purpose they are intended, so that they can be readily identified and removed without loss of time. When required, they are taken from the racks, and the edges, butts and rivet holes carefully

marked upon them before they are taken to the machines where the shearing, punching, drilling, shaping, &c., are carried out, after which they are taken to their proper position in the ship.

In many shipyards great attention has been given to the questions of the economical handling of the material, and very costly and novel appliances are to be found in these yards for the pur- pose. As an example mention may be made of the overhead cranes fitted at the Union Ironworks of San Francisco. A framework of wood is built up over the entire building berth, the structure being well braced in all directions for carrying two travelling girder cranes. There are four building berths fitted in this manner, and the latest has a length of 408 ft., a clear breadth of 80 ft., and clear height of 72 ft. A swing crane of 50 ft. spread at each end of the erection increases its effective length to 500 ft. Each of the travelling girders carries a trolley, with motion transverse to the ship; five tons can be so lifted, and parts of the ship’s struc- ture not exceeding this weight can be taken from the ground anywhere in the neighbourhood of the structure and conveyed to any desired spot in the ship. The driving power is electric. The longitudinal travel of the girders is 180 ft. per minute; the transverse travel of the trolley and speed of lift, each 90 ft. per minute. A manila rope is used for

hoisting, except for plates under the bottom and counter, where a wire rope is used.

At Newport News, in Virginia, the structures are differently

arranged, being on the cantilever travelling-crane principle. There are five such structures in the yard; three of them arc wood, the

last two of steel. The largest is 700 ft. long. One trestle structure, or gantry, serves two building berths, and runs longitudinally between