THE ISLE OF WIGHT STEAM FERRY.

The works at Langston Harbour, near Portsmouth, and at Brading, in the Isle of Wight, designed to effect the transport of trains of railway vehicles bodily across the Solent, were completed on Wednesday last, and on Thursday the appliances which have more than once been used provisionally during the execution of the works, were pronounced ready for regular traffic. We give drawings of the full details, and it should be stated that no claim is laid to mechanical novelty—their merit lies in the ingenuity in which commonplace mechanical arrangements have been applied to achieve in a simple way an exceedingly useful purpose. Railways existing on the mainland and in the Isle of Wight, with their lines coming down to the seaside, the problem to be solved was how to transfer simply, cheaply, and expeditiously from the railways to the deck of seagoing vessels, railway vehicles without disturbance of their load. Once upon the deck of the steamer, supposing only she be adapted to the carrying of a heavy deck load, the transport is simple enough—the thing is the loading and unloading, and to be useful this must be accomplished by means more expeditious and less costly than the ordinary method of handling and transhipment. The distance to be traversed between Brading and Langston is between 10 and 11 miles, 6½ miles are in the open sea, the rest in landlocked harbours, which on the island as on the mainland have been judiciously chosen as the places of arrival and departure. On both sides the process of loading and unloading goes on in perfectly still water, and on both the mechanical arrangements are the same. The amount of structural work on the island was rather less than that necessary on the mainland, owing to somewhat less favourable conditions at Langston. It goes without saying that on both sides there is direct physical connection with the railway systems. At Brading all the railways in the island are communicated with, while at Langston access is obtained to the Hayling Island branch of the Brighton and South Coast Railway, which at Havant has a junction with the London and South-Western system—to London by the direct Portsmouth line as well as to Southampton and the west of England.

At Langston the railway skirts the sea. Alongside of, and parallel to, the railway and upon the foreshore, an embankment has been built about 700 yards in length, and of width varying from 30 to 40 yards. The side or sea face of this embankment is sloped and pitched in the customary manner for its entire length, save 300 ft. at the extremity, where a wharf is formed suitable to the use for loading and discharging of ordinary seagoing craft. From the end of the embankment a sloped timber jetty projects, commencing at the rail level and descending by a gradient of 1 in 8, to 4 ft. below the natural bed of the sea. From the top to the bottom of this slope are laid eight ordinary permanent way rails, four of which constitute two running lines of the standard gauge, and along which, as presently explained, the railway vehicles pass, and four laid close, and parallel to each of the running rails. These latter act as check rails, but fulfil also a more important purpose to be described.

In carrying the waggons on board the steamer they are placed upon two lines running from stem to stern. In discharging and loading them, the vessel approaches the sloping jetty stern on, bringing the parallel rails upon her deck into line with the rails laid upon the sloping jetty. It follows that when the tide is high and covers the greater part of the slope, the level of the steamer's deck approaches the level of the top of the jetty; when the tide is low, the steamer approaches at a lower level and a considerable part of the slope is exposed; but neither at high or low tide can the stern of the steamer be brought sufficiently near to the fixed slope to admit of waggons passing from the one to the other. There is always a hiatus which must be bridged. The four extra rails above mentioned are useful in this connection. They carry the moving bridge or cradle, which passing up and down the sloping jetty in the varying states of the tide, connect the ship, at whatever height her deck, with the rails on shore.

In Fig. 2 of our drawings the cradle is shown in position for loading the steamer at low water. In Fig. 5 it is shown on a larger scale as at medium tide; the dotted fragment of the drawing indicating the position at dead low water. The cradle, which is supported on 20 wheels, resting five on each of the four rails of the jetty, is of timber with wrought iron attachments and cast-iron wheels, the movable drawbridge being balanced so as to be well within the power of a single man. It is moved up and down the slope by means of drawing engines, Fig. 9, which also drive two horizontal drums 3 ft. in diameter, by means of which waggons are lowered on to and drawn up from the deck of the steamer. The drawing engines are a pair of ordinary winding engines of 60 horse power. Attached to the drawing machinery is a movable shunting capstan for economizing locomotive power in the station yard. The steamer shown in the perspeative view, and in Figs. 2 and 3, is of iron and of great strength, her dimensions being: Length, 130 ft., breadth of beam 26 ft., horse.power 150 nominal, draught loaded 5 ft. 9 in. She has the steam steering gear of the Harrison type.

The deck arrangement is noteworthy, from the position of the lines of rails. What would in an ordinary railway be the 6 ft. space, is 4 ft. 8½ in. It follows, therefore, that in the event of there not being a sufficient number of waggons to occupy the two outer lines of rails, the load may be placed amidships on the centre line, and so contribute to the steadiness and trim of the vessel at sea. The process of loading and discharging may be briefly described. On the approach of the ship, with her cargo aboard, the person ashore in charge of the engines and cradle observes the state of the tide, and, knowing the draught of water, adjusts the cradle by lowering it or raising it to the required level. On the vessel coming into position, the drawbridge, which is raised and depressed by crabs worked from the gantry, is lowered on to the steamer's prow and made fast there. Ropes, which are ready on the drawbridge connected with the winding gear, are then hooked on to the coupling chains of the foremost waggons, and on signal being given the whole train is drawn out at one operation. The time occupied in unloading is regulated by the speed at which the engines are run, and this may be fast or slow according to the condition of the tide and other circumstances. At high tide, when the deck of the steamer and the cradle are nearly level with the rails at the top of the slope, the process of discharging may last some 30 or 40 seconds, At dead low low water, when the slope is at its maximum of steepness, a slower speed is advisable, and the time occupied may vary from 2 to 4 minutes. The loading, which is accomplished on a similar principle. requires rather more caution. The waggons being drawn to the verge of the slope by steam shunting gear attached to the winding engines, are then allowed to run on to the deck by their own gravity, checked and regulated by the ropes attached to the drums.

When the project was first mooted, doubts were freely expressed as to the sufficiency of traffic to warrant an establishmhnt of this kind. Recently, however, doubts on this subject have been resolved, and it is now anticipated that difficnlty is more likely to arise from redundancy than deficiency of freight. The present carrying power, judging from the traffic that is already offering, is likely to require augmentation. Already inland coal traffic is tendered for conveyance fully up to the carrying power, and other branches of traffic to which the system lends itself if presented in the quantity that seems probable, can only be accommodated by an additional vessel. As some indication of the need for improvement which the Transit Company supplies, we quote from an official source a brief description of the plan which the new arrangements supersede. Speaking of goods seeking delivery at the Isle of Wight the writer remarks:

"At Portsmouth, where the first handling and delay occurs, everything must be unloaded at the town station and take turn with Portsmouth town goods; then follows cartage through the town to the quay, and two more handlings occur here in unloading the carts and shipping.

"Arrived at Ryde the goods aremoved again for carriage to the station (through the town of Ryde), and once more there n loading into railway waggons.

"At Ventnor, or other destination, the reverse process occurs, and after two more handlings and another cartage, the consignee is at last reached, and it is well if he has nothing to complain of in the condition of his goods.

"Since arriving at Portsmouth there have been seven separate handlings, three cartages, a risky water passage, and a railway journey, Although the railway company's responsibility continued throughout, their actual control ceased at Portsmouth, when possession was transferred to the Isle of Wight agents or carriers."

In the future, by contrast, vehicles loaded in London will go direct to their railway destination with no more disturbance to bulk or change of vehicle than is involved in a railway journey between London and Birmingham. The whole of the costly and cumbersome terminal services at Portsmouth and Ryde will be avoided.