

The Navy designing-room, where the little wooden models were given their experimental coats of deceptive paint. Lieutenant Warner at the left.

Fooling the Iron Fish

The Inside Story of Marine Camouflage

By Everett L. Warner

Formerly Lieutenant, Construction Corps, U. S. N. R. F.

MARINE camouflage would never have proved such an enigma to the public had it not been for an ingrained conviction that it was similar to the art of concealment as practiced on land. The two have almost nothing in common. Imitation plays an important part on land, but it never enjoyed anything but a minor rôle in the work upon the ships. Even to-day there are a large number of people who persist in thinking that the conspicuous patterns, which look to the uninitiated like a cubist's dream, are intended to simulate clouds or waves when seen at a suitable distance, and so render the ship invisible.

The name "dazzle painting," as the ultimate type of marine camouflage was christened in England, in order to distinguish it from painting aimed to reduce visibility, only served to add to the existing confusion, and many persons conceived the idea that its purpose was to dazzle the eye and make vision difficult.

On the contrary, the purpose of this type of painting was primarily to deceive the

submarine commander as to the actual course that a vessel was steering and so cause him either to miss his shot or to learn that he had taken up a wrong position from which to make it. This deception was secured either by concealing the important structural features of the ship so thoroughly that it was difficult to make any estimate of her course whatever or by a skillfully designed pattern to give the impression of an apparent course considerably at variance with the true course.

To attain either of these results it is obvious that the delicate colors employed in attempts at low visibility must be discarded in favor of strong contrast. This was a daring innovation in its application to ships, but the basic principle, which is to alter form rather than to conceal it, is not altogether unfamiliar. It has long been practised in the realm of feminine wearing apparel, and some of our most successful camoufleurs have been among the ladies. When a woman appears on the street dressed in vertical stripes, she is certainly not trying to be invisible, but it is a safe guess that she is trying to give

the impression of a figure more slender than she actually possesses, and she is usually quite successful. In the later British "zebra" period this identical device was employed on ships—vertical lines to raise the apparent height of certain parts and horizontal lines elsewhere to give the opposite effect.

An examination of the file where suggestions forwarded to the Navy Department are kept sheds a good deal of light on the public attitude toward camouflage and clearly demonstrates that few people understood exactly what we were doing, or, if they did grasp the general purpose, they thought that the patterns were applied in a haphazard fashion without any underlying principle of design. A very large proportion of the communications were concerned with imitation of natural effects, and there was quite a school of inland camoufleurs who persisted in trying to show an analogy between birds or animals and an 8,800-ton steel ship, and they were not easily persuaded that the protective coloration suitable for a partridge squatting motionless in the brush could hardly be made applicable to a

fooling the iron fish

Everett L. Warner (1919)

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Originally published as "Fooling the Iron Fish: The Inside Story of Marine Camouflage" in *Everybody's Magazine*, November 1919, pp. 102-109.

Above The title page of Warner's article as it appeared originally in *Everybody's Magazine*. The camoufleurs in the photo include (left to right) Everett L. Warner, Frederick Waugh, John Gregory, Gordon Stevenson, Manley K. Nash, and M. O'Connell. On the wall above Warner's head, there is a sign that reads "Keep It Simple."—Ed.

"I was in New York a few days ago, and saw the *Leviathan*—once the *Vaterland*, and the greatest ship afloat...

But she did not look like the *Vaterland*.

She was camouflaged.

She was painted after a cubist fashion in great patches of blue and white and neutral color so that at a distance she did not look like a ship..."

William Eleazar Barton, *Blue Stars and Gold*. Reilly and Britton Company, 1918, p. 50.

• Throughout WWI, in American magazines and newspapers, there were countless references—nearly all of them derisive—to women's make-up and clothing styles in relation to ship camouflage. For an especially vivid example of this, see elsewhere in this book Alon Bement's article called "Camouflage for Fat Figures and Faulty Faces." Perhaps this was fueled in part by resentment of the Women's Suffrage Movement, which, with the passage of the 19th Amendment in 1919, enabled American women (at last) to vote and run for office.—Ed.

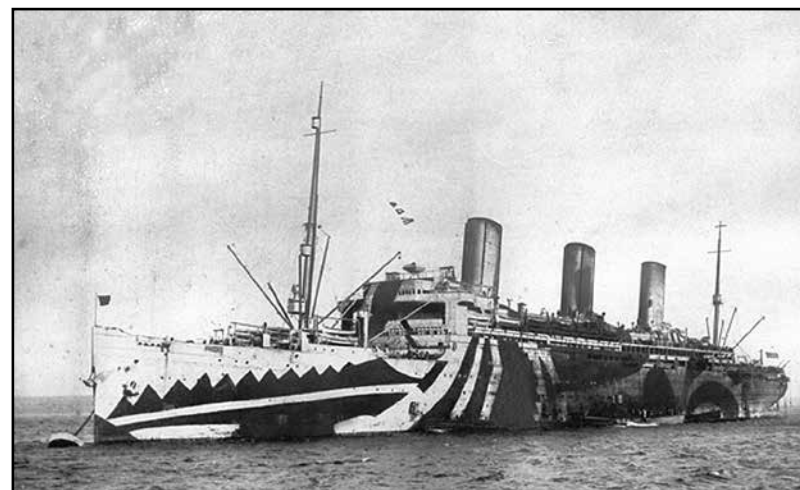
•• It appears that Warner is talking about proposals by Abbott H. Thayer, who believed that white ships are the least visible on cloudy days. The huge canvas was a shade for use on brightly sunlit days. For more about this, see Thayer's essay on "For Low Visibility the Best Color is White."—Ed.

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Above This huge American troop carrier, appropriately called the USS *Leviathan*, had initially been a German ship, the *Vaterland*. Following its confiscation, it became one of the first American ships to be camouflaged. According to one source, its magnificent disruptive plan was designed by the master and originator of dazzle-painting, British camoufleur Norman Wilkinson. But a biography of American artist Frederick Waugh attributes its design to him. Who knows what to believe, but it's possible that both are right. Prior to the war, Waugh had spent a number of years painting in England, and surely he knew Wilkinson, since both were prominent marine artists. Perhaps they designed it together.—Ed.

A very prominent authority on land camouflage submitted to the Department two models, in one of which invisibility was assured by swathing the entire ship in a net, and in the other by a huge spread of canvas painted to imitate a cloud. •• The idea of the USS *Leviathan* floating away unseen on the horizon disguised as a billowy evening cloud is a very poetic thought—if you have never seen the *Leviathan*.

