

# ERIE CLASS GUNBOATS

by Robert S. Egan

The design of the U.S. Navy's ERIE Class gunboats represented the largest most powerfully armed vessel permitted under the London Naval Treaty of 1930, without being included in the restricted tonnage amounts set aside for cruisers. The design, while not demanding extreme speeds, called for a powerful armored ship intended to operate by itself for protracted periods, capable of outrunning any merchant ship except for a few fast passenger liners, able to fight destroyers with guns heavy enough to hold them at a distance with armor-piercing projectiles, as well as bombard hostile territory and duel shore batteries. A seaplane was to be carried to extend her vision. A plentiful supply of boats could serve to ferry a landing force of 45 Marines embarked. In wartime this ship could operate as a powerful convoy escort and flagship. Considerable thought was given to the diplomatic role of this design. A spacious Admiral's quarters for high ranking guests and ample open deck space for diplomatic receptions were provided.

Two ships of this design were provided in the 16 June 1933 Emergency Program; PG-51 CHARLESTON, to be built at the Charleston, South Carolina Navy Yard, and PG-50 ERIE, ordered from the New York Navy Yard. Both ships were given names associated with their birth places. Their keels were laid down on October 27th and December 17th of 1934 (respectively). CHARLESTON was launched \*February 25, 1936, and ERIE four days later on \*February 29th. ERIE commissioned on July 1, and CHARLESTON on July 8 that same year.

The design was found to be suitable for adaption by the U.S. Coast Guard, which modified the plans by eliminating the armor and installing a new superstructure. Minor internal changes and a reshaped stern turned these plans into a 327 foot cutter. Seven ships were ordered of this new design, known as the ALEXANDER HAMILTON Class. Two were laid down at the New York Navy Yard while ERIE was still on the ways. Charleston Navy Yard was also assigned one of these cutters to be built alongside of the PG-51. The other four were produced by the Philadelphia Navy Yard, being built together in Dry Dock No. 3, our first mass production since the World War.

The standard displacement was 2,000 tons, the Treaty limit. Length of waterline was 308'0"; overall 328'6"; beam 41'0"; draft 14'10" full load; normal draft 12'8-3/4". Complement consisted of 17 officers, including the Admiral, 4 Staff and 1 Marine officer; 213 enlisted men including 36 Flag Staff and 44 Marines. Total 231. The engineering plant consisted of

\* Editor's note: These are the correct launching dates for CHARLESTON & ERIE. As a result of Mr. Egan's article and your Editor's efforts - the U.S. Naval Historical Office was able to correct a discrepancy in Dictionary of American Naval Fighting Ships, which shows these ships as launched Feb. 26, 1936 and Feb. 29, 1936, respectively.

