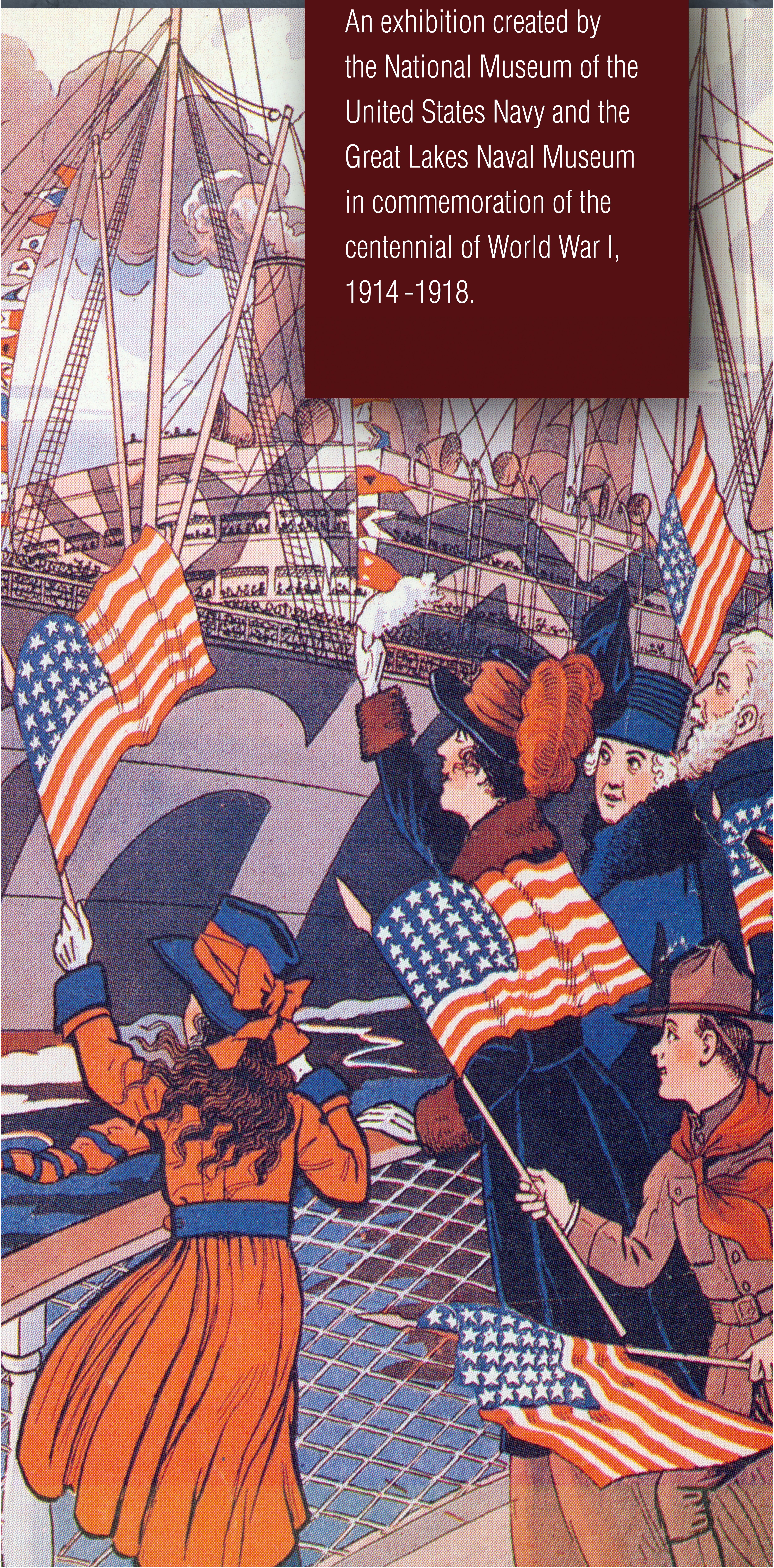
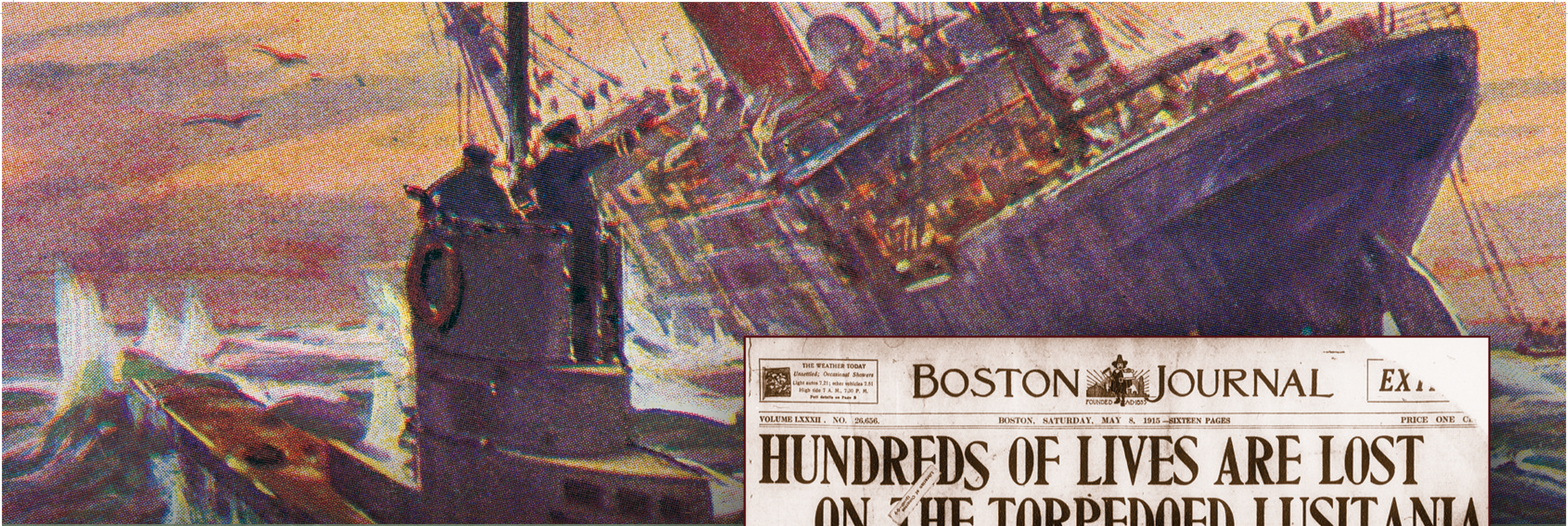


