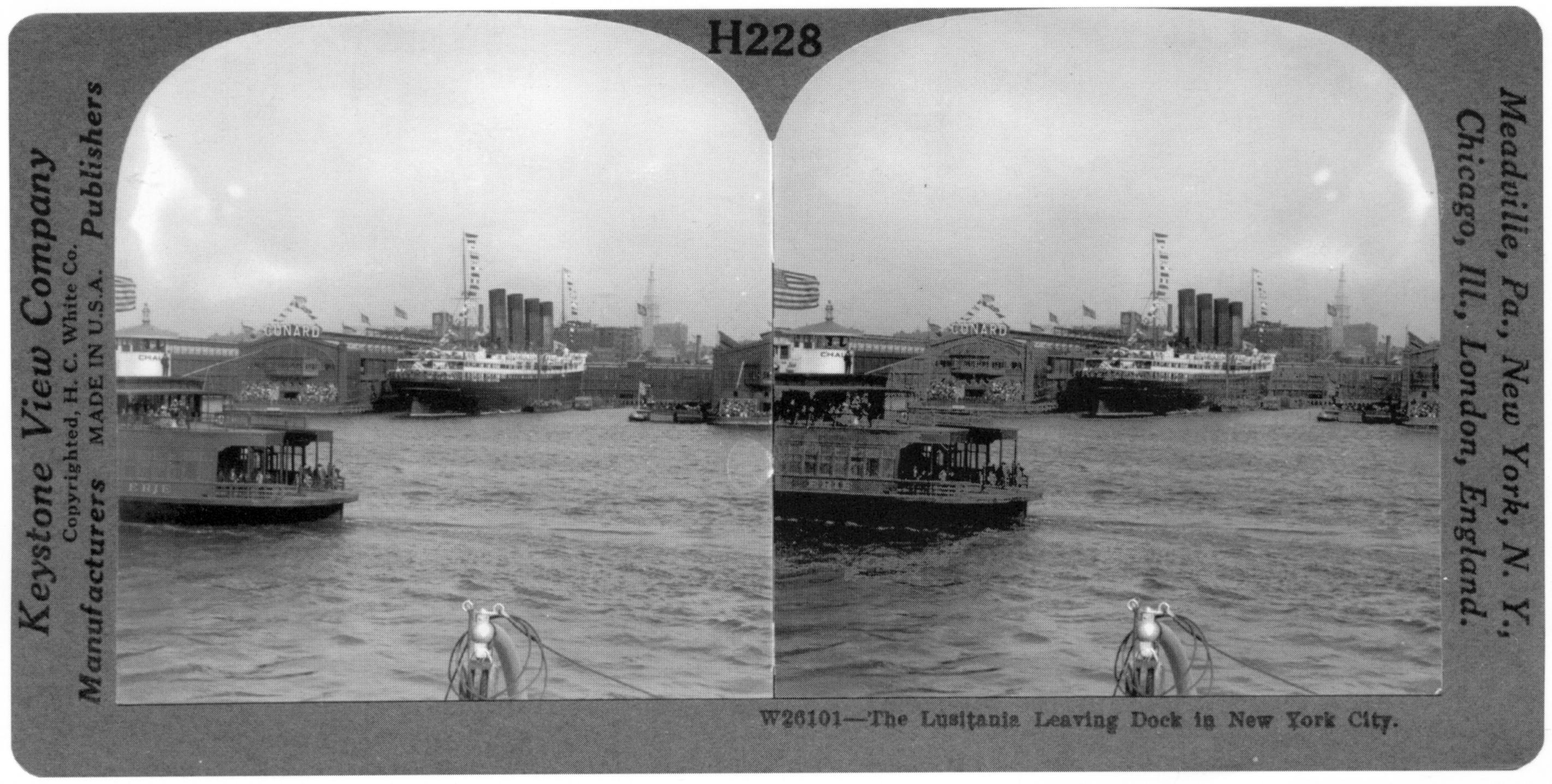


German Submarines Through Two World Wars



For very pair of eyes on the bridge of the submarine was focused on the tiny speck on the horizon. Kapitanleutnant Walther Schweiger of the *U-20* stared at the image taking shape in his binoculars. Passenger liner certainly. Big, with four stacks. There certainly weren't many of those. British, obviously. Too fast to catch. But maybe he wouldn't have to; the big liner was coming toward the

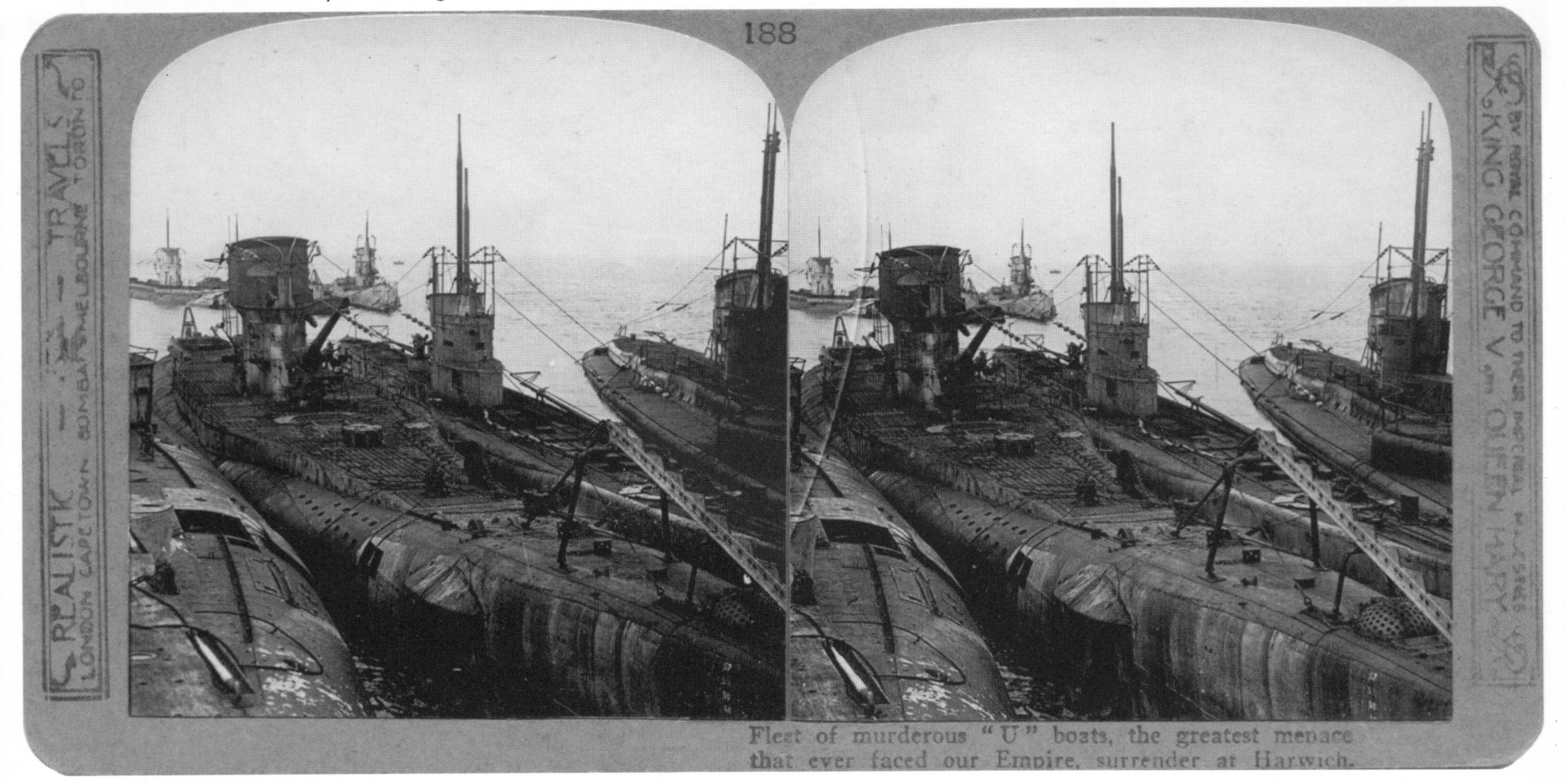
"The Lusitania Leaving Dock in New York City," No. W26101 by Keystone. The sinking of the giant Cunard liner by Schweiger's U-20 off southern Ireland on May 7, 1915 paralyzed US-German relations. An advertisement placed by the Imperial German Embassy appeared in New York papers the day of the liner's departure warning that Americans who sailed on British ships did so "at their own risk."

U-boat, angling to cross Schweiger's bow at fairly close range.

Schweiger submerged the boat and moved to the attack. It would take a lucky shot on his part for, after a week on patrol in the Irish Sea, *U-20* had only a single torpedo

available (actually three, but Schweiger intended to retain two for emergencies during the voyage home). The big ship changed course to starboard, moving even closer to the hidden U-boat. Schweiger fired. The torpedo left the tube and streaked relentlessly toward the target, striking the starboard side of the liner just aft of the bridge. The initial hit was fol-

"Fleet of murderous 'U' boats, the greatest menace that ever faced our Empire, surrender at Harwich," No. 188 by Realistic Travels. Scores of U-boats turned themselves in at Harwich, the designated assembly point, at the end of the war. Note the sawtoothed net-cutter for penetrating anti-submarine nets on the boat at the lower right.





lowed by a second, greater explosion, probably either coal dust in the nearly empty bunkers or the big ship's boilers, but almost certainly not the cargo of contraband ammunition which the liner was, however, illicitly carrying. The great ship listed heavily to one side, preventing the launching of most of her lifeboats, and sank by the bow in only sixteen minutes, leaving hundreds of tiny figures

"British Armored Cruiser Hampshire, Jamestown Naval Review," No. 18012 by H. C. White. Sunk by a submarine-laid mine off the Orkneys in June of 1916, the Hampshire was carrying Lord Kitchener on a secret diplomatic mission to Russia at the time of her loss.

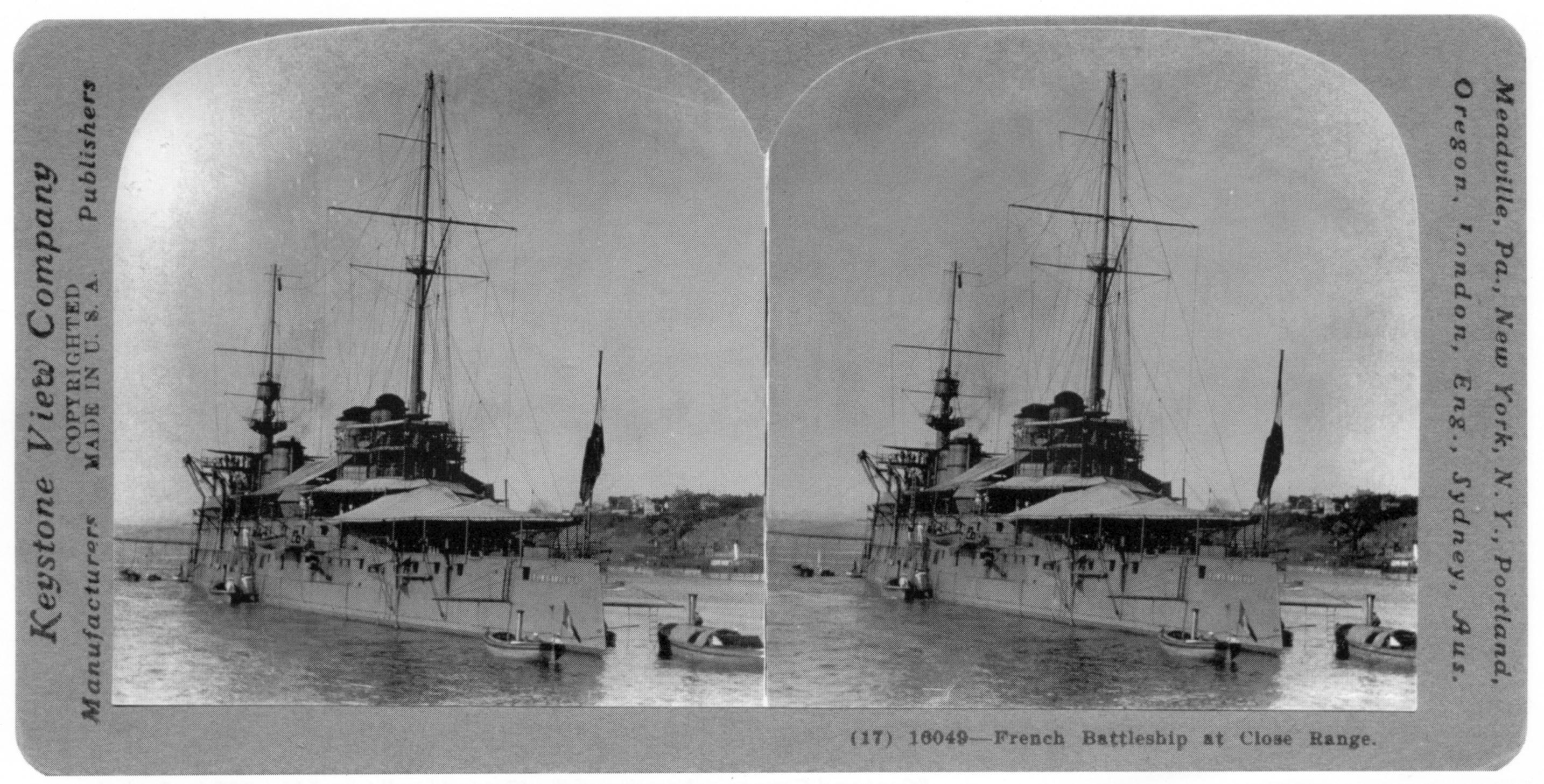
flailing about in the chilly waters. Only as the ship went down could Schweiger make out the letters on the stern. *Lusitania*.

Fast forward a quarter century.
Captain Gunther Prien carefully edged the prow of the *U-47* gently between the dark hulk of the

sunken blockship and the island dimly seen to starboard. Despite an almost moonless night, the northern lights danced on the horizon and cast an eerie shimmer on the surface of the water. The nerves of everyone aboard the surfaced U-boat were stretched to the limit. For the small gap ahead was a tiny chink in the armor of a giant and it wouldn't do to ring the doorbell. In front of them lay Scapa Flow,

"The call which resounded around the world; Lord Kitchener's magic appeal for men," No. 267 by Realistic Travels. The most prominent victim of the U-boat war, Kitchener was at the time a member of the British War Cabinet and England's greatest living soldier.





"French Battleship at Close Range," No. 16049 by Keystone. Not a battleship at all, but the armored cruiser Leon Gambetta (check out the name on the ship), sunk off southern Italy in 1916 by Austrian U-boat ace Georg Ritter von Trapp of The Sound of Music fame.

the main anchorage of the powerful British Home Fleet and the site of the German Navy's greatest humiliation, the scuttling of the Kaiser's proud battleships in 1919.