This pleasing concept of a cumulus three-stacker must take a second place beside the suggestion from another source, which was for nothing less than a veritable floating island. A rocky island with pine trees and a lighthouse



Above Secretary [of the US Navy Josephus] Daniels at the periscope of the testing theatre where the little model ships were studied as if from a villainous submarine, except that here the "sub" commander could point his victims where he pleased and change conditions of light and backgrounds of sky and water at will. —ELW.

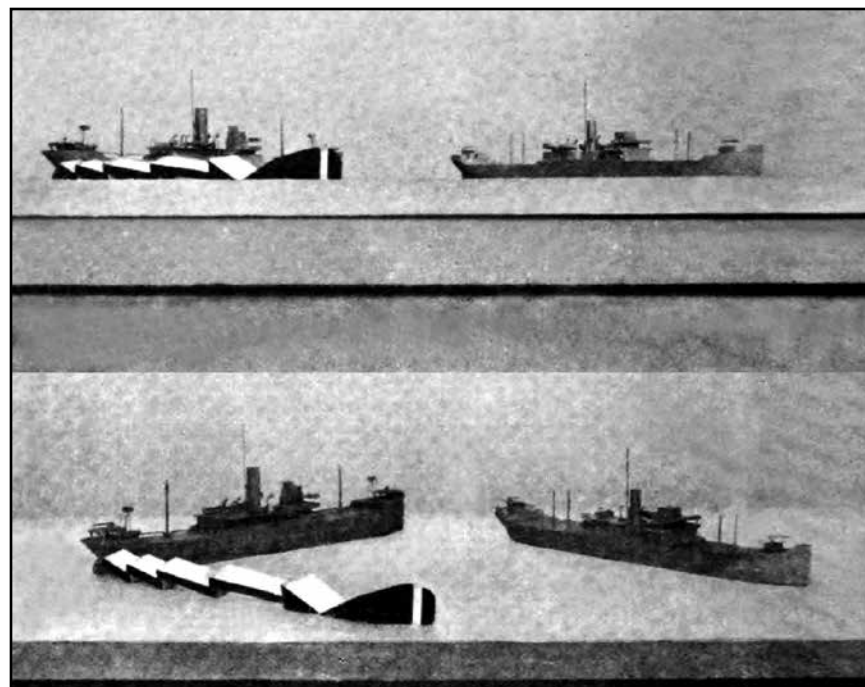
"...any New Yorker who wants to inspect its [the US Navy's camouflage] experiments for himself has only to take a ferry boat trip across the harbor and on almost any bright day. There he will see at anchor, or coming in, or going out, numerous ships whose painted sides reveal such wild extravagances of form and color as make the landsman open his eyes with amazement and mystification."

Anon, "Plenty of Camouflage on Vessels in New York Harbor" in the *New York Times*, January 20, 1918, p. 63.

moving majestically along the Atlantic steamer lanes was well calculated to startle the U-boat commander, and it needed only an ingenious arrangement for sending the vessel's smoke out through the lighthouse keeper's chimney in order to mystify the Hun completely and bring him to the surface to "shoot the sun" for his bearings.

More than one person, with a fine disregard for the taxpayer and a desire to win the war at any cost, recommended that ships be nickel-plated, and the suggestion that vessels be entirely covered with mirrors came from quite a number of different sources. It was claimed that such a surface would reflect the surrounding sea and sky, and, altering with every changing effect of the day or night, create absolute invisibility. The advocate of this scheme had at least grasped one of the fundamental difficulties of low visibility painting—its lack of adaptability to changing effects, but they understood the problem better than they did the solution.

Passing over the practical difficulties of loading steel rails or pig iron into a ship completely covered with mirrors, there still remains the fatal objection that mirrors do not work in the way this plan required, and, instead of reflecting the sea and sky behind the vessel, they would have reflected an entirely different effect from the opposite quarter of the horizon, alternately flashing sea and sky in the wrong places as the vessel rolled. A shiny surface has indeed proved so objectionable in reflecting the sun that the Navy has been trying to find a durable substitute for the present glossy paint.



Above (top) These two models, one with camouflage, the other without, seem to be going in the same direction, seen from the level of the submarine's periscope. (bottom) But they aren't—when you look down on them. The arrangement of little blocks cast the spell, and the pattern they form, if painted on a real ship, would likewise fool the periscope. —ELW.

One inspector brought forward the proposition to equip a vessel on each side with "a camera with a searchlight attachment" arranged to "throw shadows on the outsides of the ship that will represent the ocean waves, while the outline of the entire ship is kept in darkness."

Others recommended the painting of vessels to imitate whales or icebergs, and a particularly large number of suggestions were received involving some variations on the scheme of a destroyer painted on a steamer's side. The Navy had tried this out and discarded it long before these communications commenced to pour in, but the plan deserved special mention because it remained for a long time the public's conception of just what camouflage really ought to be. I saw it on the *Antigone* and I understand that it was also applied to the *Von Steuben*. The idea immediately captivated the denizens of the waterfront who saw the vessels broadside and did not realize that three or four points off the bow the distortion of perspective

destroyed all resemblance to a destroyer. It afforded the vessel no protection within the arc where it was most vitally necessary. Three destroyers apparently just leaving the steamer's side in pursuit of the submarine was a common variant of this scheme, but was never applied to any vessel.

Right As mentioned in Warner's article, the USS *Antigone* and the USS *Von Steuben* (shown here) had black silhouettes of accompanying ships painted on their sides. Courtesy Naval History and Heritage Command (NH 101626).—Ed.



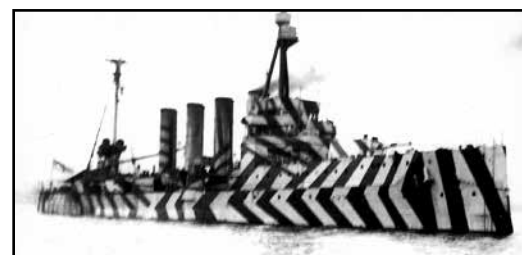
"On day nine at sea, [Ernest] Peixotto and [Wallace] Morgan's convoy was met by a dozen destroyers that were to escort them into port. The coloring of these warships caught Peixotto's eye; they were 'brilliantly camouflaged like wasps, queerly striped with black and white, with spots between of yellow, gray-blue, and water-green'—the softened tone of [Claude] Monet's paintings. 'Like wasps too they darted around us,' he wrote, 'zigzagging across our bows, dropping astern, watchful, then, with a burst of speed, forging up ahead again.'"

Peter Krass, *Portrait of War: The US Army's First Combat Artists and the Doughboy's Experience in WWI*. New York: Wiley and Sons, 2007, p. 18.

