

might maintain actions in respect of it in her own name; and could apply by a cheap means for the settlement of any dispute as to the ownership of the property, which might arise between her and her husband.

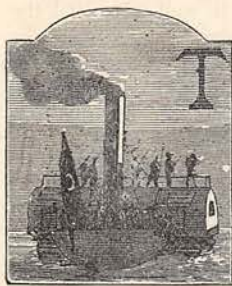
It is plain that the operation of this Act was limited. It applied only to property acquired in certain specified ways; and in all cases not falling under one of these heads the husband's marital right continued. For example, the husband took at once all cash, jewellery, clothes, &c., in the possession of his wife at the time of marriage, and all leaseholds, stocks, shares, or sums of money exceeding £200 coming to her by deed or will after marriage, or any lands acquired by her otherwise than by descent. Nor did the Act say anything of gifts to a wife during her marriage—an omission which, as was pointed out, produced this anomalous result: "that if a working woman managed out of her earnings to purchase, say a mangle, it was her own; but if any one gave it her to enable her to live by her own earnings it was her husband's, and liable to be carried off by him or seized by his creditors."

The first section of the new Act sweeps away all these distinctions, and by the words "A married woman (whether married before or after the commencement of the Act) shall have the same power of acquiring, holding, and disposing by will or otherwise, of any real or personal property as her separate property in the same manner as if she were a *feme sole*, without the intervention of any trustee," has enacted that marriage will no longer affect the ownership of a married woman's property in any respect whatever. The rest of the Act contains little more than explanatory provisions showing how these words alter the existing law. Thus it is provided that a married woman may be made bankrupt, may act as executrix or trustee, and may sue or be sued in respect of her

separate property. With regard to a married woman's right of action, the twelfth section introduces a most important change by allowing her to bring an action against her husband for any wrong towards her, and *vice versa*; and to give effect to this provision husbands and wives are for the first time made capable of giving evidence for and against each other in criminal as well as civil cases. For a wife is even permitted to proceed against her husband criminally, provided they are not at the time living together, and that the injury complained of was not committed while they were so living. If, however, a husband wrongfully took property from his wife when leaving and deserting, or about to leave and desert her, a criminal proceeding will lie, although they were not living apart when the injury was committed. It has been thought that this clause was not sufficiently protective to the wife in consequence of this proviso; but it should be remembered that any magistrate is now empowered to grant a judicial separation upon evidence of ill-usage, and that a thieving husband is not likely to obtain a magisterial commendation for domestic virtue. But although the Act seems to have fully secured a married woman against the depredations of a husband, it has not left her relations to third parties in a very satisfactory state. It will, we imagine, be risky for a tradesman to give credit to a married woman without first ascertaining whether she has a separate estate, or if not, whether she has power to pledge her husband's credit.

Experience will, no doubt, show that there are other imperfections in the Act; for no legislation can provide for all the delicate relations of married life. An Act of Parliament can only give protection in the grosser cases, which are comparatively few: it must ever remain for the husband and wife to supplement the law of the land by making to themselves a law of love and mutual dependence.

OUR IRON WALLS.



THE building of vessels of the old style has been often told in verse and prose. Longfellow has told of the building of a "vessel as goodly and strong and staunch as ever weathered a wintry sea," with her keel of oak "and timbers fashioned strong and true;" and Whittier has sung

