

they were burned so hard that they would not expand and contract. He had to be educated away from that principle. Still another placed the cupola blocks in the top part of the kiln where they did not get fired enough and were soft, which meant that they were only skin burned. When they were placed in cupola after the heat had penetrated the surface they spalled off. He had to be educated away from that principle.

If I appear personal in making the following recommendation, believe me, it is not intentional. If you buy cupola blocks or brick, buy from someone who understands cupola practice. It does not follow that because a brick is a fire brick it will stand in your cupola.

Slag should be kept in a fluid condition by the use of limestone, oyster or clam shells or by fluorspar. A much better drop will be had and less chipping to do, this in turn means less labour in building up your bosh. Right here it might be well to admonish, don't build up your lining with clay if the hole is large enough to put in a piece of brick. Place the clay or daubing on thin and if possible gradually build the lining up to normal.

Using clay or daubing one inch thick is a poor method—as it dries, it contracts; cracks appear, and it spalls off.

In the selection of a proper refractory it would seem that the point to consider is securing a brick which will stand expansion and contraction and eliminate the question of friction.

See that your cupola tender lays the brick right, instead of plastering them in the cupola have him dip in clay mixture made to the consistency of molasses.

Keep your brick in a dry place. Some foundrymen leave them out in the weather. They go to pieces shortly after being placed in cupola and the brick is consequently condemned, not because it may not have been good, but because its efficiency was destroyed before it got in the cupola.

If perchance they did get wet too, and you have used them, then be sure to keep a good fire in the cupola for eight or ten hours to dry out moisture.

I would like to add here in parenthesis that in a talk with a foundryman at lunch to-day he asked if any harm would be done in leaving the firebrick out in the weather. I told him that many a good firebrick has absorbed the moisture when left outside, say in the fall and it rained or froze, and in a frozen condition was put in the cupola and it is impossible to get good results therefrom. That is equally applicable to any fire brick; if a firebrick is placed into a boiler or brass furnace, malleable iron furnace or cupola for eight or ten hours the moisture dries out and better results will be obtained than even if blast is placed in cupola or boilers.

Mr. Fleury, our Toronto manager, suggested to me to-day