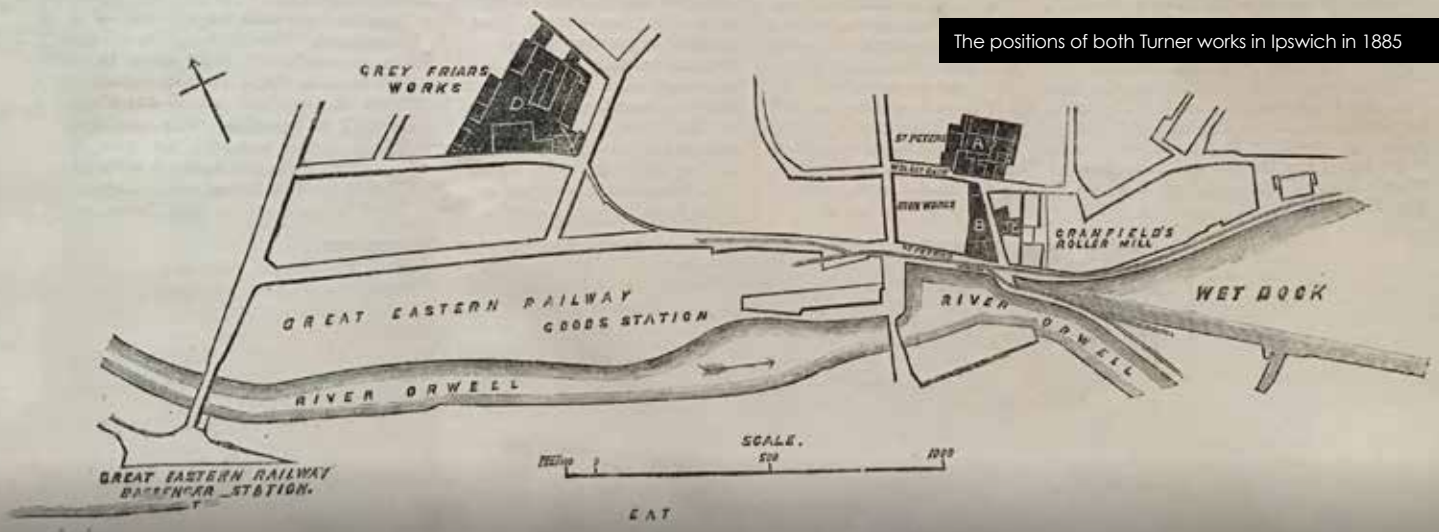


The positions of both Turner works in Ipswich in 1885

British engineering firms: The works of ER & F Turner, including the carter roller system in the course of manufacture at St Peter's & Grey Friars Works, Ipswich - Part one

Milling journals of the past at The Mills Archive

by Mildred Cookson, The Mills Archive, UK

A series of articles in The Miller and Milling, in the 1880s and 1890s, on the British engineering firm ER & F Turner have attracted my attention. Over a couple of decades, reporters made various visits to their works and to mills where they were installing machinery. They had established a productive relationship with J Harrison Carter of 82 Mark Lane, London and manufactured roller mills and other machines used in his system of flour milling.

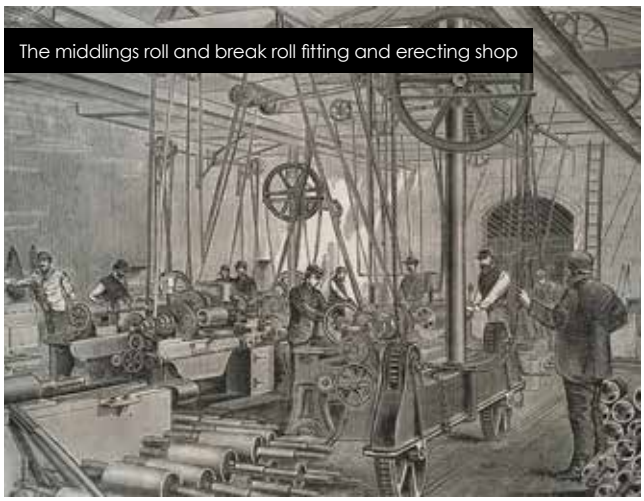
After a works visit, one reporter enthused (The Miller, June 1885, pp 321 - 326) that he had seen proof "that the great industry of grain flouring machinery was evident in the factory and that Mr Carter should be congratulated on having found co-workers to supply his customers with machinery of the best British make and material".