of the ship-builders and their task, when

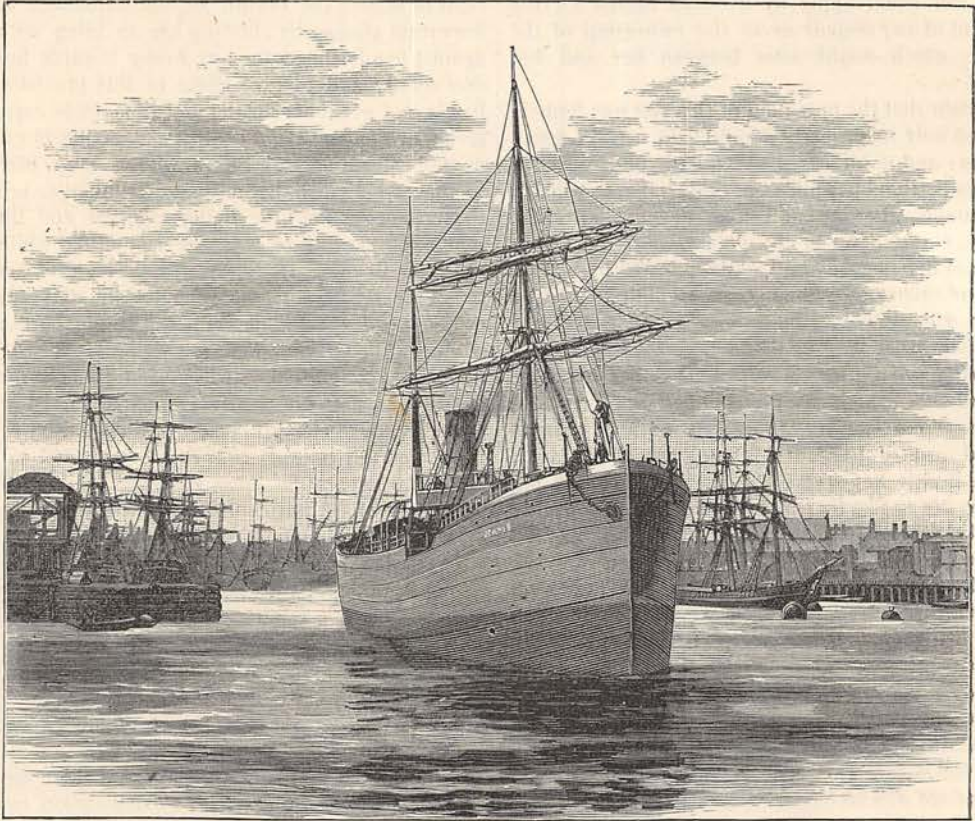
— "spectral in the river mist
The ship's white timbers show."

But it is work other than that which builds up our vessels now, for the days of the "wooden walls of old England" are past, and rapidly the wooden vessels are dying out, to be replaced by those of iron and steel. Nor are those the only changes in the building

of our vessels, nor in them, for steam-vessels are rapidly taking the part of sailing ships, and there is a desire to obtain an increased speed, a greater structural strength, and a fuller work effected with a given combustion of fuel.

The building of our iron vessels has largely centred itself on the Clyde, on the Tyne, the Wear, at West Hartlepool, and at Barrow-in-Furness. In these parts there are cheap iron and steel—essentials in the profitable conducting of the industry; and there are also workmen who inherit the ship-building skill of generations. Many of these parts have chosen out special portions of the trade—the Clyde, the building of great passenger vessels; the north-east coast, the building of cargo-carrying boats, and so on.

Selecting typical yards, the course of construction may be glanced at. "First catch your order." Let it be for a small or large vessel, for a vessel that may cost from £18 per ton up to £30, ac-



IRON STEAM-SHIP "JEANIE." (*From a Photograph.*)

according to the degree of finish and to the price of iron at the time, there is a general order of procedure. The contract having been agreed to, the period of delivery and terms of payment fixed, the work is first put into the hands of the draughtsmen, who obtain the sanction of the owner and of "Lloyd's"—that great authority in ship construction and shipping—to the plans, the materials are ordered, working plans are made, and other preliminaries got through. The actual operation of building is begun by the "frame bender" making a light set for each frame or rib of the ship, as they are "screived" down on the draughting-boards. This set is laid on a floor of heavy iron perforated blocks. On these the shape of the set is chalked, and the chalk mark further defined by iron pins being placed in the perforations round the chalk mark. Angle irons—irons of sections like this (J)—are heated in a furnace, and bent when hot to the shape defined by the chalk, the iron pins retaining it in that shape. Each frame, after being thus bent, is carried to the draughting-boards, hammered to the exact shape (holes being punched previously), and the parts fitted together ready for riveting.

Whilst this is in progress, the keel of the vessel has been laid, and part of the frames and beams

hoisted into their places, and there fixed by "ribbons"—that is, temporary strips of wood—and this is gone on with, as the frames are fixed, until the whole of the frames and beams have been erected in their places. When this is done the "inside plating" is commenced, and when this is well advanced the "shell," or outer plating, is commenced. Riveters working in "gangs" (for machine riveting is still in its infancy in its application to ship-building, though it has known rapid recent growth) are assigned different parts of the vessel to complete, and having red-hot rivets they place them through the holes that pierce the plates, angle irons, &c., and, having driven them home, a series of sharp and skilful blows speedily unite these parts of the framework. The caulkers and painters follow in as rapid a succession as possible, and with these the vessel is ready for the launching ceremony. This is usually effected at spring tides, reaching their height from three to five o'clock in the North of England.

