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Hampshire Industrial Archaeology Society

Hampshire Industrial Archaeology Society was founded as the Southampton University Industrial Archaeology Group in the 1960s from members of the University Extra-Mural classes who wished to continue their studies in industrial archaeology. Recording has included surveys of mills, breweries, brickworks, roads and farm buildings. Restoration work is undertaken by associated groups such as the Tram 57 Project, the Hampshire Mills Group and the Twyford Waterworks Trust. In addition to the *Journal*, the Society publishes a newsletter (*Focus*) twice a year and lecture meetings are held every month throughout the year.

To join, contact the Membership Secretary: Keith Andrews, 13 Ashley Close, Winchester, Hampshire, SO22 6LR.

Front cover picture:

The official opening of the new Chandlers Ford Station on the 19th of October 2003, was marked by the arrival of A4 locomotive 60009, *Union of South Africa*, at the head of a steam special, "The Chandlers Ford Phoenix". [see page 26]
(Jeff Deacon)

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Hampshire Industrial Archaeology Society

(formerly Southampton University Industrial Archaeology Group)

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Editorial

Welcome to issue **31** of our *Journal,* which contains three articles. For the first time in nearly twenty years, we have changed our printer. Now, we can have colour pictures throughout, though you may not notice much difference as most old photographs are black-and-white anyway!

In our first article, Nick Gudde writes about the rise in the importance of patents in nineteenth century business, taking as his example, improvements to flour mills using traditional millstones to produce the flour. It centres around a court case between a patentee, George Bovill, and a Winchester miller, Augustus Crate, whom he sued for infringing the said patent. In the nineteenth century, as in the present century, it is probable that the only people who made any money out of the case were the lawyers.

Jim Beckett tells us the story of the railway station at Chandlers Ford, over the past 175 years. Starting as a small country stop in the middle of an agricultural area, a community grew around the station with the start of brick making in the 1870s, an industry which declined in the twentieth century, The station was closed by the Beeching plan, only to be re-opened in the twenty-first century for today's commuters.

Andy Fish relates the history of Northam Steam Mill as seen through a series of newspaper cuttings. Our Journal has had many articles on wind and water mills, but here is an article on a steam driven flour mill which operated for 50 years in Southampton. Although photography was available throughout its life, sadly, no photographs of it seem to have survived. If you know of one, please tell us about it.

Martin Gregory
May 2023

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Jim Beckett has been interested in Industrial Archaeology for most of his life. He uses his hobby of photography to record disappearing industrial heritage. Past projects of this nature have included mechanical railway signals in Sothern Hampshire and Southampton Docks. More recently, he has turned his attention to brick manufacturing, and is a volunteer at Bursledon Brickworks Museum.

Andy Fish
Andy Fish was born in Southampton and has lived there all his life. He was educated at Richard Taunton's College, and worked in construction for most of his working life until he retired. He is currently researching the Steam Mills of Hampshire, and Mills on the River Wey in Dorset. His first article was published in the *Southern Evening Echo* back in 1966. He is a past chairman of Hampshire Mills Group, was editor of the Dorset Industrial Archaeology Society newsletter from 2011-2019, and is a committee Member of Hampshire Industrial Archaeology Society.

Dr Nick Gudde
Dr Nick Gudde is a retired industrial chemist/chemical-engineer with a passion for industrial history. A career spanning process development, operational support and technology planning left him with a fascination for why/how technologies get invented, adopted, used and superseded. He has been a volunteer tour-guide/writer at the London Science Museum for eight years and a volunteer miller/mill-guide at Winchester City Mill for two years.

Acknowledgements

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Bovill *vs* Crate, 1865 – How new technology put a Winchester miller in the dock.

Nick Gudde

Introduction

The inspiration for this article was a letter found in the filing system at Winchester City Mill (WCM) during the Covid-19 "lock-downs." [1] The letter, dated August 2008, had been sent to the WCM Manager by Mr Colin Moore[2] enquiring whether the Mill had any information about a court case from the 1860s. The case – which concerned infringement of patents for improved mill technology – was between George Bovill, an inventor and entrepreneur, and Augustus Crate, a Winchester miller. WCM has no record of a reply to Mr Moore who subsequently published a detailed article about Bovill, in the *International Journal of Molinology.*[3] Winchester's mills are not mentioned in Mr Moore's article, so the discovery of his letter raised some intriguing questions.

Bovill's patents concerned a technology known as "millstone ventilation." This was a hot topic during the second half of the 19th century with technical articles in several journals of the day, e.g. *The Engineer*, *Scientific American* and *Mechanics Magazine.*[4,5,6,7,8] Bovill defended his patents vigorously and his court cases were much discussed in legal circles at the time;[9,10] the 1873 summing-up[11] was subsequently re-issued in 2012 as part of a modern book-series called "The Making of Modern Law".

Bovill sued Crate personally for patent infringement, but - somewhat surprisingly – the court records are not clear which mill was involved.[9,10] An article in the 1867 edition of *The Engineer*[7] merely describes the offending mill as being "on the River Itchen". We have therefore looked into Crate's history and three corn mills which lie close together on the main stream of the Itchen: Durngate Mill, WCM and Segrim's Mill also known as Wharf Mill (Figure 1).

The general histories of these mills have already been reported.[12,13,14] Today, only Winchester City Mill survives as a mill (Figure 2) with the building looking much as it would have during the 19th century. Segrim's Mill was rebuilt in the 1880s then converted into accommodation more recently (Figure 3). Durngate Mill (Figure 4) was modernised ca. 1850-1860, then again ca. 1920 before being demolished in 1966.

The Bovill-Crate court case arose during a complicated period. Milling technology was evolving rapidly because of technical advances from the Industrial Revolution, e.g. mechanisation, improved metal working. The biggest change was the emergence of roller-mills - a "disruptive technology" which would eventually replace conventional stone-mills – but technological innovations also appeared in conventional mills as they strove to remain competitive. At the same time, the UK legal system was evolving rapidly to cope with the huge increase in technological innovation. A new Patent Office was created in 1851 and a series of parliamentary acts gradually changed the way that patents were granted, challenged and prosecuted.

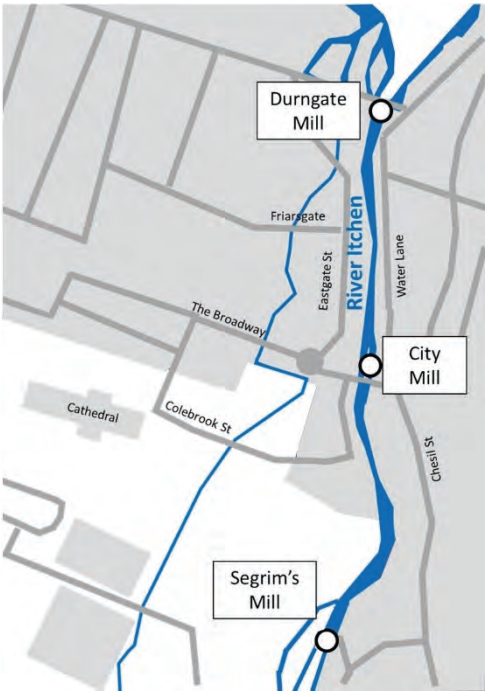


Figure 1. The sites of Durngate Mill, City Mill and Segrim's Mill

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The aim of this article is to draw these threads together in a summary for a general audience. There are 5 sections (a) background about early 19th century milling technology, (b) general improvements in milling technology during the mid 19th century, (c) millstone ventilation technology, (d) George Bovill and patents, and (e) Augustus Crate and the Winchester mills.



Figure 2. Winchester City Mill today (© N. Gudde, 2021)

Early 19th Century milling technology

At the start of the 19th century,[15,16,17,18] water mills were constructed mainly of wood, with some simple components made of iron. We have no details of the machinery actually installed in any of the three mills during this period, but the restored machinery at WCM might be used as a reasonable example.

Winchester City mill (WCM) is an operating watermill owned by the National Trust.[14] The mill site dates from the Saxon era, possibly earlier, although the current building is mid 18th century. It ceased operating as a mill in the early 20th century, subsequently being used as a laundry then as a youth-hostel. Between 1995 and 2004, the National Trust refurbished the waterwheel and machinery to make the mill fully operational for public milling demonstrations. In early 2023, the wooden equipment had approached the end of its working life and milling was suspended. The description below reflects the installation up to 2023.

The wheel is undershot and has 18 flat oak floats (paddles) supported on an oak frame attached to a large oak "axle-tree" using iron brackets. The water-supply to the wheel is controlled by a vertical wooden sluice gate operated manually through a set of iron gears. The wooden axle-tree has metal end-bearings.

The gear-train from the axle-tree to the stones is a mixture of wood and metal. The larger gears have cast iron frames with wooden cogs; the smaller gears are cast-iron. The iron components were made by P. C. Jewell & Son of Winchester ca. 1880 [19] so perhaps are a little "too modern"; they were previously installed at Durngate Mill and saved when that was demolished.

WCM's millstones are contained within a cylindrical wooden enclosure, the "tun" (Figure 5). The tun has an opening in the top for the grain feed-system which comprises a wooden hopper with an oscillating wooden chute (the "shoe") driven by a small winged iron shaft (the "damsel"). Finished flour ("meal") leaves through an opening in the base of the tun down the meal-chute into a bin below. Today, the stones typically are run at 50-60 rpm although earlier (commercial) millers ran them at 100 rpm or more.[16]

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The current brick building at WCM dates from 1744, when the mill was refurbished by James Cooke. A sketch by the artist Joseph Mallord William Turner[20] in the 1790s shows that it had two millraces separated by a smaller "slip-channel". Nearly all the mill machinery was removed in the early 20th century, but a report by the Royal Commission for the Historic Monuments of England (RCHME) suggests a likely configuration. Both races probably contained wheels although only the eastern race has space to drive millstones.[21] The surviving timberwork suggests there were 4 sets of stones around a common spur gear. It is unlikely that a single wheel could have driven more than two sets at a time so there may have been two pairs of stone-sets configured for different products eg bread-flour or animal feed.

The RCHME survey notes that the western race does not have enough space for millstones so probably was used to drive ancillary equipment. Despite the lack of physical remains, WCM probably had ancillaries such as sieves and "smutters" for grain cleaning, and "bolters" or "wire machines" for making white flour from wholemeal. These technologies were available by the 18th century[17,18] although improved versions emerged in the later 19th century. Note that WCM's configuration, with separate waterwheels for stones and ancillaries, is relatively unusual; more commonly, stones and ancillaries were powered by the same waterwheel.



Figure 3. Segrims Mill (Wharf Mill) today
(© N. Gudde, 2023)

Durngate and Segrim's Mill both operated through mediaeval times and into the 20th century. We have no detailed information about their equipment during the early 19th century but assume that they were similar to WCM. Reynolds[12] notes that Durngate leases showed both corn and fulling mills, but these may have been separate facilities on the same site.

19th Century developments in conventional milling technology

The late 19th century is often characterised by the decline in conventional stone milling and the emergence of metal-based roller milling.[15,16,17,18] However, stone milling did not simply stand still while roller milling took over; the technology of stone milling improved considerably as it strove to remain competitive.

The Industrial Revolution of the late 18th and early 19th centuries saw increased mechanisation of manufacturing and new sources of power, underpinned by better science and engineering. Improvements in metallurgy and metal working enabled larger and higher quality metal castings, forgings, and sheet-metal. Scientific theories and mathematics led to better designs. A well-known example is steam-power where efficiency (the amount of work that could be done per ton of coal burned) rose from perhaps 4% in the 1780s to nearly 15% by the 1850s.[22]

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Figure 4. Durngate Mill in 1870
(Reproduced with permission © Hampshire Cultural Trust 2023, image PWCM-2727)

Water provided the bulk of the UK's industrial power up to the middle of the 19th century.[23] As with steam-power, developments in science and technology also improved water-power. For example, John Smeaton[24] used experiments to find the optimum size and speed of waterwheels for extracting the maximum work from a given flow of water. The emergence of high-quality sheet metal during the early 19th century allowed the use of more complex designs (curved floats; more floats) raising the efficiency of undershot waterwheels from 5-10% to 10-20%. The ultimate refinement of the undershot wheel was the "Poncelet" design developed in France during the 1830s and up to 60% efficient.[18] Finally – and with a curious parallel to the replacement of reciprocating steam engines by steam turbines - better engineering and metal fabrication led to the traditional waterwheel being superseded by the water-turbine with up to 80% efficiency. Each improvement in efficiency allowed mills to grind more grain for the same consumption of water.