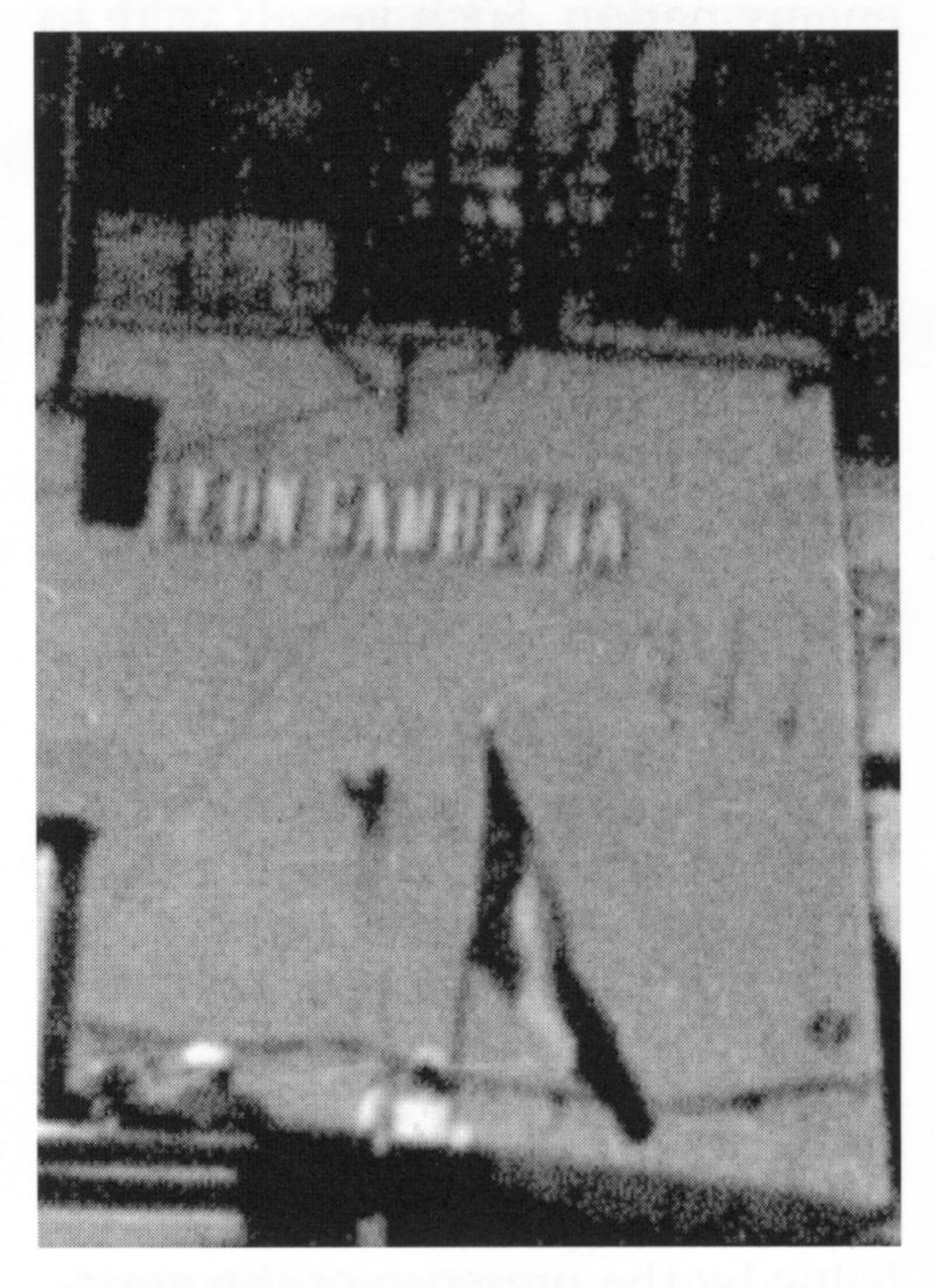
Against all odds, Prien would succeed, torpedoing and sinking the battleship Royal Oak, which had been lying blissfully at anchor, in the very heart of the enemy's greatest naval base. Furthermore, U-47 would cap this temerity by escaping, gliding silently out the way she had come, while the enemy searched futilely for the culprit. Prien might have achieved still more, had not the bulk of the British fleet moved to an anchorage off the west coast of Scotland just days before. Nevertheless, this brash young officer had achieved the seemingly impossible and U-47 returned home to a hero's welcome.

These two incidents, twenty-four years apart, represent both the most infamous and the most glorious moments of the German U-boat service, one of the most renowned yet controversial aspects of the two great wars of the twentieth century. (The term U-boat itself derives from "unterseeboot" or "underseaboat," the German equivalent of our word "submarine.")

The sinking of the *Lusitania* in May of 1915 was widely condemned throughout the world, and most particularly in the United States, as a barbarous act of piracy committed against innocent women and children, a flagrant violation of international law, and the ultimate example of Germany's notorious policy of "Unrestricted Submarine Warfare." Yet, although the policy would poison Germany's relations with the United States, the sinking itself did not, contrary to popular belief, lead directly to war.

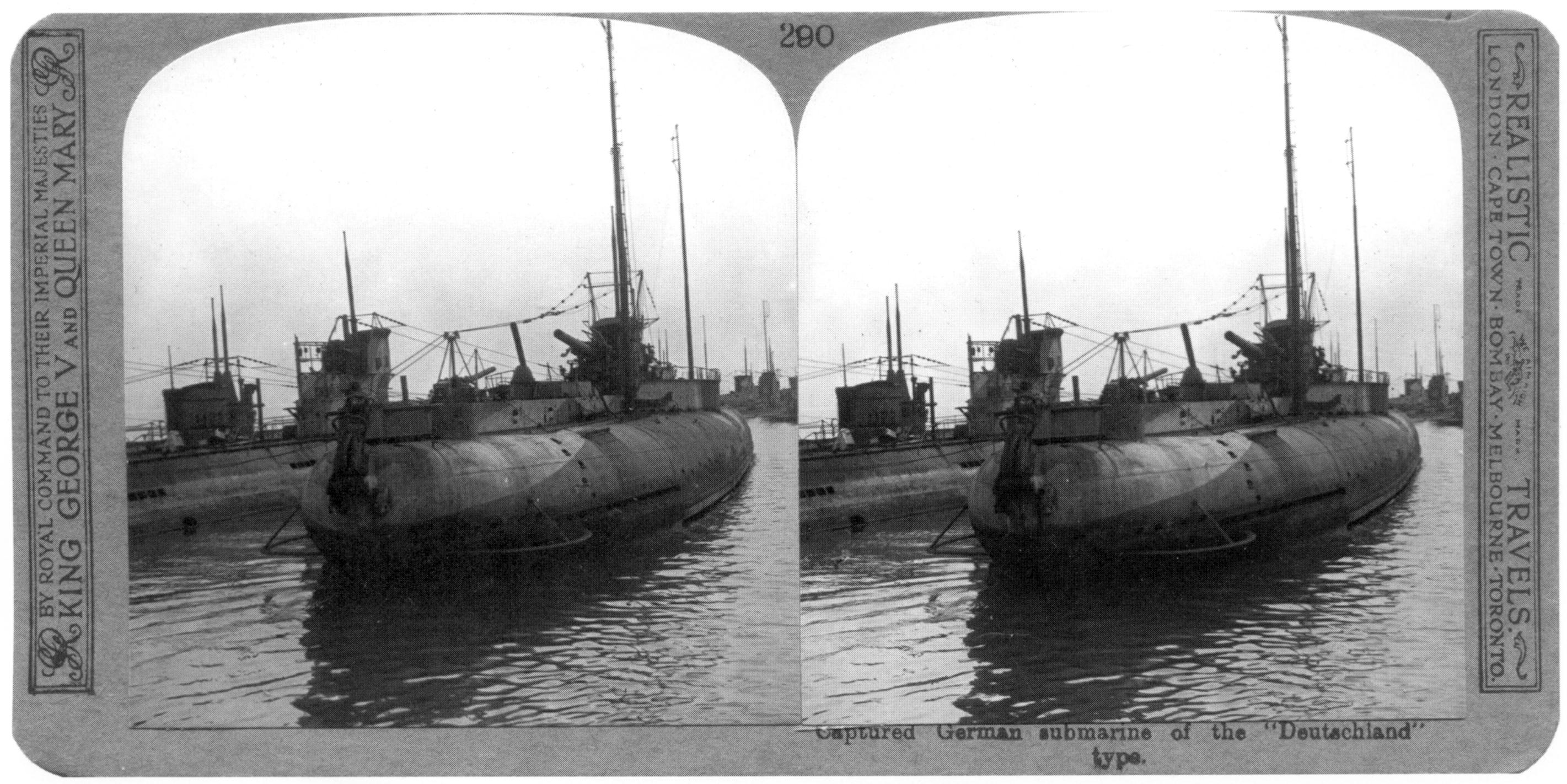
The British government, though obviously distressed by the huge casualty toll, was not entirely displeased by the results of the *Lusitania* sinking. The prevailing attitude of "Germany as villain" was one that Great Britain, with her widespread control of both the sea and international communications, was only too happy to encourage.

By 1939, the year the Second World War broke out, the German submarine policy seemed somehow less horrifying, in a conflict that would ultimately include the widespread terror bombing of civilians, use of the atomic bomb, and the wholesale genocide of entire populations. Yet once again it would be the U-boats that would



bring America to the brink of war, even if it was Japan's attack on Pearl Harbor that pushed her over the edge.

Nevertheless, in both conflicts, "Unrestricted Submarine Warfare" was a policy that was largely forced upon Germany by circumstances, particularly her relative position of inferiority as a naval power. Prior to 1914, the rules of "cruiser warfare" against commercial vessels had been clearly spelled out in a series of international agreements to which Germany herself was a signatory. Specifically, these rules stated that neutral vessels could be detained if suspected of carrying "contraband" (war supplies) to an



"Captured German submarine of the 'Deutschland' type," No. 290 by Realistic Travels. The Deutschland was unique, an unarmed, privately built and operated submarine blockade runner that created quite a stir when it showed up in Baltimore harbor in July of 1916. Such ventures proved impractical and it was soon converted for war duties.

enemy nation. Such vessels were to be escorted into a friendly port and searched; any contraband found could then legally be seized before sending the vessel on its way. Neutral ships were never to be sunk. On the other hand, enemy merchant ships could be sunk, but only after warning the ship in order to allow the passengers and crew, as noncombatants, time to seek safety in the lifeboats. These rules worked fairly well for the surface warships for which they had originally been written. Unfortunately, they hadn't been written with submarines in mind.

When, in the summer of 1914, the First World War broke out, Germany's battle fleet was largely confined to the North Sea and Baltic by the presence of the greatly superior British Grand Fleet, based in the north of Scotland, exactly like a cork in a bottle. Meanwhile, England clamped a tight blockade on Germany expanding the definition of "contraband" to include such non-military items as food. America's trade with Germany vanished while that with the Allied Powers increased dramatically. America protested feebly—against the British actions.

With her access to the world's oceans denied, Germany turned to her new and as yet untried U-boat fleet. Nevertheless, she did try to observe the rules of "cruiser warfare"—at least at first. Yet, when the British Admiralty (of which the

ever aggressive Winston Churchill was then the head) began to arm merchant ships and instructed them to try whenever possible to ram the fragile U-boats, the Germans were faced with a dilemma. Not only were submarines slower and more vulnerable than almost anything else afloat, but their greatest advantage was stealth, the ability to approach a target unseen and unsuspected. The Germans could either violate the rules or vacate the seas. They chose the former.

Nevertheless, the Germans argued, unsuccessfully as it turned out, that equipping merchant ships with guns made them "de facto" warships and thus liable to attack without warning. Even giant liners like the *Lusitania* might be fair game.

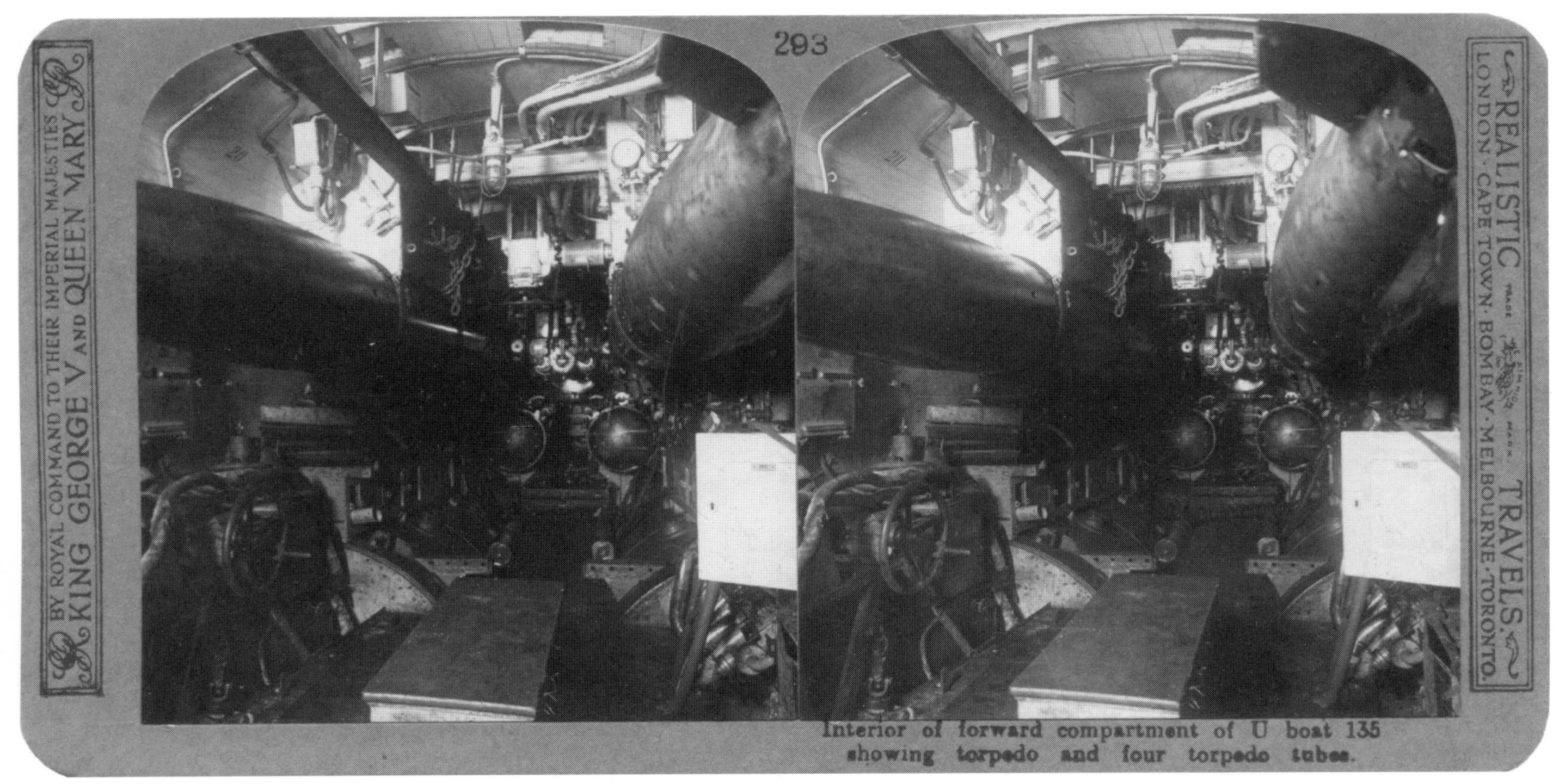
Fair perhaps, but hardly intelligent. Outrage over the sinking was so universal throughout the United States that, had President Wilson not been wholeheartedly committed to keeping America neutral, she probably would have entered the war then and there. As it was, Wilson's vociferous protests to Germany were too bellicose for Secretary of State William Jennings

Bryan, who resigned rather than send them.