Deceiving the Eye

An exhibition created by the National Museum of the United States Navy and the Great Lakes Naval Museum in commemoration of the centennial of World War I, 1914-1918.





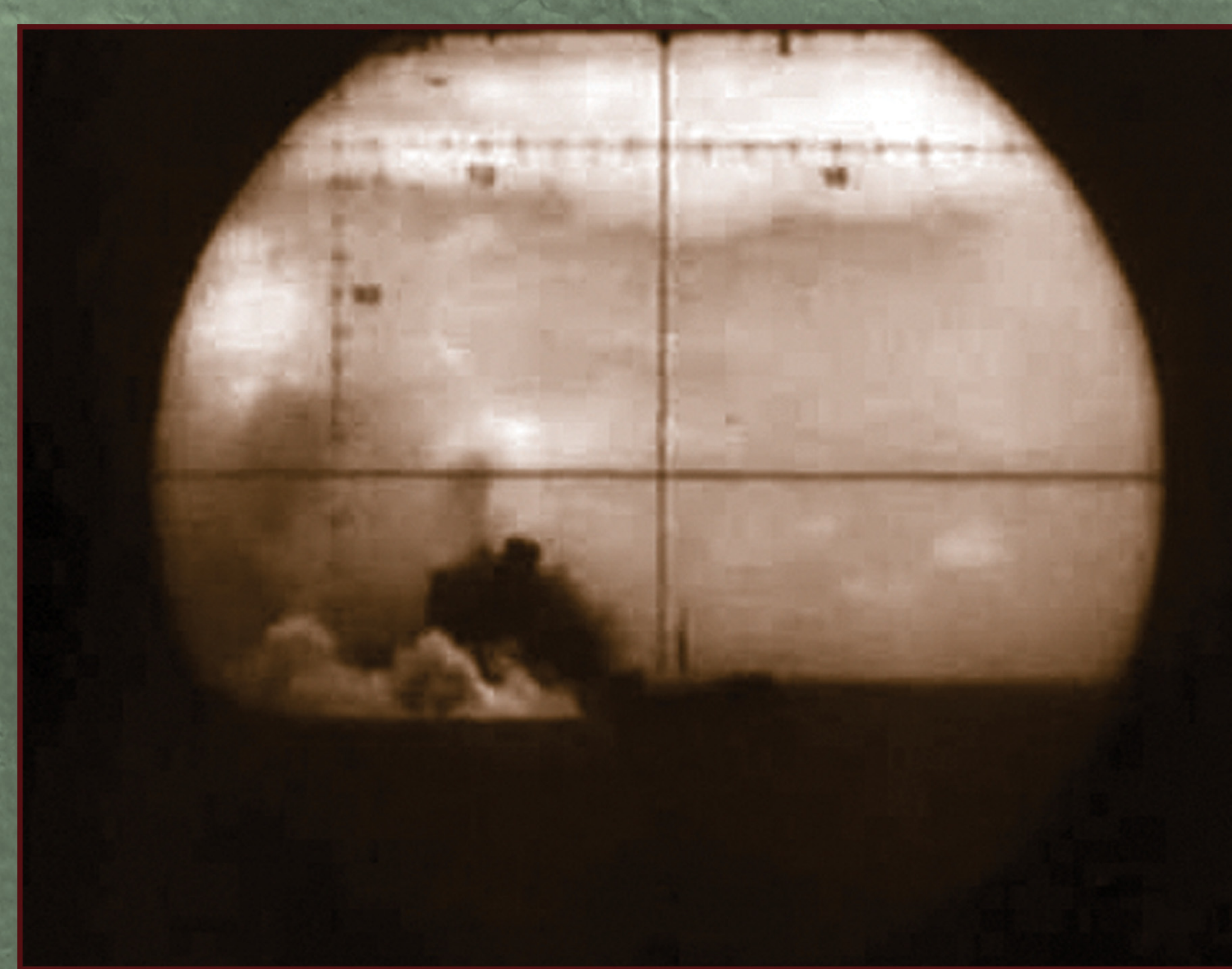
Unrestricted Submarine Warfare

By the end of 1914 the first offensives of World War I ended and armies on both sides began to dig trenches. The Western Front devolved into war of attrition; the first side to exhaust its manpower and resources would lose. To add pressure, Great Britain immediately established a blockade of German ports, which stopped ships from supplying Germany.