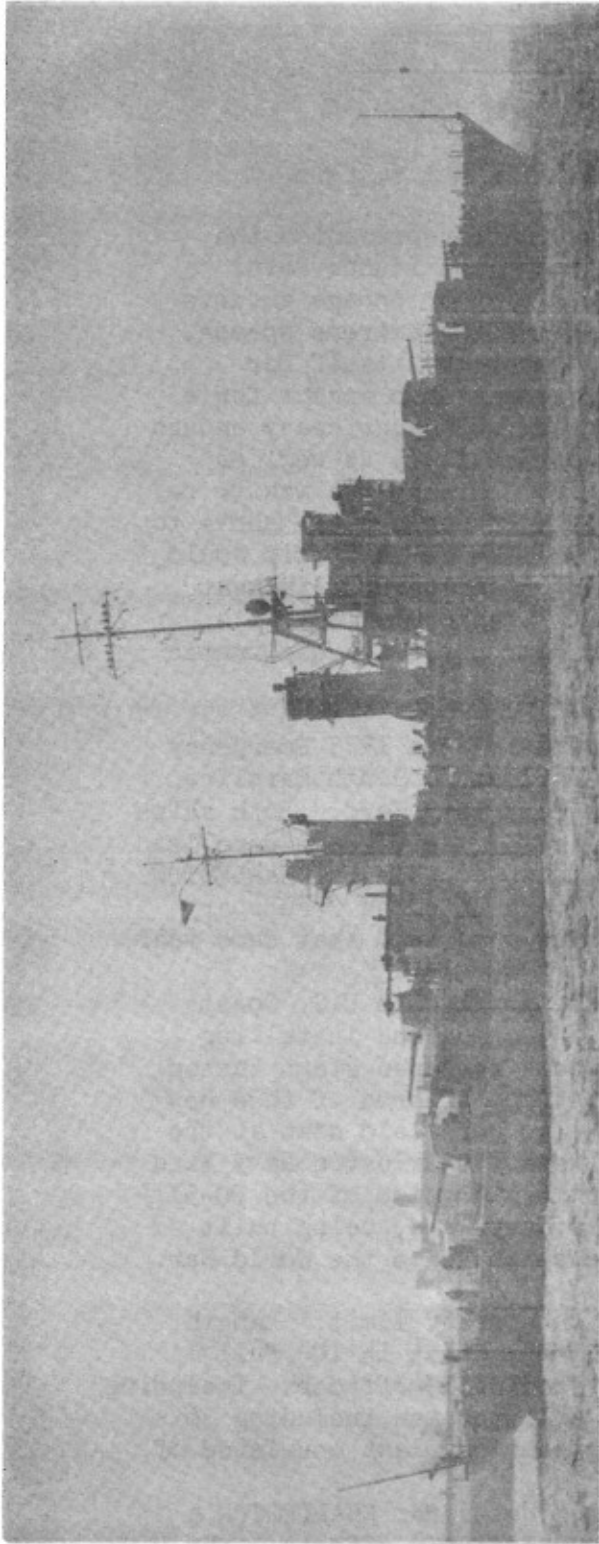
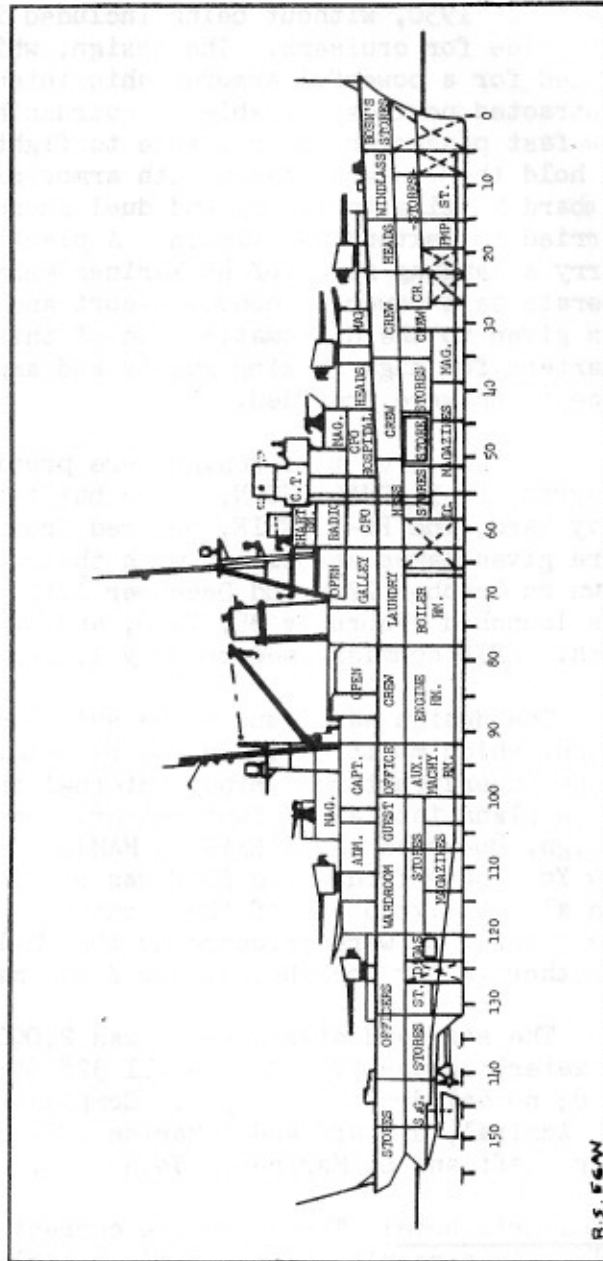