But Bryan was wrong. Despite additional incidents, Wilson's patient diplomacy eventually got the Germans to abandon "unrestricted submarine warfare"—for the time being at least.

By the start of 1917, however, Germany was clearly losing the war. Faced with the prospect of starvation in German cities, courtesy of the British blockade, and the imminent collapse of the German army, bled white by the attrition of a "two-front" war, the Kaiser's military advisors saw only one way out. Perhaps the U-boats could force England's surrender before an unprepared America could make its presence felt in the trenches of the Western Front. Anything was preferable to simply sitting back and waiting for the inevitable.

As it turned out, the decision to resume "unrestricted submarine warfare" was both unsuccessful and unnecessary. America did enter the war, in April of 1917, as foreseen, propelled by the resumption of the U-boat attacks as well as a German attempt to embroil Mexico in a war with the United States by promising the return of



"Interior of forward compartment of U boat 135 showing torpedo and four torpedo tubes," No. 293 by Realistic Travels. With only two torpedo tubes in evidence, this is most likely the after rather than forward torpedo room. Although torpedoes are usually thought of as the most lethal and typical U-boat weaponry, more attacks were made using deck guns; de la Periere, for example, sank 54 ships in a single month but fired only four torpedoes in the process!

Texas, New Mexico, and Arizona. The Mexicans were too smart to fall for the bribe, and the "Zimmermann Telegram" (as the offer was called) was intercepted by the British, who promptly released its contents to the suitably outraged Americans. Ironically, on the Eastern Front, the Russian army collapsed and the country itself was soon wracked by bloody revolution. Within months, hundreds of thousands of German reinforcements could be shipped from the Eastern Front to France. Had the Germans only held off on the decision to unleash the U-boats, they would unquestionably have won the war in the spring of 1918! But by then the Americans had arrived and Germany tottered to defeat.

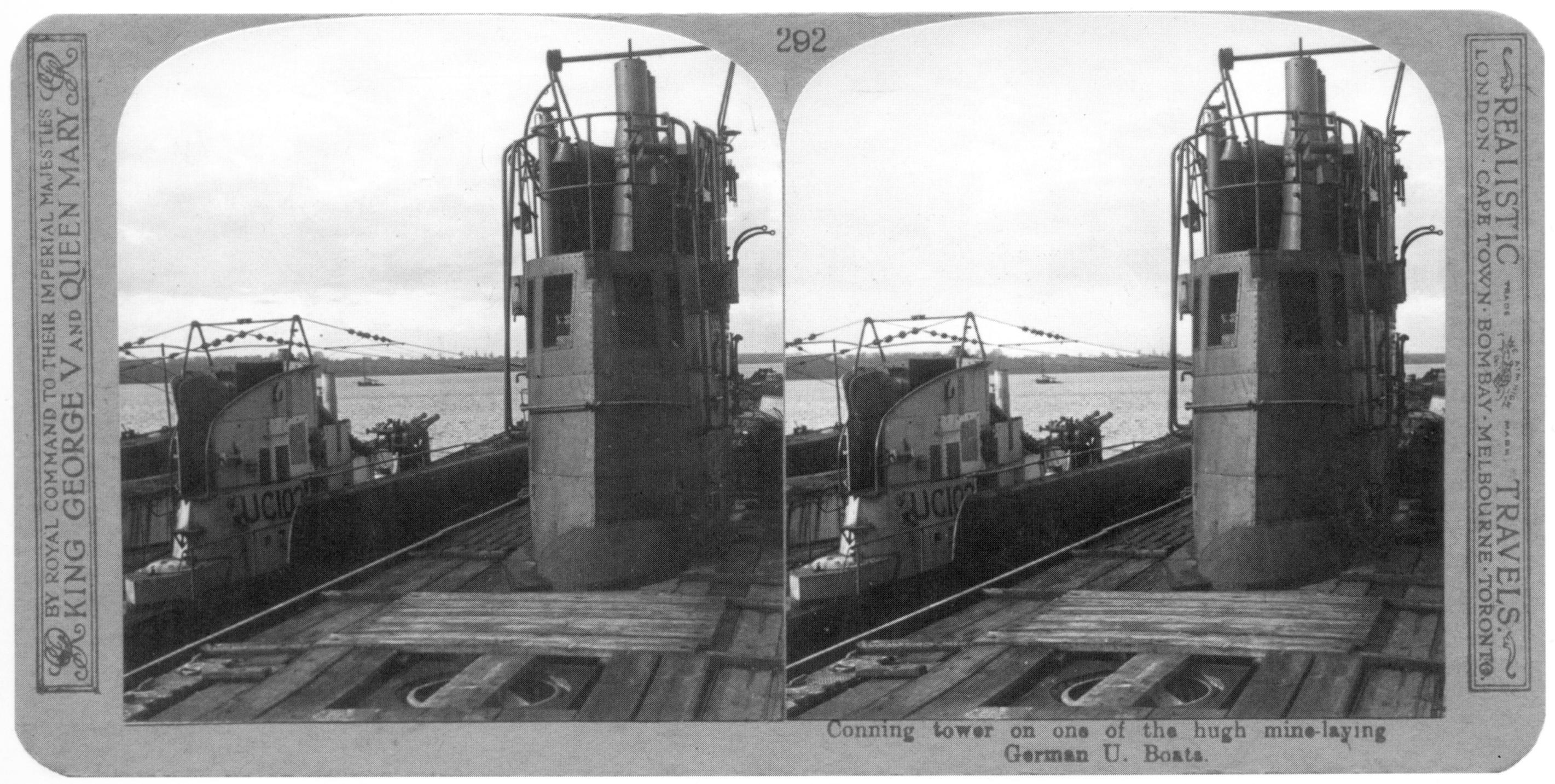
Surprisingly, given what had transpired, Germany had not even built her first submarine until 1906 and, by the outbreak of World War I still had only 45—fewer than Britain, France, the United States, or even Russia. The German war on shipping did not commence until February of 1915 and even then no more than 20 U-boats were available for offensive operations. The typical German U-boat of World War I had a surface dis-

placement of some 600 to 900 tons, a speed of 15 or 16 knots on the surface and a mere crawl of 7.5 knots submerged. It carried an armament of from 10 to 16 torpedoes (but only 4 to 6 torpedo tubes) and one or two deck guns. There were also a few specialized "U-cruisers" capable of operating at much greater range from base but carrying fewer torpedoes, plus a number of small UB-boats designed primarily for coastal defense, and the even smaller UCtype minelayers. During the war, the Germans had employed a total of approximately 360 submarines of all types in active operations, although no more than about 60 were in use at any one time.

Nevertheless, by the end of the war, U-boats had sunk, either through direct attack or mining operations, some 5,234 merchant ships of more than 18 million tons, along with 10 battleships, 18 cruisers, 20 destroyers, and 9 submarines. In the course of this mayhem, a total of 187 U-boats had been lost, but not until the institution of an effective convoy system late in 1917 did the Allies gain the upper hand. One U-boat ace, Lothar von Arnauld de la Periere,

in *U-35*, managed to sink a staggering 54 ships totaling 91,150 tons in a single month, mostly by gunfire, and he did so without ever violating the rules of "cruiser warfare!" In all, de la Periere sank more than 200 ships, establishing him as the most successful U-boat skipper of all time. In the spring of 1918, another U-boat, in an exceptionally rare appearance in American waters, actually succeeded in laying minefields in the Chesapeake and Delaware Bays. For a time, it had seemed that the Uboats might succeed in starving Britain into submission.

Although attention has tended to focus largely—and deservedly on the practice of "unrestricted submarine warfare" against merchant shipping, this was not the only dimension of the U-boats' contribution to the German war effort. The undersea craft also achieved several noteworthy successes against enemy warships, torpedoing and sinking a number of the older pre-Dreadnought battleships and lesser warships, particularly in the more restricted waters of the Mediterranean. Perhaps the most spectacular achievement of this nature occurred early in the war, before either side really understood the U-boat's potential. On September 22, 1914, *U-9*, under Lieut. Otto Weddigen, torpedoed and sank three British armored cruisers, Aboukir, Cressy, and Hogue, in broad daylight in waters not far



"Conning tower on one of the hugh[?] mine-laying German U boats," No. 292 by Realistic Travels. Note the anti-net rigging and prominent deck gun on the smaller UC102 at left.

from the Dutch coast. The success, which claimed 1,460 lives, would not have been possible had *Cressy* and *Hogue* not stopped to rescue survivors from the first victim.

Furthermore, not all of the Uboats' successes involved the use of torpedoes and deck guns. Several of the craft were also equipped to carry and lay underwater mines, and a few, such as the diminutive UC-5, were designed solely for this purpose and did not carry torpedoes at all. The most spectacular victim of a submarine-laid mine was the British armored cruiser Hampshire which struck a mine and sank rapidly in heavy seas near the Orkneys, north of Scotland, on June 5, 1916. The mine in question was apparently one of a group placed by *U-75* (Lieut. Commander Beitzen) on 28-29 May, in an attempt to disrupt British fleet movements before the Battle of Jutland. The attempt paid an unexpected dividend. At the time of the sinking, the *Hampshire* was carrying the British Secretary for War, Field Marshal Lord Kitchener, on a top secret diplomatic mission to Russia and the Field Marshal was not among the few survivors. Arrogant and notoriously difficult to work with but nonetheless brilliant, Kitchener had established an enviable reputation during the Sudanese and Boer Wars at the turn of the century and had masterminded British mobilization at the start of WWI. His looming,

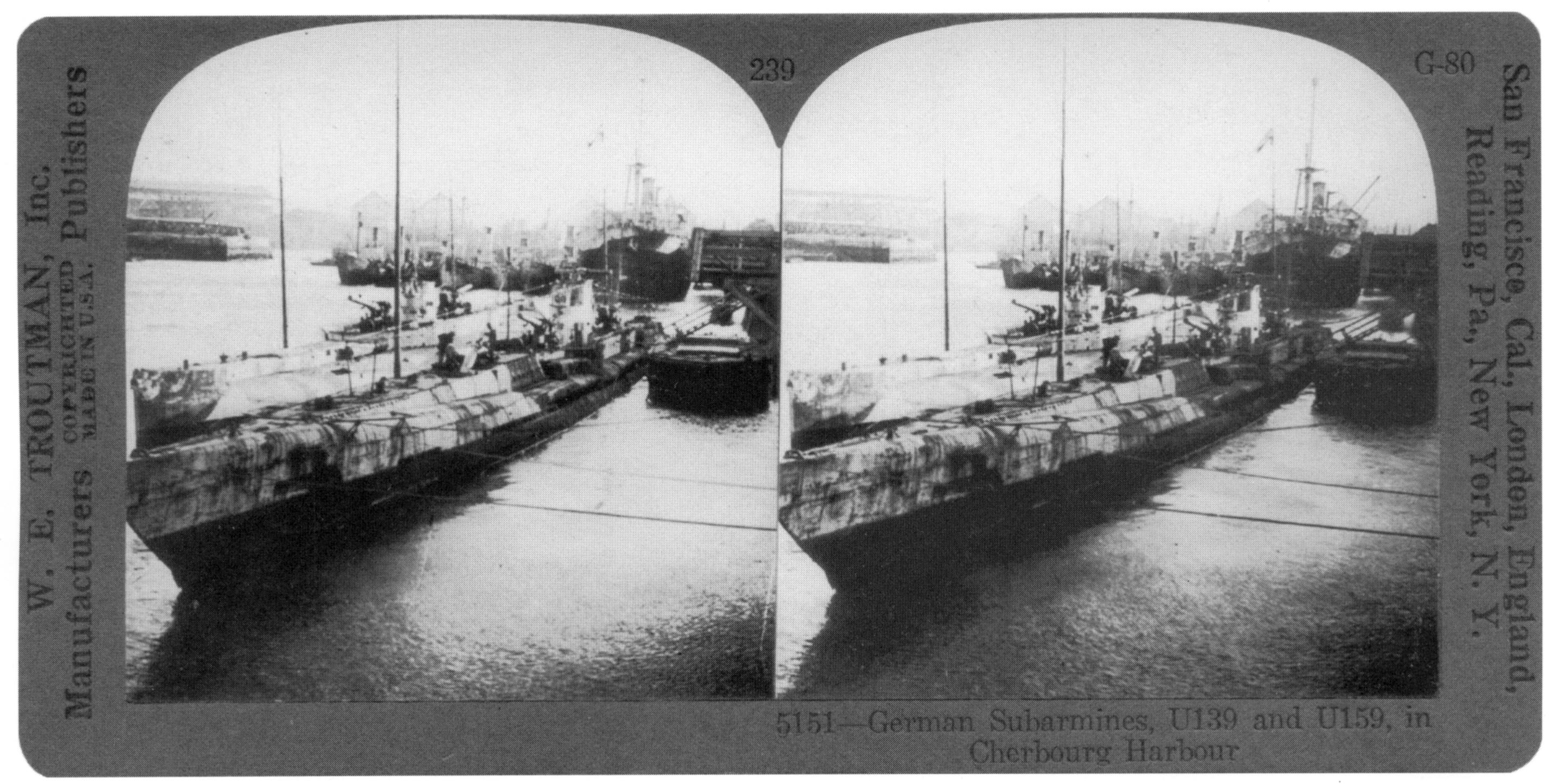
pointing likeness adorned a famous British recruiting poster that would subsequently provide the model for James Montgomery Flagg's legendary "I Want You" poster featuring Uncle Sam in a similar pose in the U.S.

Curiously, the Germans were not the only ones to employ "U-boats" in the First World War. Their allies the Austro-Hungarians also used them with some success in the Mediterranean and Adriatic. Austria's leading U-boat ace, Linienschiffsleutnant Georg Ritter von Trapp, in the Austrian *U-5*, sank the French armored cruiser *Leon* Gambetta (U-boats did seem to have a penchant for this class of warship!) just off the heel of the Italian "boot" in April of 1915. Von Trapp, whose exploits also included sinking an Italian submarine, would go on in 1938 to an even more courageous act—refusing a commission in Hitler's new German Navy in the wake of the Nazi takeover of Austria. Instead, von Trapp led his wife and large family in a daring escape from their homeland, an adventurous flight to freedom immortalized in the musical *The Sound of Music*.

The Allies struck back at the U-boats with a series of countermeasures which became ever more sophisticated as the war pro-

gressed. Chief among these was the invention of the "depth charge," a powerful underwater bomb which could be dropped from a warship like a destroyer or catapulted sideways from a "Kgun" to form a ring of death around the suspected position of a submerged U-boat; the depth charge sank to a pre-set depth where the water pressure set off a trigger mechanism and caused it to explode, sending powerful shock waves against the fragile hull of a nearby submarine. Since WWI Uboats could not dive to very great depths to evade the charges and the Allied warship had only the most imprecise idea of where the U-boat might be, the attack became something of a potentially lethal game of underwater tag. Even if U-boats were rarely destroyed in such attacks, they could sometimes be damaged and forced to the surface where they could be finished off by gunfire or ramming.

