



**FALKIRK COUNCIL**  
CULTURAL SERVICES

## **My Ancestor... worked in the iron founding industries**

Cast iron is produced in a foundry by pouring molten metal into sand moulds, and then cooling it. The casting process allowed complex shapes to be produced in one piece which reduced costs and meant that high quality items could be mass produced. Cast iron is relatively brittle but endures compression very well and it was widely used for a variety of purposes, from the production of baths to the construction of bridges.

Falkirk was an ideal location for iron foundries: supplies of water, iron ore and limestone – all essential for the industry – were available nearby; coal for the furnaces was easily accessible and the Forth and Clyde Canal provided practical transportation of large and heavy material to and from the foundries. The iron founding industries had a dramatic impact on the local landscape. The Carron Dams were constructed to meet the industry's demand for water, coal mining grew at a great rate (James Watt's famous steam engine was devised in part to tackle flooding in the deep pit at Kinneil), and villages sprung up all around Falkirk to house workers in the foundries and coal mines.

### **Iron Foundries in Falkirk**

The two largest foundries in Falkirk were the Carron Iron Works (which opened in 1759) and the Falkirk Iron Works (1810).

**Carron Iron Works** (1759-1982) became the first iron foundry to be built in the area. Initially, the Company imported a skilled workforce from England. This practice earned the Works the nickname 'The English Works' and, not surprisingly, caused considerable resentment. Gradually, however, the workforce was replaced with newly trained local labour. The turbulent politics of the late 18<sup>th</sup> and early 19<sup>th</sup> centuries meant that demand for munitions was high and although the foundry produced a variety of innocuous items, its chief focus was on weaponry. However,



*The carronade*

the poor quality of the Foundry's early output almost ruined the Company, as the Navy and the War Office refused to use the unreliable cannons it produced. The Company's fortunes changed at the end of the 1770s with the successful design of the 'carronade'. Being shorter than traditional cannons, the carronade could be recharged and fired more quickly and its light weight made it safer on small ships. It was said to be devastating at the close quarters which characterised naval warfare at that period.

The **Falkirk Iron Works** (1810-1981) quickly flourished. By 1845 it employed 500 men and boys (about 1,500 by the turn of the century); it supplied the government with munitions during the Crimean War (1853-6).

The industry grew rapidly in the latter half of the 19<sup>th</sup> century and by the beginning of the First World War there were about thirty foundries in the Falkirk area. Six of these closed down during the Depression of the 1930s and a few more during the 1960s and '70s. The collapse of Britain's heavy industries in the late 1970s and '80s saw almost all of Falkirk's remaining foundries close down and today only one still survives in the whole district (Ballantines, in Bo'ness).

### Who Worked in the Iron Foundries?

A **Pattern maker** would construct a wooden pattern from a design. This was a model of the finished product, made a fraction larger than the desired size to allow for the shrinkage of the metal as it cooled. Using the pattern, **moulders** would create a mould from sand (prepared by **sand mixers**), clay or other materials. Accuracy by the pattern maker was therefore essential, as any flaw in the pattern would be duplicated in the mould and in every cast taken from it. Iron would be melted in a furnace (often a 'cupola' – a type of furnace designed specifically for melting iron) by a **furnace operator** (also known as a **cupola attendant** or a **melter**), who would load the pig iron into the furnace then supervise the melting process and monitor temperatures. **Casters** would then pour the molten iron into the mould. **Knock out operators** would remove the cast from the mould and excess metal would be removed by **fettlers**, **grinders** and **shot blasters**.

### Working Conditions in the Iron Foundries



*Pouring molten iron into moulds at New Grange Foundry (Ballantines), Bo'ness, 7th August 1979*

Workers in iron foundries, as in many other industries, were prone to pulmonary and respiratory illnesses caused by daily exposure to dust and fumes. Accidents and even deaths were also not uncommon. The New Statistical Account (1845) reports that, "no branch of these employments [in the iron foundries] is considered more detrimental to health than other trades, and no disease is peculiar to them. The most common complaints are fever, a disease called blackspit, and other epidemical disorders, but these they are subject only in common with other workmen in the neighbourhood. Many of them attain an advanced period of life."

### Sources

You can find out more about Falkirk's iron founding industry and the people who worked in it from a variety of primary and secondary sources. Ian Scott's *Falkirk A History* gives an overview of the iron industry in the area and if you are interested in Carron Iron Works in particular, try *Where Iron Runs Like Water!* by Brian Watters. Falkirk Archives holds a copy of Falkirk Museum's Foundry Survey, 1981, unpublished, and you can also look through the finding aids to locate a number of relevant primary sources.