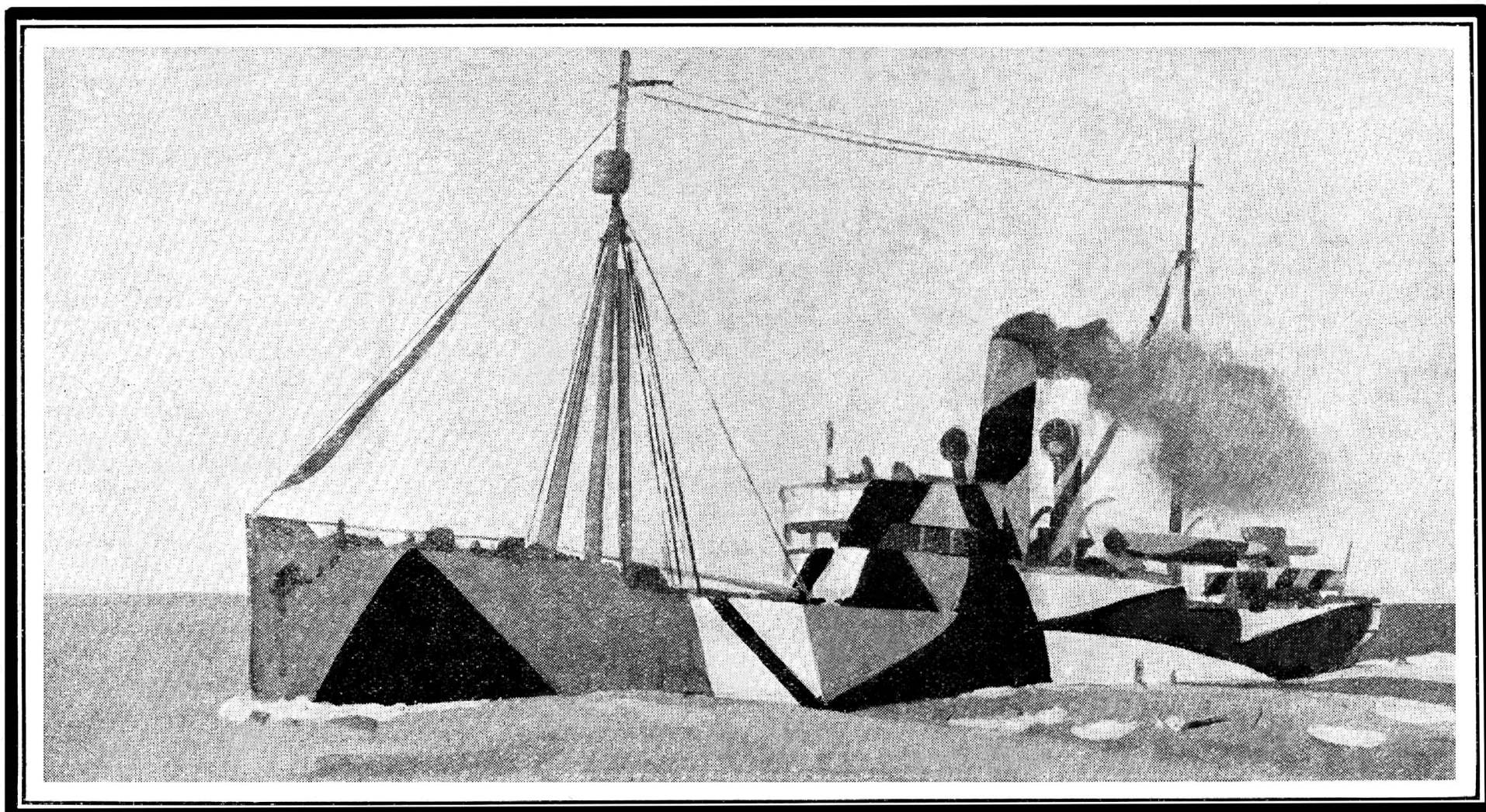


# The Art of Dazzle-Painting

By Jan Gordon, Lieut. R.N.V.R.



“THE INDUSTRY”

The first dazzle ship—contrast this pattern with the “Olympic,” one of the latest developments

“Say! You should see our Fleet! It’s camouflaged so, it looks like a flock of sea-going Easter eggs. If you shut your eyes good and tight, and stand behind a wall, you can’t see a ship a cable’s length away. It was an English guy thought of it first, and his name’s the first toast now at all the paint-makers’ social reunions.”—Extract from an American paper.