In response, Germany ordered its U-boat fleet to aggressively target the vulnerable merchant ships that supplied Great Britain with food and war material. The British Navy was unprepared to meet this new kind of threat, and it looked as if the U-boats would win the war for Germany.

However Germany's greatest weapon proved to be its downfall. In 1917, believing that Great Britain's will to fight was nearly broken, Germany released its U-boats from restrictions on attacking the American vessels that supplied the British; this act led the United States to declare war on Germany in April 1917.

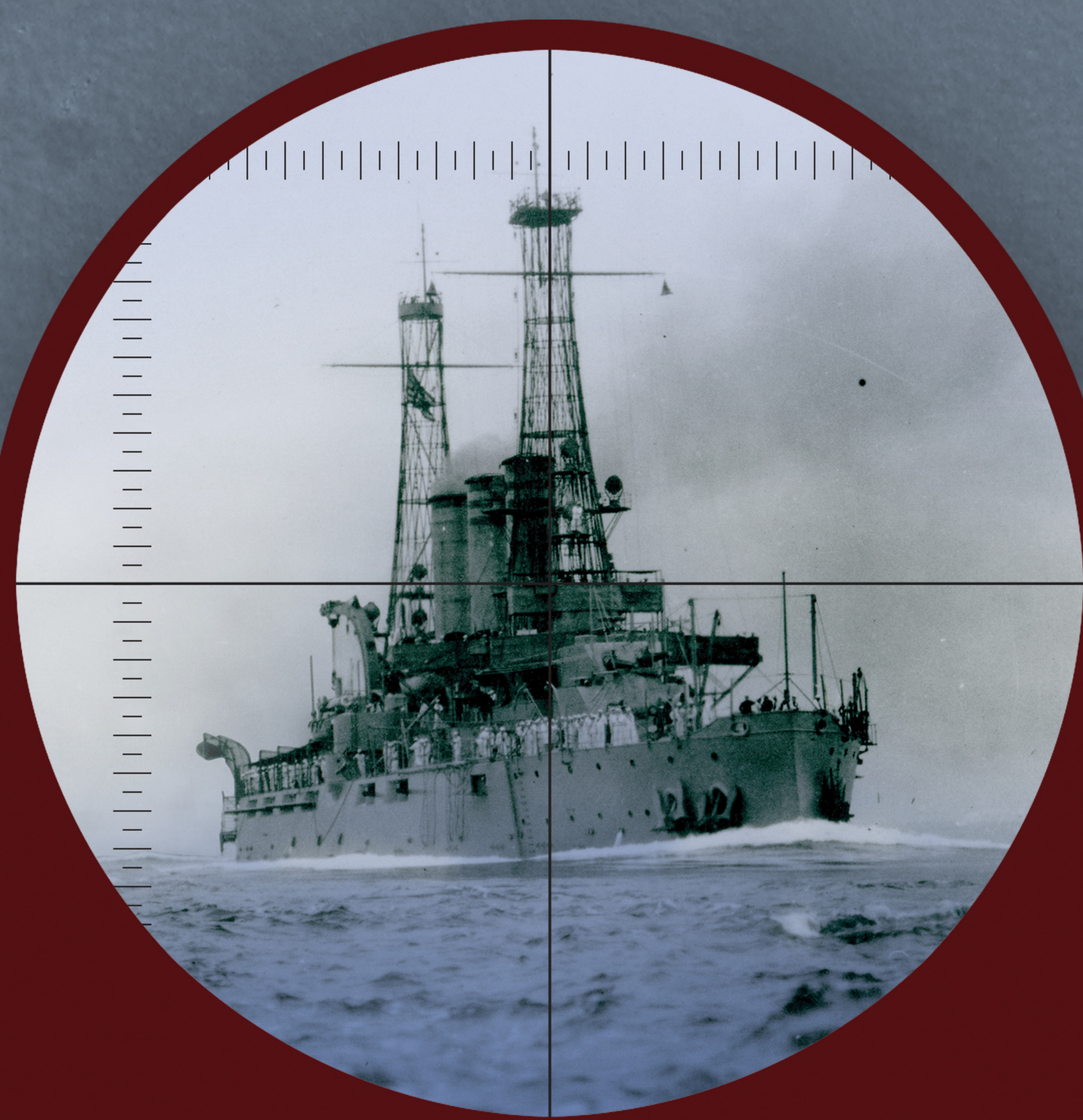
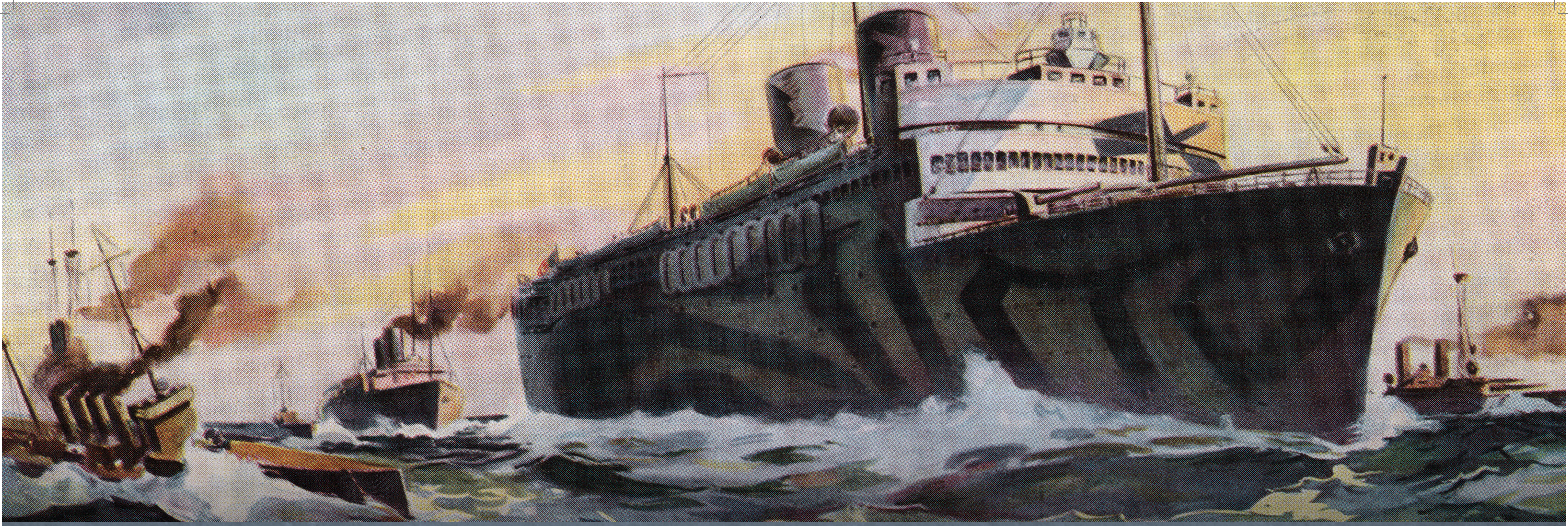
Although Germany's U-boat campaign was very successful, it claimed American lives in the process — most notably the sinking of RMS *Lusitania* in May 1915. Wishing to avoid armed conflict with the United States, Germany placed restrictions on which targets its U-boats were allowed to attack.