As Turners were among the oldest millwrights in England, it was not surprising that their works were producing a wealth of flour milling machinery. The works had doubled in size since Carter's connection with the firm, and, in the mid 1880s, the increased output activity was entirely due to the great success of the Carter system. The June 1885 article describes the two Ipswich sites, Grey Friars and St Peter's, in detail.

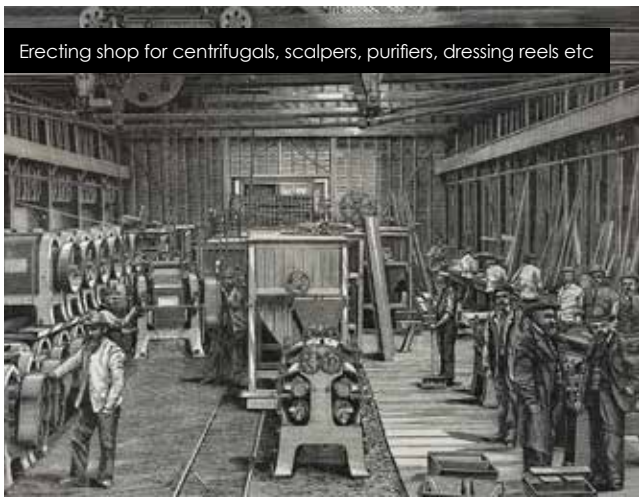
The firm of Messrs ER & F Turner of Ipswich dated back to 1837, when it was founded under the name "Bond, Turner & Hurwood." The capital came from the two senior partners, Bond & Turner, whereas the conduct of the business rested largely in the hands of Mr Hurwood, who was himself a practical millwright and engineer.

Both Bond and Turner died towards the end of 1846, and the following year one of Turner's sons, Mr ER Turner, joined Hurwood and the business ran as Hurwood & Turner until 1851, when the name was altered to ER Turner & Co. Eventually, Mr F Turner joined the firm and it became known as ER & F Turner.

In 1846, Bond, Turner and Hurwood agreed a contract to fit up a steam mill for Joseph Fison of Ipswich. The plans for the mill were drawn up under the direction of Mr Hurwood. The plant, which comprised a pair of 20 horse power compound engines, hursts and gearing for eight pair of stones, with corn cleaning and flour dressing machinery, was entirely built in Turner's St. Peter's Works.



The middlings roll and break roll fitting and erecting shop



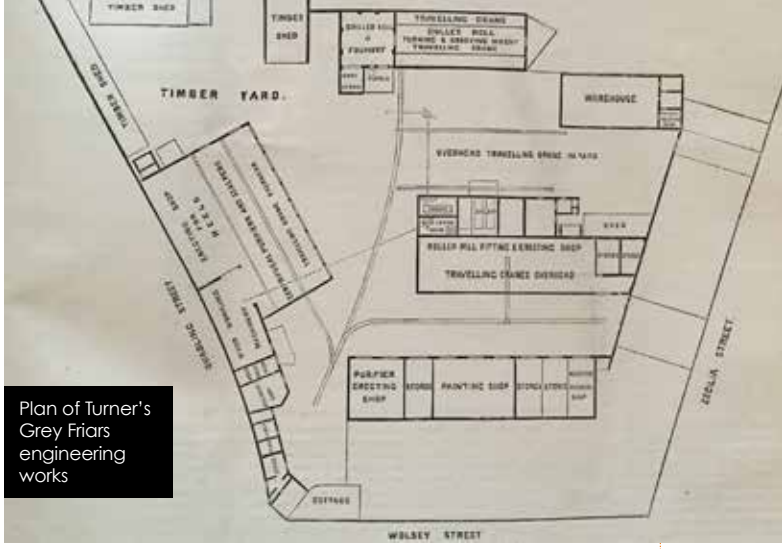
Erecting shop for centrifugals, scalpers, purifiers, dressing reels etc

In May 1850, Mr Hurwood patented a metal grinding mill, which, at the time, attracted a great deal of notice. The invention related to "the construction of the grinding surfaces of metal mills, and to the arrangement made for forcing a constant current of air between the grinding surfaces of mills generally, to facilitate and improve the operation". The International Exhibition of 1851 awarded the invention a prize medal, stating "the best metal mills that have been produced are those of Messrs Hurwood of Ipswich". This invention continued to be a specialty, long after Hurwood's retirement.

