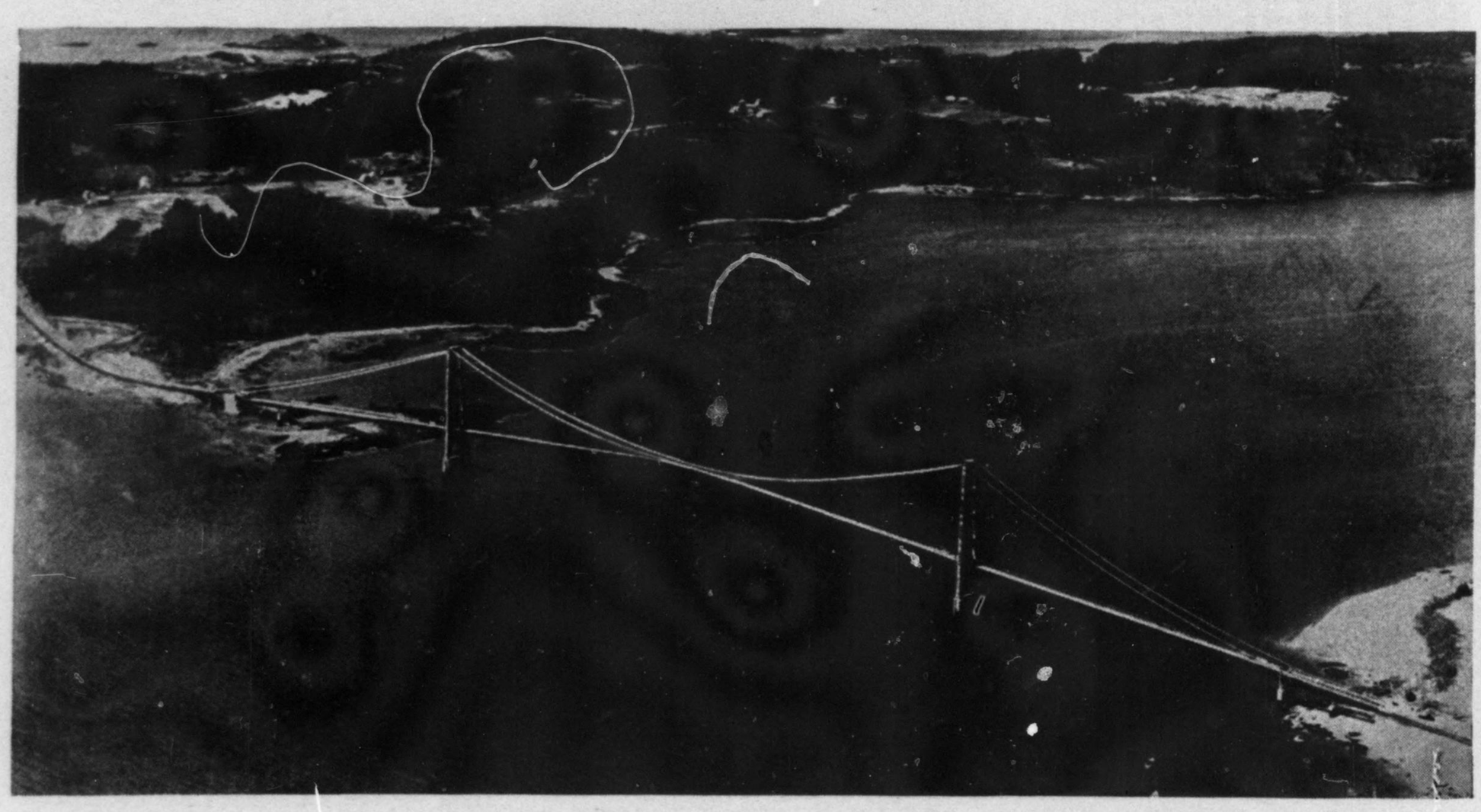
Long-Span Suspension Bridge in Maine



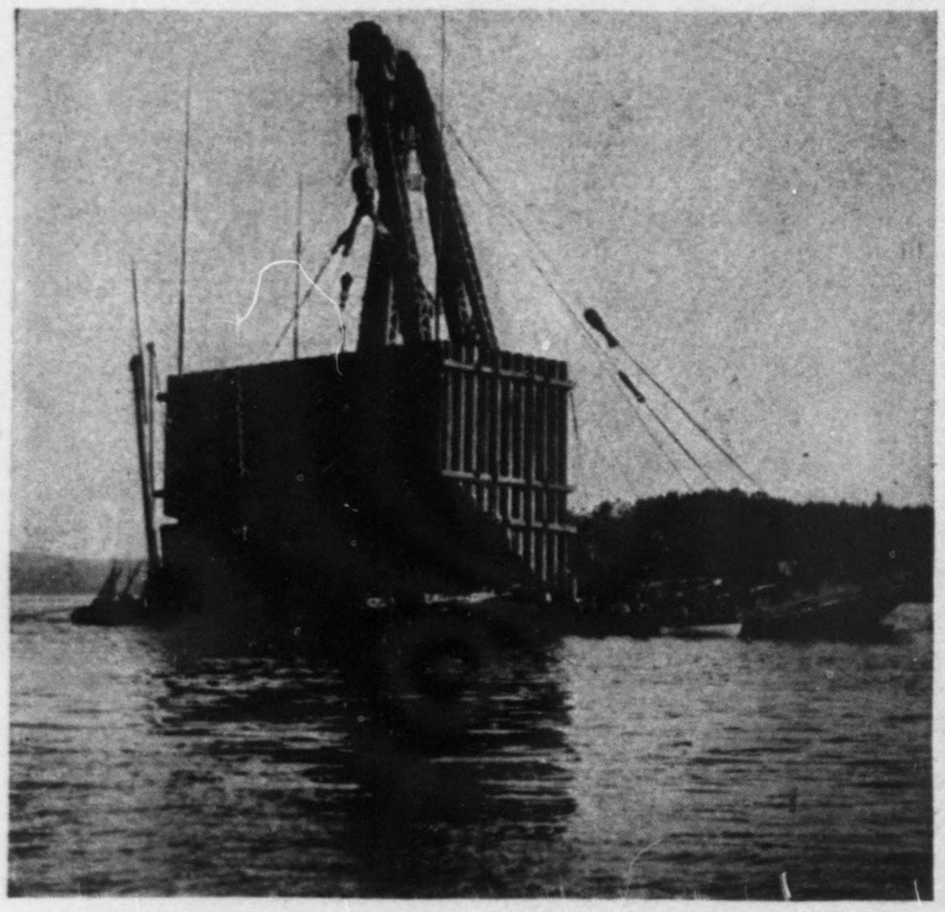
THE NATION'S NEWEST SUSPENSION BRIDGE, which was dedicated last week, connects isolated Deer Isle with the Maine mainland. Economy limited the roadway width to 20 ft., narrowest of any such long-span structure.

DEDICATION CEREMONIES on June 19 officially marked the opening of the Deer Isle-Sedgwick suspension bridge across Eggemoggin Reach in Maine. Limited funds, foundations in deep water and an exposed, wind-swept location (the reach is an arm of the Atlantic) presented problems that were met by ingenious design and clever construction methods. The entire structure, consisting of a main span of 1,080 ft., two side spans of 484 ft., two deep and six shallow piers, two abutments and roadway approaches, was built for $870,000.

To build the two main piers in deep water, the foundation contractor sank prefabricated cofferdams of steel sheetpiling, their bottom edges cut to fit the irregular rock surface of the bed of the bay. This procedure, as well as other interesting foundation construction, was described in *ENR* Aug. 18, 1938, p. 207.

Economy required the lightest possible structure consistent with safety and sound engineering practice. A 20-ft. concrete roadway was considered adequate, but introduced design problems to cope with wind stresses on such a long, narrow structure. Steel towers 185 ft. high carry two 7½-in. cables, each made up of nineteen 1½-in. galvanized bridge strands. At the center of the main span the cables are fastened to the 6½-ft. stiffening girders to damp cable vibration under high winds. Also from each tower leg at roadway level three storm cables radiate to various points on the main span suspension cables. These are essential in stiffening the structure.