The history of marine camouflage can be acquired almost painlessly by the student, because there is none to speak of. It is said that Caesar during an expedition to the English coast disguised his vessels by painting them green and ordering the sailors to wear green clothing, and that Nelson at Trafalgar painted the port and starboard sides of some of his vessels different colors to increase the apparent number in his fleet. But except for a few isolated experiments, ship camouflage by means of paint never acquired any importance until the advent of unrestricted submarine warfare. By a pure coincidence camouflage as an important weapon of defense had its inception in the very same month that we entered the war.

Late in that month a British artist waited upon the Admiralty with a proposition that was destined to revolutionize existing theories in regard to the painting of ships. Up to that time the name of Norman Wilkinson had been a familiar one to that portion of the British

public that appreciates an ably painted picture of the sea, but beyond the limits of his own land few had heard of the artist and fewer still had seen any examples of his work. Before many months had passed designs from his hand had been observed in every part of the globe where the British merchant flag is flown, and so far reaching was his influence that ultimately the fundamental principles that he advocated were adopted by all of the great maritime powers among the Allies.



Left The HMS *Achilles*, a British cruiser, painted in a wasp-like scheme designed by Norman Wilkinson and his unit of camoufleurs in London.—Ed.

Lieutenant-Commander Wilkinson had spent a lifetime in the study of ships and the sea, and he quickly realized the futility of trying to find any color or combination of colors which would at once tend to decrease visibility at a distance and at more moderate ranges offer any sort of concealment or protection to a huge moving steel hulk pouring forth a certain quantity of smoke. He reasoned that since the ship would certainly be plainly visible for a considerable distance, possibly even located by her smoke when still below the horizon, there was nothing to lose by making her a little more visible. In his own words, since it is "impossible to hide a vessel, it does not matter how visible she is, providing her course remains a matter of question to the attacker."

The correctness of his conclusion as to the value of course distortion received a striking confirmation when at a later date the confidential manual issued by the German submarine school at Kiel for the instruction of its student officers came to light. Here we find the situation summarized in the following words: "The determination of the track angle, or (what amounts to the same thing) of the enemy's course, is the foundation of the whole art of firing submerged."

It was, however, in the microphone that Lieutenant-Commander Wilkinson found the most powerful argument against low visibility painting. The submarine was peculiarly well adapted to the use of this underwater listening device, since with the exception of submarine chasers, which were of too shallow draft to be easily torpedoed, it was the

Facing page (top) It's easy to see the direction in which the gray model is headed, but the camouflaged one will keep you guessing, though it is on exactly the same course.

(bottom) This shows how the painted design on the deceitfully moving ship was worked out. It imitates the look of the model cut in sections and twisted.—ELW.

"Supervision of all camouflaging of merchant vessels for the Shipping Board will be exercised by the Navy Department in the future...

'The Navy Department will prepare the types and designs of camouflage painting for general use and, where practicable, design of camouflage painting applicable to particular ships. These designs will be furnished the district camoufleurs...The district camoufleur shall not change the principle of the design furnished by the Navy Department, but may adopt such design to suit the particular ship which is being camouflage painted.'"

"US Navy to Supervise Camouflage" in *Nauticus: A Journal of Shipping, Insurance, Investments and Engineering*. Vol 1 No 2. June 8, 1918.

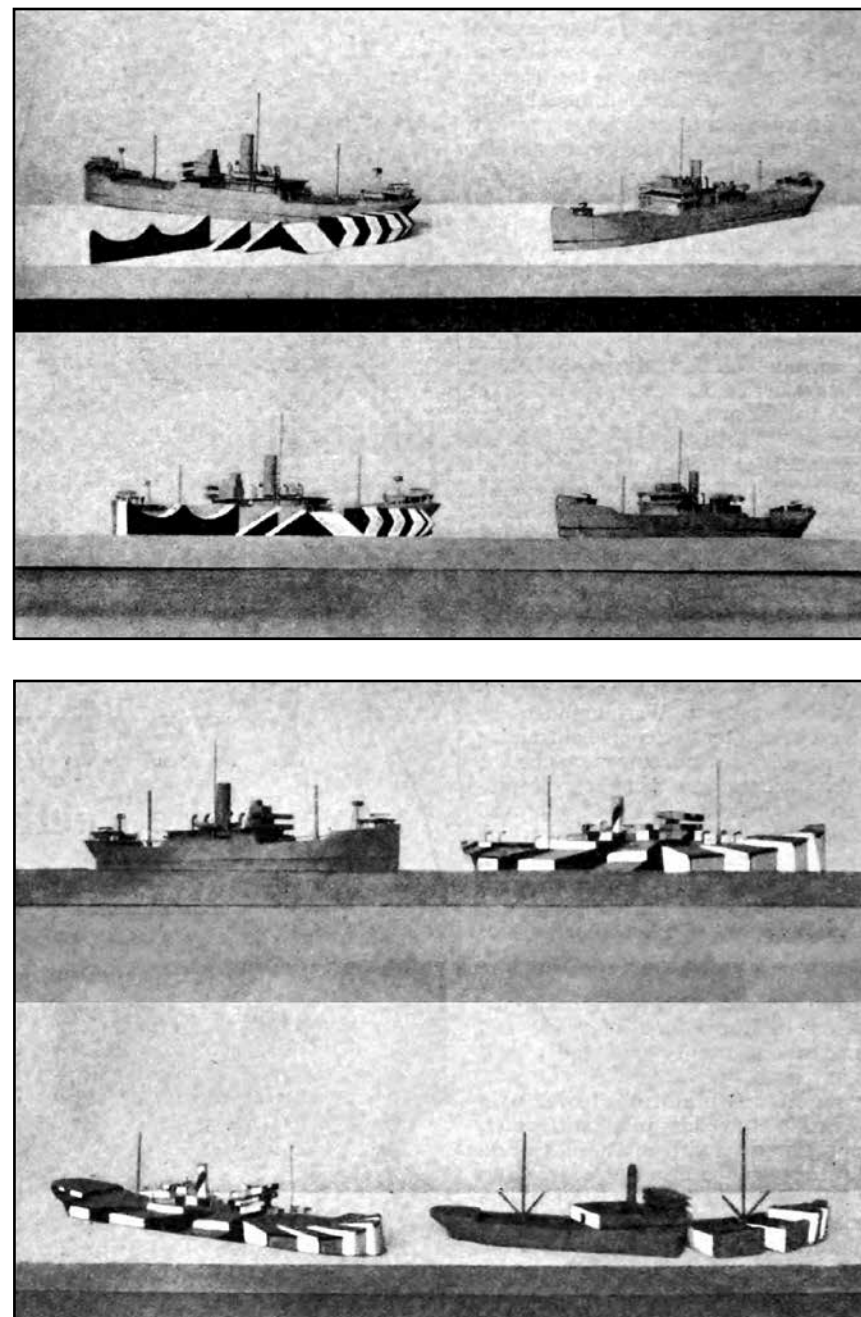
only craft that dared to remain motionless in the danger zone. Under such ideal listening conditions an approaching steamer might often be heard, and her approximate position determined, at distances greater than she could be seen.