A rare photograph of a sinking Allied ship viewed through the periscope of a submerged German submarine. Remaining in this position, a U-boat was almost undetectable and could escape to attack again without warning.



A U-boat's gun team poses with their weapon, a 105mm breechloading rifle. To conserve vital torpedoes, which were the submarine's main weapon, U-boat skippers used the deck gun whenever they deemed it safe to surface.



The U-boat commander peering through his periscope at a distant ship would predict its course by determining its orientation from distinctive features such as its bow and funnels, and estimate the distance by comparing its apparent length to its actual known length. With experience, these simple methods were highly effective.



Razzle Dazzle camouflage made it difficult to determine which side of the ship the observer was seeing by distorting the apparent position of distinct parts of the ship. Until the ship came near enough for the observer to see through the camouflage, it was impossible to accurately judge the target's heading.

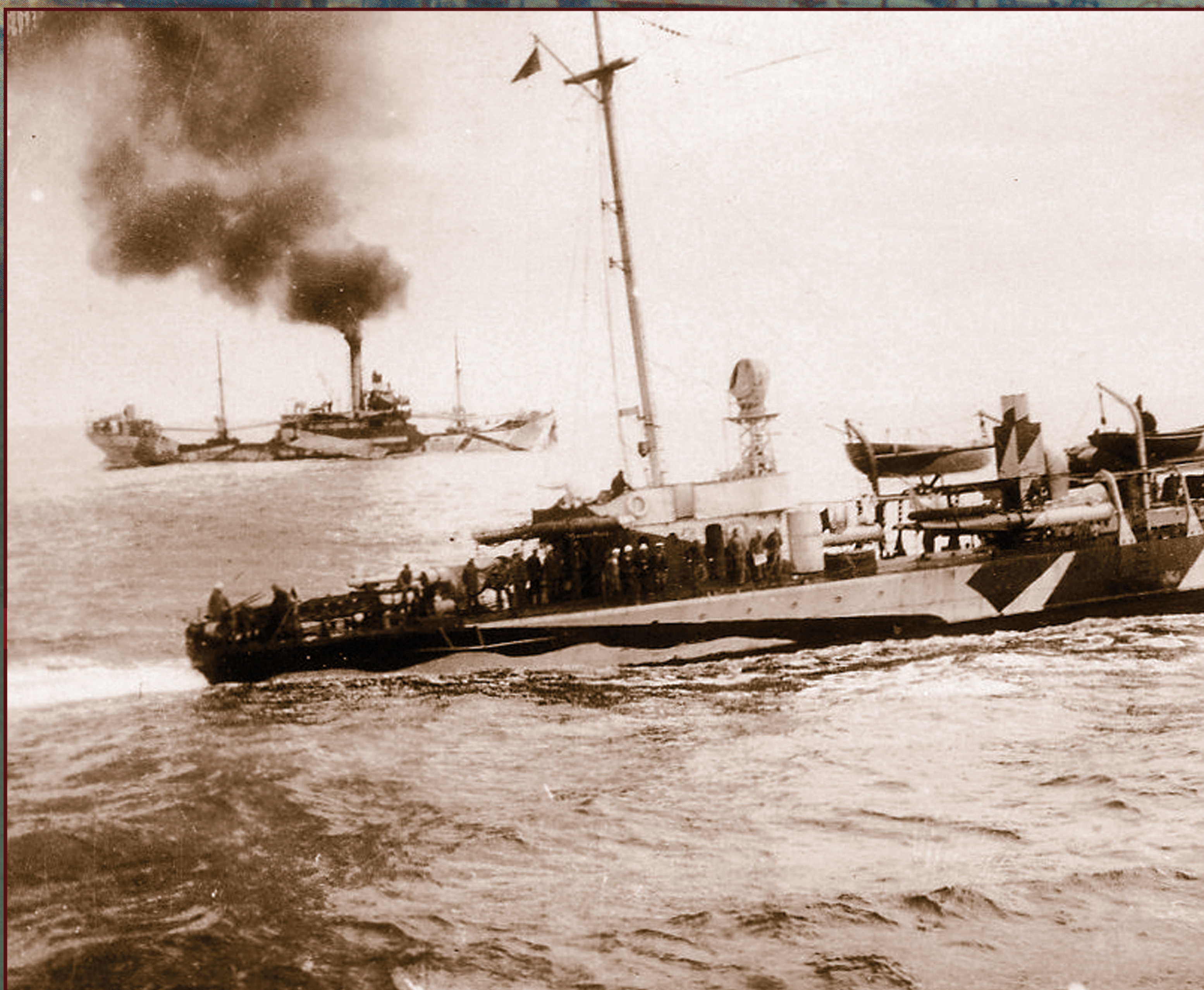
To execute a surprise attack, a U-boat had to dive and remain almost still while a target approached. Being in the right position for a torpedo shot required good planning and an accurate assessment of the target's range, course, and speed. The U.S. Navy responded with *Razzle Dazzle*, a revolutionary new anti-submarine camouflage.

Razzle Dazzle did not attempt to hide a ship, since the smoke of the ship's coal-fired engines made that impossible. Instead, it distorted a ship's appearance so U-boat commanders would incorrectly predict where to submerge and wait for their prey, leaving the submarine well out of the target's path and torpedo range.



Convoy Duty

Beginning in July 1917, the U.S. Navy implemented the convoy system on both sides of the Atlantic, to beat back the U-boat threat. Naval escorts based on America's eastern seaboard took convoys as far as Iceland before turning back. As convoys neared Ireland, U.S. Navy destroyers and aircraft based in Europe met them for the final leg.