Other new technologies found application in conventional mills. Cast-iron components became more common, for example Eling Tide Mill has cast-iron shafts and a cast-iron feed system, factory-made by Joseph Armstrong of Ringwood. Better components also allowed more mechanisation. For example, a governor could be used to control the flow of grain to the stones or the "tentering" (separation between the stones) which in principle would have improved productivity and flour quality (or reduced labour costs).

Another emerging technology was the powered air-fan whose first major industrial use was mine ventilation in the late 18th century. By the mid 19th century, powered fans in farm threshing machines may well have inspired improved fan-assisted "smutters." [15,18] Fans were also applied to the milling process itself; this was the subject of the Bovill-Crate litigation so is explored in more detail in the next section.

Millstone ventilation technology

A conventional set of millstones comprises a fixed "bed-stone" and a rotating "runner-stone" usually on top. The grain is fed into the "eye" at the centre of the runner then gradually moves outwards as it is ground. Both stones have a series of grooves or "furrows" carved into their faces to aid both the grinding and the outward movement of the raw product (known as "meal").

Meal is a mixture of particles, typically in the size range 40 to 250 micron, however milling also produces dust (<10 micron) which is easily carried by air currents. The tun, in a conventional mill, is usually open at the top for the grain-feed (Figures 5 & 6A) but this also allows dust to escape into

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the mill building. Accumulated dust was unhealthy to breathe, created a hygiene problem and posed a serious fire hazard e.g. Tradeston Mill, 1872.[25] Dust may have become a more serious issue with emergence of larger mills and better power technologies and (e.g. water-turbines; steam engines).

A second millstone problem is heat. A set of millstones producing 60-100 kg/hr of meal requires ~3kW of mechanical power[15,16] which is converted to heat through friction within the meal layer between the stones. This raises the temperature of the meal potentially impairing properties such as flavour and shelf-life. Overheating also displaces internal moisture as water vapour which turns dust into sticky unhygienic residues. Millers therefore check the temperature of the meal and adjust the mill's operating conditions accordingly.



Figure 5. Photograph of WCM mill-machinery in 2023 (© N. Gudde, 2023)

Dust can be mitigated using forced ventilation to extract dust-laden air from the tun so that it could be vented outside the mill or into a filter box. Apart from the extraction trunking, this configuration would not require any further modification of the tun so could be retrofitted to conventional mill equipment. Power for the fan could be taken by belt drive from the mill (in the same way as other ancillaries).

Heating can be mitigated by a flow of air between the stones. There is some natural airflow due to entrainment with the grain and the centrifugal action of the stones, but the early 19th century saw attempts to enhance this using forced ventilation. Simple physics shows that the air does not act as a cooling medium in the same way that flowing air cools a car radiator. Instead, the airflow removes fines from the meal making it less cohesive thus reducing friction in the meal layer. Less friction means less power is needed to turn the stones thus frictional heating is reduced. Alternatively, meal production can be increased for the same power input; the temperature is still reduced because the frictional heat is spread over a larger mass of meal.

Millstone ventilation probably originated in France between 1830 and 1850.[3,4] Early approaches included fan blades attached to the edge of the runner-stone, fan blades inside the eye of the runner or air-scoops on the surface of the runner to direct air through special air-channels into the meal layer. Later approaches used external fans either to suck air out of the tun or force air into the eye; both required a seal between the eye and the tun. Many of the ideas were published in milling handbooks or French patents; a few went into commercial operation.

British development started a decade later and broadly followed the same path as France. English patents were awarded to Corcoran in 1843,[26] Gordon in 1844,[27] then Taylor,[28] and Newton[29] in 1846.

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Bovill - the instigator of the court action – entered the milling story around 1845.[3,6] He was an engineer initially employed by Swayne and Co, Millwall[30] which manufactured railway wheels and associated machinery. He became interested in millstone ventilation in the 1840s eventually obtaining three patents in 1846, 1849 and 1852.[31,32,33]

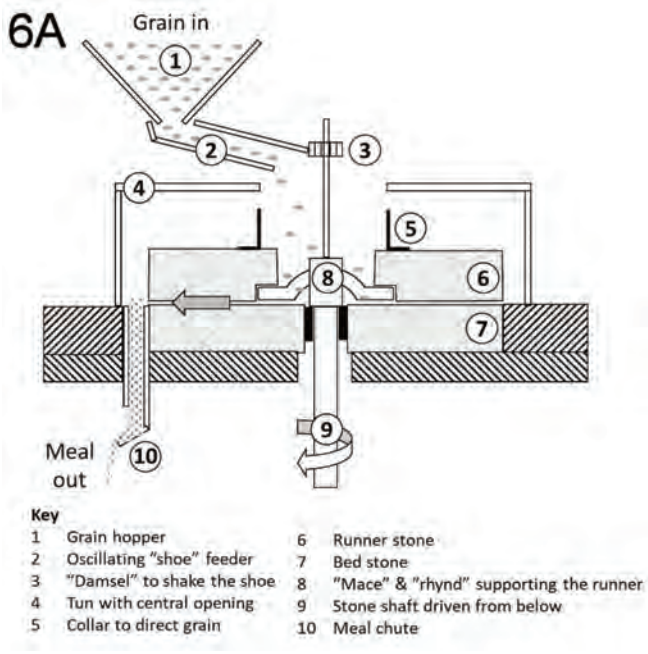


Figure 6A. Conventional mill-machinery without forced ventilation

WCM (Figure 5) has conventional machinery with no forced ventilation; this is shown diagrammatically in Figure 6A. The remaining parts of Figure 6 show three ventilation concepts from Bovill's 1846 patent; the modifications are highlighted in red with the air flow in green. Figure 6B shows a crude centrifugal fan employing radial vanes fixed to the perimeter of the runner. Figure 6C has an axial fan located in the eye of the runner. Figure 6D shows an external extraction fan providing millstone ventilation. In all three cases, the tun is closed using a central "sleeve" extending down to a circular grooved seal on the runner. The dusty air exits the tun via a perforated inner liner. The principles are fairly clear, but one can imagine it would be difficult to balance the flows of air, grain and meal; to counter this, it appears that the various concepts were sometimes tried in combination.

Bovill's patents also covered other millstone layouts (e.g. "silent feed" or "inverted" stone-sets) but for simplicity these are not discussed here.

George Bovill and patents

Pre-industrial mills generally used components which could be sourced or made locally, e.g. by carpenters or blacksmiths under the guidance of the local millwright. The industrial revolution brought a wider change in the "technology supply chain", with dedicated engineering manufacturing (e.g. Boulton & Watt) "engineered" components for a range of customers on a regional, or even national, scale. Bovill, Corcoran and Gordon were not millers or millwrights but businessmen who wanted to sell milling equipment.[30,34,35] Their income derived from supplying their invention to customers, but this let the wider world see how the device worked potentially allowing other people to "reverse engineer" the product. If a competitor or a potential customer simply copied the product free of charge, then the inventor received no return for all the knowledge/time/money expended in turning an idea into a saleable product. Early inventors often kept good ideas as secrets thus inhibiting their wider deployment which might have benefitted society in general. One solution was the patent system.

Patents - like copyrights and trade-marks - are legal instruments to confer the ownership of intellectual property. Legal ownership of an idea discourages uncontrolled copying, thus allowing the inventor to be recompensed for their R&D "investment." This might entail the inventor making/selling/operating the invention themselves, but the inventor might also get a return by selling licences allowing other people to use the idea for a fee. Either way, helping inventors to profit from their invention was seen as a way of encouraging innovation and deployment of new ideas.

At first sight, the various "ventilation" patents seem to cover similar ground but there are subtleties about how the concepts might have been implemented or used in combination. This places great

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importance on the exact wording and structure of a patent. If the wording is too narrow then a patent might easily be bypassed. Overly broad wording may lead to personal differences in interpretation (setting the scene for legal dispute)!

Trials were made of the various inventions, but – as might be expected – they did not necessarily work first time. For example, Newton's technology was tried at Deptford Tide Mill[5] but needed modification of both the placement and speed of the ventilating fan. Bovill arranged technical trials at a small steam-driven mill in Millwall in 1847, then at the Navy's Royal Clarence Yard in Gosport in 1847 and 1850; neither was conclusive.[3] Bovill refined his technology for a third dockyard trial in 1852, which claimed to show double the meal output for little increase in meal temperature and dust.[3] Again, this extra "tinkering" may have clouded the issue about what exactly was covered by each patent.

By the mid 1850s, ventilation technology was poised for wider exploitation across UK mills, but a legal complication arose – the UK patent system was a mess. Up to the mid 19th century, the Court of Chancery managed English patents and patent applications.[36] The process was slow and expensive; patent applications were not examined systematically or consistently. This clearly was a hindrance in an era when technical innovation was booming. So, the UK government set up a new dedicated Patent Office to operate a system defined by the Patent Law Amendment Act of 1852.[37] The new system continued to evolve through further acts e.g. The Patents, Designs, and Trade Marks Act of 1883; The Patents Act of 1902.

The evolution of the legal system created a complication for the ventilation patents. Many had been filed under the old regime but were being commercialised and tested under the new one. Today, a patent

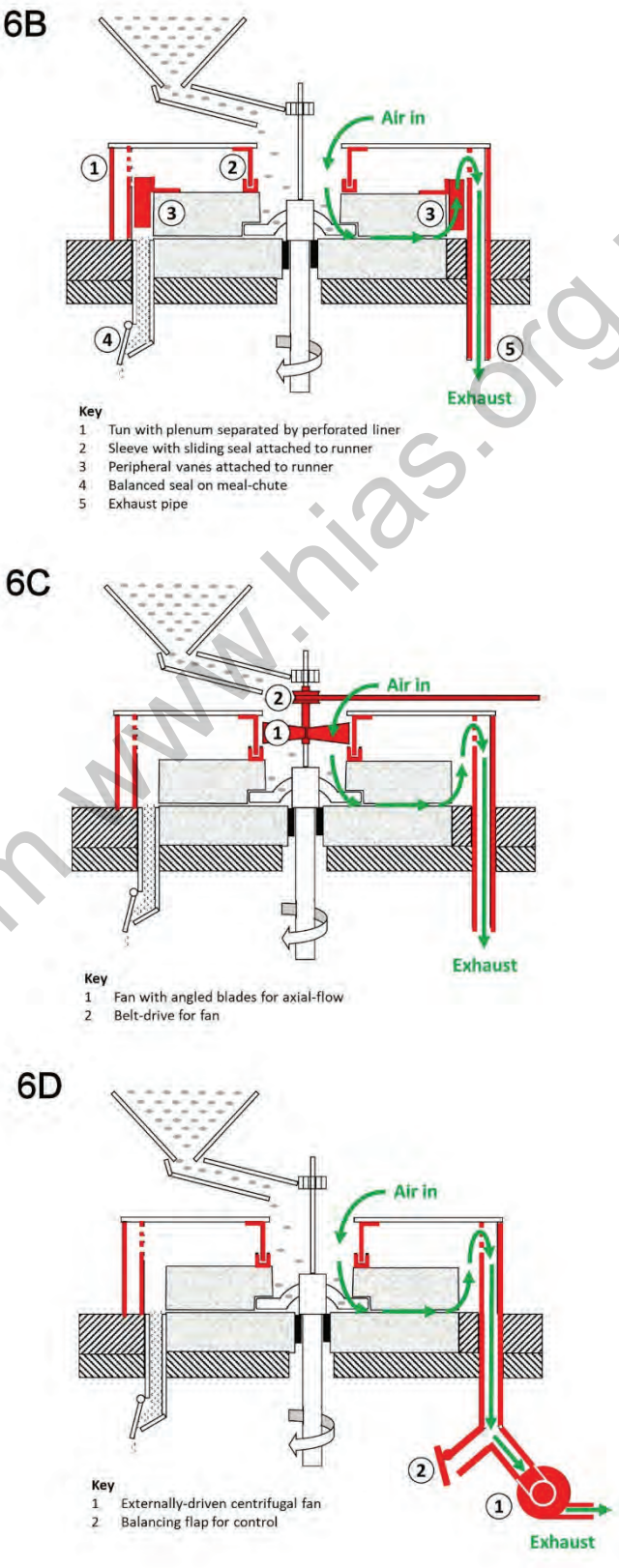


Figure 6B. Ventilated millstone – peripheral vanes
Figure 6C. Ventilated millstone – fan in eye
Figure 6D. Ventilated Millstone – external fan

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application must show that an invention is workable, useful, novel and that the patentee made the inventive step in person. It must include a specification which describes the invention in detail with a series of claims to define the aspects which the inventor seeks to protect. How this should work took time to crystallise after the Patent Law Amendment Act, so Bovill's court-cases[10] came during a period when lawyers were still testing the principles of patent law.