**C**AMOUFLAGE is the oldest of the human arts. The first record of it is to be found in the early chapters of the Book of Genesis, and so salutary a lesson did humanity receive on that occasion that it has never ceased from practising since. The first military use of it appears to be the famous horse of Troy, at which time also the ships were painted with eyes forward and reddened cheeks, so that naval camouflage has also a respectable antiquity. The true art of camouflage is to make an object appear to be what it is not, by means of green and brown patches, cut up by white or black lines. The military camoufler endeavours to turn guns, tanks, motor cars, and such-like objects into bits of scenery more or less appropriate to their locality; but this is not the art of the naval painter; and so the word camouflage, with its associations, has been dropped in favour of the more appropriate word “dazzle-painting.”

The unrestricted submarine warfare instituted by the Germans naturally brought about enormous efforts to counteract the danger, and all the earliest efforts at a camouflage scheme had in view the object of making a ship an invisible object, or, at least, one very difficult to see. Unfortunately, most of the men who experimented in these directions were not sailors. A week of careful observation at sea would have shown them their error. The average sky value of the Atlantic, for instance, does not mean that the Atlantic is ever of that value. It varies from almost the blackest of clouds, upon which even a black ship in sunlight may shine as a light spot, to the glowing radiance of after sunset, upon which background a white ship becomes a black silhouette. The problem of producing an invisible ship upon this variant background is insuperable, especially when it must be remembered that the illumination of the ship is received from the sky itself, and therefore, except in direct sunlight, can never be as strong. Another drawback to the attempt to produce invisibility is the presence of coal-smoke and of masts and shrouds, and as long as none of them could be got rid of there was little value in seeking a mere invisibility for the hull; though some joker did suggest that a well-known American

inventor had made a ship so invisible that nobody had seen it come or go.

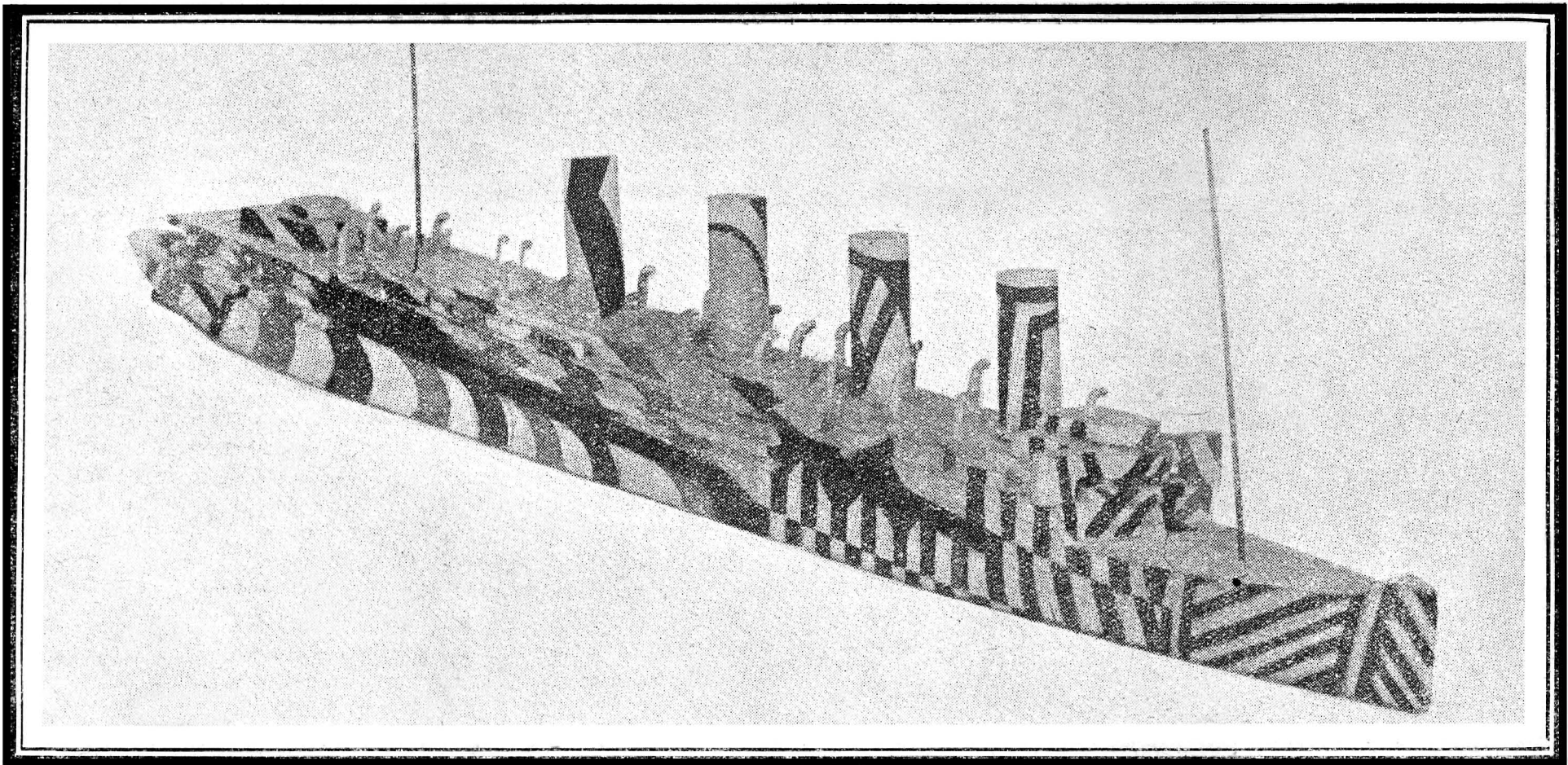
The solution of the naval problem was happily found in dazzle-painting. The idea of the work is to produce an effect which shall confuse the observer at the periscope to disguise from him, firstly, the type of ship he is dealing with; secondly, its size and speed; thirdly, its course; and as the art of submarine attack depends upon a knowledge of these various constituents, dazzle-painting, if it did nothing else, would tend to make periscope observations enormously prolonged, with the chance of the ship spotting the menace, and either attacking it or of escaping.