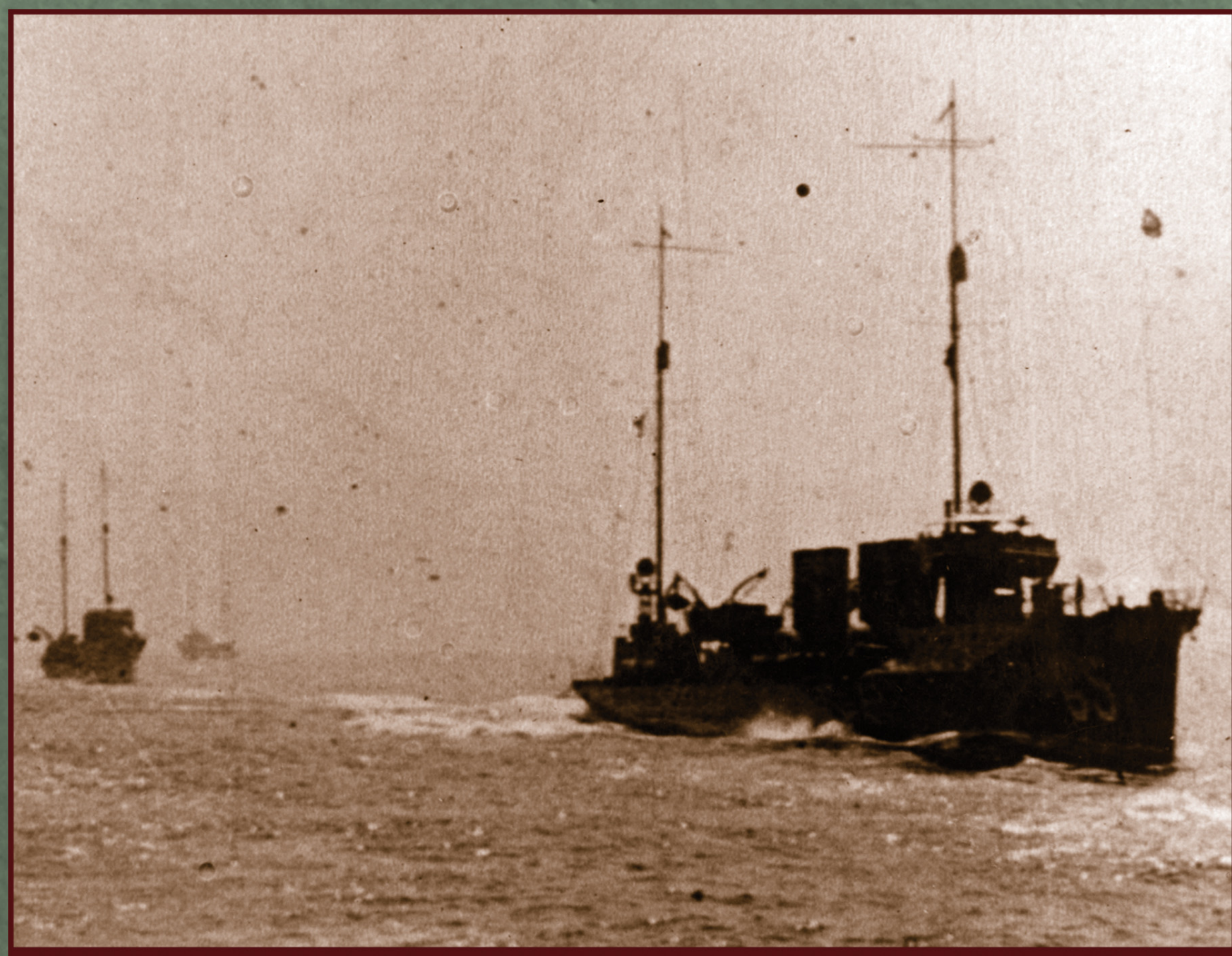


An American transport and destroyer, part of an Atlantic convoy, wear Razzle Dazzle in 1918. Before the war, the destroyer had been a countermeasure to fast attack boats, but fitted with depth charges it turned out to be the ideal anti-submarine platform. The Navy cancelled battleship construction in favor of building more destroyers.

By concentrating 20 to 30 transports, convoys emptied much of the sea of Allied ships, making them harder for U-boats to find. They provided more lookouts to spot U-boats and ensured a counterattack should a U-boat be sighted. Within months, reported losses fell from 20 percent to less than one percent.

