long and short sides of the plate. A number of wrought-iron bars, longer than the width of the plate, of about 5in. thick, and 3 in. broad, are bent to the vertical curves of the ship's side, which the plate is to assume, in order that it may fit closely to that portion which it is intended to protect. In front of a hot-air furnace is the bending cradle, which now first devised for shape the armour plates of the floating batteries constructed for the attack of Russian maritime fortresses during the late war. The cradle consists of two vertical and parallel open frames—pierced with numerous holes in the upper half—each of the length of the plate, and set apart a distance equal to the width of the plate. The open frames consist of a number of wrought-iron slabs, somewhat more than 3 ft. high, 8 in. wide, and 1 in. thick. The space between each two is equal to that of the shaping bars. The slabs have a double flange at bottom, by which they are securely bolted, in a vertical position to the bed plate, and a flange on the inside at top, to which a longitudinal slab is bolted throughout the entire length, to give increased rigidity to the frames, and at the same time to serve as *point-d'appui*, against which wedges are driven to force the armour plate down. At about the centre is another longitudinal slab, on which the ends of the shaping bars rest, and which is capable of adjustment, to give the required curve to one side of the plate. The longitudinal slabs, and cross or shaping bars being arranged according to the mould taken from the side of the ship the armour plate is to cover, the latter is withdrawn red-hot from the hot-air furnace, opposite and close to one end of the cradle, and laid upon the shaping bars. Immediately other bars are introduced above the plate, but below the longitudinal slabs, and with their ends passing beyond the spaces between each two of the vertical slabs. Wedges are next driven in between the tops of the upper bars and the bottom of the longitudinal slabs, until the armour plate is bent down to the curve required. The driving in of the wedges is tedious and laborious in the extreme. On either side of the cradle are iron rammers, weighing each about 600 cwt. They are balanced and suspended from the centre by chains attached at top to rings which are free to travel along horizontal iron rods over head. The rammers are worked by men horizontally in pairs, and against the wedges over the ends of the same bar simultaneously, so that the plate may be forced down gradually. Were all the rammers worked at the same time, as they should be, and with a minimum of four men to each, it would require twenty-four men to bend a plate in one heating. If this be persisted in, which we do not think likely, there is no reason why the wedges should not be driven in by moveable steam hammers, working in a horizontal plane.

The inventive facilities of our engineers are surely equal to devising some mechanical means to bend the armour plates, whereby human intelligence will be all that will be required to direct the force of steam. Whether it be by steam hammers travelling over the armour plate laid in a compound bed plate capable of being adjusted to the required curve, only adjustable rollers passing over the surface of the plate, in manner similar to the one above, or by a series of hydraulic presses with adjustable surfaces, that the problem will be solved, we know not, but we feel confident that it will be solved, and are strengthened in this belief by the fact, that an invention made at Plymouth, for effecting this object, by a series of hydraulic presses, and that an officer of the Admiralty has been despatched to examine and report upon it. However, the system of shaping cradles, which was employed to bend the plates of the "Warrior" and "Resistance," admits of the plates being bent to within ½-inch of the required curve. Since the "Warrior" was plated, further advance has been made to accuracy, and the plates are now curved to fit quite close to the ship's side. For this purpose the plate, after it has been in the shaping cradle, is removed to a hydraulic press of peculiar construction, made by Messrs. Westwood, Baillie, and Co., and capable of increasing a pressure to 2,000 tons. The bed plate, so to speak, is carried above the piston by two pairs of stout cylindrical standards, having screws cut on the upper parts and fitted with nuts to admit of the bed plate being adjusted to any required height. The armour plate (cold) is carried in slings when not resting on stout wooden rollers; two on either side of the press, whereby it is shifted two and fro between the bed plate and piston. The workman is provided with moulds exhibiting the curves to which the plate is brought. Then, by blocks and sheet iron of various thicknesses, which he places between the armour plate and bed plate, he blocks up the first to the required curve, using the portion of the hydraulic press to bulge out the plate, as it were. After this the plate is carried to a horizontal planing machine, where the longitudinal sides are planed to obtuse angles, one entering and the other projecting, so that the plates may fit accurately to one another and hold fast together. The "Warrior's" were, we believe, tongued and grooved, and plates of this form may be seen in the yard; but the arrangement of angulated edges is undoubtedly the best. The ends of the plate are planed straight in vertical planing machines, and particular holes on two ranks are drilled in the plate if it be of the largest size. Instead of being cylindrical, the holes are conical, or diminishing in diameter from the outside to the inside, so that a considerable amount of the strain is transferred from the heads of the bolts, which are countersunk, to the whole of that likewise conical which hold in the thickness of the plate. Then the plate is carried on a horse to the side of the ship, where it is lifted by a pontoon steam crane, which travels fore and aft on a tramway alongside the deck, each on one side. In this position the inside of the plate is daubed over with red paint, and then lowered on to spars or inclined guides, down which it slides, and is applied to the part it is to protect. Afterwards it is removed to ascertain from the marks left by the red paint if it fits accurately. If it does not—and it very rarely fits the first time—the plate is carried back to the hydraulic press to be operated on again and again until the exact curve is attained. When this is done, the plates up to the walls are coated on the inside with tar, and fixed to the ship's sides with tarred felt. Above the walls, dry felt is used, and the plates are not tarred. The bolts which hold the plate are 1½ in. in diameter, and look too slight to hold so great a weight as they will have to do in a rolling sea. But when it is remembered