

# Water-Powered Industry in Axminster in the 19<sup>th</sup> Century

## Background

Since the earliest recorded settlements in the lower parts of the valleys of the Axe and its tributaries man has used the energy in the rivers to power machinery. The earliest documented examples in and around Axminster include flour and grist mills (e.g. at Weycroft and Millbrook, and at the foot of Castle Hill), fulling mills (for the cleaning of wool and cloth) and machinery for the processing of flax. All of these mills are sited at locations where the course of the riverbed was not subject to significant movement over time. Any casual observer of the Axe, the Yarty and other local rivers will know that they can move significantly over time, sometimes as a consequence of gradual erosion, sometimes as a consequence of major floods.

The flow of river water to these early mills could be controlled to some extent by opening and closing wooden 'gates' where the 'leats' (or mill streams) drew their water from the main river. The water which was diverted through the mill would then be re-introduced into the main river some way down-stream from the mill, leaving the flow unchanged for the majority of the river's course. None of the mills close to Axminster were in a position to create significant 'mill ponds' (where diverted water could be stored until required, thereby giving the miller far greater control over how and when his mill would run).

This document does not deal with these early users of water power, but starts with the construction of large weirs, which increased both the reliability and the level of power which could be generated by water wheels or turbines. The mechanism was relatively simple: instead of 'splitting' the flow of water between the main river and an artificial leat, the weir allowed the leat to become the main flow, with excess water only being directed down the main river when the flow exceeded a certain level (which was largely determined by the height of the weir, but could be fine-tuned by opening control gates).

As the available power increased, so it became possible to move from a relatively modest mill to larger-scale and more power-hungry industrial processes.

## The construction of the Town Weir and other weirs on the Axe

Although no document has (yet) been found recording the date of the construction of Axminster's Town Weir, there is evidence which allows it to be estimated with reasonable confidence.

The earliest detailed map of Axminster was drawn for the Petre estate in 1776/78. It shows a complex series of loops and branches in the river in the section at the foot of Castle Hill, with two main buildings straddling mill streams (one being to the north of Castle Hill, close to Green Dragon House and the Old Brush Works, and the other being to the south, at what is still called Mill House). The map shows a significant split in the river about 200m north of the present level crossing, but no real evidence of any control mechanism.

The next detailed map dates from 1838 (having been drawn up for the purposes of the Tithe Apportionment process). This shows a very different river system, and although there is no label to name the Town Weir, the dimensions of the river as drawn in 1838 are entirely consistent with later maps where the weir is explicitly drawn and named (e.g. the Ordnance Survey map of 1889, which is based on a survey undertaken in 1887).

We also have evidence from the Western Times (issue of 2 October 1841) which, when reporting on major floods on the Axe commented on the effects on salmon, and drew particular attention to the fact that "... *many persons have collected to witness their vaulting over the Town Mill Weir*". This confirms that the Town Weir had been built by 1841, and suggests that it was probably only a few years old at most, because it and its effects retained novelty value for the local population.

We then have evidence from contemporary authors and newspapers, and in particular George Philip Rigney Pulman's seminal 'The Book of the Axe' (4<sup>th</sup> edition 1875). Frustratingly, although he refers many times to the effect of the various weirs on the ecology of the river, he does not give the date of construction, which might be taken to suggest that it happened either before he was born (in 1819) or while he was still a child.

On page 546 he writes that half a century ago salmon were common above Axminster, often being caught at Coaxdon Mill and Tytherleigh Bridge. At the time of writing, however, the weirs prevented most salmon from reaching this stretch of the river. What is not certain is whether he was referring to 1825 (i.e. 50 years before the 4<sup>th</sup> edition was published), or whether the phrase had survived from earlier editions, implying an earlier date.

However, on page 549 he refers to a particular instance of salmon being caught at Coaxdon in about 1820, and writes that he personally recalls big catches being made there 15 to 16 years later (i.e. around 1835).

Further evidence to support this can be drawn from notices placed in two newspapers of that time. The issue of the Sherborne Mercury for 20 June 1831 reported that a property at Coaxdon was available to rent, and referred specifically to the quality of the salmon and trout fishing there. A second notice in the Dorset County Chronicle of 8 March 1838 referred again to the quality of the fishing at Coaxdon<sup>1</sup>.