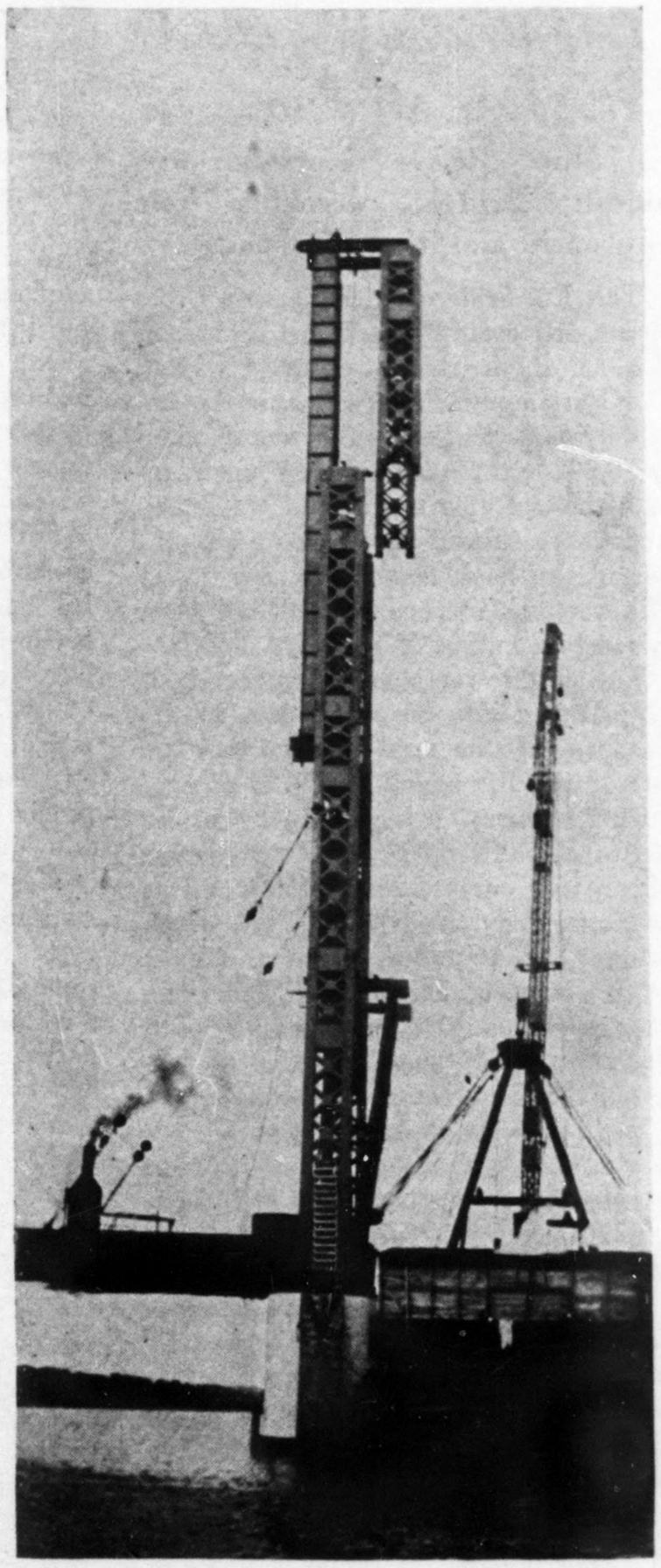
The bridge was built as a WPA project sponsored by a local district and the state. Robinson & Steinman, New York, were consulting engineers. Merritt-Chapman & Scott Corp., New York, built the substructure, and the Phoenix Bridge Co., Phoenixville, Pa., erected the superstructure.

