

Lott and Walne Foundry

Setting the Scene

Dorchester has been a market town for the best part of a 1,000 years and perhaps much longer. Its role in a rural county was to supply the farming community with all its varied needs over the centuries, this will change with the passing years. When I came to Dorchester in 1964 the town was still doing this in part but things were changing fast, a new generation of college trained young farmers were preparing to take over the family businesses.

In 1964 the town had one foundry, two working blacksmiths [one was also a farrier] and several grocers, butchers, fishmongers and most other thing as well. The ancient centre was the cattle market. Market day was very busy and all the pubs had trade. The station had a line of coal bunkers mostly for the town's use, the trains were steam locomotives.

The Industrial town

In the past there were two foundries, Lott And Walne and Memberys in Colliton Street, Eddison's steam roller and traction engine works and of course a Brewery, gas works, a timber yard and at one time a place for generating electricity, I think in Church Street.

I was present at the last casting at Lott and Walne, about 40 years ago. Over the years I had made a number of friends and had been given details on the art of mould making. In those days if you wanted items for the museum collection the craftsmen insisted you should know how the item was used. This was no hardship as I was very willing to learn.

The Casting Gallery

Imagine the ground floor of the casting gallery - a large floor space approximately 20 metres by 10m. As you face the building on the right hand side was the furnace constructed of iron, lined with ceramic fire bricks that could withstand high temperature. The melting point of iron for this type of furnace is about 1500 c. This furnace was made of iron and approx 3½ metres tall, & on each side was a Doric pillar. Near the base was the vent where the molten iron would flow out. The furnace backed up against a wall & behind

this wall on the first floor was the loading bay where the iron, coke and limestone would be shovelled in. There was a hole in the wall for communication with the casting floor. The limestone is the flux that lowers the temperature a little and helps the metal to flow; so much for the furnace.

Now the casting floor - as you face the furnace and to the right was a large wooden crane that could carry the loaded iron crucibles away from the furnace to be poured into the moulds or smaller crucibles. This crane was static and could only swing so other smaller ceramic crucibles could be filled. A tool was used so two men could carry smaller crucibles. The crane had an iron plate attached to the end of the main beam with 1837, the year of the coronation of Queen Victoria. This hard working crane had had its carrying capacity reduced over many years, all recorded in chalk on the beams.

The floor where the moulds were produced. Sand was the medium used for producing the moulds so the floor was covered in a thick layer of near black sand approx 12 to 18 inches deep, the dark colour the result of use over many years and the accumulation of linseed oil.

The Mould /Patten Makers Workshop

On the opposite side of the road was the patten makers work shop. Sadly they were not very forthcoming, which made it much harder to collect the forbidden secrets of their craft. The wooden pattens were hand made by skilled workers. When an object was brought to the foundry to be cast it could be made of all sorts of materials, but mostly of iron such as large driving gear wheels from water mills, of which Dorset had many.

When iron is poured into the sand mould it would contract or shrink to a degree depending on the size of the item, so all the patten makers' rules were adjusted to take this shrinkage into consideration.

I never had the good fortune to acquire any tools of this trade. Some objects could be quite large.

So now we have the wooden pattern we will go back to the casting floor.

The making of the mould.

The tools required to start the process were a box made of iron in two halves, with no top or bottom. The upper half had flanges that fitted into the female ones on the bottom half so the top half could be lifted off. Other tools included smoothing tools, a mallet & spatulas [small spoon like tools]. Some tools were often made by the mould maker and this was done by the splendid man I knew and led me into the art of casting.

The first task was to select the correct box, remove the upper half and fill the lower with sand, well packed in with the use of the mallet and a flat piece of wood. Now the patten is placed on the packed sand and lowered in until only the upper half is exposed. The sand around the exposed half of the pattern is levelled and packed down to perfection. When the craftsman is satisfied a very fine dusting of sand is applied. When the lower half is finished the upper half of the box is put in place and now filled with sand gently compacted with the use of the mallet. The upper half is carefully lifted off. I was amazed when I first saw this magic - a perfect upper section and a perfect lower section, that dusting of fine sand had proved a perfect separator. The patten is removed leaving behind a perfect impression.

Then a hole is cut in the upper part of the pattern in the upper box to allow the metal to enter the impression of the object. The position of the hole is carefully selected to make a perfect cast. When all is in order the top half is carefully lowered into place. A metal ring is placed around the hole to help reduce sparks, gases and drops of very hot metal from flying. Now using a spike small holes are made not too deep, avoiding the internal impression, the holes will allow gasses to escape reducing damage to the cast.

On occasions an internal core is required, to produce it the core sand from the floor would be mixed with linseed oil, packed into a mould and baked. When cold this can easily be worked with a small knife and a rifler to the required shape. The placing of the core takes skill because when the metal enters the mould it can shift the core resulting in a thin wall that will fail under stress, so chaplets are used. These are brackets placed with skill in both top and bottom to hold the core, then as the metal enters, the heat of the cooling cast will destroy the chaplets - when that occurs the metal will be a shrinking solid. The art of sand casting is centuries old. So back to the casting floor.

The day of the Casting

The iron crucibles have been lined with sand and linseed oil, the same as the core mix, and baked, which will protect them from the molten metal. The furnace has been lit, stoked, loaded with coke, iron fragments and limestone & the temperature is 1500 c. The iron is puddling at the bottom of the furnace so all is ready to lance the vent. Communication with the upper floor and the casting floor is vital. Now a man with two lances takes up position, one of the lances has a large blob of wet clay, the other will break the seal of clay allowing the iron to flow in a stream into the large iron crucible attached to the crane. When enough iron has been poured the second lance with the blob of wet clay is placed with skill to stop the flow. On the floor are two long lines of moulds with pathways for the men carrying the smaller crucibles. As the metal enters the moulds the gases can be seen escaping from the small holes in the top.

To the observer this looks very dangerous, both from the metal and gas, but the men are skilled workmen who know the dangers of the process. On the following morning the moulds are knocked out, the castings are inspected and the fettling can start the removal of the pouring spur and cleaned up ready to be collected.

Rodney Alcock, 24/9/ 23, as remembered over 40 odd years.