During the time that the work in England was passing through the earlier stages of its development we were going through a period of this experiment in this country.

While the five camoufleurs sanctioned by the Shipping Board were endeavoring to solve the problem by applying various designs and patterns to our merchant ships, the Submarine Defense Association approached the subject from the theoretical side. A series of readings were made on flat profile models to determine the relative visibility of various colors and patterns, but up to the time that the Navy Department took charge of camouflage painting in this country the Association had no opportunity to test its conclusions by observation on a ship under sea conditions.

Nearly all of the experimental work in this country had been aimed at the reduction of visibility, but the men of the Navy were gradually becoming convinced of the futility of further effort in that direction.

In January 1918, the Navy Department decided to adopt the principles of the dazzle system, and organized a Camouflage Section in order to develop the system for use on our vessels. Lieutenant Van Buskirk was placed in general charge to handle executive matters under the direction of the higher officers of the Bureau of Construction and Repair. Lieutenant Loyd Jones was put at the head of the Subsection





Above Of the US Navy camouflage artists at the Design Subsection in Washington DC, the most ingenious may have been Frederick J. Waugh (1861-1940) (he was nearly 60 years old when, at Warner's request, he agreed to be a camoufler). *Facing page* Waugh's design for camouflaging the SS *West Mahomet*, showing the wooden model (top) and the actual painted ship (bottom). —Ed.

• Understandably, there seems to have been some resentment among the US Shipping Board camouflers toward the US Navy's insistence on its own artists designing all ship camouflage, both military and merchant. In a book by civilian camoufler John D. Whiting, who worked in New York under William Andrew Mackay, there is mention of Mackay "quietly evolving his own school for camouflers," without informing the Navy. —Ed.

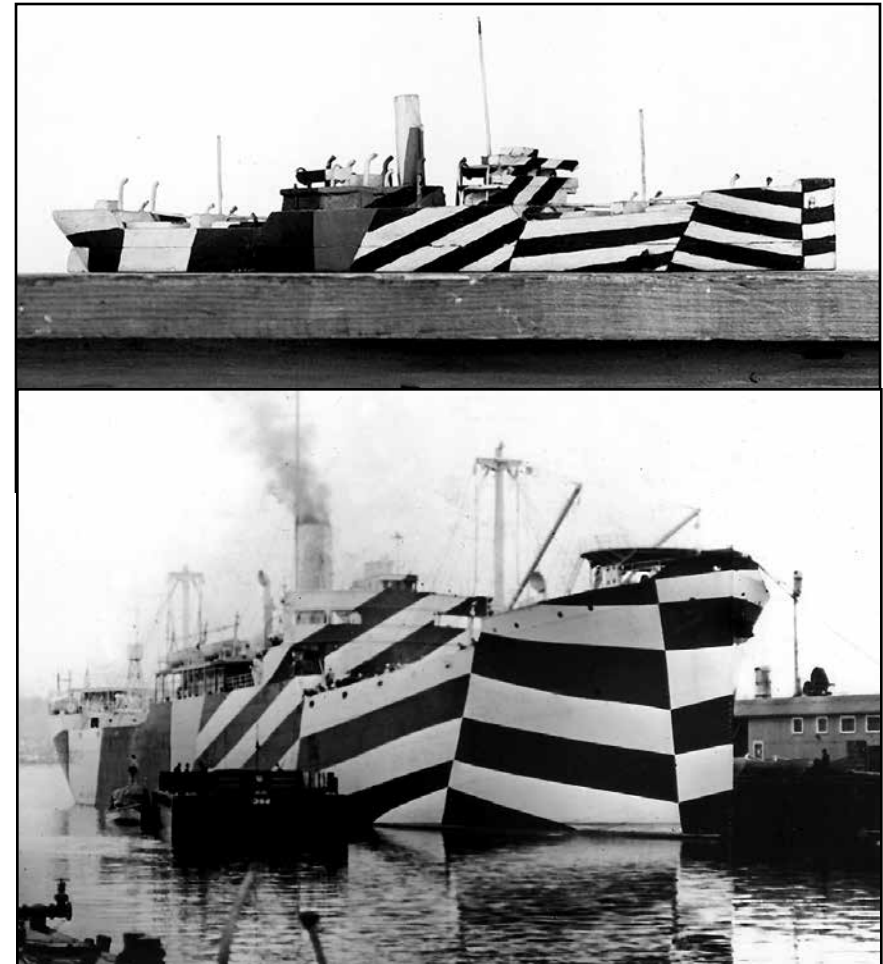
•• Two of the artists assigned to make sketches of camouflaged ships were Thomas Hart Benton and Louis Bouché. —Ed.

of Research located in Rochester, and the writer was placed in charge of the Subsection of Design.

An arrangement was reached with the United States Shipping Board whereby all existing types of camouflage were to be discontinued. The Navy undertook to supply dazzle designs for all American vessels and the Shipping Board agreed to organize and maintain at the ports a force of camouflers whose duty it should be to supervise the application of these designs to the vessels.

The Navy worked so quietly and under such close censorship that few people were aware of the leading part that it was playing in the work. There exists even today a very widespread impression that the designs which the Shipping Board camouflers applied to the ships originated with them. This belief is entirely without foundation.* All designs were supplied by the Navy, and while it is true that at several of the ports the camouflers built small testing theatres copied after ours and did a certain amount of experimental model painting, this was wholly for their own education or relaxation, and none of the dazzle designs so made was ever authorized for application to any ship.

The Office of Naval Intelligence undertook the task of supplying the Camouflage Section with photographs and sketches made in all the larger ports of the United States,** and in this way we were kept in touch with developments in foreign design and with the way in which the Navy designs were being carried out on American ships. It was essential that the camouflers should exercise their own judgment in the application of a type design



to a ship that was structurally different, and we soon discovered that in this work of adaptation the value of a pattern was often seriously impaired by a failure of the camoufler to understand the principle of the design.

To correct this situation it was arranged that three of the Shipping Board camouflers should come to Washington every week for a brief intensive course of training in design. The camouflers were for the most part artists and architects of professional attainment, and we approved and issued several excellent designs which they produced while working in the Design Section in Washington.

• For Kenneth MacIntire (1891-1979), this and his earlier camouflage training with William Andrew Mackay were probably high points in his career. A Boston-born painter, he moved to California in the 1930s, and spent the remainder of his life painting portraits of celebrities and race horses.—Ed.