The scheme was invented by Lieutenant-Commander Norman Wilkinson, R.N.V.R., O.B.E., R.I., when in command of a coastal motor launch. He had had the advantage of being a practical seaman and of having seen a goodly mass of our transports at sea, for he was at Gallipoli. He saw, firstly, that our huge black-painted ships, with white upper works, or even the naval grey ones, presented the easiest of targets to the enemy’s torpedo. It were as though the painting were designed to help the enemy, the dark hull severely outlined against the white, giving the exact angle of the ship’s course, the white upper works marking clearly out the shadows beneath the boat and bridge decks, the yellow funnels and masts, which gleamed for miles; and it suddenly occurred to him upon a train journey how if all this were broken up into large masses of divergent colour form and value what a great difference would be effected.

The seekers after invisibility had, to a great extent, ignored the fact that a ship is not a plain silhouette; they had missed the accumulation of small matter along the deck—winches, capstans, bollards, donkey-engines, etc.—which make a sort of deep-tinted fuzz, outlining the whole of the forward and after parts of the ship as clearly in most weathers as though it were drawn with a black chalk pencil. They ignored the shadows beneath the flying bridge, beneath the boat decks, beneath the bilges of the boats, and even in the cowls of the ventilators. All these things are of immense importance in estimating the exact course of a ship for submarine attack, and Commander Wilkinson realised that with paint these things could to some extent be distorted; their positions could not be altered, but they could be added to, made definitely misleading. He saw how by strong contrasts the fore side of the bridge could be displaced, and how, in general, by means of strongly contrasted blacks with lighter colours, the whole tendency of the ship could be twisted and altered.

Upon these points there has, I believe, been a general





MODEL OF THE "OLYMPIC"

The false bow may be noted, also distortion and confusion of the bridge and general long lines of the hull, while the curves on the stern counteract normal curves of the ship.

misapprehension about the aims and objects of camouflage at sea. Young ladies who have been spending a vacation—well earned, no doubt, in some Whitehall office—upon the south coast have told me of marvellous camouflage they have seen. They said it had succeeded perfectly; it looked just like a pile of rocks, or like a ship cut in two; but it is scarcely necessary to point out that if a submarine saw a pile of rocks standing in the sea at some point where no rocks were charted, and no recent earthquake to account for so mysterious an appearance, he would promptly go and investigate; and if, upon further inquiries, he discovered that this pile of rocks possessed two masts and a funnel, and made queer propeller-like noises in his hydrophone, I do not think that the camouflage had been successful if, upon closer inspection, it did not keep him deceived with regard to the actual course of the ship. Nor do I think a submarine would ignore the phenomenon of a ship cut in two and still proceeding gaily at the speed, let us say, of ten knots without further submergence. Thus, to some extent, the romance goes out of the thing; there is no attempt to produce a sort of sneaking wraith-like ship, nor yet uncharted rocks; the simple thing is to disguise, to confuse—in fact, to dazzle.