Bovill instigated court cases[3,6,7,9,10,11] against various millers e.g. Bird (1855), Pimm & Rands (1856), Keyworth & Seely (1856) and Christie (1858). In 1863, he successfully applied for an extension his 1849 patent. This triggered another round of litigation against millers, e.g. Hadley (1864), Goodier (1865), Crate (1865), Smith (1866) and Hitchcock (1868). The volume of cases was so large that an association of nearly 90 British millers created a fighting fund to assist its members.[3,10] By the time of his death in May 1868, Bovill seems to have instigated more than 60 cases, with at least one apparently continuing posthumously (Bovill & Another *vs* Finch, 1870).

The cases tested various aspects of patent law. For example, Keyworth & Seely (1856) argued that Bovill's "invention" was not novel and that his claims were imprecise; the judge however found for Bovill. Pimm & Rands (1856) also challenged the precision of the specification and Bovill's inventorship; they also lost. Bovill's case against Goodier (1865) covered much the same ground but Goodier's defence argued that some French ventilation patents pre-dated Bovill's patent. Today this might well invalidate Bovill's patent, but at the time it was felt that foreign inventions could legally be "re-invented" in England. The Goodier case also raised a procedural discussion why Bovill had to keep defending the same patent again and again. This was deemed justifiable because similarities with previous cases could only be identified once a case had been brought; each new case therefore had its own merit. Bovill may have had his own reasons for continuing the legal fight, but the legal system also benefitted from the detailed discussions which ensued. Presumably, the lawyers also benefitted from the legal fees?

The Bovill *vs* Crate case in 1865 was fairly typical. Bovill claimed Crate had infringed his 1852 patent; Crate's lawyers defended by claiming that the patent lacked novelty. They also offered a procedural defence that Bovill had not been sufficiently diligent in protecting his intellectual property and had been too slow in bringing the case against Crate. Bovill's lawyers countered that the delay was legitimate because Crate's membership of the millers' association made the case more complex. The case eventually was decided in Bovill's favour by the Vice-Chancellor, Sir W Page Wood.[7]

All this legal activity might suggest that millstone ventilation was a valuable technology worth protecting. In reality, the commercial decision to use it wasn't straightforward. Suitable centrifugal fans required a lot of power so the availability (and cost) of the additional power had to be balanced against the increased grain capacity. For example, "The Engineer" [4] cites City Mill, Blackfriars as achieving a 50% increase in production but needing a 100% increase in power to drive both the stones and the fan. "Scientific American" [8] describes a French steam-driven mill where meal production per stone was increased but at the expense of higher coal consumption. The economics of millstone ventilation involved a compromise between increased capital/operating costs and the value derived from higher productivity per stone, improved meal quality and reduced dust formation.

Augustus Crate and the Winchester mills

We have no direct evidence which Winchester mill featured in the Bovill vs Crate court case, however Paget[7] provides some technical details. The "offending" mill had four sets of millstones and a millstone ventilation system including "runner stones fitted … with three small wings, the millstone eyes being sealed with a "ring of coarse sacking" and an "exhaust fan […] located on the bin-floor at the top of the building." It is assumed that the sealed eye directed the airflow between the stones to provide cooling. The 4 stone-sets would be consistent with either WCM[21] or Durngate Mill;[12] Crate's involvement points to the latter.

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The Crate family had a long connection with Durngate Mill. Pigot's Directory[38] and Robson's Directory[39] both list John Crate as the miller during the 1830s. After he died in Sep-1838,[40] after which his wife Edith took over [41]; the National Census for 1841 describes her as "miller" living at the mill with her two children, Augustus (age 12) and Ellen (age 9). The 1851 Census[41] describes Edith as "miller, employing 3 men." She seems to have retired by 1854 with Augustus taking over the business [42]. Edith lived in an adjacent house in Eastgate Street until her death in 1864.

The 1861 census[41] describes Augustus as "Master Miller employing 4 men" and shows him living at Durngate with his wife Emily, their daughter, and a servant. By 1871[41], he employed five men and the household had grown to include 5 children, a servant, and a boarder. Augustus died in Dec 1885[43] whereupon his wife Emily took over; both from census reports. Modernisation during the late 1850s to early 1860s would be consistent with the ventilation court case in 1865.

The trade directories suggest that Segrim's Mill had a progression of millers during the mid 19th century: Joseph Smith in 1830,[38] James Chiddell in 1844,[45] Henry Clark in 1852,[13] 1854,[42] and 1859,[46] then William Gifford in 1874[13] and 1881.[47] Both Segrim's and Durngate were owned by the Bishop of Winchester[13] and were sometimes leased as a pair; possibly the Crates might have leased Segrim's at some time, but we have no evidence. The mill may have been refurbished in the mid 18th century[13] but we have no evidence of another upgrade before it was demolished in 1877.[13] It was rebuilt in the 1880s as a roller-mill powered initially by a water-turbine, first supplemented by steam, and then electricity. It therefore seems unlikely to have been the "high-tech" stone mill of the 1865 court case.

WCM in the 19th century also would have met Paget's description of 4 sets of stones[21] and its unusual configuration would have made it a good candidate for ventilation. Using the western "ancillaries" waterwheel to power the ventilating fan would have reduced the friction between the stones allowing the eastern "millstone" wheel to drive the stones at greater capacity for the same waterflow.

WCM and adjacent properties were acquired by John Benham around 1820.[14] Surviving timberwork supporting the machinery and the remains of an iron tentering system suggest he refurbished the equipment at some point in the mid 19th century[21,48] but we have no evidence of major modernisation. Benham ran the mill until 1859[38,39,42] when he let the mill to Charles Butler-Dance.[46] There was a failed attempt by Benham to sell the Mill in 1891, then an appeal against bankruptcy by Butler-Dance in 1892.[49] This suggests that the mill had been struggling financially, which would be consistent with a lack of technical investment. Together with the lack of any direct evidence that Crate was involved with WCM, it seems unlikely that WCM was the mill in the Bovill *vs* Crate court case.

Millstone ventilation may well have improved the productivity of conventional stone mills, thereby resisting the challenge from large roller-mills and imported wheat. It was however only a temporary respite. WCM ceased operation before World War 1 when it was used as a laundry.[14] Despite the modernisation in the 1880s, Segrim's Mill was too small to remain competitive during the early 20th century and ceased milling in 1933.[13] Durngate Mill was modernised again in 1919 but it spent its last years as an animal feed-mill before it too stopped operating in 1946.[12]

Conclusion

This article contains little original research but uses circumstantial information from various sources to show how new technology might have affected the three Winchester mills during the second half of the 19th century. Durngate likely moved first by installing improved stone-milling equipment in the 1850s, probably giving it a commercial advantage for 15-20 years. Durngate was then leapfrogged by Segrim's Mill when it was rebuilt with a water-turbine and roller-mills in the 1880s.

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WCM probably lagged the other two technologically, making it the least competitive and the first to go out of business.



Figure 7. Durngate mill before demolition in 1967 (D. Bignell)

Two areas may be worth further enquiry. Firstly, the Crate family may well have had a wider role in Hampshire milling. Secondly, other Hampshire mills might have used ventilation technology; Harris[15] notes that few historic mills today use millstone ventilation, but it might be possible that traces of the installations remain in place?

It is interesting how "modern" this story feels. Incumbent businesses based on long-established technologies find incremental technical improvements to help compete against their peers. Access to new technology involves new players and new business models. Ownership of, and access to, intellectual property become more important – and sometimes ends up being argued in court.

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Chandlers Ford Station, a Short History

Jim Beckett

Introduction

The London to Southampton Railway opened fully in 1840, it was one of the earliest lines to be completed. About five miles north of Southampton was built a station, named Bishopstoke, after the nearby village. The name of that station would change over the years, eventually becoming Eastleigh. The Gosport to Portsmouth line from Bishopstoke was opened in 1841 and the line to Salisbury, through Chandlers Ford, opened six years later, in 1847.



Figure 8. The railway system around Chandlers Ford prior to Beeching. Note the Basingstoke to Salisbury Line which opened in 1857, allowing direct access between Salisbury and London.
(Southern Railway, British Railways Board)

The railway company operating the services began life as, "The London and Southampton Railway", but was renamed, "The London and South Western Railway", because of sensitivities among the inhabitants of Portsmouth about any enterprise that mentioned the rival city of Southampton. Before the line from Waterloo to Salisbury, via Andover, was opened in 1857, the only way to get to Salisbury was through Bishopstoke (Eastleigh), Chandlers Ford and Romsey.

Chandlers Ford Station

The line from Bishopstoke, through Chandlers Ford, opened for goods traffic on the 27th January 1847. The Hampshire Chronicle reported,

"On Wednesday the Bishopstoke and Salisbury branch railway was opened for the transit of goods and nearly 2000 persons were present at the Bishopstoke station, to witness the departure of the first train, consisting of 23 heavily laden carriages, three of them containing about 30 tons of coal for distribution to the poor of Salisbury."

The report goes on to explain that coal was very hard to come by in Salisbury and that, in the future, the cost will fall from 34 to 24 shillings per ton. Growers will save £1 per ton transporting their grain. The line was built double track, and opened for passengers on the 1st March 1847, but Chandlers Ford Station was still under construction, and did not fully open until the 22nd November of that year.

On the 1868 Ordnance Survey map, it can be seen that the area around Chandlers Ford station was very rural, just farms and woods and a few cottages. At first, there were very few passengers, and the station was mainly used for agricultural goods and other materials. The station building was situated on the up line, on the other side of the track, compared to where it is today. There is a recollection of the early station from the local landowner, Tankerville Chamberlayne. Speaking in 1900, he said,

"When I was a child, soon after the railway station opened, I had the impression that Chandlers Ford was a most outlandish place. The railway guards, when it consisted of a farm and a cottage, sarcastically referred to it as a city and there used to be a joke that only one man was ever known to get out at Chandlers Ford, and he was never heard of again." [1]

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Nevertheless, we know that the station was used from its earliest days by William Heathcote, Baronet, who lived at Hursley Park. His wife, Lady Selina Heathcote wrote in her diary, in February 1848, *"Sir William went up to town from Chandlers Ford Station, now just opened."* and again in July 1848, *"Left by express train from Chandlers Ford for London at 9.00 am"*. (See Appendix 1)

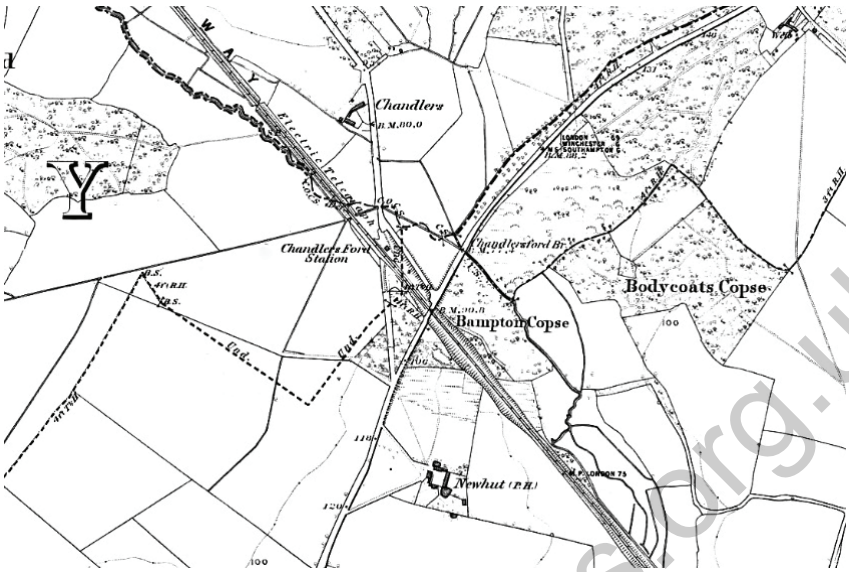


Figure 9. Ordnance Survey 6-inch map ca. 1867. Note the station appears as a small square so the building may not have been complete. There are telegraph wires but there was no telegraph station at Chandlers Ford until much later. The Southampton to Winchester main road now has a bridge over the line and the Hursley Road has been diverted.
(Reproduced with permission of The National Library of Scotland)

Train travel in the 1850s was a very different experience to that of today. It was possible to board in, first, second or third class carriages. First class seats were more like those in today's carriages but there was no carriage heating and the ride was very bumpy. Second and third class had wooden benches, with second under cover, but third was open to the weather. Things did gradually improve for the second and third class passengers, but it was a serious offence to board the train without the correct ticket for your class of seat.