"...it was precisely when our work was most firmly grounded on the book of Euclid that the uninitiated were the most positive that the ships were being painted haphazard by a group of crazy cubists."

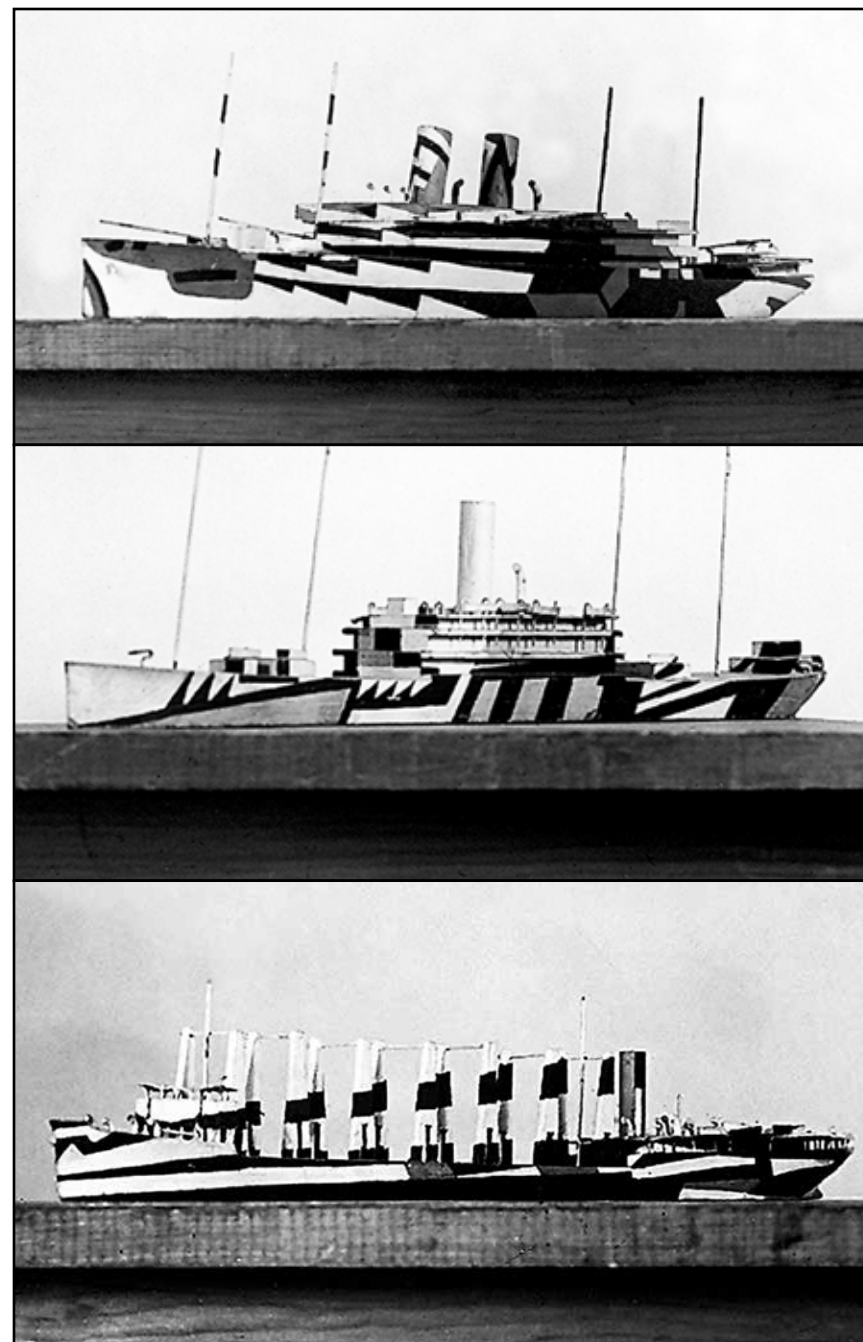
Everett L. Warner, in this essay.

Facing page These photographs (probably never published before) are of three elaborately painted models made by the US Navy's Design Subsection (c1918), under Everett Warner's direction. By making wooden models, the proposals could be tested in an observation theatre, equipped with a periscope and turntable, to determine their effectiveness. The three ships shown here include (from top to bottom) the USS *America*, a "Nansemonde type" (according to Warner's lecture notes), and the USS *Proteus*.—Ed.

The work began in the model-making room, where about a half dozen skilled men under Ensign Kenneth MacIntire• were kept constantly busy in the production of miniature wooden models, which were accurately made to a fixed scale from blueprints of the vessels required. The reader may get a general idea of the size of these models from the dimensions of the President's ship, the USS *George Washington*. It was one of the largest of them, and measured about twenty-two and a half inches in length.

The model was next turned over to a designer, who studied its peculiarities and, after applying a tentative pattern, carried it into the testing theatre for further study. Here we had rather elaborate equipment consisting of a periscope and a turntable placed at such a distance from it as to represent a distance of two thousand seven hundred yards, according to the scale we had established for our vessels. Different types of skies were painted on a strip of canvas which was so arranged on rollers that the designer, without leaving his post at the periscope, could vary the background and at the same time by means of the turntable place his vessel at any desired angle. Sometimes his first tentative design proved sufficiently deceptive to be made permanent with hardly any changes, but more often repeated changes were necessary before the design was approved and the painted model was handed over to Ensign [R.J.] Richardson, who had charge of the drafting room and was responsible for transferring the patterns to previously prepared special or type plans.

Reversed perspective was the most important aid to deception which we used at first, and



"... there was great activity both on land and in the spacious harbor of Chesapeake Bay. Here, the warships, that were anchored off shore, awaiting the time of embarkation of United States troops, made a profound impression on me. These great floating monsters could, also, be seen maneuvering, from time to time, the onlooker not knowing for what purpose.