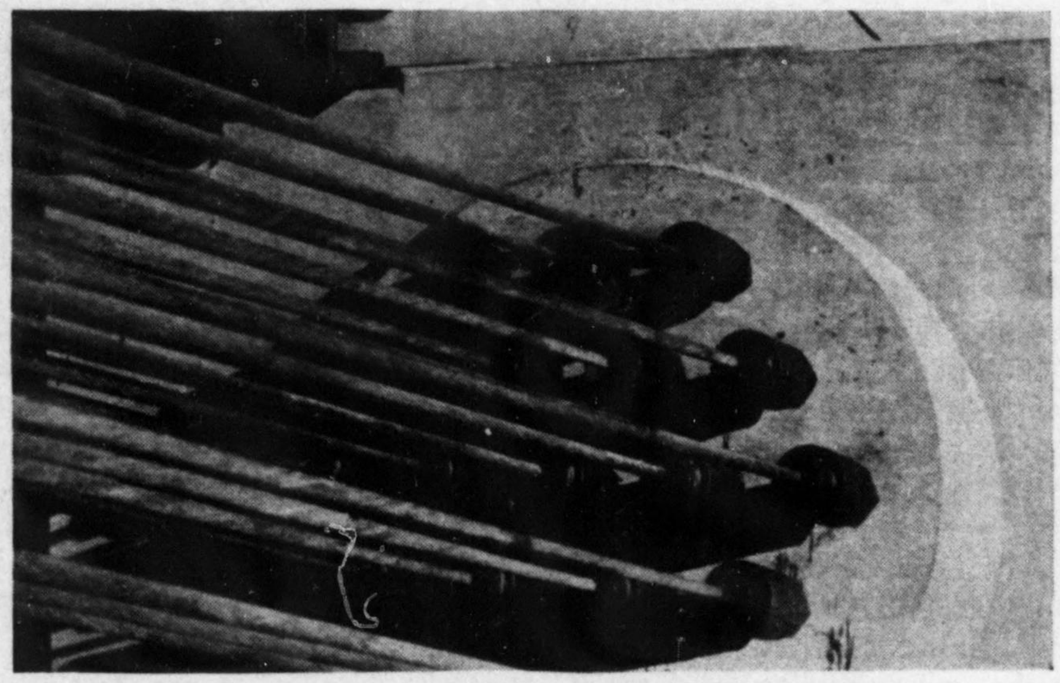


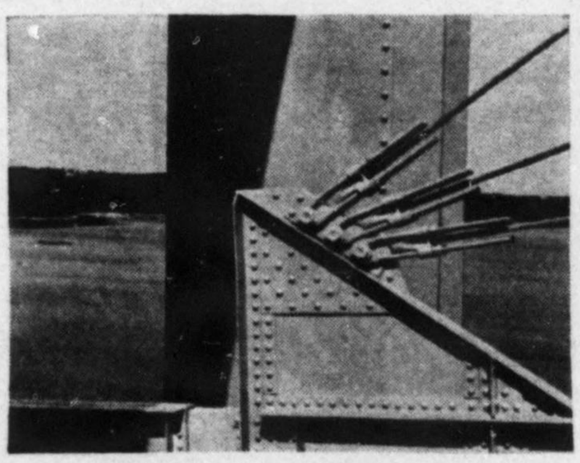
COFFERDAMS for the submerged bases of the two main piers were built up of steel sheetpiling and steel framing, trimmed to fit bedrock contours, and dropped to place in deep water by a huge floating derrick.