Another problem was the "Q-ship," a small merchant ship of deceptively innocent appearance that was in fact a powerfully-armed decoy vessel designed as a U-boat killer. Because U-boats had very limited capacity and carried relatively few torpedoes in WWI, they often preferred to attack



"German Submarines, U-139 and U-159, in Cherbourg Harbour," No. 5151 by W. E. Troutman. The large "U-cruisers" U-139 and (possibly) U-159, the latter never completed, were among Germany's largest U-boats. The similar U-151 laid mineffelds in American waters and sank the liner Carolina by gunfire off the New Jersey coast—one of the ship's lifeboats, crammed with survivors, reached shore amid a crowd of astonished beachgoers in Atlantic City!

smaller targets on the surface, using their deck guns. If the target turned out to be a Q-ship, hidden guns would suddenly appear and the U-boat, to its dismay, would discover a Lilliputian with fangs. Q-ships accounted for a fair number of U-boats sunk during World War I.

Surface gunfire attack by a U-boat held other perils, besides Q-ships. If a U-boat ventured too close to its intended victim, it might find itself the target of an attempted ramming. If successful, such a deliberate collision would almost always have fatal results for the U-boat and a number met their end in this way. Among the vessels that succeeded in sinking U-boats in this manner were the large British battleship *Dreadnought* and the White Star liner *Olympic* (sistership of the ill-fated *Titanic*).

Despite all these measures, U-boats remained such a threat that the Allies would, in 1918, attempt to seal them up with the so-called North Sea Mine Barrage, a supposedly impassible barrier extending from the Orkneys to Norway, a distance of 230 miles, with a width of from 15 to 25 miles. It failed to have the desired effect, although a

smaller field off Dover successfully closed off the English Channel to the U-boats. The North Sea Barrage employed more than 70,000 mines—and accounted for no more than a single U-boat!

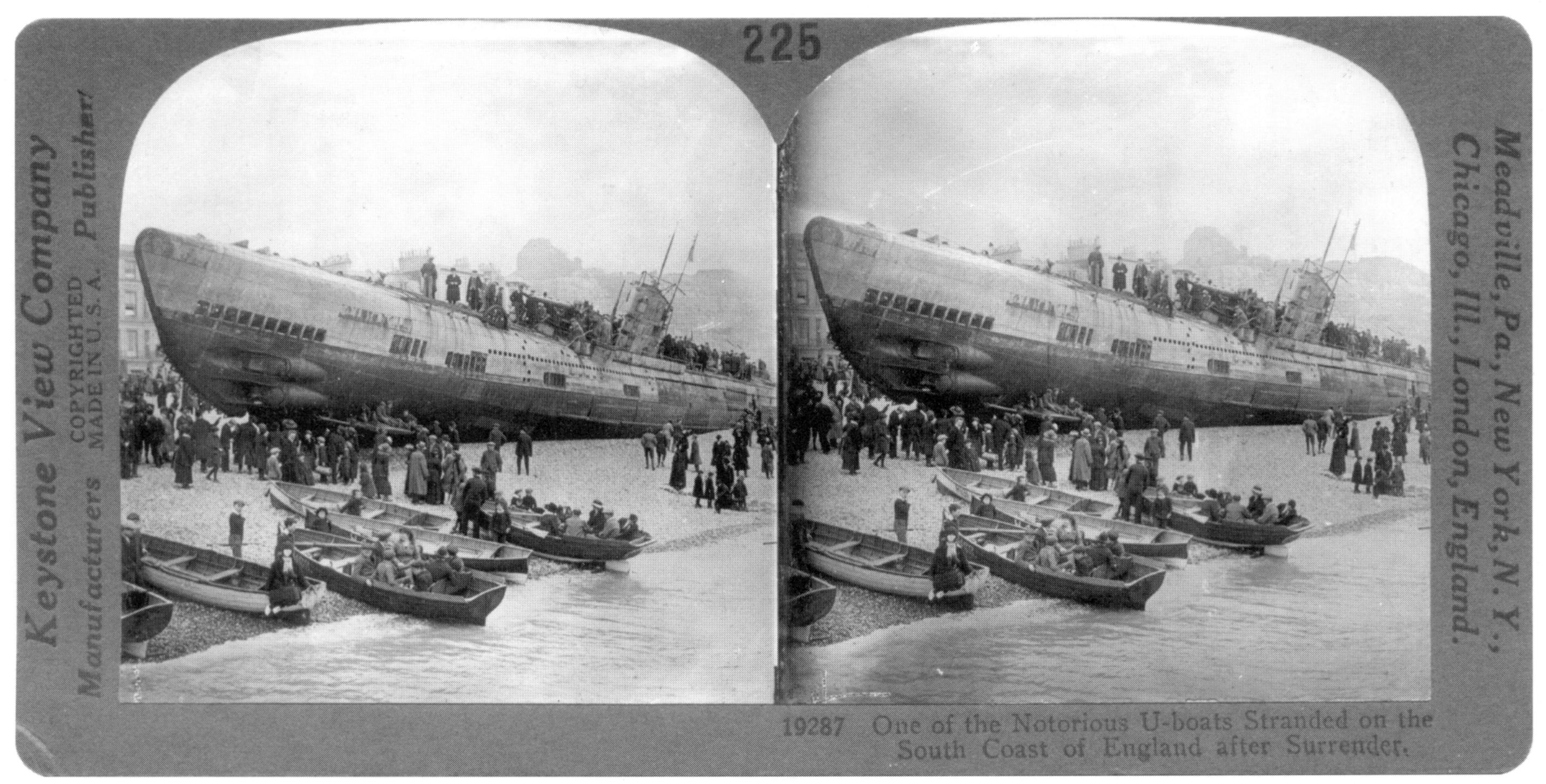
No more effective was an attempt by the British Navy to shut up the German U-boat base at Zeebrugge, Belgium, by a daring April 1918 raid. A force of marines was landed on the harbor's defensive mole or jetty from the old cruiser HMS Vindictive but failed to reach its assigned objectives. Furthermore, a number of blockships, sunk in the channel entrance, failed to adequately seal off the Uboat base. Nevertheless, it was a gallant effort and the mere fact that it was tried shows the concern inspired by the U-boats even at this late date.

Woodrow Wilson had made "freedom of the seas" a key element of his "Fourteen Points" peace plan and the punitive Treaty of Versailles that followed deprived Germany of her U-boat fleet. The peace was needlessly vindictive, placing the entire blame for the war squarely on Germany and making her pay through the nose. For a country whose economy was

already wrecked by the effects of the long war and the crippling blockade, Germany was forced to give up colonies and territory, stripped of most of her army and navy, and saddled with huge "reparations" payments for all the damages caused by both sides in the war. Premier Clemenceau of France even wanted Germany to foot the bill for lifelong pensions for French war veterans! Essentially, the Germans were forced to sign a "blank check" for these reparations, the full amount of which would be determined by the Allies at a later date.

Predictably, the Germans neither forgot nor forgave the humiliation of Versailles. The German economy soon collapsed utterly, with the German mark rendered totally worthless as hyperinflation ran amuck. Germany was in chaos, with rioting in the cities and a Communist revolution a distinct possibility. All of which led to the rise to power of a former corporal in the Kaiser's army, Adolf Hitler. And it was largely Hitler's attempts to regain German territory lost at Versailles that led directly to the outbreak of World War II and the reappearance of the U-boats.

By September of 1939, what Winston Churchill had called the "twenty-year truce" was over and Europe was again at war. Once again, Germany found itself hopelessly outclassed at sea and, once



again, she would turn to the U-boats to redress the balance.

In the wake of Hitler's denunciation of the Versailles Treaty, Germany had again begun to build Uboats in 1935. Nevertheless, the Fuhrer had informed his naval planners that there would be no war before about 1944 and U-boat construction had accordingly received a low priority in comparison to larger surface vessels like the imposing battleship *Bismarck*. As a consequence, the outbreak of war caught the German Navy largely unprepared, with only 56 U-boats in service, only 22 of which were capable of long-range Atlantic operations. Although the German "Kriegsmarine" contained some of the finest and most powerful warships in the world, they were even more hopelessly overmatched than the Kaiser's fleet had been in 1914 and the onus would once again fall on the U-boats.

The "Battle of the Atlantic" lasted from September of 1939 to May of 1945 and was the longest battle—or more appropriately "campaign"—of World War II. The key weapon in this lengthy struggle was the U-boat and once again it would take the Allies approximately four years to finally master their undersea foe. In the course of the struggle, the Germans built and deployed almost 1200 U-boats, which destroyed nearly 2800 Allied merchant ships of some 14.5 mil-

"One of the Notorious U-boats Stranded on the South Coast of England after Surrender," No. 19287 by Keystone. Numbers barely visible on the side of the conning tower suggest this is the 267 foot U-118, a 1,164 ton ocean minelayer with 4 forward torpedo tubes and 2 mine tubes in the stern.

lion tons, more than 62% of the total Allied losses from all causes. A total of 781 U-boats were lost. Winston Churchill, who, before becoming Britain's Prime Minister in May of 1940, had reprised his First World War role as First Lord of the Admiralty, would later write that "the only thing that ever really frightened me during the war was the U-boat peril." And he was in a position to know.

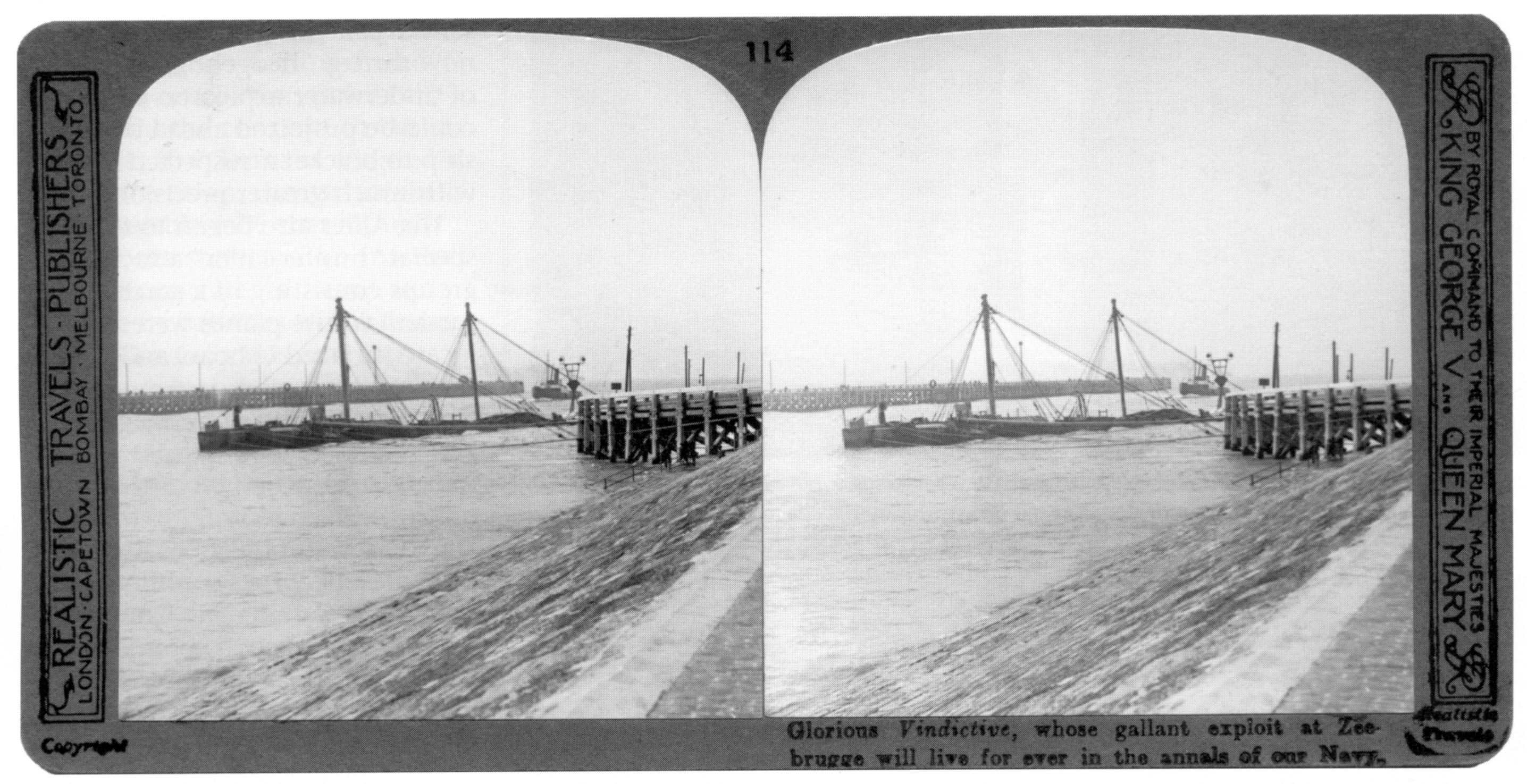
By far, the great majority of German U-boats employed during the Second World War were of the Type VII-C variety, more than 700 such vessels being built. The Type VII-C boat was some 220 feet long, with a displacement of 769 tons (871 submerged), attained a speed of 17 knots on the surface (7.5 submerged), and carried a total of fourteen torpedoes (fired from four bow and one stern tube), along with one 3.5-inch and several smaller deck guns and a crew of 44. It had an operating range of 6,500 miles. Although technologically more sophisticated and capable of superior performance, such vessels differed little in most respects from the U-boats of the First World War. The most notable change was not in the boats themselves but in their weapons—torpedoes of far greater speed, range,

accuracy, and explosive power.

In response to Hitler's invasion of Poland, Britain and France declared war on Germany on September 3, 1939, and within a day a German U-boat had sunk the small British liner *Athenia*, killing a number of American passengers and evoking memories of the Lusitania. In little more than a month, in addition to Prien's exploit at Scapa Flow, another U-boat succeeded in sinking Courageous, one of Britain's few aircraft carriers, which had been futilely engaged in hunting submarines. (U-boats would also account for the aircraft carriers Ark Royal and Eagle and the battleship Barham, all torpedoed in the Mediterranean between 1941 and 1942.)

If anyone thought that the Second World War in the Atlantic would simply be a replay of events from twenty years before, they were mistaken. In the spring of 1940, Nazi armies quickly overran Norway, France, and the Low Countries. Now Britain stood alone. German U-boats and even battleships, operating from bases in occupied France and Norway, could easily reach the shipping lanes of the North Atlantic.

Furthermore, with escort vessels in critically short supply, the



"Glorious Vindictive, whose gallant exploit at Zeebrugge will live for ever in the annals of our Navy," No. 114 by Realistic Travels. This caption is somewhat misleading since Vindictive was not lost during the famous Zeebrugge raid but was however sunk as a blockship in an equally futile attempt to close the channel leading to the German U-boat base at Ostend the following month.

British were reluctant to institute a convoy system and most merchant ships sailed independently, trusting to luck to see them through. The result was what became known in the U-boat service as the "Happy Time," with plentiful targets, minimal risks, and almost no U-boat losses in exchange for massive enemy tonnage sent to the bottom. One skipper, Otto Kretschmer of *U-99*, alone sank 44 ships, a record seven in a single patrol, and that didn't include the two that became so panicked by his attack on a convoy that they collided and sank themselves! On one occasion, Kretschmer even whimsically ordered a small freighter to sail to France and turn itself over as a prize to the German authorities there The ship dutifully tried to do so but was sunk en route.