PHOTO: Starboard view of U.S.S. ERIE, PG 50, taken in 1936. Official U.S. Navy photograph from the Wm. H. Davis collection.



DRAWING: This drawing shows the compartments of this class ship. Drawing by R.S. Egan.

2 boilers which supplied steam to two sets of geared turbines. Total shaft horsepower was 6,200, giving 20 knots. Two shafts were provided, with a speed length ratio (speed in knots, divided by the square root of waterline length) of about 1.2. ERIE's hull was equivalent hydrodynamically to that of a cruiser; thus, she was quite fast for her length, a fact shown by the finely shaped waterlines of her fore and afterbody. The old fashioned counter type of stern was adopted to give a broad afterdeck, which effect was somewhat marred by locating a huge winch and a large vent squarely in the center of it. The raised platform for the after gun could form a fine bandstand. Awnings could be rigged over this whole area, while the aircraft platform amidships covered over another spacious deck area suitable for entertaining. ERIE was, in fact, capable of functioning as a floating U.S. Embassy. The after deckhouse housed the spacious Admiral's and Captain's quarters. High up in their after superstructure a large movie projection room was set up to project aft to a portable screen which could be set up on the fantail while guests watched from the portable chairs on the afterdeck and O-1 level. The Admiral's and Captain's cabins and the wardroom could function as conference rooms. Ample high powered radio facilities were installed to direct operations or communicate with Washington. ERIE's design was, it is believed, very well suited for her intended functions. These were not ships which were of the highest value during World Wars due to their low speed, but were designed primarily for peacetime or small war uses. In this sense they were a luxury, built mainly to provide work during a severe depression.

Four powerful 6"/47 caliber guns with shields were provided. The forward and after ones were on raised platforms to provide unobstructed end fire. This required raising the deck house height below Nos. 2 & 3 Mounts to clear the lower guns; in the case of No. 3 Mount, the entire after deck house was built with extra high deck-height to enhance the impressiveness of the Admiral's and Captain's cabins for visiting foreign officials. Two 3 pdr. saluting guns were mounted on the O-1 level below the bridge. For anti-aircraft protection sixteen 1.1" A.A. guns were specified in four quad mounts, two on the centerline firing over 6" gun Mounts 2 and 3, and one on each side above the bridge wings. Delivery of these weapons was delayed, and both ships operated without them for some years. No other weapons are shown on the plans of the ships as built. During the war they rated a very low priority for rearming with improved light A.A. guns. The 1.1" guns were unsatisfactory, tending to jam under prolonged rapid fire. One of the illustrations in P.H. Silverstone's book U.S. Warships of World War II dated May 1940, shows ERIE with awnings rigged and all four quad 1.1" mounts on board. ERIE was little altered during the War beyond the removal of the big boats and launches. She retained the whaleboats on each side under the bridge wings, a radar screen was mounted on the gun director, and depth charges added aft. CHARLESTON in addition had the aircraft and boat handling booms and kingposts removed along with her seaplane. The after superstructure was cut down by eliminating the motion picture projection room. Six 20 mm guns were mounted amidship, three on each side of the former aircraft handling platform.

The pilot house was built around a circular conning tower 3" thick. The large square pilot house windows allowed vision from the slits in the conning tower. The 6" gun director utilized the armored tower as a foundation. A 24" searchlight was mounted at the top of the tripod foremast and a 36" one on the after superstructure. Both were available for remote

operation for target illumination. The tripod foremast provided a rigid support for the searchlight and eliminated the need for mast stays which might have interfered with boat or aircraft handling amidships. As completed a small seaplane with folding wings was carried amidships, but was sometimes replaced with additional launches. When torpedoed, ERIE was carrying her seaplane.