There is variation in the mode of launching, according to the position of the ship-building yard, &c. Usually, the vessels are launched stern first. Hollowed baulks of timber are blocked up from the ground to the bottom of the ship, at about six feet from the keel on each side. The upper side of this is covered

with soft soap and tallow. On these others are laid, and the whole so wedged up that the weight of the vessel partly rests upon them. There have been, of course, blocks below the vessel whilst building, and these are now all split out from under her, so that the whole weight of the vessel rests on the greased sliding baulks. At a signal, then, it is easy to knock out certain detaining blocks, and the vessel glides with gathering impetus down these ways into the water, her speed being checked by long cables or steel-wire ropes attached to the shore. If, as is now common, the vessel is to be steam-impelled, she is then towed to the marine engineers' works, to receive the powerful engines and machinery that have been built for her, and, after being thus fitted, she returns to the builder to receive the finishing strokes, to be equipped and completed.

And thus the vessel will pass into the owner's hands, fitted with every possible appliance for safety, comfort, and economical working. Such a steam-ship as we have pictured (carrying possibly 3,000 tons of cargo and coals for her own use), employing a crew of perhaps twenty-six to thirty officers, engineers, and seamen, and capable of a speed of from ten to fourteen knots per hour, consuming seventeen tons of coal daily, is in many respects a model of arrangement. Her cabin is finished handsomely; her crew have three times the room the Board of Trade demands; and their work is lightened by steam-winch, steam steering-gear, patent windlasses, and other appliances; and the result is that she effects by speed and arrangement four or five times the work of the old sailing vessel.

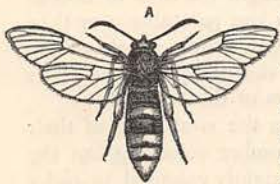
This brief outline is of work that may endure four or six months, or even longer, according to the degree

of preparation, the number of workmen, the weather, and other causes of speed or delay. From the ordering of the iron and the preparing of the plans to the raising and fixing of the frames and beams, in an average time, two months will elapse; in the work needed till the shell-plating and part of the riveting is done, nearly two months more will pass; and in the riveting, preparing for launch, engine-fitting, and finishing, over two months will elapse, so that a period of six months spent in construction will be no unfair average, except in yards so well equipped that it is possible to obtain a speed greater than usual. And yet at this rate the demand is so great, and the supply of material and of labour so large, that the United Kingdom is now turning out new vessels at the rate of fully one million tons yearly.

In the work of construction changes are still known. Increasingly "mild steel" is being used instead of iron as the material for vessel and boiler; there is an attempt to use machines for riveting in place of manual labour, and there are other divergences from the olden rule. But in whatever form the construction may be, it is certain that ship-building is one of our chief industries—one that, by the labour it employs and the demands it makes on our iron-works, is a vast direct and indirect influencer of the labour market, and one that, from our supplies of minerals and our insular position, is of the utmost importance nationally as well as locally. And whether under the old or the new form—wooden, iron, or steel walls—our merchant navy, from the days of the *Great Harry* to those of the larger and swifter *Alaska*, may claim the benediction that Longfellow gives when the sea, "bridegroom old and grey," takes the young vessel to its "protecting arms."

J. W. STEEL.

PROTECTIVE MIMICRY.



CLEARWING.

Y MUST beg my readers not to be alarmed at the somewhat formidable title at the head of this article. The subject is neither intensely difficult nor scientific, but has been brought forward with the

hope that it may afford a pleasant pursuit in the everyday walk abroad, and offer to a certain extent an untrodden field of research.

By the economy of nature nearly all the different kinds of animals are endowed with a hostile feeling for, or fear of, each other, and consequently war is always going on. Of course, if it were not for this innate hostility of race for race, our earth would be overrun by an excessive creation. On the other hand, if there were no chances of escape for the weaker animals, certain classes, which play an important part in this economy, would be exterminated. Now, to avoid this, nature has recourse to several devices, one of which is the subject of this article.

By protective mimicry is meant the capability with which the weaker animals are endowed of protecting themselves from their enemies by imitating in their form and colouring either (a) their more offensive brethren, or (b) nature itself. (This mimicry is not confined only to animals, but is found in plants also; on this kind, however, I am not going to touch now.)

Of these two groups, the first, although the most interesting, affords fewer striking examples; there are, however, one or two clearly defined cases. Bates mentions that in South America there are two kinds of butterflies—one with a nasty smell and irritating taste, the other plump, juicy, and a delicate morsel for any fortunate bird. There would be a slight chance indeed of the edible species surviving, if nature had not endowed it with almost the exact colouring and habits of the indigestible kind; consequently birds, rather than incur the risk of catching the one, prefer to leave both alone.

But we need not go so far abroad for an example of this kind of mimicry; in England we have a good one.