The answer to the U-boat problem in the Second World War proved to be the same as it had been in the First: the use of convoys. A convoy was a large group of merchant ships sailing in a boxlike formation and surrounded by a protective screen of destroyers and other escort vessels. Although a convoy covered a large area, it was still hard to locate in the vast

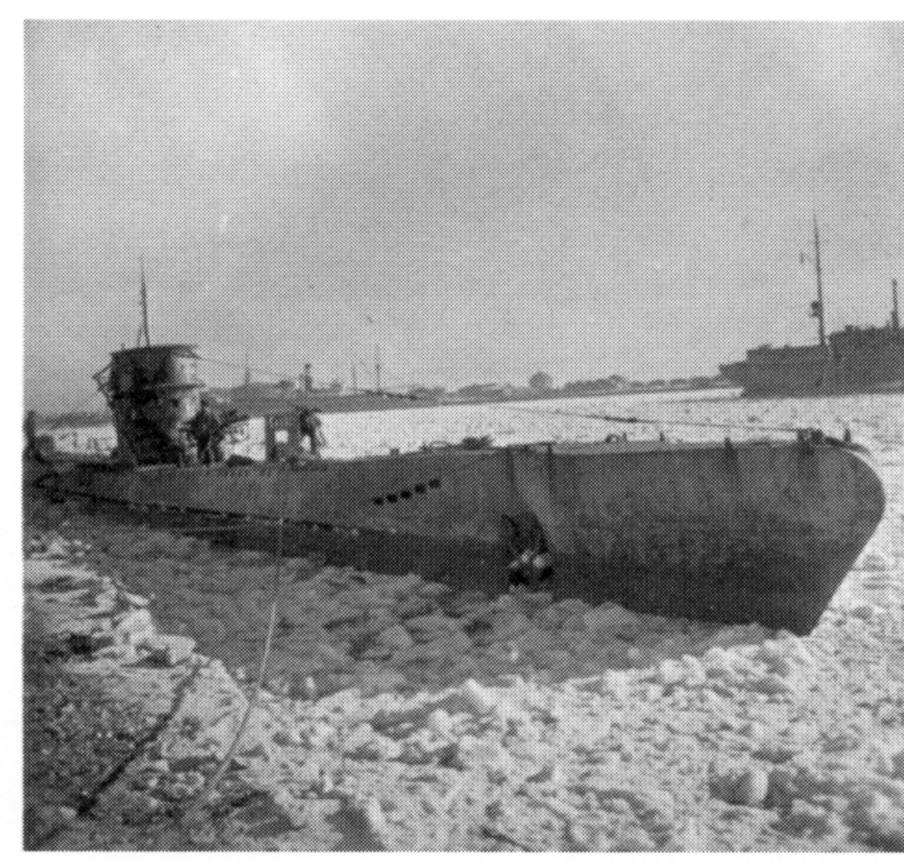
expanse of ocean and there was now but a single target to find where there previously had been dozens of individual ships. Furthermore, any U-boat attacking a convoy risked destruction from the escorting vessels, even if successful. Now the U-boats had to come to the enemy on his terms. The number of sinkings declined while Uboat losses grew. The "Happy Time" came to an end in March of 1941 when Germany's three greatest U-boat aces, including Prien, were eliminated in little more than a week.

The German response to the adoption of convoys had been creation of the "wolfpack"—a group of submarines that initially formed a scouting line to locate a convoy, then coordinated their attacks so as to overwhelm the escorts. Now a single convoy battle might involve a dozen U-boats, last for a week or more, and result in the sinking of a score of merchant ships, with their precious cargoes of food, munitions, and fuel.

Hitler's invasion of the Soviet Union in June of 1941 expanded the conflict into the icy Arctic seas, for the only way to supply Russia with much-needed war materials was by sea past the long coastline of German-occupied Norway to Russia's few Arctic ports—a particularly dangerous and brutal voyage known in the convoy trade as the "Murmansk Run." The Russian convoys stretched British naval forces to the limit.

What was happening in the Atlantic brought the war ever closer to America's shores as well. President Franklin Roosevelt, mindful of the prevailing mood of isolationism in the United States, was nevertheless determined to do all he could "short of war" to aid Britain in the struggle. The result strained American neutrality to the breaking point. This was especially true of the President's swap of 50 old WWI destroyers for American use of British naval bases in the Western Atlantic. When the U.S. Navy began escorting convoys as far as Iceland, it was inevitable that armed clashes with the Uboats would follow. After a U-boat fired on the destroyer USS Greer in September of 1941, FDR ordered his Navy to "shoot on sight" at any German warship, neglecting to mention that the destroyer had been provocatively dogging the Uboat's position at the time of the attack. The result was an "undeclared naval war" between the U.S. Navy and Hitler's forces, a contest in which the U-boats drew first blood, torpedoing one American destroyer and then sinking another, the USS Reuben James, in Octo-





"Unterseeboot. Im vereisten Hafen des Stutzpunktes; die uber Kreuz laufenden Leinen - die Spring - sind wegen des Eises lang geshoren, um die Bewegungen, die durch die Gezeiten und den Tidenhub im Hafen entstehen, bie diesem Eisgang besser ausgleichen zu konnen." [#A U-boat at the submarine base in an ice-clogged harbor. The mooring lines - the springlines - extending out to the boat are long and have a lot of slack to allow for movement of the boat caused by rising and falling tides and drifting ice.] - No. 51 in the Raumbild "Kriegsmarine" set; photographed by Dr. Trotter.





"Unterseeboot. Im Paket, d. h. nebeneinander liegen im Stutzpunkt. Auf dem vorderen Boot ist zur Musterung angetreten." [A pack of U-boats moored alongside one another in the submarine base. On the nearest boat, the crew is assembled to stand inspection.] - No. 53 by Raumbild; photog. Engelmeyer.

ber. As a result, Germany and America were already poised on the brink of war when the Japanese attack on Pearl Harbor rendered the entire question academic.

America's entry into the war simplified matters for the U-boats and provided them in the spring of 1942 with a "Second Happy Time" off the east coast of the United States, where merchant ships continued to sail independently, often silhouetted at night against the glow of coastal cities. Nevertheless, the Americans learned quickly and shipyards were soon turning out large numbers of "Liberty ships," prefabricated merchant ships designed to be built more rapidly than the U-boats could sink them. In essence, the Battle of the Atlantic came down to a war of numbers, the ratio of

tonnage sunk to that of new ships built, what Churchill called a "shapeless, measureless peril, expressed in charts, curves, and statistics."

As escorts became more plentiful and better armed, it became even harder for the U-boats to penetrate the convoys. Even night surface attacks, which had offered the surest chance of success, became more difficult to pull off. In place of the primitive sound-detecting hydrophones of World War I, many destroyers, destroyer escorts, and corvettes now carried radar capable of detecting a surfaced Uboat, sonar (called asdic by the British) for underwater detection, and H/F D/F (high-frequency direction-finders) for pinpointing a Uboat's radio transmissions, along with improved sound-detecting gear. In addition to the ever-present depth charges, many escorts now carried "hedgehog," a cluster of underwater explosives that could be projected ahead of the ship to bracket a suspected target with much greater precision.

The Allies also began to form special "hunter-killer" attack groups consisting of a small "escort carrier" whose planes were used to locate surfaced U-boats and guide the accompanying destroyers to the target. When not engaged in actual combat, submarines were forced to spend much of their time on the surface recharging their electrical batteries since their powerful diesel engines could not be used when submerged. Consequently, a surfaced U-boat could often be surprised by aircraft, many of which now carried a couple of depth charges as well.

The climax came with a number of fierce convoy battles in the spring of 1943, especially an assault by a 20 U-boat wolf-pack on eastbound convoy ONS-5 during what became known as "Black May." The U-boats sank 12 merchantmen but lost six of their own number to the heavily reinforced escort, a pattern that was to become disturbingly familiar as time went on. What the U-boats did not know was that the Allies could now predict their movements. Thanks to a remarkable exercise in top-secret code-breaking known as "Ultra," the British and American high command was rapidly deciphering the radio transmissions between the U-boats and their home base.

By now, the U-boats were being hunted relentlessly at sea and ceaselessly pummeled from the air in their heavy concrete pens on the French coast. Passage of the Bay of Biscay, once the easiest part of a U-boat's patrol, had now become a lethal death trap, thanks to long-range air patrols from Britain. Clearly, the hunters had become the hunted.

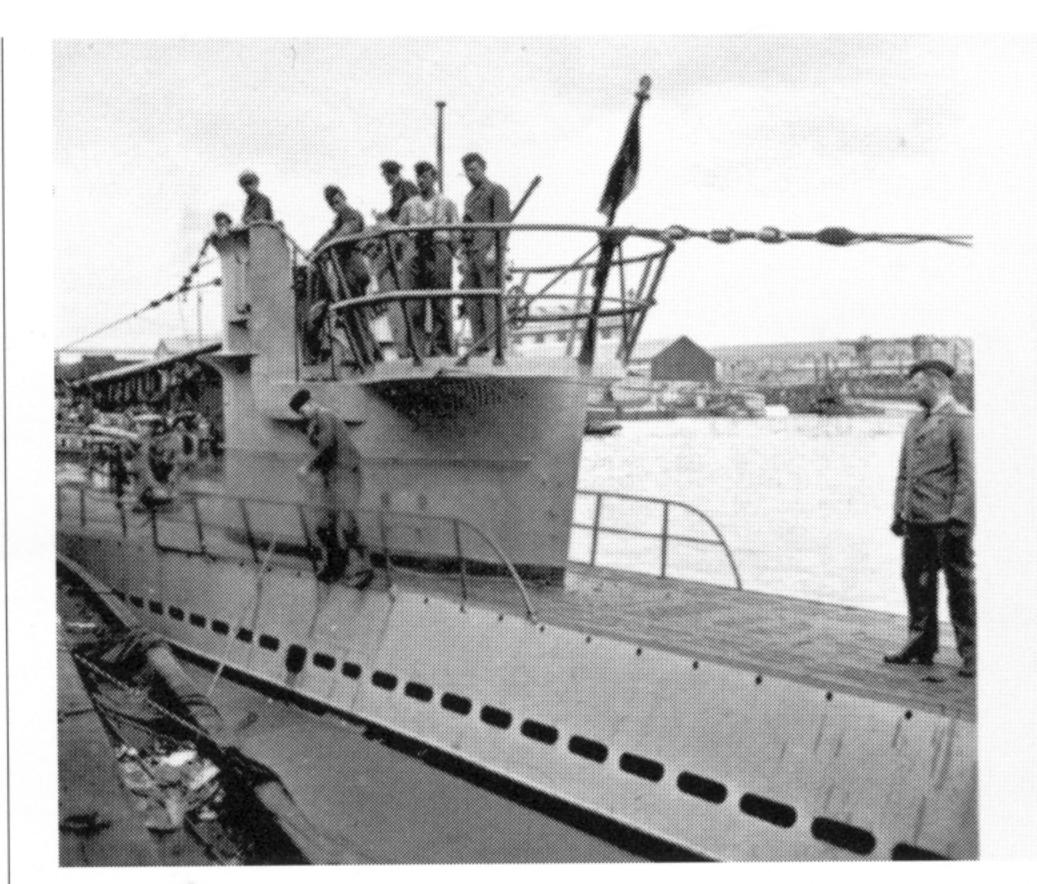
The Germans countered with a few surprises of their own. To allow the attack submarines to remain on patrol for longer periods, special supply submarines, called "milch cows," were dispatched to refuel, reprovision, and rearm the U-boats at sea. But, thanks to "Ultra," the Germans

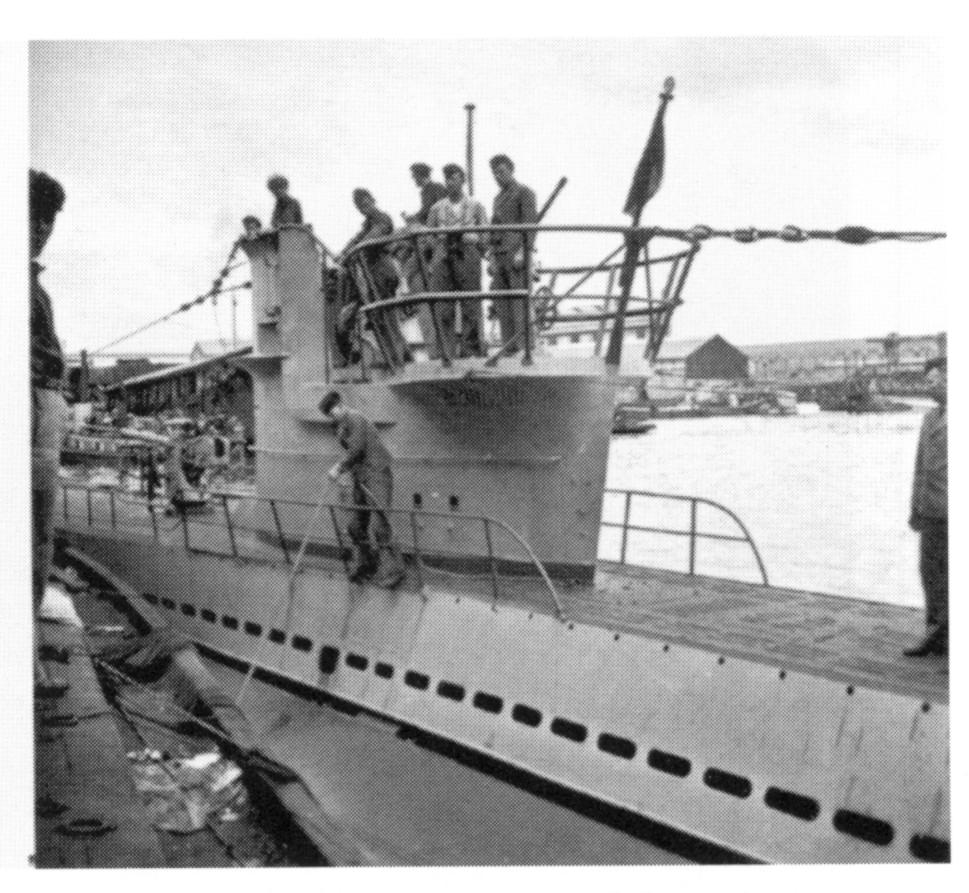
were often unpleasantly surprised to find the Allies waiting at the scheduled rendezvous point.

To avoid the constant threat of air attack, the Germans adopted a Dutch invention, the "schnorkel," an extendable tube that brought air from the surface, allowing the U-boat to operate its diesels and recharge its batteries without surfacing. The Germans also introduced an advanced acoustic torpedo that homed in on the sound of a target ship's propellers. An entirely new kind of U-boat, capable of unprecedented underwater speed, might have created real havoc among Allied shipping but, fortunately for them, was developed too late to enter active service before war's end.