Jane's Fighting Ships states with unknown accuracy that ERIE had a side belt 1" thick, 3" over vital spaces, 1" shields for the guns and bridge, and 2" + 1" decks. It is known that the second deck was 1 $\frac{1}{4}$ " over the machinery spaces. While these figures based on Jane's are possible, they would seem to be maximums, as it is doubtful if a ship of this size could devote any more weight than this to protection. Previous American gunboats were unarmored, except for gun shields.

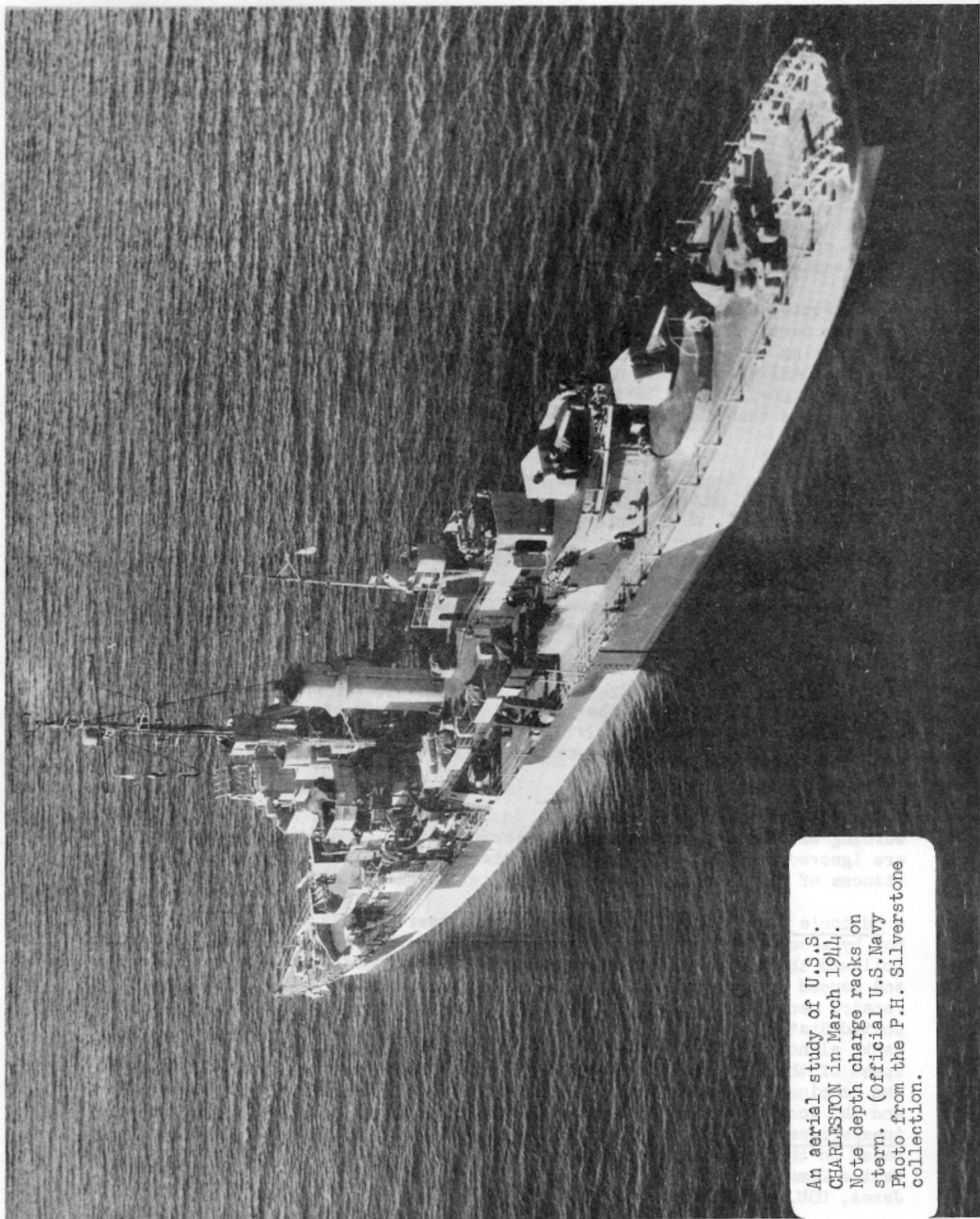
### SHIP CAREERS

The CHARLESTON sailed from Norfolk, Virginia, 24 February 1937 to join Squadron 40T, the special force in the Mediterranean created during the Spanish Civil War to patrol and guard American interests. With this squadron she visited Dubrovnik, Yugoslavia; Trieste and Naples, Italy; and Algiers before returning to Charleston, South Carolina, for overhaul 24 April. On 9 July, she left Charleston for Balboa, Canal Zone, where she became flagship of the Special Service Squadron, carrying out a varied program of exercises and battle practice in the Panama area until 1 March 1938, when she stood north for Charleston.

Returning to the Caribbean again between 21 April and 3 October 1938, and between 4 January 1939 and 27 June 1940, CHARLESTON joined in Army-Navy maneuvers, conducted off-shore patrols, and created good will by visits to Central American and Mexican ports. During the second of these cruises, she again served as flagship. On 8 September 1940 CHARLESTON cleared Norfolk, Virginia, for Seattle, Washington, and duty as flagship for Commander, Alaskan Sector, Thirteenth Naval District. From 6 November 1940 to 27 November 1941, she made five cruises from Seattle north to Aleutian and Alaskan waters, to guard this long section of American coastline.

