

THE ELLERSHAUSEN PROCESS—ITS GREAT VALUE.

The method of making iron by the Ellershausen process is thus described by the New York Times.

The process consists in the conversion of crude cast iron, as it runs from the smelting furnace, into wrought iron, by the simple admixture of granulated iron ore. It is carried out at the works of Messrs. Shonberger, at Pittsburg, in the following manner: On the casting floor of the smelting furnace, a cast iron turn-table, about eighteen feet in diameter, is revolved on rollers by a small steam-engine. Upon the outside edge of the table stand a row of cast iron partitions, forming boxes, say 20 inches wide and 10 inches high, open at the top. Just above the circle of boxes stands a stationary wide-mouthed spout, terminating in the top hole of the furnace. When the furnace is tapped, the liquid iron runs down this spout, and falls out of it in a thin stream into the boxes as they slowly revolve under it, depositing in each a film of iron say one-eighth of an inch thick. But before the fall of melted iron reaches the boxes it is intercepted or rather crossed, at right angles, by a thin fall of pulverized iron ore, which also runs out of a wide spout from a reservoir above. The two streams or falls are of about equal volume, say one-quarter of an inch deep and twenty inches wide. A workman, with a bar in the taphole, regulates the stream of iron, and the iron spout from which the liquid metal falls into the boxes is removable, other spouts, previously coated with loam and dried, being attached to a common revolving frame, so as to be ready for use when the loam covering of the first becomes cracked or removed.

The thin layers of iron and ore soon chill and solidify, so that by taking away the outer portion of the boxes (which form the rim of the turn table) they may be removed in cakes of the size of the boxes, and weighing about 200 lbs. each. Four of these cakes or blooms are put into a reverberatory puddling or heating furnace, and raised to a bright yellow heat. They will not melt at this heat, but become softened, so as to be easily broken up with a bar. The four blooms are formed in the furnace, by the "rubble" of the workmen, as in ordinary puddling operations, into eight balls. The balls are brought out, one after another, squeezed in the ordinary "squeezers" to expel the roller and superfluous ore, and then rolled into wrought iron bars, which are now ready for market, or for further reduction into smaller finished forms.

The chemistry of the operation is as follows: The crude cast-iron contains say five per cent of carbon and two per cent of silicon, and more or less sulphur, phosphorus and other impurities. In the Bessemer process the oxygen of the air, blown into the liquid iron, combines with this carbon and those other impurities, and not only removes them, but leaves the pure iron in a liquid state, from which it can be cast into homogeneous masses of any size. In the puddling process, the oxygen of the air and of the ore or other "feeding" put into the furnace with the iron, combines with and eliminates the impurities, which are afterward squeezed out of the pasty mass by the squeezers and rolls. This process is long and comparatively expensive because the mixture of oxygen or oxygen-bearing substances is not made intimate with the iron except by long stirring, which is not only skillful, but exhausting work.

In the Ellershausen process the oxygen of the ore or oxide of iron (magnetic oxide is preferred) combines with the carbon and impurities, eliminating them as in the puddling process, and the iron of the ore increases the product. The chemical combination of the ore and the liquid crude iron appears to take place partly at the time of their contact when falling and lying upon the turn table, and partly where the reheating occurs in the furnace. It seems impossible that a reaction which is so violent in the Bessemer process, and so prolonged in puddling, should take place so quickly and quietly in the new process, but the fact that the cakes of iron and ore do not melt by subsequent heating, as cast-iron would, proves that its nature is changed by the first contact of the ore. The removal of sulphur and phosphorus also seems more thorough than in the other process. Analyses at different stages of the operation will throw more light on this question.

The remarkable feature of the Ellershausen process is that absolutely no skill is required to carry it out. The proportion of ore mixed is intended to be about thirty per cent, but if too much is added, it is readily squeezed out with the slag, and seems to do no harm. The subsequent heating occupies about half an hour. "Puddling" the product obtained from the first rolling is never marketable or finished iron. It is usually very ragged and unsound, and requires subsequent piling, reheating, and re-rolling, to expel the impurities, and to give it soundness and solidity. The new process appears to produce merchantable iron at the first rolling, and at Pittsburg, from a very inferior pig iron, made of one-half sulphurous Canada ores, and one-quarter Lake Superior and one-quarter Mountain ores. The thoroughness and rapidity of the purification by this process, evidently depend on the intimacy of the mixture of iron and ore. This intimate mixture is also the essence of the Bessemer process. In fact, to Mr. Bessemer's original apprehension of this idea of intimate mechanical mixture, the greatest modern improvements in iron manufacture are due.

TRICHINIASIS IN NEW YORK CITY.—We understand that several deaths occurred in the city during the past week, caused by trichiniasis contained in the meat the persons had eaten. It is stated that seven of the boarders in a German boarding house, in Carlisle street, were taken sick last week, and removed to different hospitals, that two have since died in the New York Hospital whose flesh, as proved on the post-mortem examination, was filled with trichinae, which could be plainly seen by the aid of a microscope. A piece of flesh was taken from the eye of one of the men while he was alive, and in this myriads of them were discovered. The keeper of the boarding house, it is said, in the habit of purchasing hard dried beef and pork, which was probably in an impure state before it was salted, and the animal was thus swallowed with

fatal consequences. Other deaths from the same cause are said to have occurred in different parts of the city.—N. Y. Evening Express.

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