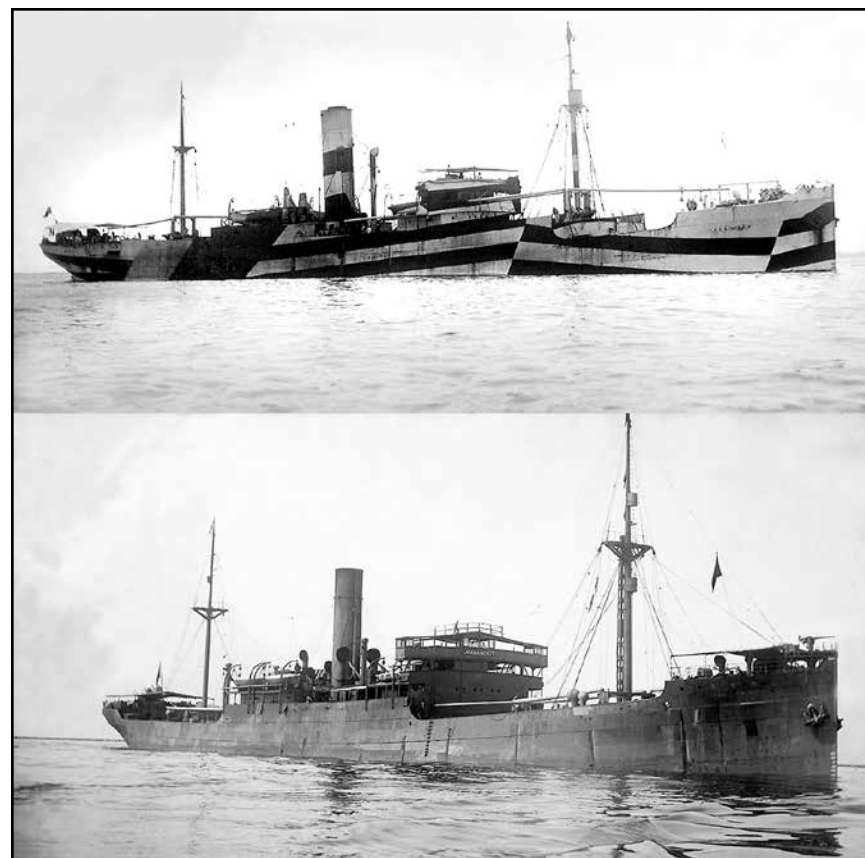
Here, I got my first vivid impression of the meaning of camouflage. The stripes, the saw teeth, the confusion and perplexity of light color and design, peculiar markings of the warships, that appeared more like a Japanese puzzle, than like sea-going vessels, showed how deception is practiced in war; and that things are not what they seem..."

William More Decker, *Book of Meditations*. J.W. Clement Company, 1920, p. 164.

perhaps in the larger sense it may be said to have governed all of our patterns. Briefly to explain it in its most elementary form, let us suppose a vessel's side to be painted with black squares, the largest toward the stern and the others diminishing in size toward the bow. The human eye is so accustomed to the normal operation of perspective that if this vessel is viewed from some point off the bow we unconsciously assume that the squares are of similar size, and that, following the natural law of perspective, the smallest one is the farthest away from us. This gives us the idea that the bow is farther away from us than the stern, and that the vessel is heading away, when in reality it is steering in our direction.

That is reversed perspective in its simplest form in the realm of plane geometry, but we soon made excursions into solid geometry, and our development of design in that direction constitutes, in my opinion, the American contribution to the dazzle system. We had found that certain patterns and movements of line produced certain effects, and in casting about to learn the reason we realized that it was because these patterns gave the impression of being painted upon the surface of definite geometric solids placed in definite positions in regard to the eye.

I do not hope to explain this adequately in words, because, even brush in hand, it proved impossible to make it clear to the Shipping Board camoufleurs, three of whom came down every week to become more familiar with our designs, and I had to have wooden blocks in a variety of shapes made up for the purpose of demonstration.

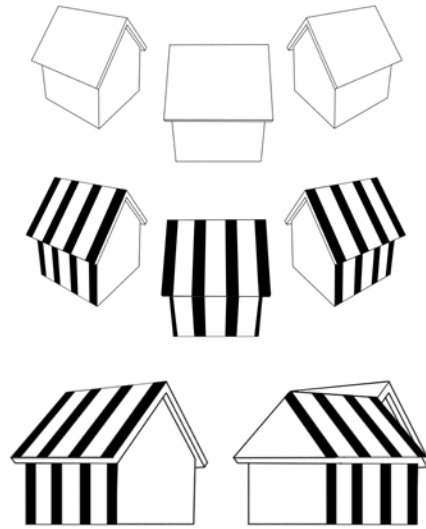


Above These two ships are similar, but not identical. One is dazzle-painted, while the other is monochrome "battleship gray." Together, they demonstrate the differences between the two systems, one designed to complicate the aim of a U-boat gunner (with little if any attempt to reduce visibility), while the purpose of the other is low visibility. In the US Navy's Camouflage Section in WWI, the subsection of artists in Washington DC nearly always favored dazzle-painting, while the scientists at Eastman Laboratories, as experts on illumination, tended to favor reduced visibility. Physicist Loyd A. Jones even invented a "visibility meter," as part of his research of this. See US Patent No. 1,437,809.—Ed.

"Over in the Cunard and French docks they saw the first examples of the 'camouflage' they had heard so much about; big vessels daubed over in crazy patterns that made the eyes ache, some in black and white, some in soft rainbow colors."

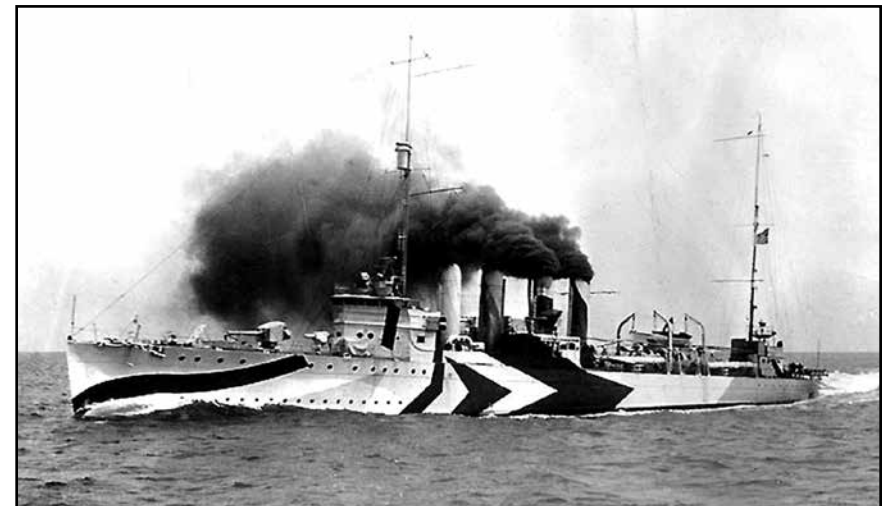
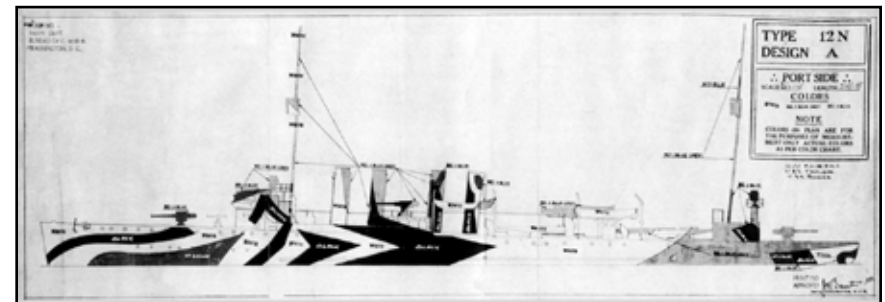
Willa Cather, *One of Ours*. New York: Knopf, 1922, p. 272.