Upon the entry of the United States into World War II, CHARLESTON intensified the schedule of patrol and convoy escort duties necessary to protect this far-northern region, and except for four voyages to the west coast ports for maintenance, she operated from Dutch Harbor or Kodiak throughout the war. Along with her escort and patrol duties, she carried out such missions as landing reconnaissance parties, aiding stricken ships, and taking part in the operations at Attu, which was assaulted 11 May 1943. Two days later, CHARLESTON arrived to bring her fire power to support Army troops ashore, bombarding Chicago Harbor, and screening the transports lying off the island. During the attack of Japanese bombers on 22 May, she evaded aerial torpedoes by radical maneuvering, while splashing one enemy plane and helping to drive off the others. She provided call fire until the island was secured, and supported its occupation through convoy escort runs between Attu and Adak.

At the close of the war, CHARLESTON prepared for Far Eastern duty, arriving at Hong Kong 25 November 1945. She also visited Shanghai before returning to San Francisco 4 March 1946. She decommissioned there 10 May



An aerial study of U.S.S. CHARLESTON in March 1944. Note depth charge racks on stern. (Official U.S. Navy Photo from the P.H. Silverstone collection.)

1946 and transferred to the Massachusetts Maritime Academy 25 March 1948. She was unsuited for this duty, and ultimately was replaced by a cargo ship.

CHARLESTON received one battle star for participation in the Aleutians Operation, resulting in the capture and occupation of Attu, 13 May - 2 June 1943.

The ERIE's role in World War II began when she was on patrol between Balboa, Canal Zone and Puntarenas, Costa Rica. On the 13th of December, 1941, the Costa Rican government turned over 30 Japanese prisoners of war to the commanding officer, who sent a prize crew to take charge of the motor vessel ALBERT, setting course with both vessels for the Canal Zone.

Enroute, ERIE, took another prize, the motor vessel SEA BOY. A boarding party took charge of the ship, taking one Japanese prisoner of war and ordering the ship to Balboa. On the 16th, she sent a party to board SANTE MARGARITA and ordered her to proceed to Puntarenas, Costa Rica. A distress signal from ORION brought her to the rescue of that ship the same day, and she then towed ORION back to Puntarenas, arriving in Balboa on the 18th.

