

A CENTURY AND A HALF  
OF  
PITTSBURG AND  
HER PEOPLE

GENEALOGICAL MEMOIRS OF THE LEADING FAMILIES  
OF PITTSBURG AND VICINITY, COMPILED  
UNDER THE EDITORIAL SUPER-  
VISION OF

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No more valuable contribution to the early history of iron and steel making in the United States, as setting forth the first steps in the processes which were to revolutionize the industry, may be found than in the following personal and unpretentious narrative of the life of Jacob Reese, written in simple language, and which was found after his demise:

I was born in Llanelly, Wales, July 14, 1825. My father, William Reese, and my mother, Elizabeth Reese, with their family emigrated to the United States and landed in Philadelphia on the 14th day of May, 1832. William Reese obtained employment at Phoenixville, and moved his family there. While at Phoenixville he made the acquaintance of John Savage and George Thompson, who owned property in Huntingdon County, Pennsylvania, and there William Reese was engaged to build an iron works at Trough Creek, and the family moved from Huntingdon. A blast furnace and forge were built, and cast and wrought iron were produced in 1834. I spent most of my time with my father at his works, and received my earliest impressions in metallurgy and mechanics. As Chillcott's, a little town three miles away, was the nearest store for domestic supplies, I was often required to go there through the woods, and learned to avoid wild animals, for the woods were full of them.

In 1835 the family moved to Bellefonte, Pennsylvania, and father built a furnace and introduced the boiling process for the Valentines. There were no fire brick to be had in this country, so father ordered fire brick from Scotland to build a furnace. Unfortunately, the vessel carrying the brick sunk, so father built his furnace of sandstone. He lined the sides with forge cinder, and the bottom with limestone. When the furnace was ready and my father was working at it a number of prominent men from Bellefonte and Philadelphia were present to see the new departure in making iron. When the heat was ready I pulled up the door, and father, with a long tongs, drew a large red hot ball out of the furnace and threw it under the hammer; my brother, Isaac, pulled down the gate and let the water on, the big wheel turned and the hammer came down and smashed the iron ball into "smithereens." I saw that it was a failure. My father was cool. He said: "Don't cry, Jacob; shut the water off, Isaac; pull up the door, Jacob; I know what's the matter." Then he drew another red hot ball out, and let it lie on the standing, and, taking the ladle, he poured about a quart of water on the hot ball; a great blue flame arose as high as father's head; the ball was put under the hammer, the gate raised, the hammer pounded on the ball, which father turned with the tongs, while the cinders flew in all directions. And thus was made the first bloom by the boiling process in the United States.

The balance of the iron was treated in the same manner, and the new process was pronounced a success. I then asked father how it was that cold water made the iron good, and he said that the lime bottom had made the iron too dry, and that you must make the "blue blazes" come out of dry iron before it will work properly. I asked father what "blue blazes" was. He replied: "You will find that out when you go to school." About a week after I was fishing with a fly on Spring Creek, when Judge Burnside came along

and asked me to let him fly a few for me. I replied: "If you will tell me what 'blue blazes' is I will." He said: "O, you are Mr. Reese's son who made the good iron by making the 'blue blazes' come out of it; that, son, was a wonderful thing to me; it belongs to the realm of chemistry, of which I am not familiar; but I am going down to Philadelphia next week and I will bring you a book that will tell you all about 'blue blazes.'" He fished a while, and then went away. About two weeks after that Judge Burnside came to our house and gave me the Oxford edition of Chemistry, which, he said, if I would carefully study would lead me into a wonderland that is full of delightful pleasure and profit. With my grateful thanks he departed, and I laid aside Bunyan's Pilgrim's Progress and commenced to study the wonderland of chemistry. The panic of 1837 closed the works at Bellefonte and father moved the family to Pittsburg, and there at the works of Hogg, Bealer & Co., father, Isaac and I were employed until 1839, during which year we were in Wilkesbarre, Pennsylvania. In 1840, being then fifteen years of age, I obtained employment as hammerman at the works of Spang & Co., which was located at Pine Creek, about five miles from Pittsburg. Here I had practical demonstration of both the puddling and the boiling process, and saw the great advantage chemistry was to the manufacturer of iron, and I continually compared the book chemistry with the mill practice.