This suggests that the Town Weir had not yet been built by the mid-1830s, whereas the evidence of the 1838 Tithe Map strongly suggests that it had been completed before the end of the decade. On balance, therefore, an estimated date of about 1836/37 seems sensible.

On a slightly different topic, Pulman writes on page 621 that there had been work done at the start of the 19<sup>th</sup> Century to re-build and re-align Stoney Bridge (the bridge which carries the Membury road over the Axe just beyond the level crossing). He describes the old bridge as being very steep, and like Beckford Bridge (the oldest locally-surviving bridge, known colloquially as the 'pack-horse bridge', which crosses the Yarty at the boundary of Axminster and Membury parishes).

He explains how, when the old bridge was removed, the road was re-aligned so that it passed in front of instead of behind the row of cottages. He also comments how salmon used to be trapped in large numbers in a pool just up-stream from the bridge.

The Exeter & Plymouth Gazette edition of 20 May 1870 carries a long report on the state of fishing on the Axe, and confirms that the disappearance of salmon, and the increase in trout fishing could be directly attributed to the weirs at Axminster, Coaxdon and Westford (near Chard Junction).

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<sup>1</sup> It has to be recognised that on balance the evidence suggests that the Town Weir had probably been built by the time of the 1838 notice cited here. However, it is also possible that the consequences of the weir's construction had not yet been fully and widely understood.

## The structure and use of the Town Weir

The Exeter & Plymouth Gazette (see above for details) describes the main structure of the Town Weir as comprising a series of stone steps about 12 inches wide, with a distance 'water-to-water' of 12 feet. From the context, and based on the 1838 and later maps, this probably means it was 12 feet long, from bank to bank. The perpendicular height was given as 6-to-7 feet, and the top of the weir was described as having a stone 'floor' surface 4 feet 4 inches wide.

The report confirms that there was no salmon 'ladder' to enable fish to pass the weir on their way to spawn (this being one of the proposals being discussed in 1870), and also confirms that only a few salmon ever managed to jump over the weir. Even if they did, as the article points out, they would then be faced by further similar weirs at Coaxdon and Westford<sup>2</sup>. The Coaxdon weir was built to serve the cement works there.

So far as can be seen, in the early years of the Town Weir it simply served the businesses which were already there, with the main focus being on flour milling.

## Occupants of the Town Mills, 1835 to 1865

In 1835 the Town Mills were described in an advertisement in the Western Times issue of 18 July of that year, in which they were offered for a period which could last for 3, 7, 10 or 14 years. The whole package was described as including "... *a substantial dwelling house with water, corn and grist mill attached, commonly called, or known by the name of the Town Mills, lately in full action, and working two pairs of French stones, with flour machine, bolting mill<sup>3</sup>, and every requisite means for conducting the business*" with outhouses, an orchard and meadow. There is reference to the Axe in this notice, but not to the Town Weir, lending further support to the idea that the weir was built shortly thereafter.

It seems highly likely that the successful bidder only took on the business for 3 years initially, because on 1 August 1838 the Taunton Courier & Western Advertiser carried a further notice (dated 18 July of that year) in which three lots were offered for sale by auction at the George on 13 August. Lots 2 and 3 between them constituted almost exactly the same package as had been offered in 1835, but Lot 1 was quite different. It comprised a group of buildings which were described as having previously been used for cloth making, but most recently as a flax and tow manufactory, and in an 1838 directory, which was in all probability compiled prior to the announcement of the auction, Robert Phelps Pearce was described as a 'flax tow spinner' at the Town Mill, Axminster.

The building in which flax had recently been worked was described as "... *being in length 60 feet, and in breadth 22 feet in the clear; possessing four distinct stories in height; and having the action of a well-regulated 10 feet wide breast water wheel; together with a stable, linhay and cart house adjoining*". In relation to the water power, it was stated that "... *the supply of water for the grand wheel attached to the building is most ample, and the waste passage is wholly distinct from all connexions with the water grist mills*". To view the properties interested parties were directed to contact Robert Phelps Pearce, or to write to Henry Knight, solicitor (who was co-owner of the Manor of Axminster, and therefore of the Town Mills).