Facing page The top photograph is a view of the drafting room at the Design Subsection of the US Navy's Camouflage Section, in Washington DC. Note the inclusion of women. Everett Warner is standing in the mid-ground (the second person right of the post), conversing with a camouflleur as they look down at plans on the table. Further back, behind Warner, is Harold Van Buskirk, the executive in charge of both this and the Research Subsection. At the center of front table is Raymond J. Richardson (a former student of William Andrew Mackay), who was in charge of the drafting room. Near the right end of the third table back is Manley K. Nash. In the very back row, resting his chin on his hand, is Frederick Waugh, while in front of him (behind Nash) is John Gregory. The person on the far right, holding the larger ship model, appears to be Kenneth MacIntire (another Mackay student). Below that photo is a diagram for the camouflage of one side of a ship (these were reproduced as large colored lithographic prints, printed by the Geological Survey and sent out to district camouflieurs), with a note that it will be applied to three ships, the USS *Fairfax*, USS *Taylor* and the USS *Boggs*. Below that is a photograph of the USS *Fairfax*, with its camouflage complete.—Ed.



Above The diagrams of striped building forms on this page are not Warner's originals, but comparable reconstructions of them. As he explains in this essay, a pattern on the surface of a dimensional form can better enable us to see its shape—or, if the pattern contradicts the form, as in the last drawing on the bottom right, it can prevent us from seeing the shape. In designing ship camouflage, Warner's group of artists made frequent use of this and other distortion techniques.—Ed.

For example, a block shaped like a gable-roofed house served to illustrate the widely used herringbone pattern. Black and white stripes were painted upon the roof, following the lines of the rafters, and were therefore normal structural lines on such a form. When our little house was laid on its side, the herringbone pattern, which looks like a row of service chevrons, did not appear until the block was turned away from the observer in one direction or the other. That is the reason why the herringbone pattern painted on a flat surface that is broadside to the observer tends to turn that surface away into entirely another plane. It is simply because the herringbone

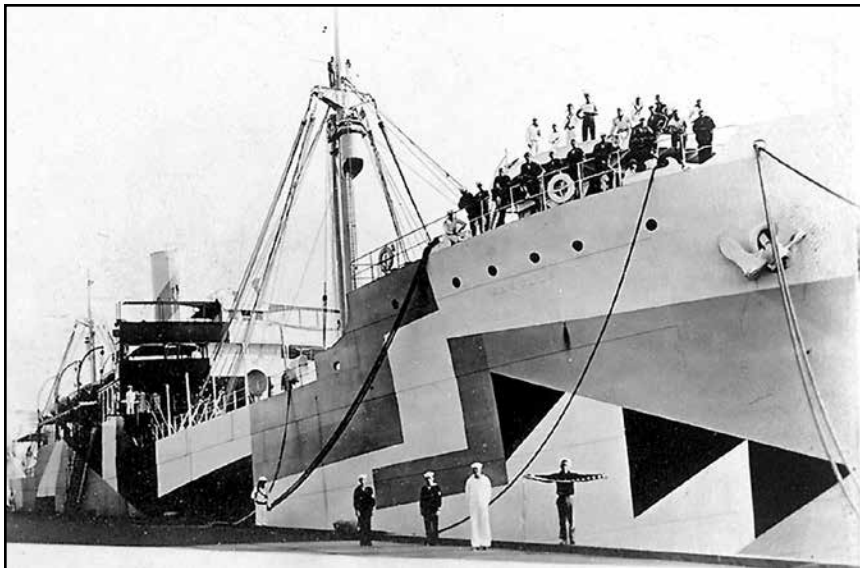


We passed a Belgian relief ship so beautifully *camouflagé* that it looked twice as far off as the Captain said it was.

Arthur Everett Shipley, *The Voyage of a Vice-Chancellor*. New York: G.P. Putnam's Sons, 1919, pp. 25-26.

pattern is characteristic of a definite geometric form only when that form is turned away.

We went back and reexamined our earlier designs in which the course distortion had been obtained by the method of trial and error, and we found that all of the best ones could be explained in one of two ways—either by arbitrary geometric forms or by an analysis of the structural forms of the ship itself.



Only yesterday, an enthusiast on cubism—by the way fittingly enough employed as a ship's camouflage designer—tried to prove to me that the movement was not a new one, but as old as Byzantine art...

Donald Maxwell, *The Last Crusade*. John Lane, 1920, p. 6.

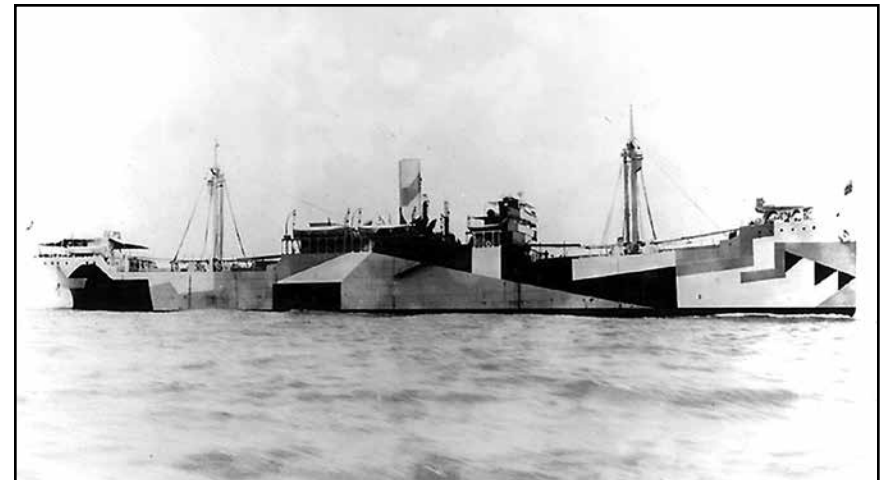
Above and on the facing page are two views of the spectacular dazzle-painting for the USS *Wakulla* in 1918. Courtesy of US Navy History and Heritage Command (NH 104461 and NH 105612).

As an experiment, we built up some designs by laying out some groups of blocks, and found that when a plain gray ship model was placed at any angle behind one of those rows of blocks it invariably appeared to take the same direction as the blocks.

