

only a 2 inch water space, and not a single brick of any description. The well is a circular, cast iron water jacketed vessel, mounted on four strong wheels for convenience of moving it when repairs are necessary, and so made that the hole in one side connects with the outlet hole of the furnace, which is also thoroughly protected by water and it is through this that the matte and slag flow out of the furnace as rapidly as formed. They thus escape the influence of the blast, and prevent what Vivian calls "the sole objection to blast furnaces" the so-called "sows" or "salamanders" as great masses of metallic iron which choke up the furnace and tie up large quantities of copper and other metals. The charging door is situated on the upper floor, as also the bins for roast ore and coke. The coke used is from Connellsville, Pa., and is brought by way of the Great Lakes and the Sault Branch of the C.P.R. The charge for the furnace consists of 1,800 or 2,000 lbs. of ore and coke mixed, one ton of coke usually sufficing for eight tons of ore. The mass as it melts gathers at the bottom of the furnace, and flows through the outlet into the well or reservoir, where the heavier and metallic portions sink to the bottom while the lighter slag remains on the surface, running in a continuous stream over the jacketed spout into pots on wheels, which are removed when filled, an empty one always being ready to take the vacant place. The matte is drawn off at intervals of 15 or 20 minutes through a separated bronze water-cooled tap-hole casting, near the bottom of the well, and which is filled as usual with a clay plug that can readily be removed with a few blows from a steel bar. The smelting of the ores is greatly facilitated by the basic character of the accompanying gangue rock, for instead of quartz and acid silicates there is chiefly hornblende and very fusible feldspars. This circumstance, as well as a judicious mixture of the different qualities of ore obviates the necessity of any flux, which is a very fortunate circumstance, as limestone is somewhat distant and suitable iron ore difficult to procure. The slag buggies or pots are made as strongly and lightly as possible, are case-hardened and shaped like inverted hollow cones, and before each tap are thickly washed with clay water to prevent the matte from welding to the iron mould. This matte is sampled and weighed and allowed to cool before being dumped from the pots and the slag also is sampled and assayed once every 24 hours, so that an