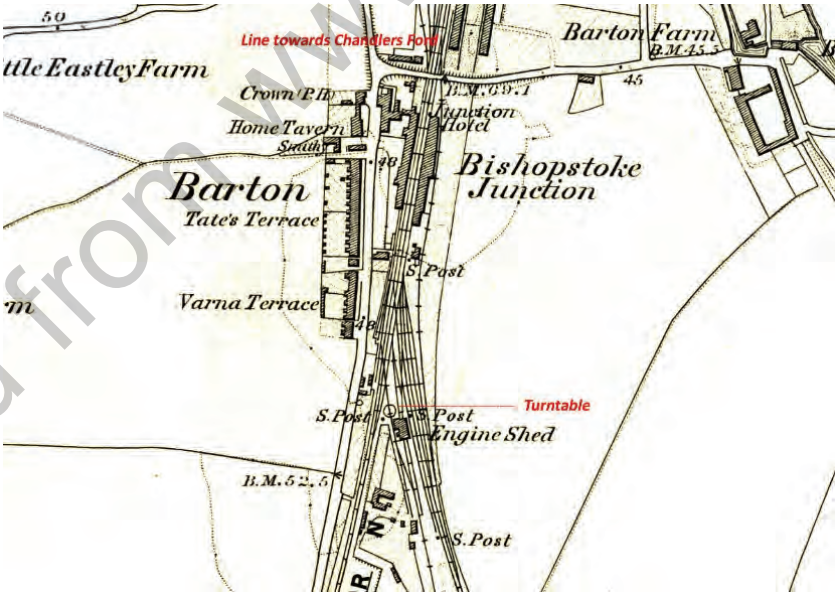


Figure 10. Ordnance Survey map ca. 1868 showing Eastleigh (Bishopstoke Junction) Station.
(Reproduced with permission of The National Library of Scotland.)

For the ten years that Chandlers Ford Station was on the main line between London and Salisbury, through trains stopped at Bishopstoke where it is possible that the locomotive would have been turned on a turntable, and then run round to the front of the train. The 1868 OS map shows a turntable located a short distance south of Bishopstoke Station. The Salisbury line could only be joined from the south, so both up and down trains from London would need to use the turntable to get the locomotive to the front. It is also possible that passengers had to change trains at Bishopstoke, for the Southampton to London train, but timetables published in the local press do not show this.

We can get an idea of what travel through Chandlers Ford was like in those early days from reports in local newspapers. Passenger trains would have carried mostly businessmen and landowners, who would have paid handsomely for their ticket, so it is not surprising that in 1848 when the early down train from Waterloo, which should have arrived in Salisbury at 11.00 am, broke down, they were not very happy. The engine, named *Hecate*, had a problem with the firebox after stopping at Chandlers

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Ford, had limped to Romsey where it took two hours to repair. This was reported to be "Much to the annoyance of the passengers."[2]

In addition to delays, early rail travel was often rather dangerous, as there were a number of fatalities on the line between Chandlers Ford and Bishopstoke (Eastleigh). Luckily for the passengers, though, these accidents mostly affected railway staff.

Railway accidents in the vicinity of Chandlers Ford

In January 1849, a locomotive was derailed, and tumbled down an embankment, possibly near Woodside Avenue where the line is seen to cross the road on a modern bridge. Fortunately, the carriages became uncoupled and did not follow the engine. The driver was seriously injured, but the fireman escaped almost unscathed. The passengers were delayed by a mere 70 minutes as they were taken on their way by another locomotive. The LSWR management needed someone to blame. They chose John Prescott, who was prosecuted for negligence because he had not displayed a green flag for danger, as the poor condition of the track, due to heavy rain, had been noticed before the accident. (At that time a green flag meant proceed with caution, or slowly.) In the middle of the nineteenth century there were either no signals or very primitive ones and there would have been no signal box at Chandlers Ford. That would come much later.

During his prosecution, Prescott explained to the court that he was not actually employed by the railway company, but by a sub contractor, as a plate layer. He also said that he was expected to look after 18 sets of points and, at the time of the accident, his employer had told him to check on some wagons. The court dismissed the case.[3] It took several days to recover the locomotive, but because the line was double track, services were not interrupted.

In 1862, a railway guard, John Reed, 39, was killed when he fell from his guard's van onto the track while the train was in motion near Chandlers Ford station. It appears that he had been sorting some parcels, when the door, which was not properly fastened, fell open. The porters at stations were responsible for checking that the doors to the passenger carriages were properly closed, but the guard's door was his own responsibility.[4] 17 years later, in 1879, an almost identical accident occurred in the same place to Samuel Mansell, who was 42. In both accidents the guards were last seen alive at Romsey, the engine drivers both noticed their absence at Eastleigh and returned with a light engine to search the line, and in both cases, they discovered the bodies on the track.[5]

A serious accident occurred in 1870 when a heavy goods train from Yeovil failed to stop at Eastleigh and ploughed into some empty wagons, causing the engine to overturn, killing the driver and injuring the fireman, who also died later. The train was carrying cattle in about 35 trucks and many were killed. The reader may question why the train failed to stop.[6]

At that time there were no brakes fitted to the wagons, this train had three brake vans, also called guard's vans, which had mechanical brakes. The guards would apply them when the driver blew a long note on the whistle, or they would apply them if they thought it appropriate, being familiar with the line. A heavy train with a powerful locomotive, which we know this was, would take about a mile to stop so the brakes should have been applied near Chandlers Ford station. It could have been travelling over 40mph. The driver was not familiar with the line and it was dark. In addition, not all the guards were experienced. The blame in this case was placed on the deceased driver.

The last accident to be considered occurred in 1890. William Pitt, was the engine driver. He lived in Southampton, and had 33 years experience on the South Western. On the fateful day, he came on duty in Southampton at 5.30 am. He worked the 6.30 am passenger train to Weymouth followed by the 10.35 am goods to Portland, where he carried out some shunting of wagons. When he had finished, he drove back to Weymouth where he had a lunch break. At 2.20 pm he drove a passenger train from

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Weymouth to Eastleigh, arriving at 5.11 pm. Pitt has now been working for 12 hours. He was then asked to do an extra duty, driving the 6.05 pm passenger train to Salisbury. When he arrived, he did some more shunting, filled the engine with coal and water and was kept hanging around until 8.37 pm, when he set off for Eastleigh with a light engine.

He felt tired on the journey back and had a head ache. At Chandlers Ford signal box, the signal man raised the alarm to Eastleigh box because Pitt had passed the signal indicating the line ahead was not clear. There was a stationary goods train further on waiting to join the main line at Eastleigh. The guard on this goods train happened to look behind and saw the light engine approach. He jumped from his van and climbed up the bank. At the same time a Portsmouth to Salisbury passenger train was passing on the other track. The guard waited to see what would happen. The engine driven by Pitt collided with the guard's van of the stationary train at the very instant the guard's van on the passenger train was passing. Debris was thrown up and some penetrated the passenger train guard's van, killing that guard instantly.

The engine driver, William Pit, would probably have faced prosecution for manslaughter, but for technical reasons about the signals shown, the case was dismissed. The signal man in the box at Chandlers Ford was called to give evidence, because he saw Pitt pass a stop signal there, but the fact that Pitt had been working for almost 15 hours when the accident occurred did not, surprisingly, figure greatly in the case. [7]

The accidents that occurred near Chandlers Ford Station were similar to those happening all over the country and safety improvements were introduced much more slowly than the building of the lines in the first place. It took a major accident in 1876, involving the Flying Scotsman, before things began to change; readers interested in early railway safety may wish to acquaint themselves with the Abbots Ripton rail accident which occurred in 1876. This eventually led to the adoption of better braking on passenger trains, but brakes on goods trains were not significantly improved until well into the 20th century.

The station and the village, - a place to meet

In 1850, the inhabitants of Romsey asked the mayor for a one-day holiday to celebrate Coronation Day on the 28th of June. The mayor agreed, and an outing was arranged for the folk of the town to travel to Chandlers Ford by train where they would take part all sorts of games and entertainments. The countryside around the hamlet of Chandlers Ford appears to have become a popular meeting place after the railway arrived and its secluded nature was ideal for less savoury activities. In 1868 a bare-knuckle prize fight, locally promoted, saw two combatants come down from London on the train. The fight was held a short walk from the station where, hidden by trees, a ring had been constructed and a crowd had gathered. With gambling and other criminal activity expected, the police came on the scene but not until the fight had finished. [8]

Along with the railway came the same sort of problems seen today, where the public often do not appreciate how dangerous railways can be. In 1851, two men trespassed onto the railway line at the station and were nearly run down by a train. They were very drunk and one fell on the track. The penalty at that time was £5 but this was mitigated by the court to 10 shillings plus 7 shillings costs. (That is almost £100 today). [9]

In 1866, The Rev. J Keeble, vicar of Hursley and a nationally famous scholar and writer, died while visiting Bournemouth. His coffin was conveyed to Chandlers Ford station by train and thence to Hursley by horse drawn hearse. His funeral was a huge affair and the scene at the station would have been remarkable.

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The railway company ran excursion trains; for example, in 1852, to Smithfield Cattle Show. The newspaper announcements give us a useful insight into what it would have been like to take part. 3rd class in an open carriage would have cost you 5 shillings, a week's wages for a labourer. By 1857, however the 3rd class carriage was covered but probably had no glass in the windows. We also get an idea of the journey times. From Salisbury to London took over 4 hours. However, by stagecoach the journey would have been about three times longer. Express trains were quicker, for example 2 hours 12 min from Bishopstoke to Waterloo in 1850. More locally, in 1856, the excursion from Salisbury to visit the Spithead Naval Review took 45 minutes to reach Chandlers Ford.[10] The same route today, Salisbury to Chandlers Ford, would take about 30 minutes, although it actually takes 43 minutes because the train follows a route via Southampton.

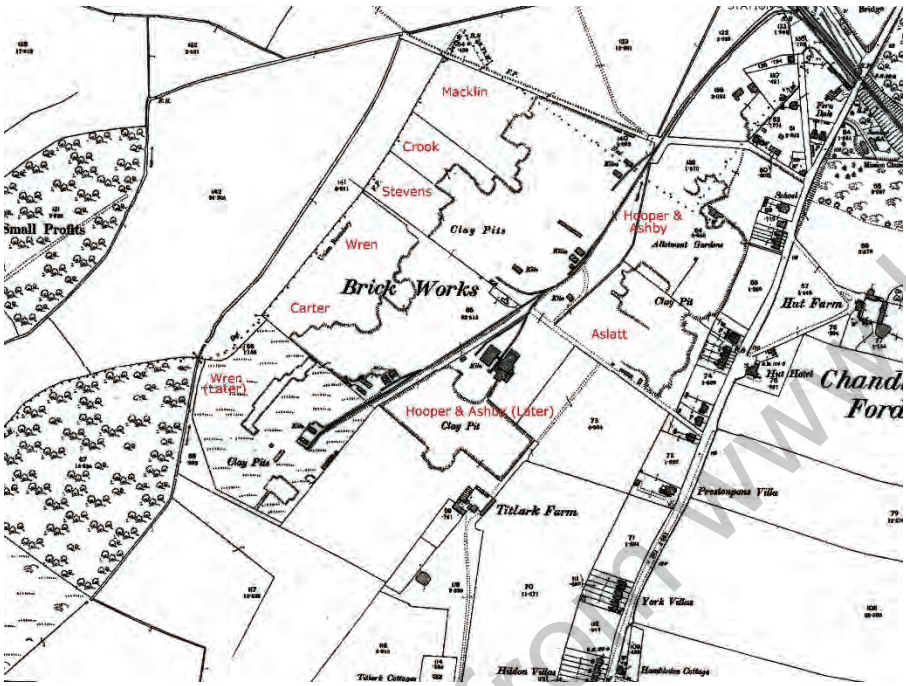


Figure 11. The railway sidings joining the main line at Chandlers Ford station, just visible at the very top of the map, showing the individual yards that existed around 1890.
(Ordnance Survey. Reproduced with permission of The National Library of Scotland) Data in red, author.