It is curious how little the scheme has altered from its earliest conception. In Commander Wilkinson's first submission to the Admiralty he seems to have grasped the whole scope of his idea. Subsequent work and experiments have only combined to prove him more right, and the sole result of the experimentation of the last eighteen months has been towards the evolving of patterns more and more effective. His letter, written upon April 27th, 1917, enumerates all the objects which dazzle-painting still aims for. The scheme was approved by the Admiralty on May 23rd, and shortly after he began his first experimental ship, *The Industry*.

*The Industry* was painted at Devonport in under forty-eight hours. At the same time there were two other experimentalists working on the invisibility theory; and, curiously enough, just as the final trials of their efforts, which had covered weeks of labour, were pronounced failures, the newly painted *Industry* steamed above the horizon. The contrast was too great. The scheme of dazzle-painting was approved, and first with a few transports, then with more, until finally the whole of the mercantile marine, all the ships engaged in convoy work, and a good many of the scouting cruisers and aeroplane carriers; in fact, all the ships especially susceptible to submarine attack were painted. It is interesting to know that the pattern on *The Industry* was never changed, and right up to the end of the war, and running through quite dangerous seas, she escaped all torpedo attack.

The chief drawback to dazzle-painting lay in its advantage. It became obvious to the German submarine commanders that a ship which was worth dazzle-painting was worth attacking, and so a tendency would be created to estimate dazzle-painted ships as of superior value to those which yet remained grey, and so make them more liable to concentrated attack from those more ambitious German captains who

risked the difficulties of the task to gain a superior quarry. Thus at the earlier stages of the scheme it was exceedingly difficult to gain any real data about the actual sea value of the work, though constant reports from naval and merchant captains showed that in many cases great deception was caused by the painting—and, of course, German submarines captured would be exceedingly reluctant to admit its value in the almost inverse ratio of its real usefulness. The ramming of a submarine by the *Olympic* recently recounted in the papers, however, tends to prove the real value of dazzle, as also the growing unanimity of favour which it has found with merchant captains who are notoriously conservative in sea matters. In the case of the *Olympic*, it will be remembered that the submarine was discovered just under the bows of the ship. It may be judged from this that the commander had estimated that the ship was steering on a much wider course. The dazzle-painting of the *Olympic* was designed to produce this effect. The design on the model of the *Olympic* here reproduced is a modern variant of the one she then carried.

Now as to the method by which these weird schemes are evolved. It would obviously be impossible to make a separate design for every one of the ships trading in the English mercantile marine, so they have been divided into a number of types—the type dependent upon certain marked differences in construction and length. These types covered more or less any variation of ship which could be found, and the dazzle officers at the various centres fitted these plans to the ships which came beneath their control. These types were modelled in wood about nine to twelve inches in length by three expert model makers. The models were then dazzled by the designers and tested in the theatre. This theatre consisted of a long sea-tinted platform in which were let turntables at various ranges, and at the back a canvas screen painted to approximate a normal sky value. At the observing end of the table a periscope permitted observations to be made as if from an actual submarine, and from the length of model and the distance of the turntable ranges were calculated. The model was tested, altered, tested again upon various bearings, till it was judged that a maximum amount of distortion and disguise had been produced, and then from the model transferred to a type plan by a large staff of lady artists. From the type plan the painting was carried out on the actual ship. In the case of special ships, special models had to be made.

The success of dazzle-painting was such that it was adopted by the French and Italian Governments, and after a visit of Lieutenant-Commander Wilkinson to the United States, by the American Shipping Board.

Of course, as time went on, and the practical results of the experimental work went on, design improved until, from the blobby effect of *The Industry*, Commander Wilkinson brought it to the tigerish effect of the *Olympic*, which is one of the latest developments. This does, to a certain extent, combine with the distortion an amount of low visibility; but it must be insisted that the chase of actual invisibility is a myth which will never be solved.