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<sup>2</sup> Coincidentally the report refers to a new weir on the river Yarty, at Higher Westwater, which had recently (i.e. not long before 1870) been installed to facilitate the irrigation of water meadows. That weir has a series of pools down one side specifically to make it easy for fish to get past it.

<sup>3</sup> Bolting is the process of sorting and screening flour for fineness.

The emphasis on the water supply gives further credence to the idea that the Town Weir had recently been built, and the layout of the associated water channels modified.

An 1844 directory again lists Robert Phelps Pearce as a tow spinner on Castle Hill, but by 1850 he had changed direction significantly, and had become Relieving Officer for the Axminster Union (the body which provided many of the functions and services which were later devolved to local councils).

Kelly's directory published in 1856 states that the former flax mill was being used for winding and throwing silk, using water power and a small workforce, and mainly employing children. It identifies James Lawton as the responsible person, but Billings directory of the following year lists the operator as Samuel Lawton & Son, and refers to an extensive business. The Lawton family also had a silk business in the Lim valley at this time, and that seems to have been their main premises, because they were not listed at Axminster again.

It seems likely that the flour milling element of the Town Mills had been taken on (possibly in 1838, but this is not confirmed) by James Anning and Joseph Deane, because in 1847 a partnership between them, both described as Axminster millers<sup>4</sup>, was dissolved, and in both 1857 and 1861 we have confirmation that Joseph Deane was running the Town Mill on his own<sup>5</sup>. When his death was reported<sup>6</sup> in 1886, it was stated that he had operated the Town Mill for 20 years.

Joseph Deane was clearly the flour miller at the time when the railway was built. The construction of the railway must have had an effect on the Town Mills, because it runs between them and the Town Weir. It must also have had a more general impact on the functioning of the river system, because by introducing a major barrier (in the shape of the railway embankment) into the flood plain quite close to the river, it must have increased flooding elsewhere, including on the Membury side of the level crossing.

### **The further industrialisation of the Town Mill area, 1865 to 1881**

Although peripheral to the main thrust of this account of water-powered industry, the directory for 1866 provides the first evidence of the Town Gas Works, located on a site off Vale Lane (formerly known as Gas Lane). The works, which was originally developed to provide fuel for street lighting, was managed at that time by Charles Silk, who was still the manager in 1873. By 1878 the manager was John Copp, who ran the works for many years. The proprietor of the works, at least by 1883, was Walter Lewis Copp of Watchet, Somerset.

One year before the founding of the gas works, in 1865 (according to the newspaper report at the time of his death, many years later<sup>7</sup>), George Heal established an iron and brass foundry at Axminster, which later went under the name George Heal & Sons. This was on the south side of Castle Hill, close to the Green Dragon Inn, which he also ran from the late 1860s, along with owning or leasing most of the houses on the north side of Castle Hill. In fact, based on the evidence of an 1870 directory and the 1871 census (see below for details), the manufacturing side of the business may have been started by his father, John Heal. Whatever the true details may be as regards ownership and management of the

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<sup>4</sup> Source: Exeter & Plymouth Gazette, 10 April 1847.

<sup>5</sup> Sources: 1857 Billings directory, and Western Times, 23 August 1861.

<sup>6</sup> Source: Exeter & Plymouth Gazette, 13 February 1886. This tells us that Joseph Deane was 76 when he died.

<sup>7</sup> Source: Exeter & Plymouth Gazette, 5 September 1924. His presence in Axminster can also be confirmed by his marriage in 1866 and (after her very early death) to Tryphena Harvey in 1868.

business, they were both involved in it at the beginning, and George was the one who drove the business forward over the subsequent decades.

In 1870 George Heal was listed as inn keeper at the Green Dragon as well as being a flax and hemp dresser and agricultural implement maker. His father, John, was also listed in connection with the industrial enterprises. The 1871 census then confirms that George and his growing family lived at the Green Dragon, with him being described as an engine smith and agricultural implement maker, while his father was living in the next-door household, at what was described as the 'balling mills'. He (John) was described on the census return as an implement manufacturer employing seven men and an apprentice.