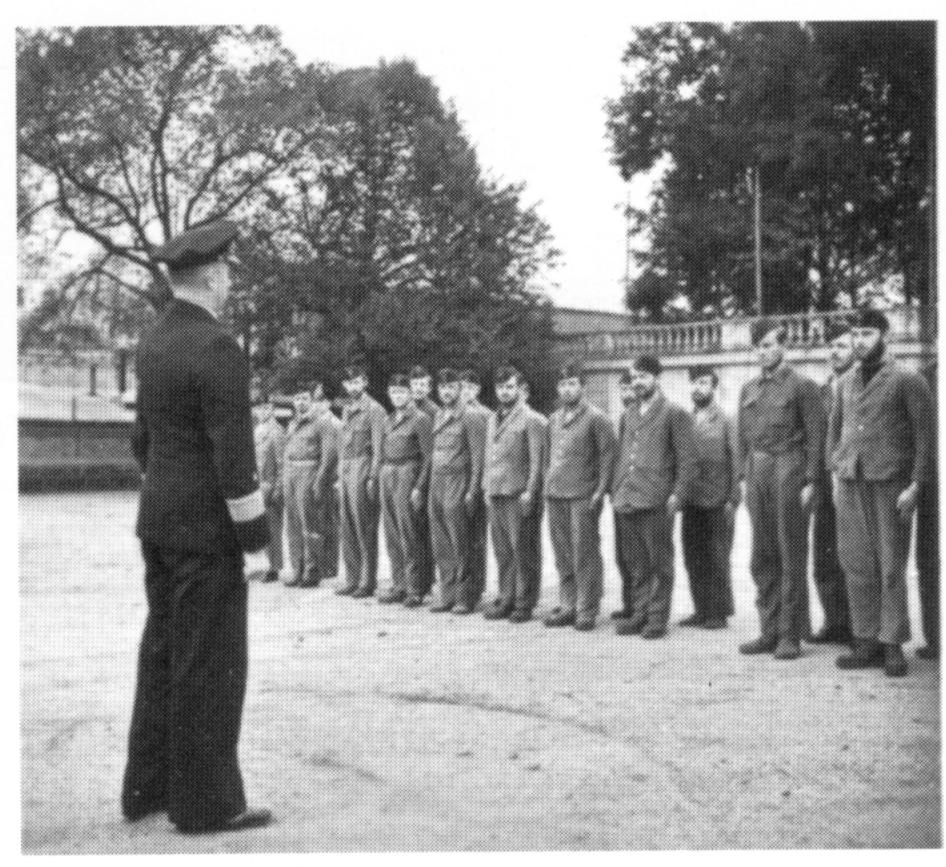
None of this made any difference and, by May of 1945, Hitler's "thousand-year Reich" was finished. The U-boats had once again fought with great tenacity and had suffered an unbelievable 60% casualty rate. Fully 28,000 of their men would never return from patrol, and another 5,000, including *U*-99's Kretschmer, were prisoners. Once again, as in the first war, they had almost driven Britain to her knees, but they had been utterly unable to interfere with the vast Normandy invasion and, despite their unquestioned courage, ultimately failed in their overall mission.

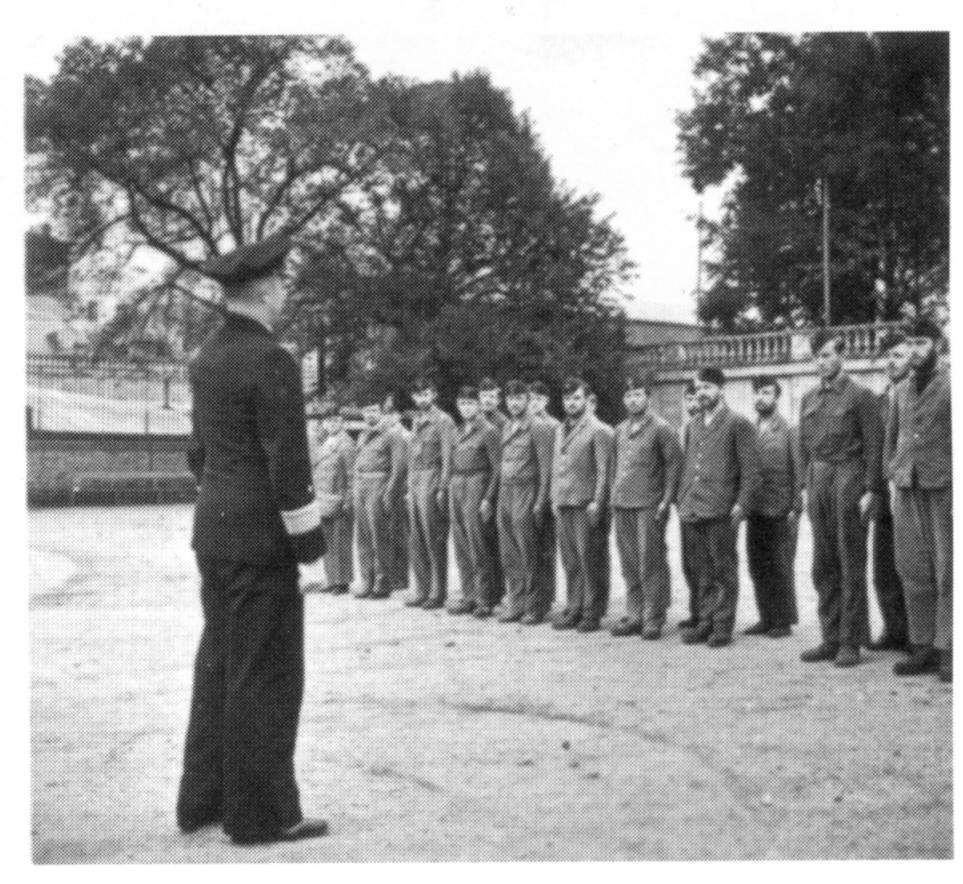
After the war, the victorious Allies placed the surviving Nazi leaders on trial at Nuremburg for war crimes. Among the defendants was Admiral Karl Donitz, head of the U-boats and briefly, following the death of Adolf Hitler, Nazi Germany's second and final fuhrer. Despite the fact that several British and American admirals were prepared to testify in his defense that the German Navy had fought a "clean" war and that the U-boats had done nothing in the Atlantic that the United States had not done, with more success, against the Japanese merchant marine in the Pacific, Donitz was sentenced to ten years in prison. Given the tens of thousands of Allied sailors and merchant seamen who had died in the Battle of the Atlantic, it would not have been expedient to let him completely off the hook. Nevertheless, as Nuremburg went,





"Unterseeboot. Boot legt zum verholen auf einem anderen Liegeplatz ab." [A U-boat casts off to move to another berth.] - No. 54 by Raumbild; photog. Engelmeyer.



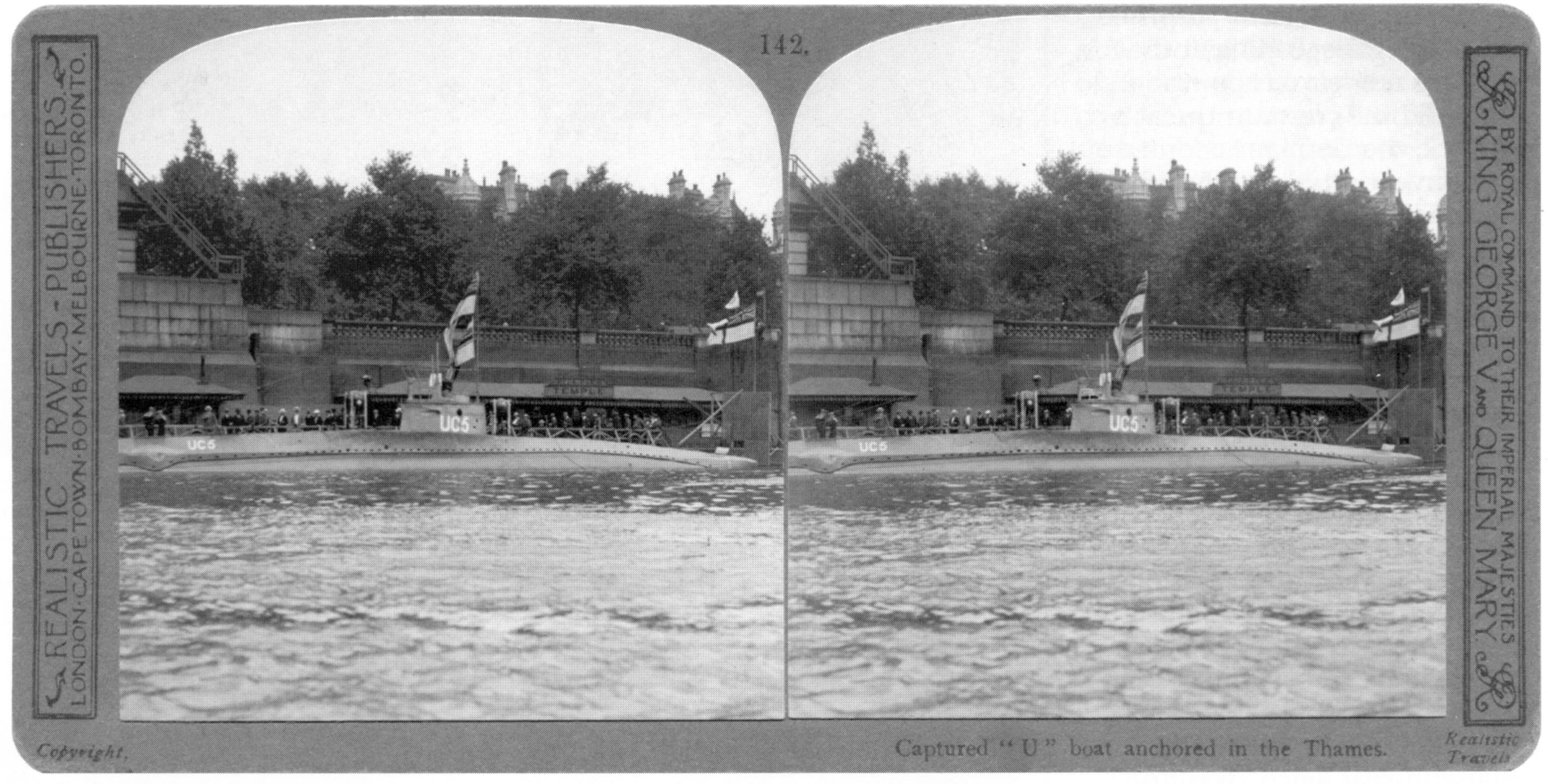


"Unterseeboot. Der Befehlshaber der Unterseeboote (links) Admiral - hier noch Konteradmiral - Donitz begrusst die Besatzong eines nach erfolgreicher Fahrt in den Stutzpunkt eingelaufenen U-bootes." [At the left, Supreme Commander of the U-boat fleet, Admiral Donitz (at this time still a rear admiral), greets the crew of a U-boat that has returned to the submarine base from a successful patrol.] - No. 62 by Raumbild; photog. M. W.

it was a light sentence. He was released from prison in 1956.

Although far from plentiful, stereo images of U-boats do exist from both world wars. Given the fact that the First World War was abundantly covered, with Keystone, Underwood, W. E. Troutman, and the British company Realistic Travels each producing literally hundreds of views, along with the supreme notoriety of the U-boats, it is perhaps surprising that there are not more views of them. But it must be remembered that the war was stereographed primarily from the Allied side and there were few opportunities to document enemy naval activities. Furthermore, the First World War was not as widely stereographed as might at first appear. Although World War I views are by far the military stereographs most commonly encountered by collectors today, this is due almost entirely to the incredible volume of Keystone sets produced during the early 1920s, and there are probably fewer different images of World War I than of the Civil War or some other conflicts. Furthermore, a great number of the Underwood images eventually wound up in the Keystone set and do not therefore represent different views. I have personally encountered no more than a dozen actual U-boat stereographs, although a greater number perhaps relate directly or indirectly to their activities. All of the U-boat stereos themselves show captured or surrendered vessels and most were taken subsequent to the armistice of November 11, 1918.

An apparent exception to this are two views by Realistic Travels of the small submarine minelayer, *UC-5*, which went aground off the British coastal town of Harwich and was captured on April 20,



"Captured 'U' boat anchored in the Thames," No. 142 by Realistic Travels. The small submarine minelayer UC-5, which went aground on the English coast in 1916, shown here on subsequent display at Temple Pier.

1916. It was subsequently displayed in the Thames and was apparently the only German U-boat open to public inspection during the war. One of the smallest of the U-boats, the *UC-5* had been built by the A. G. Vulkan works in Hamburg and launched in June of 1915. Only 111 feet long and displacing a mere 168 tons (183 when submerged), *UC-5* carried a crew of only 14. It was equipped with six mine tubes and a total of 12 mines but no torpedo tubes and only a single light machine gun.

Coincidentally, it was Harwich, located at the southern end of the North Sea, that was chosen as the primary receiving port for surrendering U-boats at the end of the war, and other exceptional Realistic Travels views show some of the dozens of German submarines anchored there. These views preserve much interesting detail, such as the saw-toothed net cutters over the bow, designed to assist the undersea craft in avoiding entanglement in anti-submarine nets. Realistic also included at least two views of U-boat interiors, both allegedly taken in the forward torpedo room of the *U-135*. However, given that no more than two torpedo tubes are visible, it is probable that the views in fact show the stern torpedo room. Oddly, many of the Harwich boats soon fell victim to looters, who even attempted to pry the reflecting lenses from their periscopes.

Perhaps the most unusual of the Realistic views is one that shows a German submarine "of the Deutschland type." Deutschland and six similar boats were designed not as combat craft but as large undersea freighters for transporting highly valuable cargo through—or rather under—the British blockade. Before America entered the war, this privately-built undersea blockade-runner made a daring trip to the United States, on her return carrying a million-dollar cargo of vital war materials from Baltimore to Bremen. Such mercantile Uboats were impractical, however, and the *Deutschland* and its sisters were soon converted into combat craft.

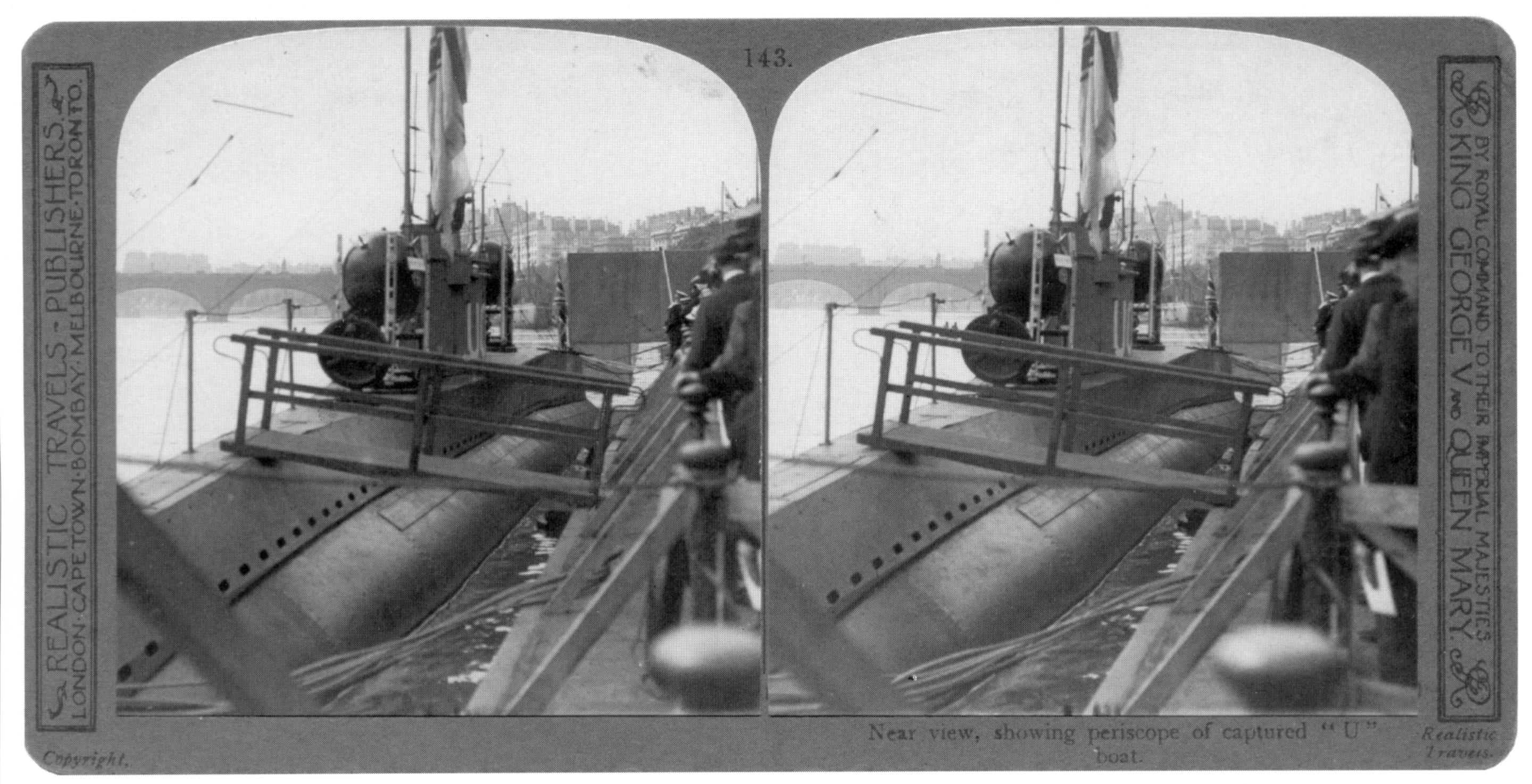
Not all the U-boats surrendered at Harwich, and Troutman issued a view of two boats, apparently *U-139* and *U-159*, in the French Channel port of Cherbourg. The accuracy of the latter identification is open to question, however. Furthermore, as is typical of the Troutman views, the quality of the prints leaves much to be desired.