In 1869 several sheep from Titlark Farm were killed on the line near the station. The farmer claimed the fence had been inadequate and took action against the LSWR. Needless to say, he didn't win the case.[11] Also in that year, through no fault of the company, James Tudgey was killed at Chandlers Ford station. He had been unloading railway sleepers from a cart when he slipped, fell from the cart and a sleeper fell on top of him. This is interesting because we learn that the sleepers had come from Mr Fleming's woods, which suggests there may have been a saw mill on the Fleming estate at that time.[12]



Figure 12. Photograph from around 1910 taken from the road bridge westward. The red arrow indicates the siding which ran into the brick yards (Eastleigh and District Local History Society picture archive)

We arrive now in 1870, and the opening of the brickyards. This would probably never have happened had it not been for the station. A siding was constructed with branches leading to each of the seven or eight brickworks on the land where Chandlers Ford industrial estate now lies. The arrival of this industry began the gradual expansion of the hamlet into what we now know as Chandlers Ford today. During the next fifty years, to the outbreak of WW1, it is

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estimated that between 200 and 300 million bricks left Chandlers Ford Station, for destinations as far away as London.[13]



Figure 13. Taken around 1910 looking towards the road bridge which is obscured by smoke. The station master's house was the first building on the left and the station buildings are beyond. The station buildings today are on the opposite side of the track.
(Eastleigh and District Local History Society picture archive)

Station Masters (Company Agents)

We do not know for certain the name of the first LSWR agent at Chandlers Ford station, but it was probably James Lamb, who was appointed in 1848. The next was John Gradidge. A Winchester man, the 1851 census shows him working as a railway policeman. At that time a railway policeman's primary duty would have been to operate any early signalling equipment and to keep the railway safe, as well as dealing with any trespassing, or criminal activities taking place on company premises.

When George Gradidge died in about 1871, or soon afterwards, George Newell was appointed. He was born in Walton on Thames about 1830. His wife, Sarah, was from Andover. Around the time of his predecessor's death, he was working as a railway inspector in Salisbury. He probably moved to Chandlers Ford soon after that. We know he stayed in Chandlers Ford until he retired in about 1895. He would have lived in the station master's house, overlooking the platforms. We do not know exactly when the house was built, but it would have been no earlier than about 1880.

In 1895, the *Portsmouth Evening News* included a short report about Mr Newell.

"Few persons can have travelled by rail past the station at Chandlers Ford who have not been struck by the beautiful floral appearance of the grounds attached to the residence of the station master, Mr G. Newell, who has displayed an amount of taste for horticulture which would do credit to a professional gardener." [15]



Figure 14. Showing George Newell's garden, behind the fence on the left, ca. 1910
(Internet)

During the 1880s George Newell would have witnessed the gradual expansion of Chandlers Ford from hamlet to village, and with it, the

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increasing use of the station. The signal box was probably added about this time along with the other outbuildings, which are shown on the 1895 OS map, but not on the 1868 survey.

Other Station Masters working at Chandlers Ford and who have been traced, are shown in the Appendix 2.

The expansion of the village

Activities such as horse racing, which took place on a course near the station, in what is now Valley Park, would have increased the passenger traffic. On the 3rd of October 1883, *The Sportsman* newspaper reported, *"The ground was in excellent going order and the attendance fairly up to average. Several well filled trains arriving from London, Portsmouth and Southampton".*

The station served the population living in several outlying areas such as Hursley, with farms and forestry using the facilities. For example, in 1887 there was a major sale of livestock and equipment at Ratlake Farm, due to a change of ownership. The auctioneers arranged horse drawn transport to meet specific trains at Chandlers Ford station and advertised the times in the local papers. Prospective purchasers would then be conveyed to the farm. There was a charge though, of one shilling per person. It has to be asked, was this the beginning of an integrated transport system? [14]



Figure 15. An early photograph of The Railway Hotel in Hursley Road. (Barrie Pictures)

1890 brought accelerated growth. Mary Wallis, a local woman, had sold land in Eastleigh for the railway company's new carriage works, and she used the money to purchase land in Chandlers Ford from the Heathcote Estate. This land was north of the railway line and was called Brownhill Park. Mr and Mrs Wallis offered building plots in this lovely countryside, for the wealthy to build grand Victorian villas. The proximity of the station would have been important in promoting the area, by enabling the wealthy to travel to their businesses with ease. The couple built a large house on the land for themselves, and named it, "Kings Court."

The new housing developments attracted a newspaper reporter to investigate the sudden expansion of the village and, in September 1893, one of the people he interviewed was George Newell, station master, who said *"Almost the whole of the new building work has been completed in the last 9 months".* [16]

In 1895, Strong & Co., the Romsey based brewers, applied for a licence for a new hotel and public bar to be built near the station in Hursley Road. They already owned The Hut Hotel, but that was too distant from the station and there was a demand for another hotel and stables. At the hearing, Mr Newell was one of the witnesses. During questioning he stated that 7-8000 passengers used the station monthly (about 14,000 was the figure in 2018). The licence was approved and the hotel was built at a cost of £2200. It opened in 1898 as The Railway Hotel. Today, it is called, 'The Monks Brook.' [17]

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The 1891 census tells us that there was a Telegraph Inspector living at the station, possibly in the station master's house. Telegraph lines had been erected along the line soon after opening but initially telegraph stations were provided only at Bishopstoke, Romsey and Salisbury. George Prior, one of the founders of the group which preserved Romsey's signal box, carried out much research into local signal boxes. He puts the date of building Chandlers Ford Signal Box at around 1875.



Figure 16. Chandlers Ford signal box before demolition, ca. 1960 (G.F.Gillham, Southern Signals)

During the 1890s, many more people were moving into Chandlers Ford, particularly from the new carriage works in Eastleigh. In 1897, Chandlers Ford became a Civil Parish and a parish council was appointed. Early in 1905 the parish clerk wrote to the LSWR company asking for improvements to the waiting accommodation and for cattle pens and a ramp to assist in loading livestock. The reply, from the company's general manager, Sir Charles Owens, said that they had considered the request but felt accommodation at the station was adequate, considering the amount of traffic. The company would, however, be erecting a footbridge over the tracks. Some council members were incensed at the reply. The council had not asked for a footbridge and did not want one. Mr Wallis, the property developer, complained, *"When it rains, we have only a tin shed to wait in. The booking office is used as a parcels office and there are often parcels of fish etc, littered about. We should ask the directors to come and see for themselves."* Another councillor added, *"Let them come about 8 o'clock when there are 30-40 laundry girls there."* The clerk was instructed to write back saying that they did not want a bridge, in addition they would like an alteration to the timetable so that the train arriving at Eastleigh, from Waterloo, at 1.24 pm could connect with the train to Salisbury, leaving at 1.25 pm. When the clerk read out the reply at the next meeting of the parish council the councillors were despondent as none of the requests would be granted. A councillor said *"The Company could close Chandlers Ford Station, if they wished, at any time"* Mr. Wallis replied, *"There is no fear of that."* [18]

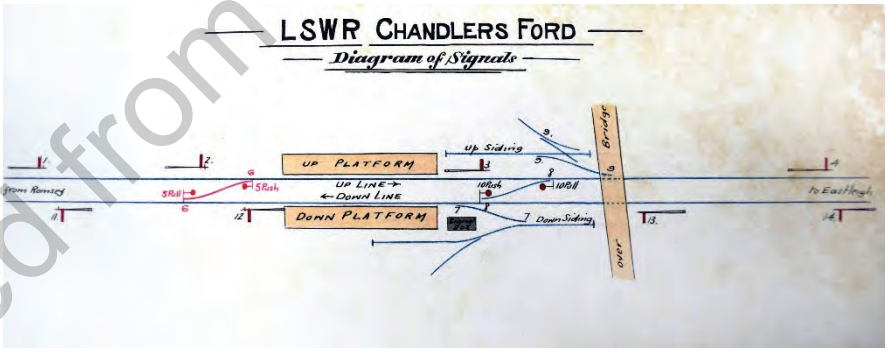


Figure 17. Layout showing various sidings on both sides of the main tracks. The new crossovers are shown and, at the bottom, the line running into the brick yards. 1898. (The National Archives)

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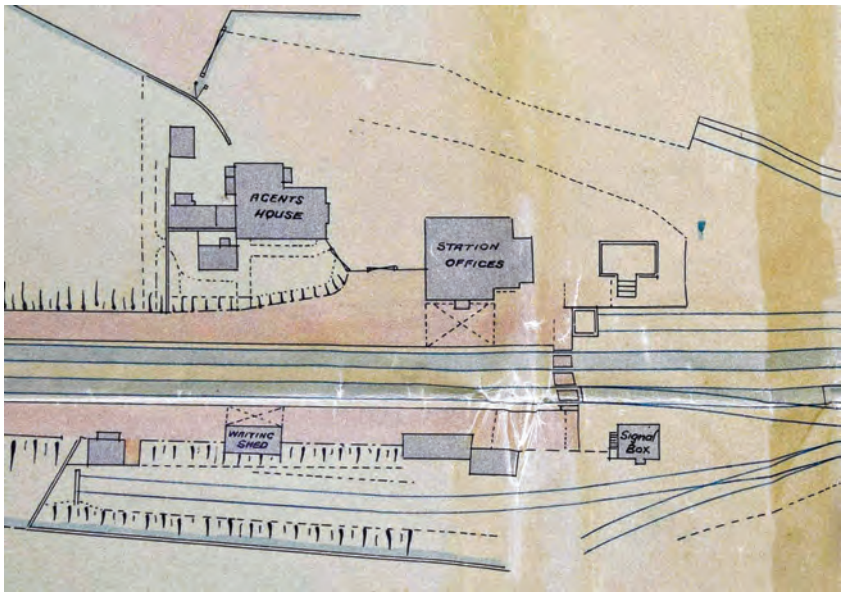


Figure 18. This plan dating from 1898 shows the layout of the buildings. The Down Platform (Bottom) is where the modern station is located, roughly where "Waiting Shed" is shown. There is a pedestrian crossing over the tracks as the footbridge was still to be built. The station master's house is shown as "Agents House" and the main station building as "Station Offices". All buildings were demolished soon after line closure in 1969, but one remained until much later. The corrugated iron shed shown to the right of the Station Offices was used as a store by a business that sold garden sheds.
(The National Archives)

In fact, according to local historian Capt. John Fortune,[19] who was born about 1892, the station was very busy during Edwardian times. He was born at nearby Ford farm, so would be in a position to know. He says a goods train came from Eastleigh every morning and tons of coal, fertilizer, cattle cake, machinery and other goods were unloaded at the station. Heavy stones, for the new building works at Hursley Park and for the new workhouse were also unloaded and shunting would go on for two hours. A crane was erected at the station but this collapsed one day, resulting in yet another fatality, to one of the workmen.

Mr Wallis was right, the company did not close the station, The next fifty years saw little change at Chandlers Ford station. With the exception of a likely increase in traffic during the Second World War, passenger numbers, I suspect, will gradually have fallen. Nevertheless, when it was decided to build a parade of shops in Bournemouth Road in the 1930s, the close proximity of the station may well have contributed to the decision.

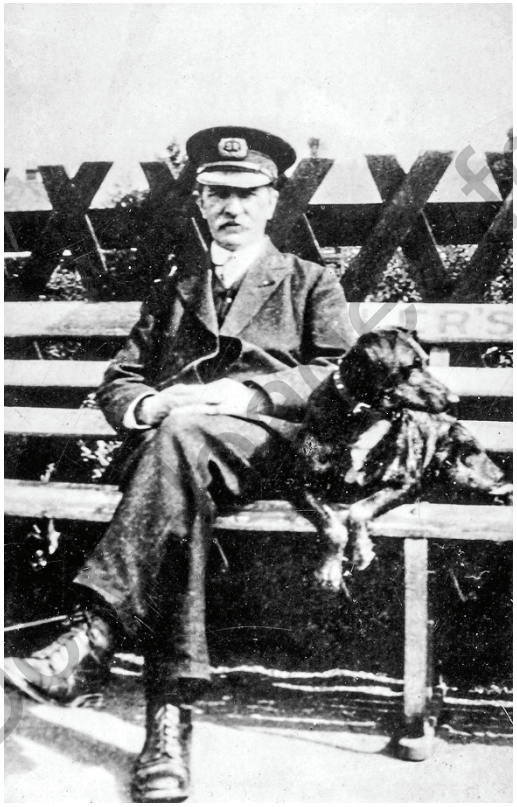


Figure 19. William P. Ames. Station Master at Chandlers Ford c1930
(Eastleigh and District Local History Society picture archive)

Before we leave the Edwardian scene, I will mention two other people. In the EDLHS archives there is a photograph of a man, in railway uniform, with a dog. The caption identifies him as William P. Ames, station master at Chandlers Ford. Census records show he was born in 1886 and his father was a station master in Southampton. The 1911 census shows him living at 3, Weston Road, Eastleigh and working as a railway clerk so he was not station master at that time. The 1939 registration list tells us that, by then, he was a retired station master, so the photograph could have been taken around 1930 – 1935, judging by the appearance of his age.