Dedicated Last Week

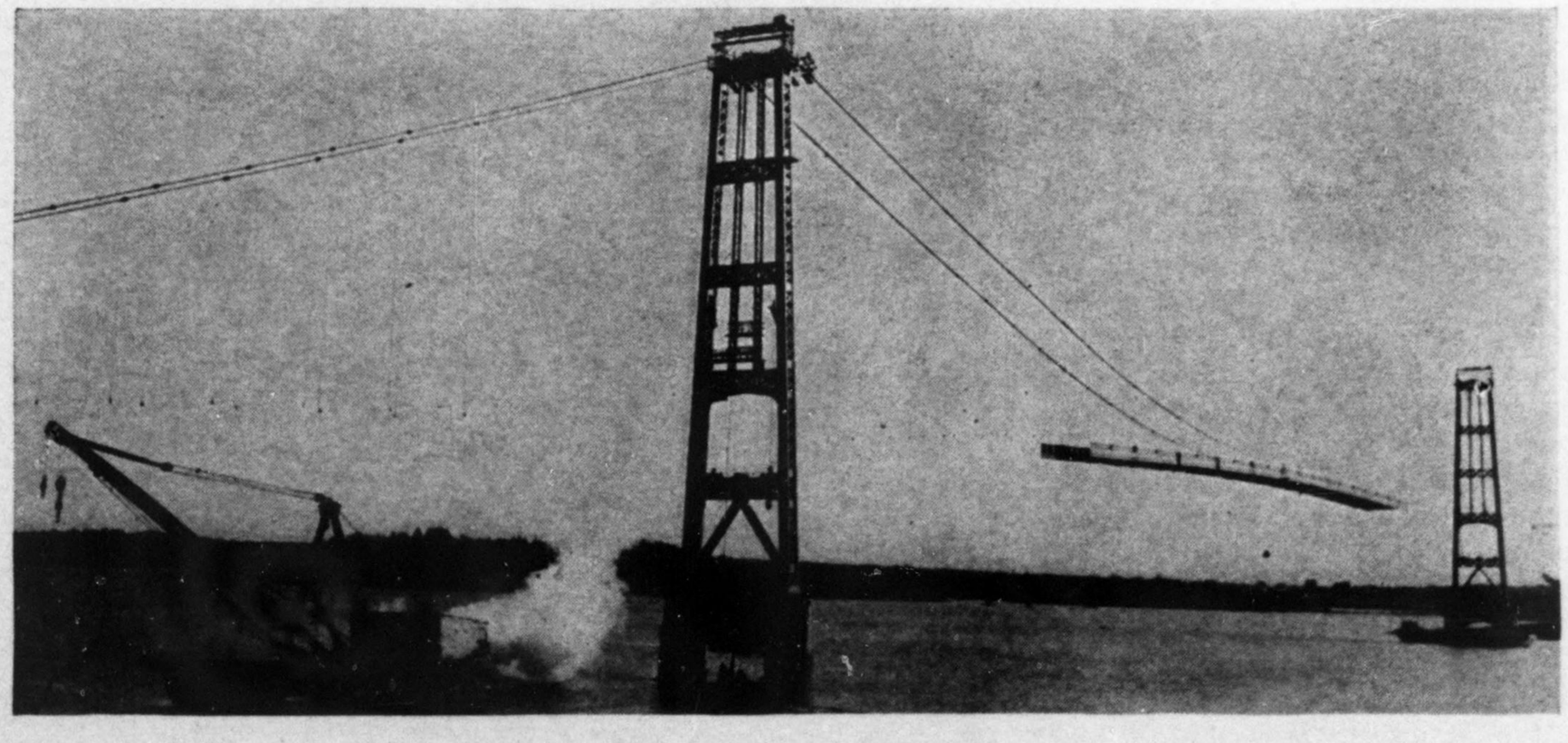
L-HEAD CRANE (right) made up of approach span girders, erected steel on the main towers beyond the reach of floating derricks. Tower sections made up of two legs and a cross strut were assembled on the outriggers at right of tower base and lifted into place as a unit. The crane hoisting engine was perched on a platform made of approach girders suspended by cables from the lower tower steel.







STRANDS of the suspension cables (above) were individually socketed to anchor bars through a threaded connection that permitted easy adjustment to proper length. At left is one of four attachments for storm cables which are very necessary in this exposed location; connection is to the top of the stiffening girders at the towers.



EXTREME CARE was necessary in erecting stiffening girders and floor steel to prevent strain on the light towers; steel was placed first at center of main span, then on side spans as a balance. Suspender rope cable bands were placed from a cage riding auxiliary cables; no catwalk was used.