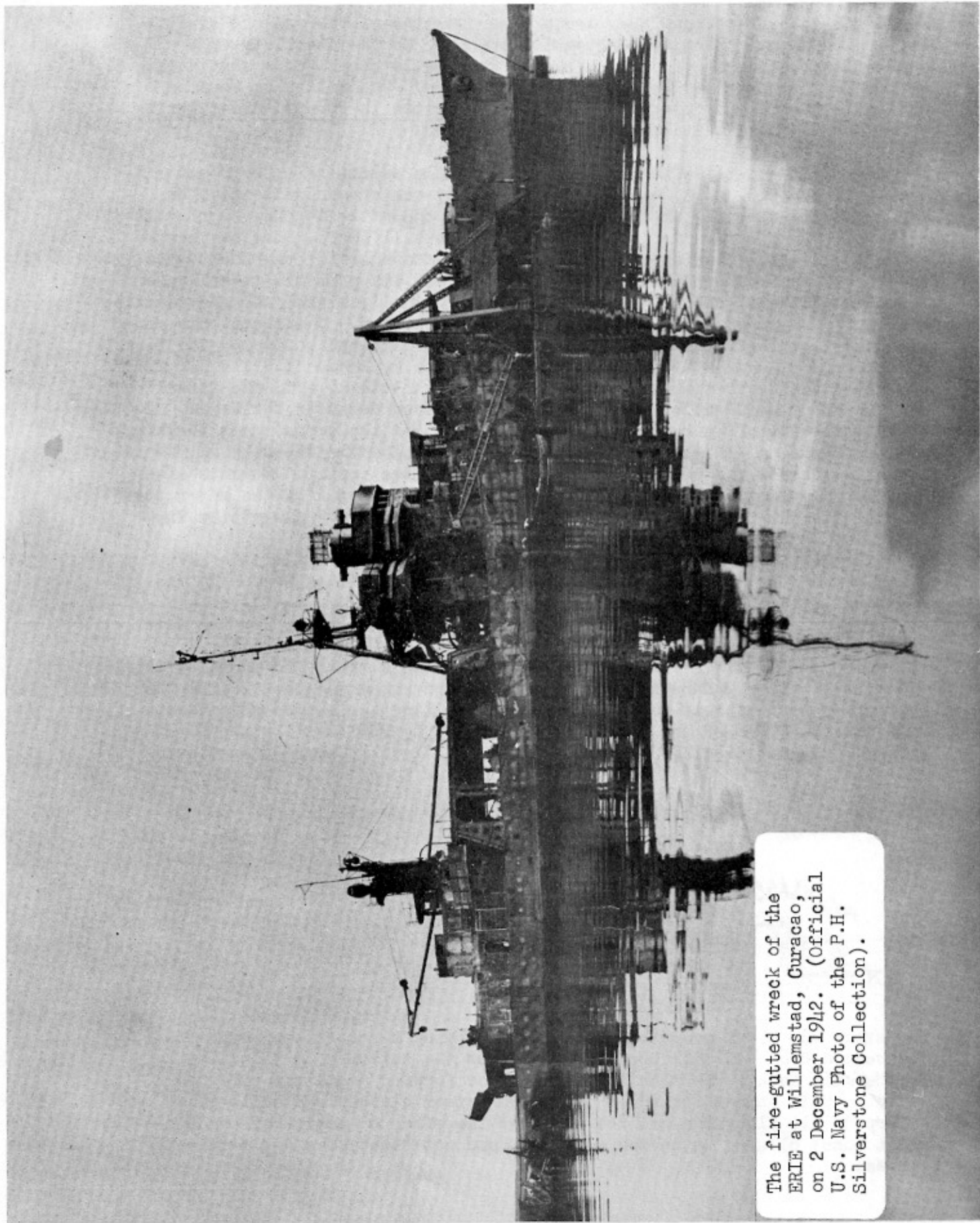
ERIE then began a period of patrol between Balboa and the Galapagos Islands, Ecuador through 11 July 1942. On 10 June she went to the aid of SS FORT GOOD HOPE, which had been torpedoed, taking the master and 45 survivors aboard. Searching for the submarine, she dropped six depth charges with no observed results.

