THE BROOKLYN FOUNDATION.

deflection is scarcely sufficient to bring all the bolts to a full bearing.

ADDITIONAL SHORES.

As the caisson proceeded in its downward course, the disproportion between the dead weight above and the air pressure from below became greater and greater. For instance, on the 15th of November, the escape of air under the shoe was so strong that no more than ten pounds of air pressure could be maintained. The over-pressure entailed thereby was twelve thousand two hundred and forty tons. This was received by a bearing surface of two hundred and eighty square feet, causing a pressure of forty-four tons per square foot.

In order to meet this constantly increasing over-weight a large number of additional shores were introduced into the caisson. They rested upon a block and wedges, and supported a cap spiked against the roof. The presence of these shores added considerable to the labor of lowering the caisson, and diminished the available working space otherwise. They gave, however, a positive assurance against any crushing weight from above, and could moreover be easily removed when a boulder was taken out, which could not be done with the permanent frames.

The downward movement of the caisson was usually so impulsive that the blocks under the posts were allowed to crush and were subsequently dug out. In fact, their crushing was the only indication we had that any portion of the caisson was bearing particularly hard. The noise made by splitting of blocks and posts was rather ominous, and inclined to make the reflecting mind nervous in view of the impending mass of thirty thousand tons overhead.

SIDE FRICTION.

No satisfactory estimate could ever be made of side friction. There must have been some, but of a very irregular character. At times an outside boulder would apparently hold one end of the caisson until a bolt head or part of the timber gave way. The batter on the outside being one foot in ten,