The other person to mention is Wilbert Awdry, better known as Rev. W. J. Awdry, author of "Thomas the tank engine." A footbridge, built recently near the station, commemorates the man. He was born in Ampfield, about three miles from Chandlers Ford, in 1911, but the family moved away when he was six years old. I like to think,

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though, that he almost certainly would have come to Chandlers Ford before they left, and that the station may have been where he was first introduced to the railway. A modern footbridge near the new station is named the "Rev. Wilbert Awdry bridge".



Figure 20. A new footbridge over the tracks near Chandlers Ford Station has been named the "Rev. Wilbert Awdry Bridge". (Author)

From closure to re-opening

Which brings us to modern times. Following the Beeching report of 1963, over 2000 stations were closed across the Nation, and Chandlers Ford was one of them. The Eastleigh to Romsey line was closed to goods traffic on 1st June 1964, and five years later, on 5th May 1969, the station was closed to passengers.[19] It has not been established if there was any traffic between 1969 and 1972. It may be that the authorities were still trying to decide whether to lift the track.



Figure 21. Looking towards Eastleigh, showing the bridge over Bournemouth Road. The siding is still there, but the cross-over and telephone lines have gone; still steam engines though!
(Eastleigh and District Local History Society picture archive)



Figure 22. View towards Romsey, probably taken after station closure, because the semaphore arm has been removed from the signal post. The chimneys of the station master's house can be seen above the small booking hall and office. The siding has been removed. The line was converted to single track in 1972.[19]
(Colin Maggs)





Figures 23 & 24. Two views from the backs of the station buildings just before closure. Note, the station offices had five chimneys, so five coal fires (six, including the signal box) to keep them warm in winter. Coal was cheap in days of old!
(Kevin Robertson,* The Southern Way*)

Why did the line survive? I believe it was for two reasons. Looking at the map it can be seen how the line would give an alternative route from Portsmouth to South Wales in the event of line closure around Southampton. Secondly, the stone trains from Somerset had direct access to the Botley



aggregate facility, without having to travel the extra distance through Southampton. The fact that the line survived made it feasible to consider the re opening of Chandlers Ford Station. It seems strange that goods services were cut in 1964, five years earlier than passenger services. Perhaps someone in British Railways thought that Beeching may have been mistaken and that this line could be really useful in moving stone down to Botley. Or maybe the military considered the strategic advantages of having a direct line between army bases near Salisbury and Warminster and the sea ports of Portsmouth and Southampton.

Figure 25. The Station Master's house was demolished in the early 1970s, at a time when working at height regulations were rather lax.
(Eastleigh and District Local History Society picture archive)





Figures 26 & 27. Trains in the years after closure: [26] A class 31 diesel locomotive hauls a diverted Cardiff to Portsmouth train past the old station, in 1980. The photo is taken from where the signal box stood and the booking office is now occupied by a display of garden sheds. (Kevin Robertson,* The Southern Way*)
[27] Tender first, a steam special trundles past Chandlers Ford on its way to Romsey. The old platform had not been fenced off at the time. (Author)



Figure 28. The first passenger train arrives from Romsey at the new platform. The station is still being built behind the fence on the left.

The station rebuilt

The Romsey to Eastleigh line was reopened for passenger traffic on 18th May 2003, though the new station building was still under construction, and was not officially opened until 19th October 2003. That is history repeating itself after 156 years. The new station was opened by TV celebrity Charlie Dimmock, but I have found no record of who, if anyone, declared the original station open in 1847.

Conclusion

So, what is the legacy of Chandlers Ford station, perhaps considered irrelevant today by the car driving inhabitants? My belief is that without the station, the brickworks would not have evolved. Digging the clay

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damaged the land, making it unsuitable for building anything other than industrial units. Without the station Mr. and Mrs. Wallace would not have speculated on buying land, and offering Chandlers Ford as a wonderful place for the affluent to build their villas. Without the station the centre of Chandlers Ford would not have developed with school, church, shops and post office all located within a short walk. After the station closed the village centre moved north, to Fryern, where it remains today.



Figure 29. A large crowd gathered outside the newly opened Chandlers Ford Station. (Jeff Deacon)

APPENDIX 1

An Eye-witness Account

On the 7th of March 1914 the *Hampshire Observer and Basingstoke News* published a letter written by J. Scorey of Swanwick in which he reminisces about the railway and Chandlers Ford. He was born in Hursley, a few miles to the north, when the village of Hursley was far more important than it is today. Hursley Park was the home of Sir William Heathcote who owned much of the land in Chandlers Ford.

The following are excerpts from his letter to the newspaper.

"People in those days used to walk more than they do now, as far as my memory can reach, I can remember being sent from my home at Hursley to my father's old home at Southampton - not a bad walk for a child. It was at Southampton I saw my first railway carriage. It was open, like the present cattle truck. Our first carriages had no windows. The guards rode outside and wore tall hats. These kinds of carriages were in use for the first quarter of a century, including the first Exhibition of 1851 and the second in 1862. I myself, when in the railway service at Waterloo, used to ride on the top of carriages with a seat, and use the brake rod when wanted. In the meantime, the railway company's funds increasing, they got better carriages. They first bought them from the Saltley Works in Birmingham, till they got to make them themselves. About the year 1846 the Bishopstoke and Salisbury railway was begun. I remember starting off to meet my mother who had gone to Southampton - I was not more than seven or eight years old - when I saw the line being made. The road leading out of the Hursley Road to the Southampton Road was then the site of the now made station.……The road was diverted when the bridge was made, for traffic to go over the bridge without interfering with the railway.

Through the late Sir William Heathcote, Chandlers Ford Station was made, and he provided an Irish jaunting car to go to and from the station and the King's Head, Hursley, which was kept going for many years. Just a pointsman's box was put up at first at the station, and a man in charge of the old half moon signal. Sometimes the man was not there when the train stopped, so it would go on. The man perhaps would be rabbit shooting on the side of the line! But gradually, a station was provided, a booking office and a waiting room: it was years before a house was made for the station-master.……"

Although the accuracy of Mr. Scorey's account is uncertain, it does throw an interesting light on the initial plan to build a station at Chandlers Ford. This would have been the nearest station to Hursley, although Winchester was not a great deal further. Sir William Heathcote's influence may have tipped the balance, if he was a shareholder in the railway company.

APPENDIX 2

Station Masters at Chandlers Ford.

(Information researched and compiled by Daniel Malloy.)

1848-1851 James Lamb
1857-1860 Jonathon Lever
1864-1871 John Gradidge
1871-1895 George Newell
1895-1908 Charles William Griffiths

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The career of John Gradidge:

Entered Railway service in July 1841 as a 'Porter' at Winchester on 18/- per week, aged 20.
in 1846, appointed 'Policeman' at Winchester on 19/- per week
in 1855, appointed 'Inspector' at Winchester on 25/- per week
in 1861, wage increased to 27/6 per week
in October 1864, moved to Chandlers Ford as 'Agent' on a salary of £70 p.a.
£10 p.a. deducted for rent of the Agent's house
Died in May 1871





Figures 30 & 31. Chandlers Ford station today (Author)

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Northam Steam Flour Mill, 1851-1900

Andy Fish

Situated around 100 yards downstream from Northam Bridge, on the river Itchen in Southampton, was a shipyard that was closed in 1851 by its owner Mr Rubie, who resided at 4 Waterloo Place. It was advertised for sale by auction, in the *Hampshire Telegraph* dated 6th September 1851, by R. H. Perkins. The sale was to take place at Matcham's Hotel, Southampton, on Wednesday the 17th day of September 1851.

After the sale, nearly half of the land was occupied by Messrs Robert and John Hague, as tenants. Mr Hague planned to build a steam powered Flour Mill. It was originally designed to have 12 pairs of stones and two steam engines with boilers. The foundations were constructed for that purpose. However, when it was built, the machinery consisted of just 6 pairs of 4 ft diameter French burr millstones, with elevators, creepers, shifting sack tackle, first class dressing and smut machines, and one pair of barley stones, all driven by a 25 horse power condensing steam engine, complete with a boiler house and brick chimney stack 70 ft high. The layout of the machinery and mill stones was arranged to a layout designed by Mr Hague senior, to reduce the labour needed to run the mill. The mill machinery was constructed by Messrs Summers, Day, and Baldock at 'The Northam Iron Works' next door to the mill. The property had a river frontage of 65 ft on the river Itchen, with a quay with a draught of water suitable for deep laden ships. The site possessed every facility for transport, either by road, water or railway, the last of which was over the Northam Quay Tramway which connected with the London & South Western Railway just south of the modern Mount Pleasant Crossing.

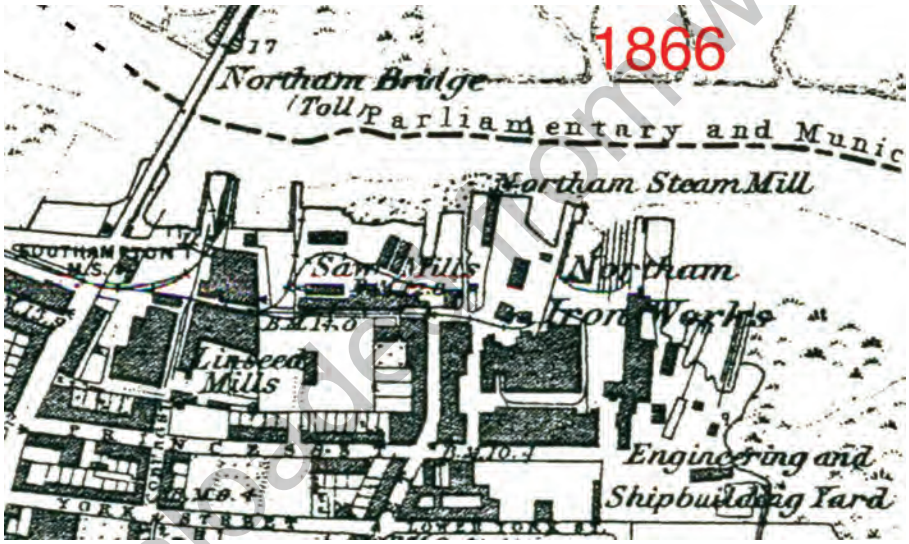


Figure 32. A map of the Northam bank of the river Itchen showing the Northam Steam Mill, surveyed in 1866.
(Reproduced with permission from the National library of Scotland)

The Hagues published, in the *Hampshire Advertiser* of the 20th November 1851, that 'The Northam Steam Flour Mill' was completed and they wanted to announce that their Mill "will commence working on the 1st December. The mill is situated on the river Itchen, and possesses every facility for carriage, either by road, railway, or water. The machinery has been tested and found that grinding is performed with extreme rapidity without heating the meal and that the dressing apparatus is adapted to produce the very finest quality of flour, The mill will also be able provide a contract to supply the Trade with flour as well as to Grind Wheat, Barley etc. at the mill, at reasonable rates. For further particulars, apply at the office on the Premises."

"The completion of this mill is an important feature in the constantly increasing facilities of the port of Southampton and serves to mark the enterprising spirit of our Townsmen."

Dissolution of partnership, 1855

In the *Hampshire Advertiser* published on Saturday 5th January 1856, notice was given that the partnership heretofore subsisting between "The undersigned Robert Hague, Charles Lorimer

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Hensman, and John Hague the younger, trading and carrying on business at The Northam Steam Flour Mill at Northam, in the town of Southampton, as millers and flour factors under the firm of Hague, Hensman and Hague was this day dissolved by mutual consent so far as the said Charles Lorimer Hensman is concerned, and that the debts owed by and to the firm will be paid and received by the said Robert Hague and John Hague the younger.

As witnessed by our hands this 28th day of December 1855,
Robert Hague. C. L. Hensman. John Hague Junior.
witnessed to the signing hereof by all the above parties.
William Henry Newman."

Fire at the Mill, 1858

It was reported in the *Hampshire Advertiser* on Saturday 16th October 1858, that, at 6 o'clock on Thursday morning, a fire was discovered to have commenced on the extensive premises of Messrs. R. and J. Hague, millers and flour factors at their Northam Steam Flour Mills, Southampton. "The mills are situated close to the bank of the river Itchen, near the Northam Bridge, between the iron foundry of Messrs. Summers and Co. and the shipbuilding yard of Messrs. Wigram. The mill machinery being worked by steam power, there is a large boiler adjoining the engine room on the ground floor. A flue leading from the boiler appears to have become overheated, and touching the beams and flooring of the room above, which were charred in the boiler house to the extent of some 100 square feet, The flames were just igniting some materials in the room above when they were fortunately extinguished. If the fire had occurred an hour earlier all the buildings would doubtless have been destroyed."