Twenty-three survivors from SS LEBORE were picked up off St. Andrews Island on 15 June and 53 were rescued on the following day.

The gunboat then shifted her patrol area to the Canal Zone - Guantanamo Bay, Cuba area until 20 July, putting in at Balboa for an overhaul between 20 July and 28 September. She then put to sea again, on escort and patrol duty between Guantanamo Bay, Trinidad and Balboa until 10 November, when she left Trinidad on her last voyage, bound for Guantanamo Bay screening a convoy.

The real tragedy of this story is the needless loss of ERIE, a classic warning of what can happen when the basic principles of naval architecture are ignored. Along with the loss of the USS O'BRIEN (DD-415) \* the circumstances of ERIE's loss were widely publicized among ships' officers during

\* Editor's note: Early in the War the destroyer O'BRIEN was struck on the bow by a submarine torpedo. Severe flexural vibration of the hull girder followed the explosion and buckled hull plating and longitudinals forward and caused serious failures in the bottom structure amidship. Temporary repairs were accomplished and the ship then attempted to return to the United States. After steaming 2800 miles, the O'BRIEN broke in half and sank, although no rough weather was encountered during this time and the speed of the ship never exceeded 12½ knots. The loss of the O'BRIEN was the combined result of the lack of drydock facilities in the advance areas and the accomplishment of temporary repairs under the direction of personnel inexperienced in the details of ship construction. (The above note is based on the report published in the article "U.S. Fleet Maintenance and Battle-Damage Repairs in the Pacific During World War II" by Capt. Ralph K. James, USN, published by the American Society of Naval Engineers.)



The fire-gutted wreck of the ERIE at Willemstad, Curacao, on 2 December 1942. (Official U.S. Navy Photo of the P.H. Silverstone Collection).

World War II. Even today they are a clear warning of the dangers of forgetting to give intelligent attention and care to the stability of a damaged ship, as that of O'BRIEN showed what could happen to a ship whose structural strength was not adequately restored. The following details of ERIE's loss are adopted from Structural Repairs in Forward Areas During World War II, with all classified data omitted.

On 12 November 1942 at 5:33 PM (1733) while escorting a Caribbean convoy, ERIE (C.O. Capt. A.R. Mack) was hit by one submarine torpedo on the starboard side aft at Frame 126, opposite the after 6" gun, approximately 5 ft. below the waterline. A huge hole in the hull 45 ft. long was opened up by the blast. This extended from 5 ft. to starboard of the keel up to and across the main deck, causing the 6" gun and its platform to collapse into the officers' cabins on the 2nd Deck. Fuel oil, diesel oil and gasoline (AVGAS) tanks in way of the explosion were demolished. Their contents mixed with the incoming water which spread rapidly through the shattered 2nd Deck spaces from Bulkheads 99 to 141. The blast tore Bulkheads 119 and 131 and distorted the door in Bulkhead 107. Because of flooding aft, the waterline was now about half way between the main and second decks in this area. Two compartments of officers' cabins, the wardroom and the compartment forward of it containing VIP guest cabins were awash. Below the 2nd Deck all storerooms, magazines and tanks were filled for the same extent. Moments after the hit, a gasoline vapor explosion occurred. Fire engulfed the after portion of the ship. By 5:45 PM (1745) the ready service 6" ammunition in the after deckhouse began to explode.