The U.S. Navy also used aircraft to provide reconnaissance and close air support for the ships of the anti-submarine program. Long-range airships followed the convoys while seaplanes operated from naval air stations across western Europe. The Navy's first major use of aircraft in wartime proved so successful that it ensured a place for naval aviation in the post-war fleet.

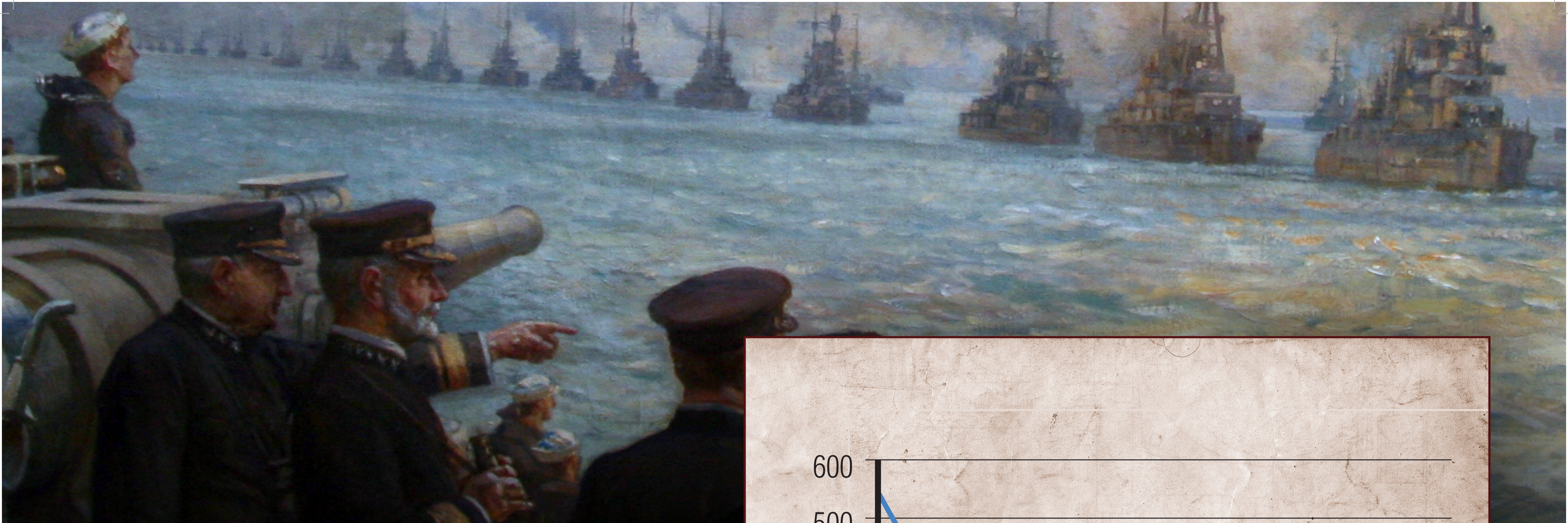
The combination of the convoy system and coordinated sea and air escorts provided a constant means of deterrent against U-boat attacks. Any submarine skipper who dared to approach to within torpedo range of an Allied convoy faced the certainty of a swift and deadly counterattack, a threat that evidently convinced most submarine commanders to look for easier prey.