The firm's millwrighting inventiveness carried on, and, in 1855, a patent was taken out by ER Turner for "a most remarkable invention", which was said to have embodied the principle of gradual reduction, as understood by modern millers. The invention was described, in the specification, as machinery designed for crushing and grinding grain to produce fine flour or meal, by the combined and simultaneous operation of crushing and grinding in one machine.

It described a wood or iron framework, a pair of crushing or bruising rollers and a pair of millstones, with necessary gearing for driving the same. The under, runner, millstone was driven by an upright spindle, which derived its motion from a horizontal shaft, via a pair of bevel wheels. The upper stone was fixed in an iron case, upon the upper side of which case rested a frame carrying the two crushing rollers, and the hopper for containing the grain to be crushed and ground.

It was specified that one of the rollers could be of larger diameter than the other; the larger roller was driven from the same horizontal shaft which drove the runner stone by means of a belt drive. The grain was first distributed by means of a feed roller between the crushing rollers, and, after crushing it, descended through the eye of the top stone on to the runner, where it is ground in the usual manner and discharged through a spout fitted onto the case of the stone casing.



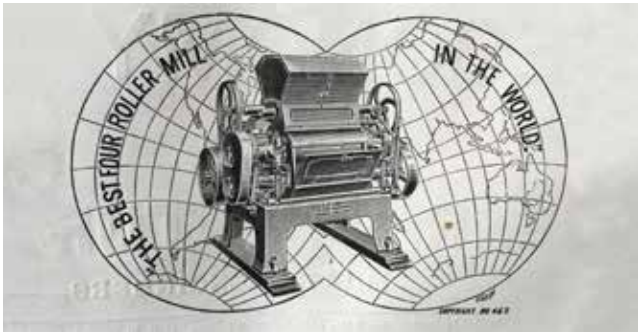
Plan of Turner's Grey Friars engineering works

Although the mill was not manufactured for very long, the reporter concluded "it is evident that had the product obtained from the smooth rollers only been subjected to scalping, we would have been face to face with an epitome of the gradual reduction process as now understood".

The firm continued with their advanced ideas on flour milling and was well aware of other innovations. In 1862, Turners undertook to construct a mill plant designed by Mr GA Buchholz. This was based on the original design under Buchholz's patents, and was fitted in mills in the United Kingdom, as well as in France. Early in the year 1877, Mr Carter gave Messrs Turner the first order for his middlings mill, which, by 1885, had become well known all over the world.

A Robinson patent double horizontal roller mil

Interior of chill roll foundry, Grey Friars works



Turners had a flourishing export trade

St Peter's Ironworks was situated, as the plan shows, on the river Orwell, covering an area of an acre and a half. On entering the office, you would pass into the adjoining show-room, which featured a line of Carter roller mills, as well as the corn grinding mills for which Turner's were celebrated. Export trade was booming and the corn grinding mills were apparently on special request. Not a week would go by without important consignments being forwarded to different points of the compass.

From the showroom you could enter the foundry, a lofty and spacious building, square in shape, in which 73 men were employed. Here, the frames for the Carter break rollers, as well as their pulleys, were cast; everything, in fact, except the rollers themselves which were cast in a separate and special foundry. Close to the furnace was a doorway leading to the open air and a yard stacked high with pig-iron and coke, ready for feeding the cupolas. The view from here took in the river Orwell, and close by was Cranfield Brothers' fine new mill, which was described as being one of the most marked successes of modern milling.

The Grey Friars Works was the outcome of rapid extension of the Carter system and covered two acres. Here, the chilled rollers were cast, turned and grooved, and the roller mill frames and other iron castings were brought from St Peter's works and fitted into their several machines. All the rest of the flour millwrights' work was conducted here. Both works were connected by telephone. In addition to the men working on site, there were over 300 men listed on the books at Mark Lane during 1884/5 who were engaged on erecting the plants.

I will return to the Turner story in the next issue. The holdings at the Mills Archive mean that I can only provide geographical and historical snapshots. If you would like to know more, please email me at mills@millsarchive.org