"As it happened, the discovery of the fire was made at the moment the men were going to their work. The workmen of Messrs. Day, Summers and Messrs. Wigram rendered prompt assistance, they brought their respective fire-engines to the mills, and got the fire out with their aid, as there was an abundance of water close at hand. The alarm of fire was also conveyed to the police-station, and a Corporation Engine, under the direction of Mr. Neale, the superintendent, and the engine from the Ordnance Survey Office, in the charge of a detachment of Royal Engineers, proceeded without delay to Northam, but their services were not required. The damage sustained to the building is covered by an insurance effected by Messrs. Hague at the West of England Fire Insurance Office."

Fire at the Mill, 1862

Another report in *The Hampshire Advertiser* on the 4th October 1862, stated that, on last Thursday night an alarm was raised that a fire had broken out in Mr. Hague's mills at Northam. "The information was conveyed to the police-station in Southampton where Mr Peake, superintendent of the Fire Brigade, immediately proceeded to the mill with an Engine and a body of Firemen. Water was easily accessible, and the fire, which was said to have arisen from the spontaneous combustion of some coal, was extinguished before much damage was caused."

Southampton Petty Sessions: Presiding, Capt. Tintling and J. H. Cooksey. Esq.
Reported in the *Hampshire Independent* on Saturday 19th May 1862, for robbing his employer:
"Charles Lock, a miller was charged with stealing a gallon of flour, the property of Mr John Hague of the Northam Steam Flour Mills. On the Thursday evening, the prosecutor met the prisoner near the mill with a basket in his hand containing flour which he admitted to the prosecutor he took from the mill in consequence of being in great distress at home. It appeared that, however, the men at the mill were allowed to take flour, the value of which was deducted from their wages on Saturday nights, and the prisoner said he had told the head miller he was going to take the flour, and thought he had made an entry of it. The Head Miller however, denied that he asked him for any, but said that he remembered the prisoner saying he should like to have a part of what they were shooting in the morning. Besides this, the flour weighed 6 lb whilst a gallon of flour weighs 7 lb.
Charles Lock was sentenced one month's hard labour."

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Libellous Reports, 1863

The *Hampshire Independent* published, on Wednesday 2nd Dec 1863, a notice that read:

"I, John Hague, have been much annoyed by a report circulated in this town to the effect that my brother and I are connected with the Machine Bread Company. I positively deny being or ever having been in any way engaged in it. And, moreover, I will give £5 to the first person who can prove either of us to be so connected.

Northam Steam Flour Mills, Nov.26th 1863."

Mill up for Sale in May, 1866

After the death of John Hague in May 1866 the devisees of his Will instructed Perkins & Sons to offer the freehold Mill for sale on the 15th June 1866, to take place at the Dolphin Hotel, Southampton, at 3 o'clock in the afternoon. It was described as "a substantially built, well-formed brick mill, three stories high, erected about 14 years ago by the late Mr. Hague, for the economical working, a first-class flour mill. The whole area the ground plan is about 27 feet by 120 feet, and all the necessary bins, rooms, fittings and fixtures, offices and stabling, cart houses etc, for carrying on a first-class trade, and having four floors including the ground floor. The Mill Offices & yards comprise about one rood and 10 perches of land, adjoining the extensive factory of Messrs. Day, Summers and Company. and possess the great advantage of river frontage, with quay and draught of water for deep laden ships, and tram road connection with the South-Western Railway at Mount Pleasant. Further particulars and conditions of sale may be had from the offices of Mr. Newman, solicitor, and from the auctioneers."

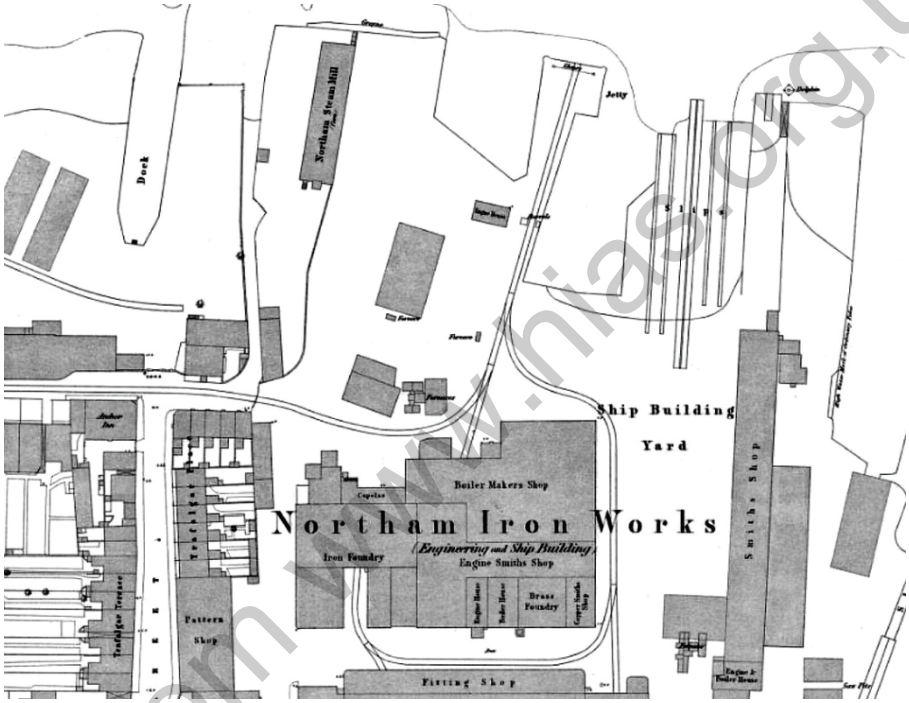


Figure 33. Detail of a map, surveyed in 1868, of the Northam Iron Works, showing the Northam Steam Mill (corn) adjoining the Iron Works on the west side.

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In Cox's Directory, for 1871;

John Atkins is shown as Miller at the Northam Steam Mills.

Accident at Northam, 1871

It was reported in the *Hampshire Advertiser* on Wednesday, 25th of January 1871, that at about 2:30 o'clock on Saturday afternoon, Henry Humble, a labourer working at Mr Atkins' flour mills at Northam, got entangled in the steam engine and his leg was broken. He was removed to his house at 76 Millbank Street where he received medical attendance.

Mill up for sale, Advertisement in Southampton, 5th June 1873

To Millers, Manufacturers, Capitalists and others

Perkins & Sons are instructed to offer for sale by auction on Thursday, 5th June 1873 at the Auction Mart, Southampton, at 2 for 3 o'clock, all that Valuable Freehold Property known as 'Northam Steam

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Flour Mill', situated on the bank of the river Itchen, comprising a substantially built and well-formed brick mill, three stories high, erected about twenty years since for the economical working of a first-class flour mill, with engine and boiler house etc. and all the expensive machinery, comprising of a condensing 25 horsepower steam engine and nearly new Boiler, with all the modern improvements, driving five pairs of stones by belting.
Silks, exhaust, and elevators complete, new within the last two years and fitted regardless of cost, for carrying on a first-class trade.
The property has 65ft of river frontage with a quay and draught of water for deep laden ships, and tram rail connection with the London & South Western Railway.

Mill not sold, 1873
In the *Hampshire Advertiser* published 7th June1873 Perkins & Sons announce that the above Mill was not sold on Thursday 5th June, and they are now to open to the sale of the Mill privately. Applications to purchase should to be made at The Auction Mart, Southampton.
The mill was purchased by Mr Appleford who had previously been shown in the 1871 Census as Miller at Town Mill in Ringwood.
He is later shown in the 1876 edition of Cox's Directory as being Miller and biscuit merchant at the Steam flour mill, Old Northam,

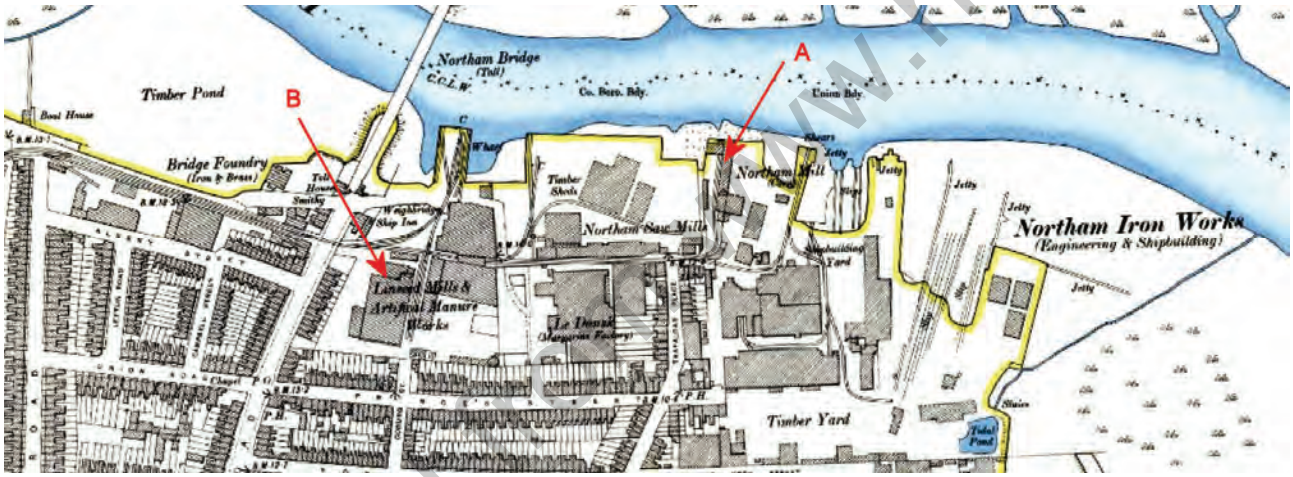


Figure 34. A map of the Northam area c. 1895. The Steam Flour Mill is shown at A and the 'Linseed Mills & Artificial Manure Works' at B.
(Reproduced with permission from the National library of Scotland)

The charge of stealing flour.
A case was reported in the *Hampshire Independent*, Saturday 31st July 1875:
"William Crouter, a carter, was charged on remand with stealing ten sacks of flour, value £15, and ten sacks, the property of his master, Mr James Appleford, of the steam flour mills Northam. Mr Killby prosecuted, and Mr K. R. Shutte defended.

"Joseph Colbourn, a boy in the employ of Mr Mundey, a baker of Floating Bridge Road, deposed to knowing the prisoner as the man who brought flour, but he had never been in the Bakehouse to receive any flour in the absence of his Master. The flour was generally delivered in the morning, Mr Mundey recalled, saying that sometimes he kept his receipts for flour and sometimes he threw them in the fire.

Edwin Chaumon a grocer and baker of St Mary's Street said that on the 12th June he received 5 sacks of flour from the prisoner at about 4 pm. He saw the waggon go down the street and went and asked the prisoner how many sacks he had brought, and he said 5. He then asked why he had not brought more, and he said because he had to take more down by the Docks. He then asked the prisoner where there. The prisoner replied down at Mundey's. He always received an invoice and kept the receipts.

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Mr James Appleford of Northam said the prisoner was employed as a Carter. On the 28th of May, Mr Mundey purchased 20 sacks off him and on the 12th June, 10 were delivered to Mr Mundey, which he refused to pay for as he had not received them. The Foreman at Appleford's mill said the order for the 20 sacks had been given to the traveller Mr Langton, for Mr Appleford. Mr Killby here applied for a remand to adduce further evidence against the prisoner regarding the other charges. But the Bench thought the evidence of the traveller should be taken first. John Langton, traveller for Mr Appleford, said that on May 28th he had taken an order for 20 sacks of flour from Mr Mundey and on June 11th when he visited Mr Mundey again, who complained he had not got his delivery. He then went to see Mr Appleford and returned to Mr Mundey on the 12th to explain the reason for the late delivery of his flour. On the following Wednesday he again visited Mr Mundey and made no remarks about the delivery of flour. Cross examined, since the trial came on, he had spoken to Mr Mundey about the flour. And he said it came in like a shot. The case was adjourned until next Wednesday.

In *Hampshire Independent,* Saturday 7th August 1875, it was reported that William Crouter a carter in the employ of Mr. James Appleford, miller, at Northam, was charged on remand with stealing ten sacks of flour, value £l5, and ten sacks, the property of his master. Mr. Shutte appeared for the prisoner. After waiting some time for Mr. Killby, the solicitor for the prosecution, the Chairman asked Mr. James Appleford, Jun., if he was prepared to go on with the case. Mr. Appleford replied that his father would not be present himself but he believed Mr. Killby would be there shortly. The Chairman then discharged the prisoner, as no one appeared to prosecute. Mr. Killby arrived soon after, and appeared much surprised at the decision of the Bench, but the Chairman informed him that as neither the prosecutor nor he (Mr. Killby) were present, the Bench had no alternative but to discharge the prisoner."