The use of the term balling mill is interesting, in that the term only came into common useage later, when steam-driven ball(ing) mills were used to crush mineral ores, among other things. The earliest ball(ing) mills were used on materials such as flints being prepared for use in pottery. However, the 1871 census definitely uses the term 'balling mill', putting Axminster, where it was being used in association with a foundry, in the forefront of the use of this particular technology!

George Heal had evidently not taken the flax works on as early as 1866, because a directory of that year lists John Hill as a flax scutcher, operating from the former cloth factory (and more recently silk mill) at the foot of Castle Hill, and Jonas Phillips was named as the miller, presumably following the retirement of Joseph Deane. Jonas Phillips was again listed as the miller on Castle Hill in an 1870 directory.

It is perfectly possible (in deed likely) that the listing of John Hill was an error, and that the reference should instead have been to John Heal. Whatever the truth of this, between 1866 and 1870, when John Hill (or Heal) was apparently the manager of the flax mill, the newspapers carried a series of reports which show that it had a very poor safety record. One letter from a local resident drew attention to there having been five accidents there in very short order<sup>8</sup>. After one of these the unfortunate worker had to have his arm amputated<sup>9</sup>, and this was by no means the last of the accidents to excite public concern<sup>10</sup>. Interestingly, in the reports of these accidents, the owner of the mill is never identified by name.

In 1870 the Exeter & Plymouth Gazette stated<sup>11</sup> that the Town Weir diverted water to three mills. The flour and flax mills can be assumed, and the third was presumably the balling mill associated with Heal's foundry (see above).

Directory entries for 1873 effectively confirm the above position: Jonas Phillips was the miller, George Heal was at the Green Dragon and John Heal was identified in connection with the flax dressing and agricultural implement making businesses.

Joseph Deane was succeeded as flour miller at the Town Mill by James Boon in about 1874. A few years earlier he had moved to Axminster from Uplyme, where his family had operated a cloth-making business for generations. In 1866, however, their Lim valley mill had burned down. When James Boon first lived in Axminster, and certainly at the time that the 1870 directory was being compiled, he was described as a wool-stapler<sup>12</sup>, cloth manufacturer and

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<sup>8</sup> Source: Western Times, 24 August 1866.

<sup>9</sup> Source: Western Times, 11 May 1866.

<sup>10</sup> Source: Exeter & Plymouth Gazette, 27 March 1868.

<sup>11</sup> Source: Exeter & Plymouth Gazette, 20 May 1870.

<sup>12</sup> Wool-staplers were specialist dealers who would buy wool from farmers, often at auction, before sorting it by type and quality for sale to end users.

farmer, living at Cedar House. By then he was just over 50, but evidently still energetic and entrepreneurial.

In 1874 James Boon announced<sup>13</sup> that he had been appointed as the new agent for the area for Lawes Manures. Confirmation that he also ran the flour mill can be drawn from a newspaper article in January 1878, when one of his employees there was injured<sup>14</sup>.

It seems highly likely that he then had the newest of the mills at the foot of Castle Hill (i.e the one which was subsequently occupied by Coate & Co) built for his own use. It has the date '1877' set into its south-facing gable end, and shortly before that, on 5 December 1876, a new railway siding had been finished close by (probably on the other side of the level crossing and to the west of the Membury road<sup>15</sup>). That siding had apparently been built to carry the heavy traffic anticipated for James Boon's new factory<sup>16</sup>.

Writing several years later, in 1902<sup>17</sup>, Herbert C Watts quoted 'The Book of the Axe' as providing evidence that the flax works had still been operational when the 1875 edition of that book had been written, with the purpose of the works being described as to prepare flax for cordage and sacking. However, he (Watts) also confirms, based on the verbal evidence of his local contacts, that "... *the building was burnt down, and the industry moved elsewhere*". Although no direct newspaper report of this fire has been found, it presumably occurred in about 1876 or 1877, suggesting that the listing of a flax works in the 1878/79 Kelly's directory was based on out-of-date information.

