

concrete. Above this point the wall is faced with 8-ton blocks backed with masswork to the level of $2\frac{1}{2}$ feet above low water level.

From this level to quay level the wall is finished of mass-concrete faced with a 12-inch layer of granolithic concrete. A coping of dressed Devonshire granite completes the wall.

Attached to the front of the wall by wrought iron holdfasts are 12" x 12" creosoted pitch pine fenders at 10 feet centres, with 9" x 4 $\frac{1}{2}$ " creosoted American elm renewable rubbing pieces attached by 12" x 1 $\frac{1}{4}$ " compressed oak trenails to the fender piles. Floating movable crib fenders to keep vessels well clear of the wall are also provided.

Cast steel mooring bollards and also the necessary hooks and rings for mooring purposes, with fairleads and electric winches for warping vessels into position were also installed. A double track railroad runs behind the wall with the coal storage tank in the rear parallel to the wall. Three electrically operated Temperley coal transporters 30' gauge, 130 feet high, with 180 feet booms for the coal grab runways overhanging the coal pile and the water front, run with one track on the main wall and the other on the coal tank wall behind.

There are three hydraulic coal tips for handling coal cars, and on the old work there are six hydraulic 1 $\frac{1}{2}$ -ton coaling cranes.

This work was constructed within the comparatively sheltered area of the harbour. Portland Harbour, which is the largest artificial harbour in the world of its class, has an area of about 3,000 acres, with a deep water area of between 30 and 60 feet deep at low water of about 2,000 acres. It is enclosed by three miles of breakwaters, which are provided with three entrances.

These breakwaters enclose the Eastern Bay formed by the Island of Portland and its connecting link to the mainland, the Chesil Beach.

The geological formation of this island and beach are extremely interesting both to geologists and harbour designers, but is beyond the scope of this paper.

The longest water fetch inside the harbour tending to inconvenience the work was only three miles, but considerable trouble was encountered from the heavy swell which entered the south entrance, which faces the open sea. Under unfavourable weather conditions, this made it difficult to secure the temporary work and floating plant. On account of the depth of water and comparative exposure of the work, the more ordinary and easier methods of construction within cofferdams could not be taken advantage of. It is doubtful if a dam could have been made sufficiently strong to keep watertight and withstand the swell and the inevitable