In 1850 I saw an advertisement offering \$1,000 for the best plan of a nail factory. I made the drawings of a works to produce twenty tons per day. My drawings were accepted, and I assisted in building the works at Sharon, Mercer County, Pennsylvania. I there introduced an improvement which made the blue nail. I took out a patent on it which brought me considerable revenue. In 1852 I was employed by English, Bennett & Co. and moved to Pittsburg and altered the Clinton Bar mill to a rail mill, after making 1,000 tons of railroad iron for the Cleveland, Columbus & Cincinnati Railroad Company. I was employed as engineer for the Cambria Iron Company, and spent 1854 and 1855 in the construction and management of the Cambria Iron Rail Mill at Johnstown, Pennsylvania. After making several thousand tons of rails for the Chicago & Northwestern Railroad Company, I returned to Pittsburg and was engaged in the sale of rolling mill supplies during the years 1856-1859. In 1860 I engaged in the petroleum business, and built the Petrolite Oil Works at Thirty-second street in Pittsburg. The works was composed in part of two stills of 300 barrels capacity, two stills of 500 barrels capacity, and one still of 1,000 barrels capacity, and a thousand barrel agitator by means of which I purified the oil by blowing a blast of air through it. In 1862 I built the Fort Pitt Iron Works at Thirty-second street and the Allegheny river in order to make hoop iron for binding the oil barrels for the refinery. In 1864 I built an addition to the Fort Pitt Steel Works. In 1865 I built the Southside Rolling Mill and Tube Works. In 1866 I built a metallurgical plant at Thirty-second street and the Allegheny river, Pittsburg. The plant comprised in part a cupola thirty-six inches in diameter and thirty feet in height; two converters and an open-hearth, each having a capacity to operate on five hundred pounds of metal at each heat; a root blower for the cupola, and a direct acting blowing engine for producing the pressure blast for the cupolas; also an apparatus for producing carbonic oxide, and a hydro-carbon vapor at a high temperature and a pressure of 100 pounds to the square inch. The construction and operation of this plant cost me over \$50,000. It was here that I

indurated lime by intense heat, mixed it with tar and formed an indurated lining with which I lined the converters and the open-hearth. In this plant I melted pig iron that was high in phosphorous in the cupola, poured it into the converter having a basic lining and a basic bath, then blew the molten metal with an air blast until the silicon and carbon were eliminated, and then continuing the blow until the phosphorous was oxidized to phosphoric acid and it united with the lime in the basic bath forming a phosphate of lime for agricultural purposes, then pouring the steel into ingots. It was there that I desiliconized molten iron in a ganister lined converter, then poured it into a basic lined converter and therein blew the molten metal with an air blast until it was deoxidized, decarbonized and dephosphorized, and the cast iron converted into pure steel. It was there that I melted cast iron in a cupola, poured it into a basic lined open-hearth, and, in the presence of a basic bath, converted the crude iron into dephosphorized steel. It was there that I demonstrated and perfected my invention of Lime Lining, Lime Additions and the Over Blow, as shown in the testimony in the case of Reese vs. Thomas et al., decided in the United State Patent Office November 26, 1881. In 1868 I had built the Fort Pitt Steel Works. With others I also built and operated the Grafton Blast Furnaces at Latonia, Ohio.

In 1877 I was so impoverished by loss of fire, explosions and creditors, that I was unable to proceed and failed. Having lost every dollar, I was compelled to start anew. In 1879 I sold some patents to Andrew Carnegie for a semi-annual payment of \$2,500, during the life of the patents or their improvements. Mr. Carnegie transferred the agreement to the Bessemer Steel Company, and they transferred it to the Steel Patents Company. After years of expensive litigation they were, by mandamus, compelled to pay.

In 1879 the United States Patent Commissioner declared an interference between Jacob Reese, Sidney G. Thomas, Henry Harmet, Philip Osan and Henderson. After a vigorous contest the Commissioner of Patents decided that Jacob Reese was the prior inventor of cases A and B, which cases covered the Lime Lining, the Basic Bath, and the Over Blow, the essential conditions of the Basic Process for the manufacture of steel. The last patent that comes under this agreement was issued in April, 1906, and will not expire until 1923.