his death, the government, as an acknowledgment of their wrong, granted him a yearly pension of a thousand dollars, and at his death this miserly recompense was reduced, to his widow, to six hundred and twenty-five dollars.

When iron is simply melted and run into any mould its texture is granular, and it is so brittle as to be quite unreliable for any use requiring much tensile strength. The process of puddling consisted in stirring the molten iron run out in a puddle, and had the effect of so changing its atomic arrangement as to render the process of rolling it more efficacious. The process of boiling is considered an improvement upon this. The boiling-furnace is an oven heated to an intense heat by a fire urged with a blast. The cast-iron sides are double, and a constant circulation of water is kept passing through the chamber thus made, in order to preserve the structure from fusion by the heat. The inside is lined with fire-brick covered with metallic ore and slag over the bottom and sides, and then, the oven being charged with the pigs of iron, the heat is let on. The pigs melt, and the oven is filled with molten iron. The puddler constantly stirs this mass with a bar let through a hole in the door, until the iron boils up, or "ferments," as it is called. This fermentation is caused by the combustion of a portion of the carbon in the iron, and as soon as the excess of this is consumed, the cinders and slag sink to the bottom of the oven, leaving the semi-fluid mass on the top. Stirring this about, the puddler forms it into balls of such a size as he can conveniently handle, which are taken out and carried on little cars, made to receive them, to "the squeezer."

To carry on this process properly requires great skill and judgment in the puddler. The heat necessarily generated by the operation is so great that very few persons have the physical endurance to stand it. So great is it that the clothes upon the person frequently catch fire. Such a strain upon the physical powers naturally leads those subjected to it to indulge in excesses. The perspiration which flows from the puddlers in streams while engaged in their work is caused by the natural effort of their bodies to preserve themselves from injury by keeping their normal temperature. Such a consumption of the fluids of the body causes great thirst, and the exhaustion of the labor, both bodily and mental, leads often to the excessive use of stimulants. In fact, the work is too laborious. Its conditions are such that no one should be subjected to them. The necessity, however, for judgment, experience, and skill on the part of the operator has up to this time prevented the introduction of machinery to take the place of human labor in this process. The successful substitution in modern times of machines, for performing various operations which formerly seemed to require the intelligence and dexterity of a living being for their execution, justifies the expectation that the study now being given to the organization of industry will lead to the invention of machines which will obviate the necessity for human suffering in the process of puddling. Such a consummation would be an advantage to all classes concerned. The attempts which have been made in this direction have not as yet proved entirely successful.

In the squeezer the glowing ball of white-hot iron is placed, and forced with a rotary motion through a