As the starboard list and trim by the stern were both gradually increasing, ERIE was headed for the beach four miles away, moving slowly on a distorted port shaft. When ERIE grounded at 6:23 PM (1823) the main deck was underwater aft of Frame 104, with a list of 15° to starboard. Following the slope of the beach, ERIE now listed slightly to port. Within two minutes after grounding the burning oil and gasoline spewing from the shattered stern spread around the hull, engulfing the entire ship except the forward 30 ft. of the bow. By 6:26 PM (1826) ERIE was abandoned. The forward 6" ammunition blew up, as well as the aircraft bombs stowed amidships which tore a 20 ft. hole in the main deck to starboard of the stack.



Damages to ERIE as per drawing published by American Society of Naval Engineers.

The stack was blown over to port and the burning aircraft went overside. The second deck was deflected downward over the boiler room below the hole in the main deck. The machinery spaces and forward magazines remained intact. ERIE burned for three days. Her armor clearly was quite good. A torpedo hit alongside had not exploded the after 6" magazines and aircraft bombs blowing up on the main deck had not penetrated the machinery spaces.



On November 19, 1942, salvage operations began by a private contractor. About 375 tons of weight and debris were removed, along with guns, anchors and their chains, liquid in tanks, stores, etc. Although all possible top-side weight was taken off, 200 of these tons represented liquids in tanks low in the ship, thus the lowering of the ship's center of gravity was very small considering the large amount of weight removed. It is apparent that the huge loss of stability caused by the extensive loss of waterplane area on the 2nd Deck was not appreciated. When refloated on November 28th, ERIE had an  $8\frac{1}{2}^{\circ}$  port list. Her draft forward was  $8\frac{1}{2}$  ft., aft 24 ft. Her stability was now  $1/3$  of that prior to damage.

She was towed to Willemstad harbor, Curacao, Netherlands West Indies. On December 3rd it was decided to place her in dry dock for temporary structural repairs to enable her to be towed to a stateside shipyard. Operations commenced to remove the list and reduce the huge stern trim to enable ERIE to be docked. This was done by emptying two port fuel tanks, flooding forward compartments, replacing the anchors and chains, and adding counterweights on the main deck forward on the starboard side. This work was completed by 7:30 PM on December 4th, leaving ERIE with a  $5^{\circ}$  port list.

By 3:00 AM on the morning of December 5th, the watchmen noticed that ERIE had righted herself and was beginning to list to starboard. The list stopped at  $10^{\circ}$  when the hull rested against a fuel barge secured to the starboard side. The large crew compartment, Frames 78 to 92, on the second deck amidships was observed to be flooding from the washroom on the starboard side just forward of it. The water covered the starboard half of the 2nd Deck in this space and ran down the centerline hatch into the engine room. An attempt was made to remove this water with a portable pump. To remove the starboard list two large port fuel tanks were rapidly flooded. Within 12 minutes after this was done ERIE began to come upright and with ever increasing acceleration capsized to port.

All of this was totally unnecessary. ERIE's condition and actions since her damage had given ample warning signs of her critical stability situation. No energetic actions to improve stability had been taken. Weights high in the ship to correct list and trim show clearly that her critical stability condition was not realized. The added free surface of water flooding the large crew berthing compartment amidship was not recognized as representing a further loss of stability. Above all, the tendency of a ship with negative stability to "flop" from a list to one side over to a list to the other side was ignored, even though this is a classic warning of negative stability. With a ship in this condition the only action that can be taken is to lower the center of gravity and eliminate free liquid surfaces as rapidly as possible. Instead on two occasions the worst possible action was taken. More off center weight was added on the high side, thus ERIE flopped over to this side and kept on going.

Flooded completely, ERIE was judged to be a total loss. ERIE's disastrous fire and salvage errors provided some valuable information for the Navy to study. As a result of this fire, as well as those which swept other Navy ships early in the War, came improved fire fighting techniques. The ship lay at Willemstad until December 1952 when the ship was salvaged by the U.S.S. OPPORTUNE, towed out of the harbor and the hulk sunk in 300 fathoms of water.