The Western Times reported on 23 May 1878 that James Boon was exhibiting a range of agricultural machines and equipment at the Devon County Show, which was held at Honiton that year, aimed at large farmers and the emerging contracting business. It specifically mentioned his involvement with Howard & Kirby's mower and reaper; Kirby's American self-binder; Howard's steam ploughing tackle; Richmond & May's portable engine; Wood & Cocksedge's cake breaker; and mentioned two traction engines and a stone breaker.

Two months later, on 27 July 1878, the Somerset County Gazette carried a report about Axminster, and its merits as a place to go for a day out. On his walk around the town the reporter walked down Castle Hill, where he found plenty of evidence of industry. He wrote the following.

*"... the river at this point is industrially employed, instead of merely figuring as a line of beauty in the landscape, as is the case lower down the valley; in other words it turns a large water-wheel, and the water-wheel turns no end of machinery in connection with the machine-works which have succeeded the carpet-factory so long and deservedly famous in Axminster."* Later, after discussing the reasons for the general decline in local economic activity, he writes as follows.

*"But the town has not been allowed to suffer on that account, the enterprise of Mr Boon and Mr Hill<sup>18</sup> providing a substitute which has proved a successful one. Only instead of carpets ploughs and other agricultural implements are the staple trade; and iron, instead of wool, flax*

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<sup>13</sup> Source: Western Times, 26 June 1874.

<sup>14</sup> Source: Exeter & Plymouth Gazette, 5 January 1878.

<sup>15</sup> The Western Times of 3 July 1874 reported that a meeting had been held on what was described as a field on Membury Road belonging to James Boon.

<sup>16</sup> Source: Western Times, 5 December 1876.

<sup>17</sup> Source: H C Watts 'Axminster Past & Present' (Edwin Snell, Axminster, 1902), page 28. This book is now very rare. Herbert Watts, FRHS, was the Congregationalist minister in Axminster when he wrote it.

<sup>18</sup> This is clearly a reference to George Heal.

*or cotton, is the material operated upon. The success which has already been attained in these departments is highly creditable to these gentlemen, and they have the best wishes of their fellow townsmen in striving after a further measure of prosperity.*" Later in the article the writer refers to another set of premises near the police station (in what is now Church Street) used by James Boon for his agricultural implement business.

Then, in a sudden change in direction, it was announced in late 1880 that James Boon had "... let a portion of his mills at the bottom of Castle Hill to Messrs Coate, Bidwell & Co, tooth brush manufacturers of Chard and London"<sup>19</sup>. It was estimated at the time that about 200 persons were likely to be employed in Axminster as a consequence.

Although that contemporary report gives the impression that a single brush-maker was involved, all other sources show that Messrs Coate & Co and Bidwell Bros remained separate entities, and direct competitors (see the separate account of brush-making for details on both firms).

At very much the same time James Smyth, a grocer in the town, is recorded as a tenant at the Town Mill, a position which is repeated until the early part of the 20<sup>th</sup> century.

At the time of the 1881 census James Boon was described as employing 30 men and five boys. He died in 1887. In 1881 George Heal employed eight men and a boy in his foundry.

### **Heal's Sawmill at Millbrook**

Although Millbrook is some way from the foot of Castle Hill, it seems sensible to deal briefly with it here, not least because when the water mill there was adapted to operate as a sawmill it was run by members of the Heal family, under the trading name of Heal & Sons. Later publicity materials state that the business was started in 1871. This mill had previously been a water-powered corn and grist mill, run by Edward Bussell in the 1850s and 1860s, and possibly as late as 1871.

At the time of the 1871 census, when he was still living at the foot of Castle Hill, John Heal's household included Thomas Bull Heal, who was George's younger half-brother. Thomas Bull Heal was described as a cabinet maker, but he subsequently became the proprietor of the Millbrook sawmill.

By 1878 John Heal was described as residing at Millbrook. On the day of the 1881 census he was living at Chard, where he had lived before, and on the census return of that year was described as a timber merchant<sup>20</sup>. Subsequent directories list him living back at Millbrook, but by 1889 the sawmill was being run by his son, Thomas Bull Heal.