Naturally at this period the designs which we issued showed a greater tendency toward the

liberal use of obviously geometric forms, and I dare say that it was precisely when our work was most firmly grounded on the book of Euclid that the uninitiated were the most positive that the ships were being painted haphazard by a group of crazy cubists.

The rather common belief that the Navy battleships were dazzle-painted is without foundation. The destroyers and cruisers were painted in that manner because they were engaged in convoy duty, and camouflage for course distortion was designed primarily as a defense against submarine attack. The battle fleet, however, remained in war gray, though experiments were continued in the hope of diminishing the visibility of this paint.



One of the things that has made the study of reduced visibility such an attractive pursuit is that everyone can be right. Every color will prove low visibility some day or against some background.

When Abbott Thayer urged white paint for the fleet, he was perfectly right. It is easily the best low visibility for cloudy weather, but it is exceedingly bad in most bright weather.

It is equally true that black under certain conditions would prove the best paint, though we have not yet been able to use it in the manner advocated by a Pennsylvania woman in what is perhaps the quaintest proposal for ship camouflage that ever came to the Navy Department. She suggested that the entire vessel, even the clothing and faces of the crew, should be painted black. Her idea was that this would form "a mirror background" and the periscope spy would see only his own face in the glass. As a further

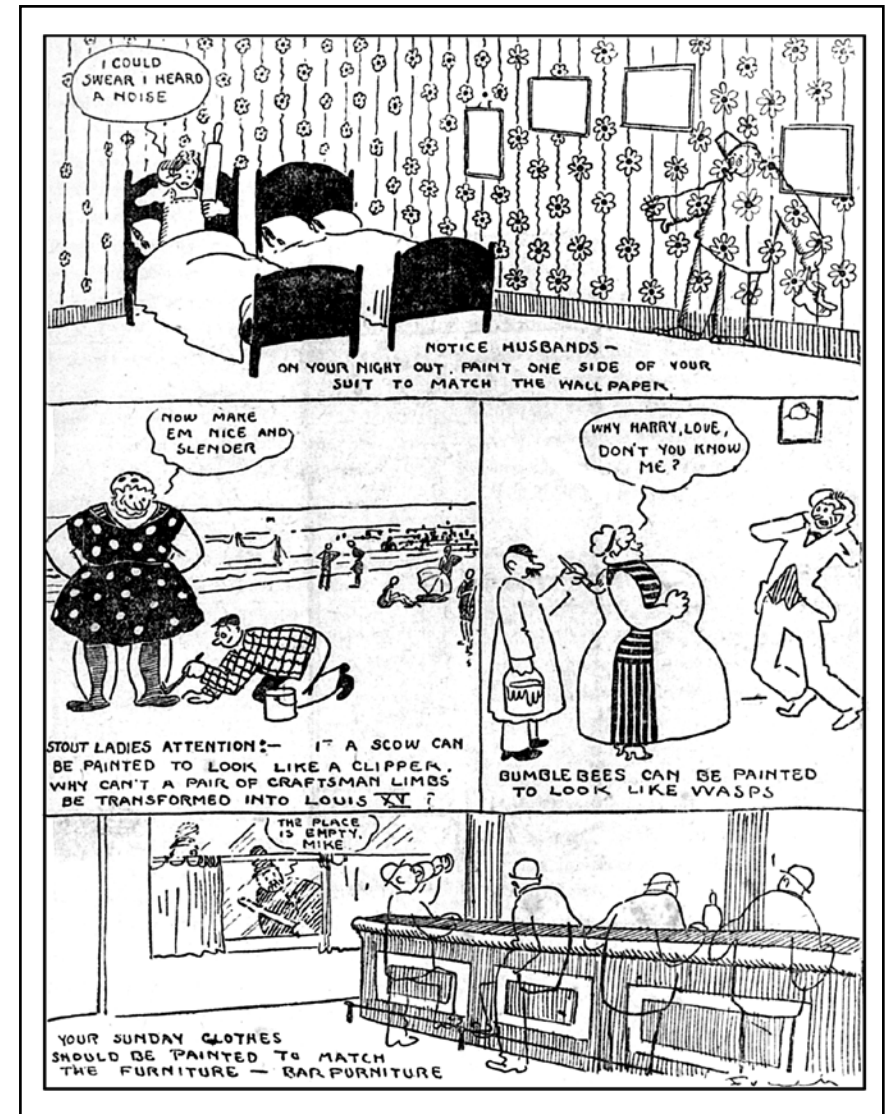
"[WWI ship camouflage] is so incredible to rational thinking that even its remoter manifestations seem grotesque. One thinks of it as of a prodigious joke, in which the world conspires to conduct the neophyte through some solemn farce of preposterous initiation. To the summer tourist, what could be more unreal than the ostentatious secrecy of sailing, the ships painted in whorls or cubes or checkers, as a child would paint his Noah's Ark or a vorticist his exhibition canvas; the cruisers, destroyers, balloons, and hydroplanes enveloping the convoy; the passengers, with life-preservers on their shoulders, looking for all the world like stage figures in some masque of *Pilgrim's Progress*; and at night the blackened ports and the secret flashings from bridge to bridge, as if the ships were winking at each other in enjoyment of some monumental humbug?

Gradually the sense of illusion weakens. The decks, crowded with khaki, moving bands of gray-green topping the camouflage of the ship's side, grow very real."

E.S., "Impressions of the Fifth Year" in *The Atlantic Monthly*, December 1918, p. 808.

proof of the correctness of her conclusion she wrote: "Try to peer out of a window into the blackness of night, and you will see yourself mirrored in the glass," and she concluded her letter by saying: "Since the war began I have been lying awake for hours trying to think out a plan. This came like a flash and I hope you can make use of it. I have always felt that I must do something to master the submarine, and even if this does not meet with your approval I am not going to quit."

I was never tempted to laugh at this naive plan which she had discovered by experiments with a "poor twenty-five cent telescope," and which she offered to the Government with such an earnest, ardent desire to be of service. The labors of the highly trained scientific experts were no more necessary to the winning of the war than was the support of such loyal people, and when I have pictured to myself this mother peering out the window "into the blackness of night" awaiting the homecoming of her boys in khaki, it has always been with the earnest hope that she did not listen for their returning footsteps in vain. ■



Above Cartoon by Alfred J. Frueh (1880-1968) in the *New York World* on July 20, 1915. Notice that there is no use of the word "camouflage" here because the French Army had established the first Camouflage Section only a few months earlier. Originally from Lima OH, Frueh (pronounced "free") began his career as an artist for the *St. Louis Post-Dispatch*. He traveled in Europe in 1908-1909, studying with (among others) Henri Matisse and Theophile Steinlen. From 1925 until his retirement in 1962, he was a frequent contributor to *The New Yorker*. His papers are in the Archives of American Art.—Ed.