At 311 feet in length and a displacement of 1,930 tons (2,483 submerged), *U-139* was one of the largest of the German U-boats of the First World War. Built by Germaniawerft of Kiel and launched

in March of 1917, it carried 6 torpedo tubes (4 bow, 2 stern), two 5.9-inch deck guns, and a crew of 62. It also was one of only a handful of U-boats to bear a name rather than simply the customary number, being officially designated as the "Kapitanleutnant Schweiger" in honor the skipper who had sunk the Lusitania.

At 234 feet and 811/1,034 tons, *U-159*, if she is indeed the other boat in the view, was substantially smaller. Also built by Germaniawerft and launched in May of 1918, she was designed to carry 6 torpedo tubes, two 4.1 -inch guns, and a crew of 39. She never saw action, however, and is listed as having been broken up before completion. This does not necessarily preclude her having been moved to Cherbourg prior to scrapping, but it does call into question Troutman's identification of the ship.

Perhaps the most dramatic of all the U-boat stereographs is also the most common, a Keystone image (No. 225 in the 300-card set) of a large boat stranded high and dry on the "south coast" of England after the surrender. This unique perspective reveals some of the features of U-boat construction normally obscured when the boat is viewed in its natural element. These include a pair of torpedo



"Near view, showing periscope of captured 'U' boat," No. 143 by Realistic Travels. Another, closer view of the UC-5 on display.

tubes on the port (left) side of the bow and a horizontal series of water-intake apertures for flooding the space between the outer and pressure hulls when diving the boat. A number of boats were driven ashore on the English coast during storms while being towed to scrapping facilities between 1919 and 1922; this is apparently the 267 foot, 1,164/1,512 ton ocean minelayer *U-118*, which was armed with 4 bow torpedo tubes and a 5.9-inch deck gun, and capable of releasing up to 48 mines from a pair of tubes in the stern.

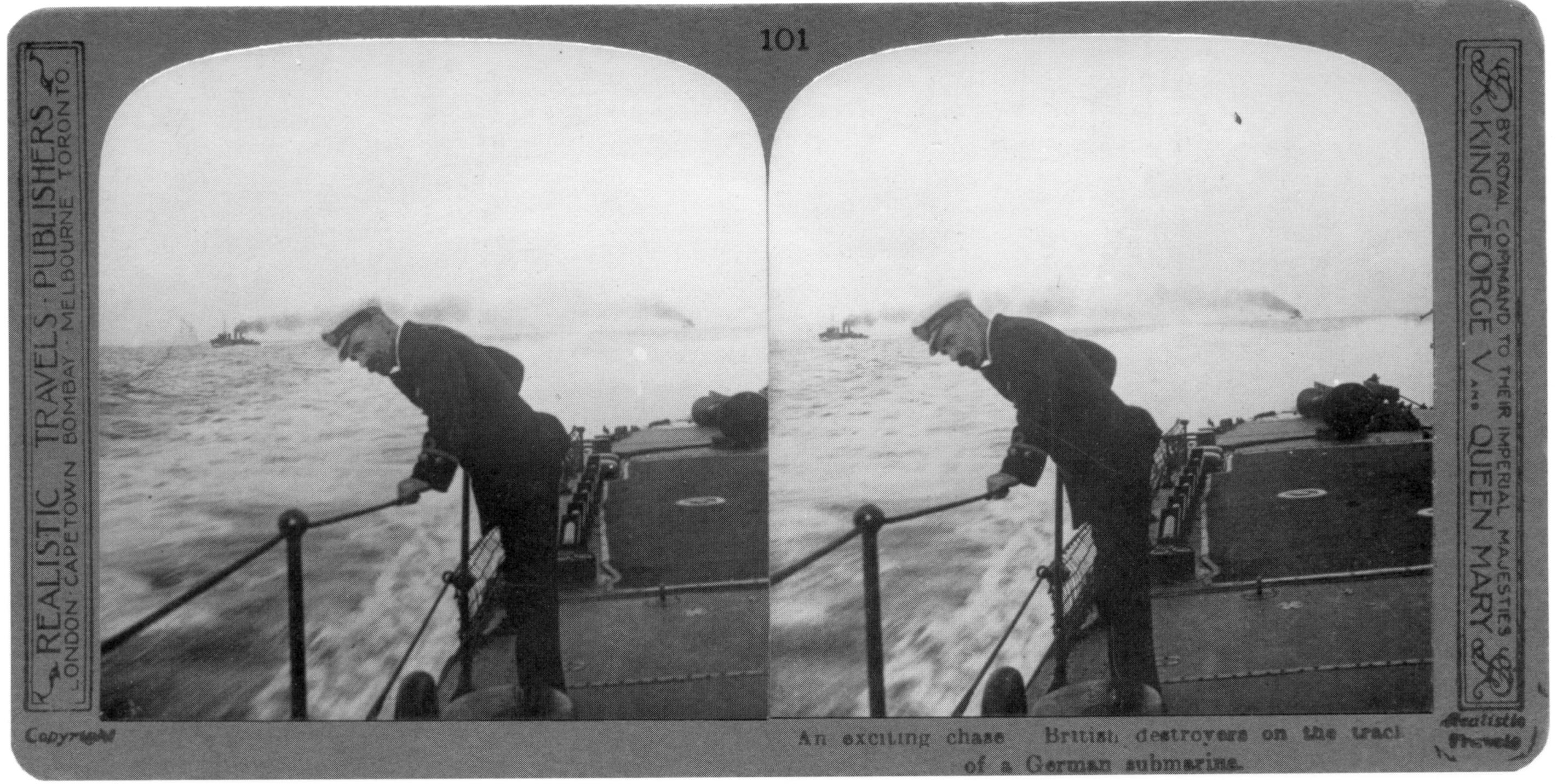
As far as U-boat related stereographs are concerned, both Keystone and H. C. White issued views of the great Cunard liner Lusitania, and other prominent U-boat victims were stereographed as well. These included the armored cruiser Hampshire, mined off the Orkneys in 1916, in a pre-war view by H. C. White, as well as the ill-fated warship's most renowned passenger, Field Marshal Lord Kitchener, in a wartime view by Realistic Travels. There are several other stereographs of pre-Dreadnought battleships and liners that met their fate at the hands of the U-boats, mostly taken in the years before the war. Among these is a most unexpected discovery, a Keystone view, actually fairly common, which is mislabeled merely as a "French

battleship"; in fact it turns out to be von Trapp's victim, the armored cruiser Leon Gambetta. Also included in the "U-boat related" category are views, most notably a group by Underwood of the Cunarder Aquitania, showing liners and troopships painted in bizarre "dazzle" camouflage schemes in an effort to thwart the undersea raiders. Not only enemies but friends of the U-boats are shown as well. Realistic, for example, produced a number of views of the German battleship Kaiserin and battlecruiser Derfflinger, taken at the large British naval anchorage of Scapa Flow after their surrender. It was here that they and the other great vessels of the High Seas Fleet would be scuttled by their proud crews in 1919 and here too that Prien's *U-47* would avenge them twenty years later.

The U-boat's weapons of choice were also recorded, in a view (No. 71) from the Keystone set showing a torpedo and mines on display in London; the torpedo was taken from the famous German cruiserraider *Emden* that was wrecked in the Indian Ocean, but differed little from those employed by the submarines. Views of anti-submarine warfare and the ships engaged in it are likewise scarce, although two views by Realistic Travels are worthy of mention. One shows an

officer, apparently looking for submarines, peering over the side of a patrolling destroyer, hardly an efficient method of locating the undersea craft, a pair of additional destroyers may be seen in the distance. The other is a most dramatic shot, taken from shore, purportedly showing a stranded submarine being blown up in the near shallows, while a large number of Allied warships and transports look on in the distance. Unfortunately, there is nothing about the large explosion that even remotely suggests the actual presence of a U-boat and the whole view, which may have been taken at the Dardanelles (and more likely represents the blowing up of an underwater mine broken free from one of the extensive fields there), should be regarded as suspect. The image was probably chosen (and appropriately relabeled) to complete the story begun with the "patrolling destroyers" view, which it immediately followed in the Realistic set.

Lastly, there are a number of views taken in the aftermath of the epic 1918 raid on the German U-boat base at Zeebrugge, Belgium. These include a pair by Keystone (Nos. 223-224 in the 300-card set) showing the defensive mole assaulted by the British landing force and the wreckage of a submarine at the base at the end of the war. This is probably a U-boat,



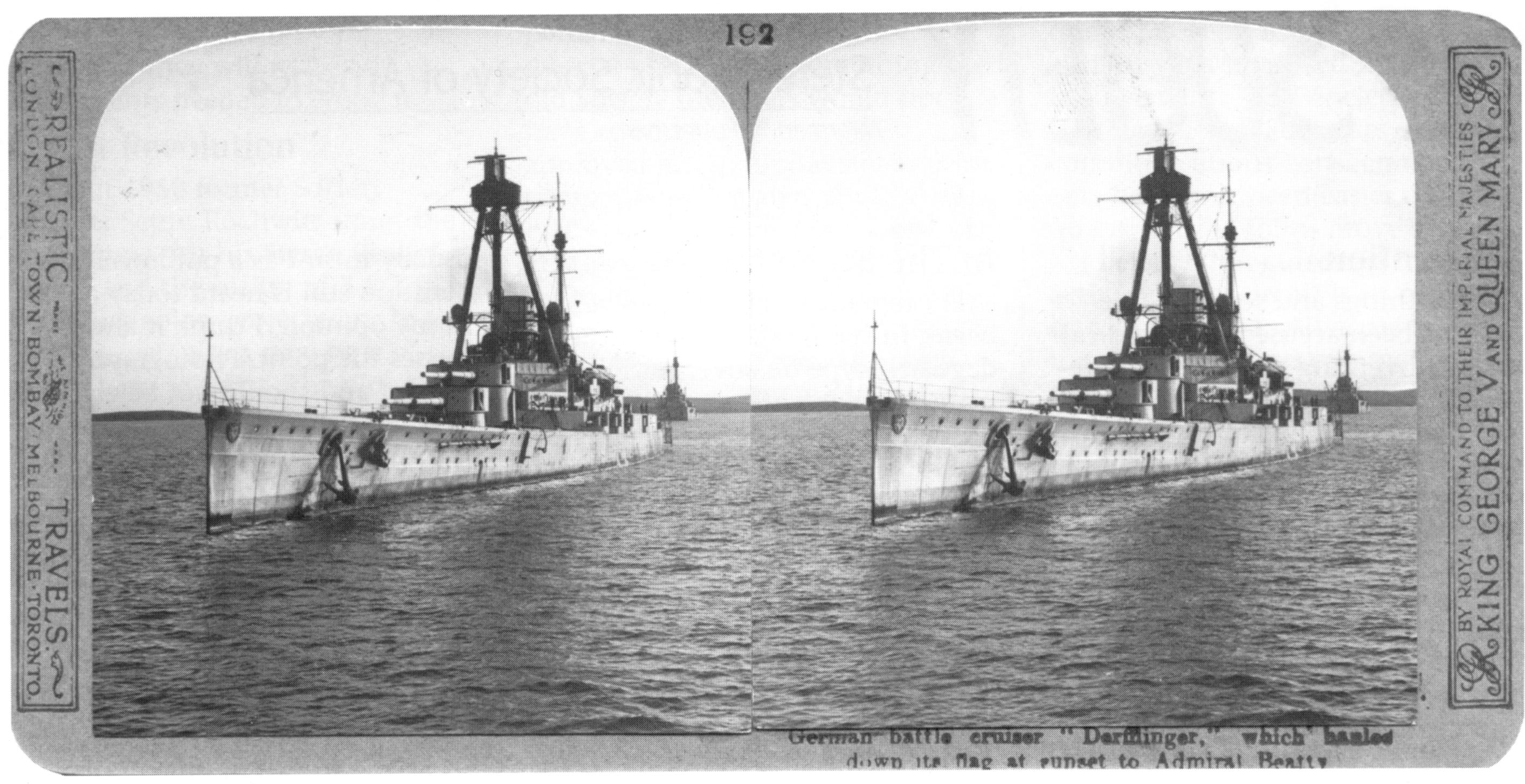
"An exciting chase - British destroyers on the track of a German submarine," No. 101 by Realistic Travels. Not only were U-boats hard to locate underwater using the primitive sound-detecting gear then available, but, until the development of the depth charge in 1916, were almost impossible to attack when submerged.

although an old British submarine, crammed with explosives, was used during the raid in an attempt to destroy part of the harbor defenses. Perhaps more interesting is a view by Realistic Travels that shows one of the British blockships sunk in the channel in the failed attempt to block the U-boats' access from their base to the sea. Curiously, the ship is identified as the Vindictive, but this is puzzling. The old British cruiser was not employed as a blockship at Zeebrugge, but rather to convey the raiders attacking the mole to and from their target. Perhaps this is one of the two blockships, *Iphige*nia and Intrepid, employed at Zeebrugge. Alternatively, the Vindictive was expended in an equally futile effort to block another German Uboat base a few weeks later. The view can be either *Vindictive* or Zeebrugge, not both. It does however graphically illustrate this dramatic phase of Allied anti-submarine operations toward the close of the war.