As well as producing sawn timber, Heal & Sons made (for example) poultry houses. By the time the directory for 1914 was drawn up they also had a sawmill at the railway station.

Thomas Bull Heal died in April 1919, by which time he was a resident of Exmouth. As well as the sawmill at Millbrook he had a second one at Axminster station, and another at Battersea<sup>21</sup>.

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<sup>19</sup> Source: Exeter & Plymouth Gazette, 23 November 1880.

<sup>20</sup> John Heal is described in many different ways in different census returns and other records, from 'coal weigher' (1851) to 'flax merchant' (on George Heal's 1868 marriage record, suggesting that he may also have had some function at the flax mill at that time); but in later years he was mainly a timber merchant.

<sup>21</sup> Source: Western Times, 11 April 1919.

The sawmill at Axminster station was badly damaged by fire in June 1919<sup>22</sup>, as was the mill at Millbrook just 2 years later<sup>23</sup>. Nevertheless, the business continued under the management of Benjamin Heal, and increasingly focussed on timber products rather than saw milling.

When the Axminster Agricultural Show was held in 1924 Heal & Sons advertised all types of hen houses and huts, as well as stating that they were offering 3- and 5-room bungalows<sup>24</sup>.

The business was sold in 1929, but continued trading under the Heal & Sons name, from premises on Woodmead Road, near the station. In 1930 they were advertising beach huts for sale, and in 1931 hay sweeps<sup>25</sup>, and they are also listed in the directory for 1935.

### **Heal and Norrington, 1881 to the mid-20<sup>th</sup> century**

The 1891 census return describes George Heal as a millwright and engineer, and he apparently made a wide range of farm implements and parts. However, for a short period in the early 1900s it appears that he leased his premises for a while. Certainly from at least 1902 to at least 1905 Sleep Symons & Co<sup>26</sup> made turn-wrest balance ploughs, cultivators, expanding rakes, hoes and whippetrees at Axminster.

After George Heal's death in 1908 his widow, Tryphena, ran both the Green Dragon and the foundry for a decade before she too died. At that point the running of the foundry was taken over by their son Frank, though in 1920 the business as a whole was bought by H Norrington & Son Ltd of Bonhay Road, Exeter<sup>27</sup>. They had other branches at Crediton and Exmouth.

An advertisement in the Exeter & Plymouth Gazette of 5 September 1924, placed there to coincide with the 17<sup>th</sup> annual show of the Axminster Agricultural Society, declared that George Heal & Sons (established 1865, and now part of Norringtons) continued to operate as an iron and brass foundry, and maker of agricultural implements. The selling of the foundry's output appears to have been exclusively delegated to Norringtons, with their name increasingly used in references to the foundry. Frank Heal must have brought with him many useful contacts, because he was also the Honorary Secretary of the Axminster Agricultural Society. By late 1932 Frank Heal had left Norringtons<sup>28</sup>. The way that this news was announced in the newspaper suggests that the parting of the ways was not entirely amicable.

Norringtons became an important outlet for a wide range of farm machinery (most notably Fordson tractors) which they sold as agents and distributors, though they kept the foundry operating for some years.

### **Brush making, 1881 to the mid-20<sup>th</sup> century**

The story of brush making in Axminster is told in a separate document.

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<sup>22</sup> Source: Taunton Courier & Western Advertiser, 4 June 1919.

<sup>23</sup> Source: Western Morning News, 15 July 1921.

<sup>24</sup> Source: Exeter & Plymouth Gazette, 3 September 1924.

<sup>25</sup> Sources: Western Times, 23 May 1930 and Western Gazette, 26 June 1931.

<sup>26</sup> Their name appears in Kelly's 1902 directory as 'engineers', and in the list of businesses included at the end of H C Watts' 1902 book 'Axminster past and present', where the address is given as Castle Hill, and the descriptor 'iron founders' is also used. They also placed advertisements in various papers in 1905 for a range of pieces of equipment as listed in the text.

<sup>27</sup> Source: Western Times, 13 May 1920.

<sup>28</sup> Source: Exeter & Plymouth Gazette, 2 December 1932.