Fuel Economy in the 1870s

In the early 1870s, Messrs. Day, Summers, and Co. of the Northam Iron Works, had been experimenting with the design and construction of compound Marine Steam Engines for their ships, and were obtaining good results from them.

Mr Appleford, in a bid to improve the efficiency and reliability of the steam engine that drove the mill, commissioned Day, Summers to construct a new single cylinder high-pressure engine, with a cylinder of 12 inches diameter and 5 ft. stroke. The exhaust steam from this new engine passed into the cylinder of 24 inches in diameter and 4 ft stroke of the old engine. The steam worked twice over and a (pusher) compound engine was obtained in the simplest possible manner. Mr Appleford's object was not only to reduce the consumption of coal, but to provide a new engine, which could be worked separately from the old one in case the same should fail or either should require repair.

This compound principle was successfully applied to the flour mill engine with very gratifying results. After the new engine had been at work and tested for between nine and ten months, very careful measurements gave the following results.

	Old single cylinder engine	New compound engine
Coal consumed	42 cwt 2 qrs	21 cwt 2 qrs
Water evaporated in boiler	3950 gallons	2060 gallons

The work done by the engine was the same in both cases, so that the saving effected by the new compound arrangement is about one half, both as regards the coal consumed and the fresh or town water evaporated, which is all measured by a water meter. It is evident that this drastically cut Mr Appleford's costs.

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The seizure of bread, 15th September 1879

Letters to the Editor of the *Portsmouth Evening News*

Sir, - An erroneous impression has not unnaturally, arisen regarding my position by the seizure of bread on my premises. To overcome this, I have to ask you to give publicity to the following explanation in your next issue. Some excitable parties, wishing to satisfy an equally excitable public, put down my probable loss at thousands; others, better disposed, shake their heads and say with evident regret, "it will be a serious thing for me." My position is simply this. When I got the Army contract, I immediately made arrangements with one of the largest, wealthiest, and most respectable millers in the South of England for the supply of the flour necessary to carry out the contract. The flour from which the seized bread was made was not equal to sample, from the causes already ready made known in the public prints. I, of course, fall back upon the miller, with whom I made the contract, consequently I do not stand to lose a shilling. The only annoyance, and it is great, to me is that such a circumstance should have occurred, but I need scarcely say, in a large business, difficulties will arise where the carrying out details have to go through to many hands.

Yours faithfully, Sam Vine.

P.S. The flour subsequently seized at my place and at Mr. Batchelor's, was that which I immediately ceased to use after the quality was discovered.

Statement of Mr Vine's Miller

To the Editor of the *Portsmouth Evening News*

Sir, - I think it nothing but right to let the military authorities and public of Portsmouth know, through the medium of your paper, that Mr S. Vine, army contractor of Portsea and Aldershot, is in no way to blame for the unfortunate seizure of bread and flour which took place on his premises. I greatly regret it has happened, although from no immediate fault of my own, and I have to add that he will in no way suffer pecuniarily in this matter.

Yours truly, J. Appleford, Steam Flour Mills, Northam, Southampton, September 14th 1879.

Southampton Borough Police, February 1895

"A Foolish Trick" from the *Southern Echo*

Thursday: Presiding: Mr P. Perkins (chairman), Mr J. P. Hine, Mr Smith, and Mr R. Chipperfield.

William Frank Bone, a young fellow, was charged with stealing three canvas bags, value 1s 6d, from the Flour Mills, Trafalgar Place, Old Northam, the property of J. Appleford. Alfred Newham, the foreman at the mill, said his master did not wish prosecute, but would leave the matter in the Magistrate's hands. The evidence was proceeded with, and Percy Barnes, an employee at the mill, stated that, as the prisoner left the previous night, he noticed that his basket looked full. He informed a policeman of the fact, and the prisoner was taken into custody. PC Sheppard said that when the prisoner admitted taking the bags from the mill, he remarked that he was a "young fool" to have done so. Bone was fined 10 shillings and costs, or 14 days imprisonment,

Situations Vacant

An advertisement in the *Southern Echo* on 14th May 1892

Wanted. Young man, to look after Wheat Cleaning Machinery and make himself generally useful. One who has had similar employment preferred, and apply to The Steam Roller Flour Mills Northam.

It should be noted the company had been renamed The Steam Roller Mill. So presumably the French burr stones had been replaced by the roller plant.

An advertisement in the *Southern echo* dated 18th February 1895

Wanted, at once, Flour Carter; must be steady, sober, civil and obliging. Only those used to this occupation need apply; Tuesday or Wednesday afternoons at 4 o'clock. - Steam Flour Northam, Southampton.

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The death of Alderman James Appleford

It was reported in the *Hampshire Advertiser* on Saturday 30th September 1899, that Mr James Appleford, one of the Aldermen for Southampton, died at his residence, Millbrook Lodge, on Wednesday 27th September 1899, at the age of 78. Mr Appleford carried on business as a miller, first at Ringwood, and subsequently at 'The Northam Steam Flour Mill'.

He was a staunch Conservative, and for some years he took an active part in the political and municipal life of Southampton. Before the municipal redistribution of seats, and when the November elections were conducted on strictly party lines and created as much interest as Parliamentary contests, Mr Appleford was, on several occasions, a member of the successful team of the 'All Saints' Ward.' He was no talker, but a hard worker. When the Wards were rearranged, Mr Appleford represented the Portswood district, but of latter years he had occupied a seat on the Aldermanic bench, from which he would have retired in November1901. For some time, the deceased was a director of the Wilts and Dorset Banking Company. The deceased was married three times, his last wife surviving him, and he leaves a grown-up family. Mr Appleford was well-known in Southampton and neighbourhood, and his numerous friends will deeply regret to hear of his death, and the greatest sympathy will be felt with the family in their loss.

From the *Hampshire Advertiser* October 1899:

A number of the members of Southampton Corporation attended the funeral to pay a last respect to the memory of Mr Appleford. It was a walking funereal, the mournful procession leaving the residence, Millbrook Lodge, the coffin which had a number of wreaths placed upon it, was carried by bearers to Old Millbrook Church where the first part of the service was read by the Rector (the Rev Studhume Wilson) who also conducted the service at the graveside in the Old Millbrook Churchyard.

Mill up for sale in May 1900

In 1900, after the death of James Appleford, the Mill was again put up for auction by Perkins & Sons on Tuesday 13th February, when it was described as follows:

"The Important Freehold known as the Northam Steam Flour Mills (late Appleford's Steam Flour Mill), with railway siding and quay frontage to the river Itchen, completely equipped, now with a five-sack Roller Plant in place of the French Burr Stones."

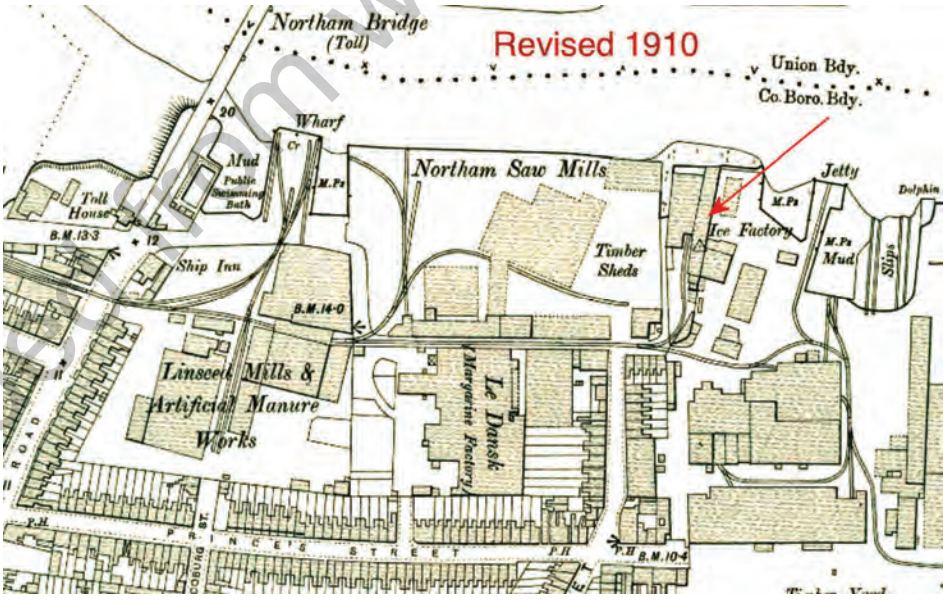


Figure 35. Detail from a map of Northam, revised in 1910. The Steam Flour Mill (arrowed) is now labelled 'Ice Factory'.
(Reproduced with permission from the National library of Scotland)

Mill sold for conversion to ice manufactory

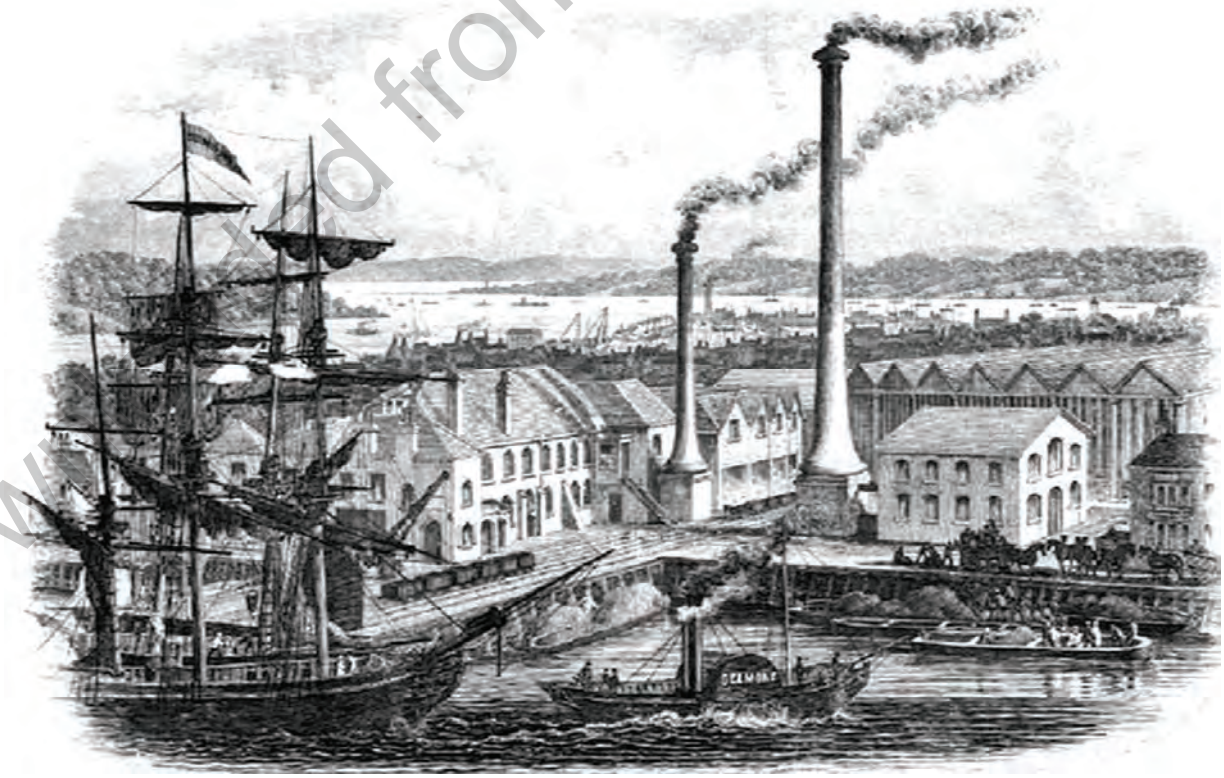
The mill was sold to The Pure Ice Manufactory, who then instructed Perkins and Sons to dispose of the whole of the Mill Machinery that was included in the previous sale, by Auction on Friday 31st January 1902, at 11.00 for 11.30.

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Figure 37. Chandlers Ford station, 1920s or 30s, with the camera pointing towards Romsey. The siding to the brickyards, through the gate, has already been lifted, but other sidings and the crossover are still in use. (Barbara Hillier)



Figure 36. Dixon & Cardus's Linseed Mills and Artificial Manure Works on the Northam waterfront (1880s). The Northam Steam Flour Mills were off the left side of the picture (Figure 34)



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