should be further secured by means of heavy cables, or otherwise connected with the north bank of the river, but either at such a height as to be over spring freshet line or made in such a way that the connection could be readily discontinued when necessary. The variation between high and low water is fully 6 feet.

It might, however, be still better, before unwatering the space to be occupied by the structure, to strengthen the sides and ends of the dams by means of continuous ranges of horizontal trusses, resting, where required, on vertical posts—the whole forming a platform of framework that could be used when handling the necessary materials, and through the openings between the different ranges of transverse and longitudinal timbers the excavation from the bottom could be taken up and material for the foundation and stones for the masonry could be lowered into place.

The inner and outer rows of piles could, at ordinary water surface, be connected with cross timbers, and at places lower down by means of screw bolts formed of bars of wrought iron 3½ inches wide by ¾ of an inch thick, forged in such a manner that the part at the ends, which passes through the piles, will be made round and of a like sectional area as the flat bar; but before one of the ends in each case is interfered with a piece of boiler plate 12 x 15 inches should be shrunk on to the middle of the bar: both of which (bar and boiler plate) when in the work should have a vertical position, but at right angles to each other. These tie bolts to have nuts, iron plates and large wooden washers, and should be put in at short distances apart, horizontally, and at different heights, from 9 feet below the water surface upward, as the driving of the second course of sheeting piles progresses.

The side of the dam ranging with the stream should be slightly circular in plan, with the convex side next the channel, and the adjoining sheeting piles should, if possible, have a full bearing on each other.

It is believed, from the nature of the material which forms the bottom, that the greater portion of the piles required for a dam of the class above referred to could be driven without being shod with iron, and that one top band will be sufficient for every ten or twelve piles.

The material used for the puddle should be such as to settle down generally in a solid mass, and that when in place and beaten down carefully in thin layers it will form, as a whole, a wall sufficiently compact to prevent water passing through it.

The dams are to be built in three different sections, and in such a manner as to embrace separate portions of the work, unless the contractor is permitted by the Department of Railways and Canals to combine the 2nd and 3rd sections in one.

First Section.—To embrace the space to be occupied by the three southern archways, piers, &c., of the aqueduct, also the wing and connecting walls at the south end, together with all the walls that may be required to be built in continuation of the main structure, where water from the canal as well as from the river will have to be fully guarded against.

Second Section.—To include the space to be occupied by the three northern archways, together with the abutment and piers connected with them, and must be constructed so as to connect with the ends of the third pier in such a manner as will admit of removing the first section of the coffer dam and allowing the river water to pass freely through the three southern archways. It also embraces whatever provision may be necessary to enable the wings to be built and a connection formed with the old lock walls and the cribwork on the north-west side of the new structure.

Third Section.—To enclose the space to be occupied by the north connecting wall between the old and new aqueducts, where water from the canal as well as from the river will have to be guarded against, as well as in the first section.

The construction of the second section of the coffer dam is not to be commenced until the works of the southern arches are sufficiently advanced to admit of the dams connected with the first section being fully removed, and the water turned through the three southern arches, and full provision made for connecting the dams and masonry on the end of the third pier in a suitable and satisfactory manner as herein contemplated.