The first American warships arrived at Ireland on 4 May 1917, less than a month after the United States declared war on Germany. These destroyers began sweeping the seas to make way for the thousands of transports that would follow.

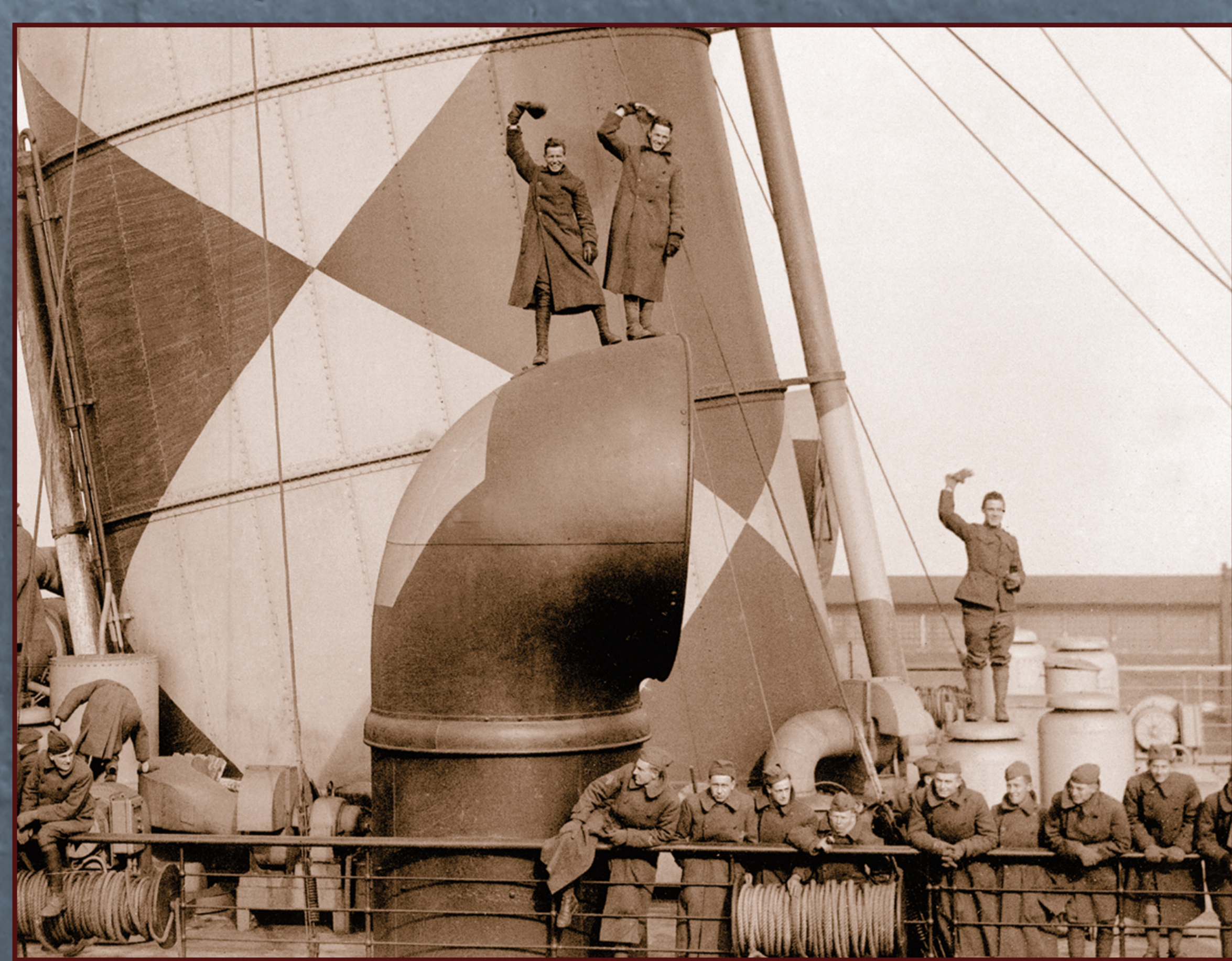


Commander Joseph K. Taussig, commanding officer of the first U.S. Navy squadron to reach Great Britain after America's entry into the war. Being greeted by the British Admiralty and asked about his state of readiness he replied, "We are ready now, sir."



