This had to be removed by a hose and constant bailing. When the shaft was forty-five feet high the water in it held seven feet of clay in suspension, and the columns of water, in place of being forty-five feet high, corresponding to a pressure of twenty pounds per square inch, would have a height of only thirty feet, showing that the mixture weighed some ninety pounds per cubic foot in place of sixty-three pounds. When the shaft was idle for a short time, this mixture would settle at the bottom and outside of it; at the same time the lightened water column would rise, requiring a fresh supply below. Constant attention was required not to let the water supply get too low. The dredges themselves were a fruitful source of water waste. When they closed tight, which was seldom the case, they would usually bring up two-thirds water and one-third mud, the water being allowed to drain through openings made in the bucket. But the smallest stone coming between the jaws, or any distortion of the bucket caused by dropping it down on stones, making the teeth interfere, would prevent their closing, and produce a considerable washing out of the material, as the bucket was drawn up through the water. This was the principal disadvantage attending their use. And yet, with all our drawbacks, our daily experience confirmed us in the assurance that we had selected the only instrument capable of disposing of all the material at hand, no matter how large or ill-shaped, or badly-packed the boulder; no matter how tenacious the clay and hardpan, nor how flowing the occasional veins of quicksand.

There was, indeed, one period when we were almost tempted to throw the buckets overboard, and another method was devised to take out the material. This consisted in connecting with the pit under the water shaft a wide and deep trench leading into the chamber. In the bottom of this was a track with a car on it, arranged with ropes for hauling it in and out from under the shaft. On this car was an open box lowered down from above, when the car was hauled to one side the box would be filled, then hauled back and hoisted, the hoisting ropes remaining attached to it all the time. This whole operation would have to take place