Surprisingly, there may be more actual stereo images of U-boats in World War II than in World War I, thanks to the Raumbild-Verlag *Die Kriegsmarine* book set of 100 stereographs. Written by Korvettencapitan Fritz Otto Busch and published by Otto Schonstein of Munich, the 84-page volume contains a folding metal viewer, pocketed, like the views, inside the heavy cardboard

front and back covers. As with the Raumbild volumes dedicated to other aspects of the German military, this one provides a spectacular overview of the Reich's Navy, with numerous views of the battleships Scharnhorst and Gneisenau, destroyers, minelayers, E-boats (similar to the American PT boats), various auxiliaries, and coast defense forces along the Channel coast. There are also the U-boats and their crews, a series of a dozen images, including one of a crew meeting with Admiral Karl Donitz, who headed the U-boat wing of the German Navy and lost two sons of his own in the sea war. Nevertheless, one gets the impression that the photographers, Dr. Troller, Engelmeyer, and an individual identified only as M. W., all attached to the Oberkommando der Wehrmacht (the German High Command), were not really into submarines. All of the stereographs are exterior views, none are taken of the conning tower, control room, torpedo rooms or other crew quarters below decks, and not one of the images is actually taken from a U-boat's deck but rather from dockside or other vessels. Moreover, some of the Engelmayer and M.W. views are relatively distant shots, with little of stereoscopic interest to recommend them. One can certainly sympathize with the rigorous and difficult conditions under which Dr. Troller carried out his assignment, given the heavy pack ice surrounding the U-boats in his two rather striking views. Nevertheless, the other types of vessels, particularly the battleships, seem to have gotten more comprehensive, not to say preferential, treatment.

Perhaps the most famous U-boat in the world today achieved that status not through any sensational exploits in the war at sea but by the whim of chance. On June 4, 1944, two days before the Normandy landings, an American hunter-killer group under Captain Daniel V. Gallery and built around the small escort carrier Guadalcanal encountered *U-505* and forced the German vessel to the surface. As the submarine crew hastily abandoned ship, a boarding party of American sailors from the destroyer escort Pillsbury raced onto the sinking U-boat, disarmed the scuttling charges, and succeeded in towing the craft back to port, the first enemy warship captured by the U.S. Navy through boarding since the War of 1812. The U-boat, with its "enigma" cipher machine and code books intact, provided



"German battle cruiser 'Derfflinger,' which hauled down its flag at sunset to Admiral Beatty," No. 192 by Realistic Travels. In 1919, many of the finest ships of the German High Seas Fleet were scuttled by their crews here in the huge British anchorage of Scapa Flow, north of Scotland, which was also the scenc of Prien's sinking of the battleship Royal Oak twenty years later.

exceptionally valuable information to its captors. Today, *U-505* resides not far from the shores of Lake Michigan, high and dry on the grounds of Chicago's Museum of Science and Industry, where it was the subject of a View-Master reel, part of the GAF three-reel pack, "Colleen Moore's Fairy Castle and the U-505," No. M-2 in the United States Travel category. Images on the reel include an exterior view of the submarine itself, plus interior shots of the control room, conning tower, galley, torpedo room, and officers' quarters.

It has been almost ninety years since Germany—and the world discovered the potential of the U-boat, a frighteningly innovative weapon that perhaps more than any other helped to introduce the twentieth century concept of total war. Questions remain—about the morality and consequences of its use, the effectiveness of its employment, its impact on the two great wars in which it played such a vital part, and the responsibility for the horrors it engendered. This is particularly true of its most famous—and infamous act.

Today, the *Lusitania* lies on her side 300 feet down on the bottom

of the Irish Sea, wrapped in an inadvertent shroud of fishing nets, with a peculiarly flattened appearance imparted as her internal bulkheads gave way. (Curiously, because of the length of the great ship, her bow had actually struck the bottom while her stern still protruded high above the surface.)

How had this great leviathan fallen victim—and so quickly—to a single torpedo?

And who bore the responsibility for the nearly 1200 people, including 94 children and 128 Americans, who lost their lives in the tragedy? Was it the Germans, with their supposedly inhumane policy of "unrestricted submarine warfare"? Or had the British Admiralty, hoping to lure the Americans into the war, deliberately set up the great Cunard liner? And why didn't Captain Turner, Lusitania's skipper, exercise more prudence when he entered waters in which he knew U-boats were operating?

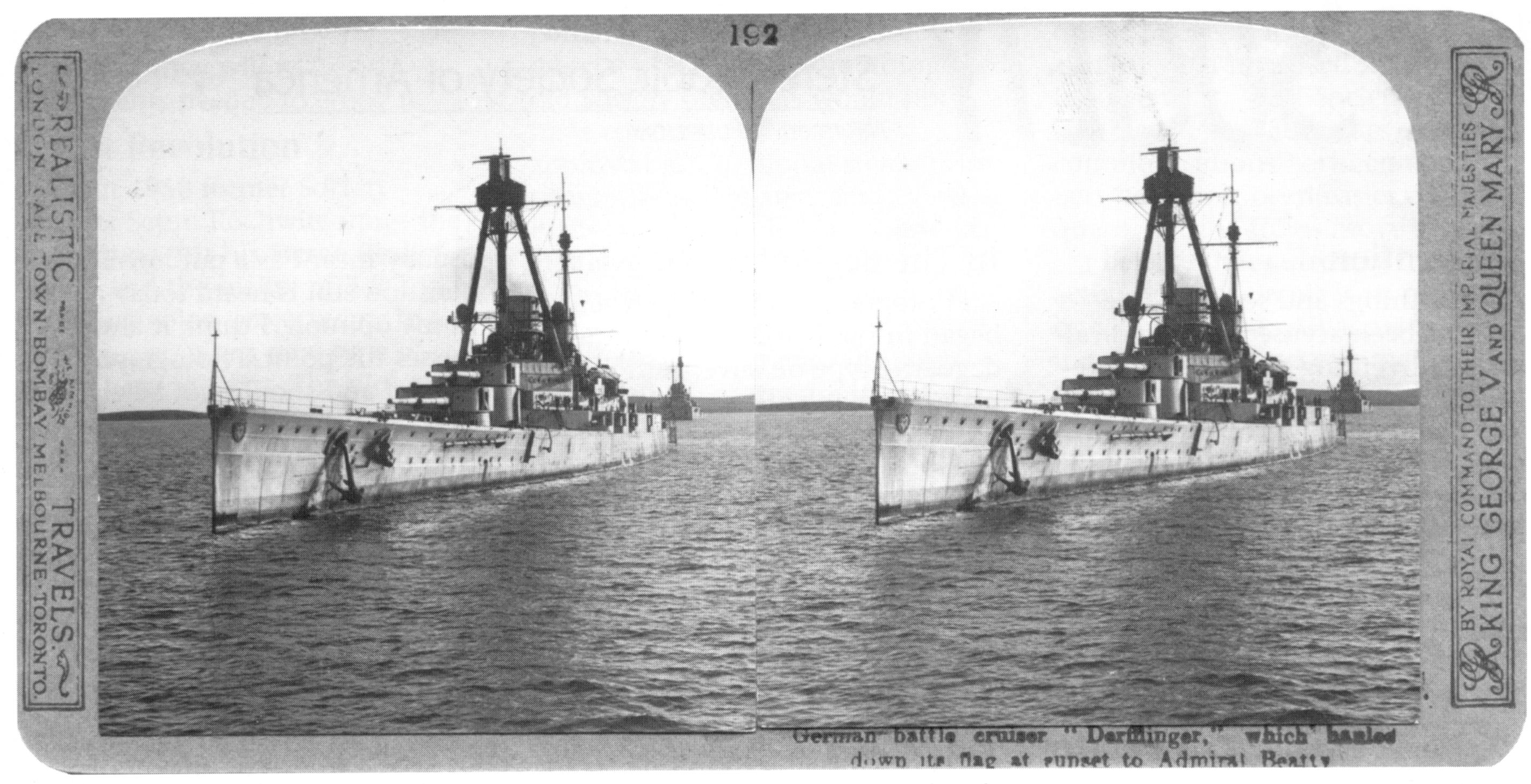
The answer to many of these questions may never be known. When Bob Ballard, who discovered the *Titanic*, dove on the *Lusitania* in 1993, he found that the wreck was lying directly on the fatal hole caused by the second explosion. Despite the problems in examining

the wreck, Ballard concluded that the explosion of the torpedo had set off a volatile mixture of coal dust and air in the ship's bunkers. Others are not so sure.

Disputes remain over exactly how much and what type of munitions the Lusitania was carrying. Apparently the Germans knew of the secret cargo. Did that justify the sinking, even if only in a narrow, legal sense?

As to the charges that the British Admiralty, and especially its devious First Lord, Winston Churchill, had a hand in the sinking, this is most unlikely. Those who prefer to see a conspiracy in the series of confusing signals the Admiralty sent to the doomed liner in the days before the sinking ignore a number of important but not readily apparent facts. Yes, Churchill had commissioned a secret study on the likely American reaction to the possible sinking of a large liner. But it was part of his job to foresee contingencies and it would have been irresponsible for him to ignore the possibility. Furthermore, the German U-boat campaign against shipping had only been in operation for two and a half months and the British were still assessing the initial results. So, although the British were concerned about the threat to the Lusitania, they weren't quite sure how to react to it.

(Continued on page 31)



"German battle cruiser 'Derfflinger,' which hauled down its flag at sunset to Admiral Beatty," No. 192 by Realistic Travels. In 1919, many of the finest ships of the German High Seas Fleet were scuttled by their crews here in the huge British anchorage of Scapa Flow, north of Scotland, which was also the scenc of Prien's sinking of the battleship Royal Oak twenty years later.

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(Continued on page 31)



Goo then (from the 1950s, left) and now (right).

tions, for a worry-free bond. (In addition to the Goo adhesive itself, the Wm. K. Walthers, Inc. catalog also includes an accessory called the Goo "Mikro Tip" nozzle—a tiny plastic spout that attaches to a tube of Goo and allows for extremely precise application to small parts.)

If you've been itching to try mounting some slides in those dusty old Permamounts you picked up a while back, don't forget to buy a fresh tube of Goo before you start. That way you can follow the original mounting instructions verbatim, and give your slides a better chance of holding together!

The search goes on...

Now that I've finally found myself a tube of ST-21-15 Goo, I'll keep busy looking for examples of other obscure Realist items, like the ST-27 and ST-29 Static-Master brushes (with their tiny bit of radioactive material!), the ST-521 cable release, or maybe even some rolls of the ST-21-7 slide binding tape for glass mounting. (A collection wouldn't be complete without all eight tape colors listed on the price sheet: red, black, green, white, blue, silver, orange-yellow, and deep orange!)

U-Boat! (Continued from page 19)

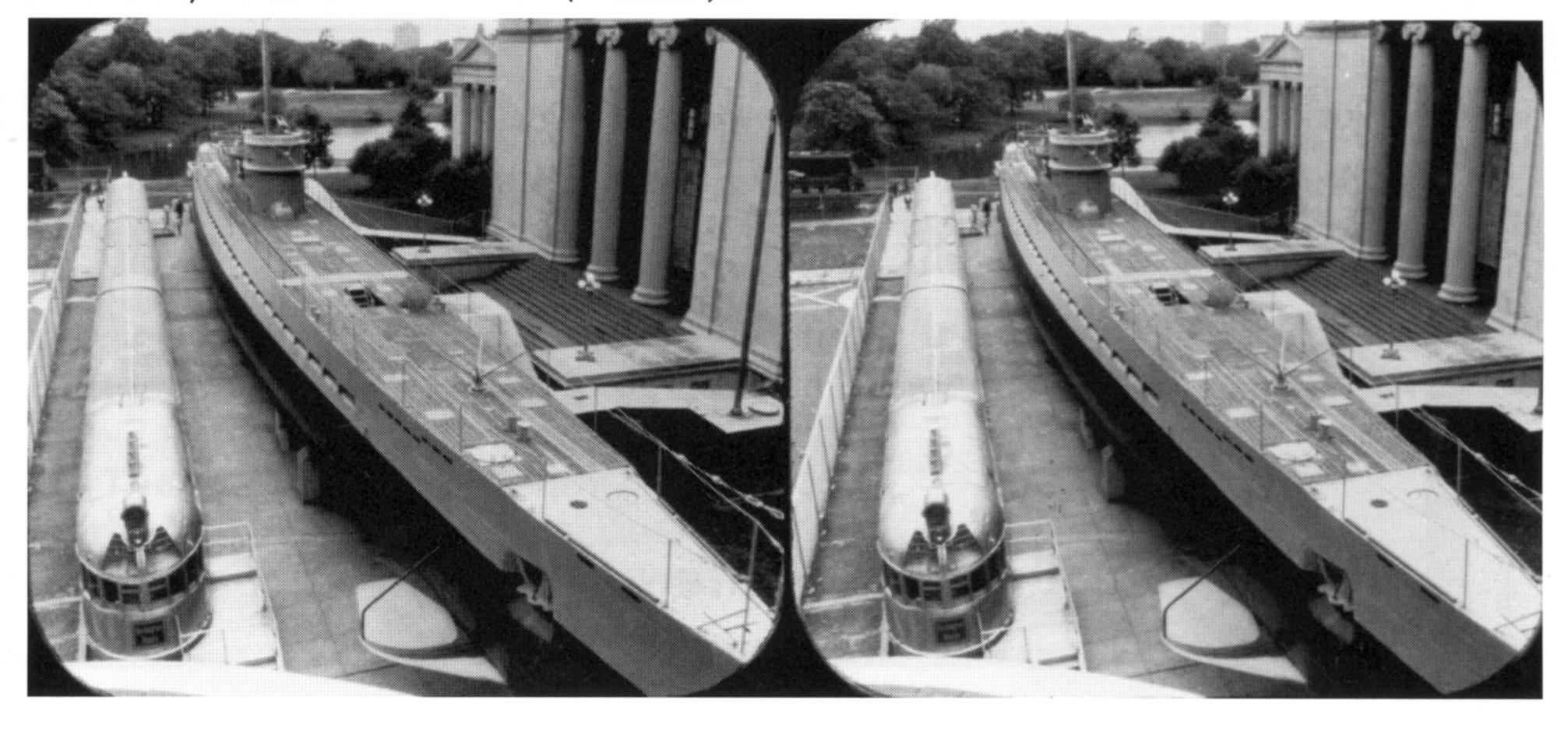
That threat, if Captain Turner had followed his orders, should have been minimal in any case. There were only a few U-boats operating off the British Isles, so the odds of encountering one were relatively slim. The liner should have been able to outrun any Uboat (except one submerged directly ahead), and the ship should not have succumbed to a single torpedo. Yet Captain Turner, who evidently thought he knew more than the Admiralty, was not staying well offshore to avoid the potential U-boat threat but had instead closed the Irish coast to check his position, and he was not steaming at full speed as instructed but had slowed to time his arrival at Liverpool with a favorable tide.

Lastly, Churchill was preoccupied at the time with the Dard-

anelles campaign just then beginning in the Mediterranean, an innovative plan for which the First Lord bore the prime responsibility and which, had it been carried out properly, might well have ended the war with an Allied victory in 1915. It was the failure of the Dardanelles, not the *Lusitania*, that drove Churchill from power and tarnished his career for twenty years. Yet one wonders whether he was not from time to time haunted by images of the great liner sinking by the bow five miles off the Old Head of Kinsale on that bright May afternoon so long ago.

The author wishes to acknowledge the gracious assistance of Duncan Woods of Cygnus Graphics and Ernst Weber in providing translations of the Raumbild-Verlag material used in this article.

"German U-505 Submarine" - overview of the captured German Type IX U-boat outside Chicago's Museum of Science and Industry; from the View-Master packet Colleen Moore's Fairy Castle and the U-505 (No. M-2).



"Submarine Control Room" - Some of the complicated equipment required by a skilled and highly-trained crew to operate a World War II German U-boat; from the U-505 View-Master reel.

