plates are then worked, and are templated from the place they are intended to occupy on the ship. They are kept at the proper distance from the frames by liners or slips of the same thickness as the adjacent inside plates. Towards the ends of the ship the number of strakes of plating must be reduced, as the girth along the frames is much less than over the midship portions. Stealers are introduced for this purpose; they are single plates, which at one end receive the butts of two plates, and at the other the butt of only one. By them two strakes are merged into one.

The number of plates requiring to be furnaced is small in comparison with the whole number, but there are always some at the after end of the ship, especially in the neighbourhood of the boss (for the stem tube) and the counter, and a few at the forward end of most ships. As each plate is got ready, it is taken to the ship, hoisted into position, and temporarily secured by the platers by means of bolts and nuts. As the work of plating proceeds, and the weight of the ship increases, extra shores are put into place, and bilge blocks erected by the shipwrights, to keep the structure to its shape and prevent local and general “ unfairness.” The shell-plating in way of the intended bilge blocks is completed at as early a period as possible, and painted, so that when once the bilge blocks are in place they need not be disturbed until immediately before launching. While the platers are at work on the shell-plating, other squads of riveters are engaged on the deck-plating and internal work, such as the bunkers, engine and boiler bearers, the shaft tunnel, casings and, in the later stages, the hatches, houses on deck, &c., and as much as possible of the internal work is done before the shell shuts out the day- light. As the work is completed by the platers, it is ready for the riveters and caulkers; and these trades follow on without delay, except in some parts of the casings and decks in way of the machinery, which are left portable, and taken down after the launch, to allow the machinery to be put in place.

The platers usually work in squads, composed generally of three platers, a marker-boy and a number of helpers or labourers, the number of whom depends on the size and weight of the plates, and the nature of the work to be done on them, and also on the facilities of the yard for hand­ling such material. On the work of a large vessel many of these squads would be employed. The riveters also work in squads, a squad consisting of two riveters, one holder-up and one heater-boy, with sometimes a catcher, *i.e.* a boy to pass on the heated rivets when the distance from the rivet-hearth is great. Pneumatic riveting has not made great progress in Great Britain. Hydraulic riveting to a limited extent is adopted, especially in the case of work that can be taken to the machine, such as frames, beams and other parts; but in shipbuilding the large proportion of the riveting is done by hand. In the Royal dockyards platers\* work is done by shipwrights, and riveting is not considered a trade, though regarded as skilled labour. Shipwrights also lay the blocks, erect the ribbands, shore and fair the ship, but labourers construct the stages. Drillers’ work consists in drilling by hand or by portable electric or pneumatic drills holes which it is not convenient or possible to punch or drill before erection; they also rimer out and countersink punched and drilled holes when this is necessary. Portable electric or pneumatic drills are used when possible in some ship- yards, and three-cylinder hydraulic engine drills are employed for some purposes, such as in cutting armour bolt holes in thick plating behind armour. The caulkers follow closely upon the riveters, and generally work singly. A very important part of a caulker’s duty is water-testing. In the large oil-tank steamers possibly 8000 tons of water are used for testing one ship alone, and about the same amount for a large war vessel. This water is pumped from the sea or river into the compartment to be tested. In the case of an oil vessel, each compart­ment is filled right up, and a pressure put on by means of a stand pipe, carried for a considerable height above the highest part of the tank; any leakage found must be made good by the caulker, and the tank retested until it is perfectly water-tight. The double bottoms of merchant ships, and the smaller compartments and double bottoms of war vessels, are filled up and tested by a head of water rising a few feet above the load water-line. It is not usual to fill all the larger compartments, such as boiler and engine rooms in war vessels, or the machinery compartments and cargo holds in merchant ships; but water at a high velocity is played on the bulkheads by hose, to test the water-tightness and the strength. An occasional test, however, is made by filling a typical large compartment with water to a height of some feet above the load water-line. Angle-smiths form beam knees where these are welded, and generally all angle-bar work where heating

in a smith’s fire is required. It is usual to defer the painting of certain parts of the steel structure of a ship as long as possible, so

that ordinary red rust may form and dislodge the black mill scale which is answerable for a great deal of corrosion in steel ships, as