A Great Win for the Navy

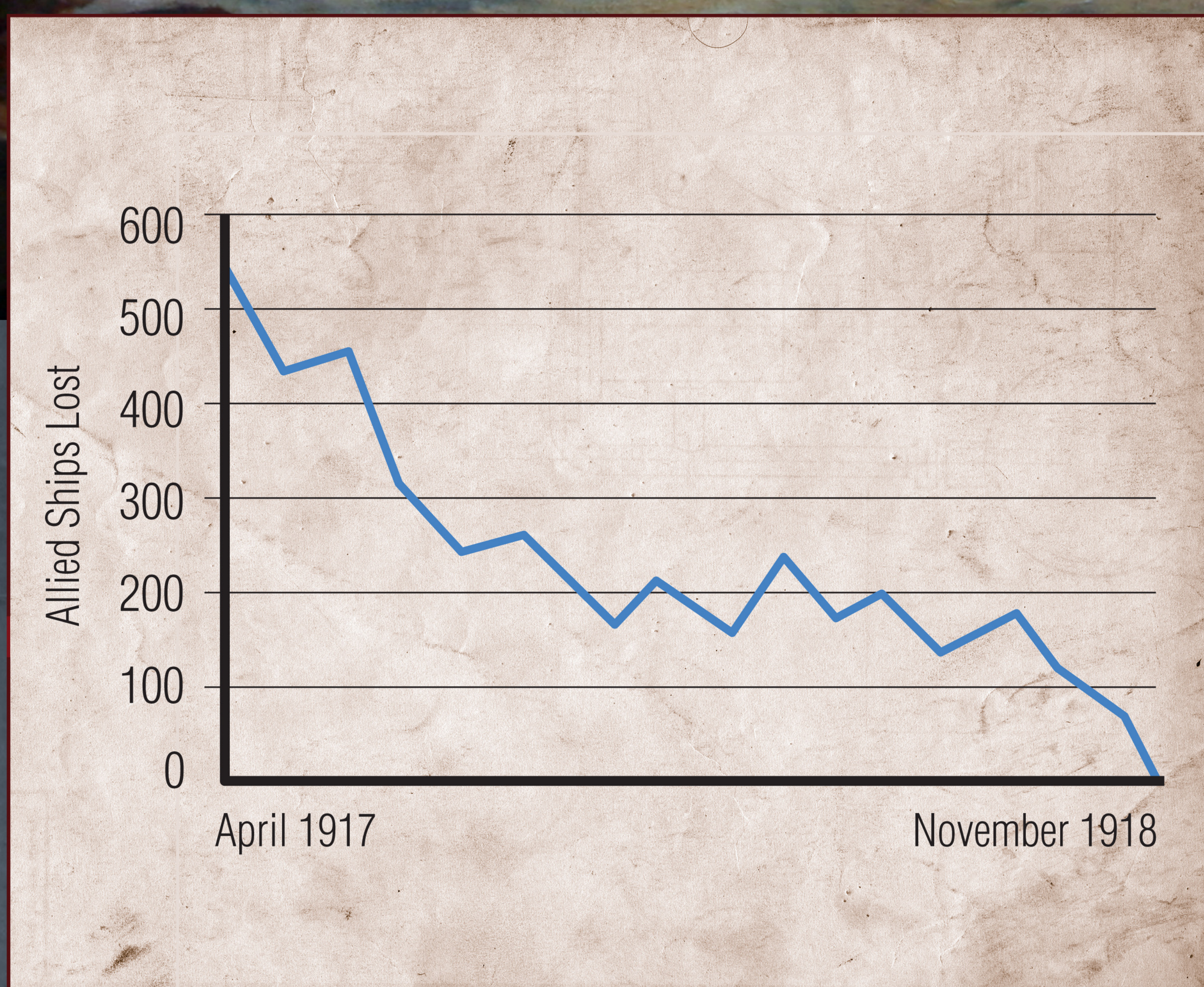
During the 16 months that the U.S. Navy operated convoys, it escorted 18,653 troopships and transports, carrying more than 2 million troops and over 6 million tons of material, without losing a single ship to enemy action — a singular achievement.



For the U.S. Navy, the end of the war brought a new mission: bringing home most of the 2 million Soldiers, Marines, and Airmen who had fought in France. With U-boats still at large, the use of convoys continued.



While the Navy was busy bringing home the troops, representatives of the victorious Allied nations met in Paris to decide the fate of Germany and the other defeated Central Powers. The conference would last through 1919.



Soon after the United States entered the war, the dire situation facing Great Britain was reversed, as Allied shipping losses fell to sustainable levels and eventually decreased 90 percent by the end of the war.

Meanwhile, the Imperial German Navy, which built only 317 submarines during the war, lost more than half of its U-boats to accident or in action. As Allied ships and aircraft turned up the pressure on Germany's remaining submarines, the U-boat hunters increasingly became the hunted.

The success of the U.S. Navy's Razzle Dazzle camouflage, anti-submarine warfare, and the convoy system all account for the decline in Allied shipping losses after April 1917, and the increasing number of U-boats sunk by Allied warships and aircraft.

Far from being the "scourge" that almost starved Great Britain during the dark days of 1915 and 1916, the U-boats had become a hollow threat by 11 November 1918, Armistice Day. Still, the U.S. Navy did not relax its vigilance until the last of Germany's submarines surrendered.