ENGINEERING

Rehearsal for Invasion

Laying the pipeline across the English Channel to deliver gasoline to Allies was preceded by 18 months' experimentation in this country.

➤ THE LAYING of a pipeline across the English channel to deliver gasoline and oil to the American and British armies, soon after the Normandy invasion, was preceded by some 18 months of experimentation both in America and in England, the War Department now reveals. The operation was planned and tested in the winter of 1942-43, long before the actual invasion, and 18 months before the first line under the channel went into actual operation.

Colonel John H. Leavell, of Tulsa, Okla., an oil operator of long and successful experience, began work on the idea of a pipeline from England to France in the summer of 1942. The use of undersea pipelines was not a new idea. They had been used in many places to discharge tankers off-shore when no harbors were available. No 30-mile-long underwater pipe, however, had been tried, or any long pipe under 150 feet of water and the great pressure at that depth.

The American experimentation was carried out on a stretch of beach on Martha's Vineyard, an island off the coast of Massachusetts. Ten miles of 4.5-inch extra-heavy pipe were used. One of the basic questions was the effect of friction set up by drawing the long lengths of pipe over the beach and the ocean floor. A 3,000-foot length was dragged 50 miles without undue abrasion and without opening any of the welded joints.

Five one-mile lengths of pipe were assembled adjacent to the shore. One was towed into the ocean and stopped so that the end could be welded to the second one-mile length. This process continued until the five sections were in a single unit, requiring three tow-boats to pull it.

After tests with this five-mile unit were completed, experiments were conducted to determine the practicability of connecting two sections of pipe under water and on the surface. The underwater test was successful in shallow water, but was not suitable for the depths that would be encountered in the English channel. The attempts at surface connections were slow and beset by a number of difficulties.

According to recently published reports, interest in a cross-channel pipeline developed in England also in 1942, the War Department states. This was while plans for invading the continent were being formulated. Experiments under joint English and American auspices developed a flexible pipe similar to the casing of a submarine cable. This was wound on enormous floating drums and unwound as the drums floated across the channel. The first line is reported to have gone into operation on Aug. 12, 1944.

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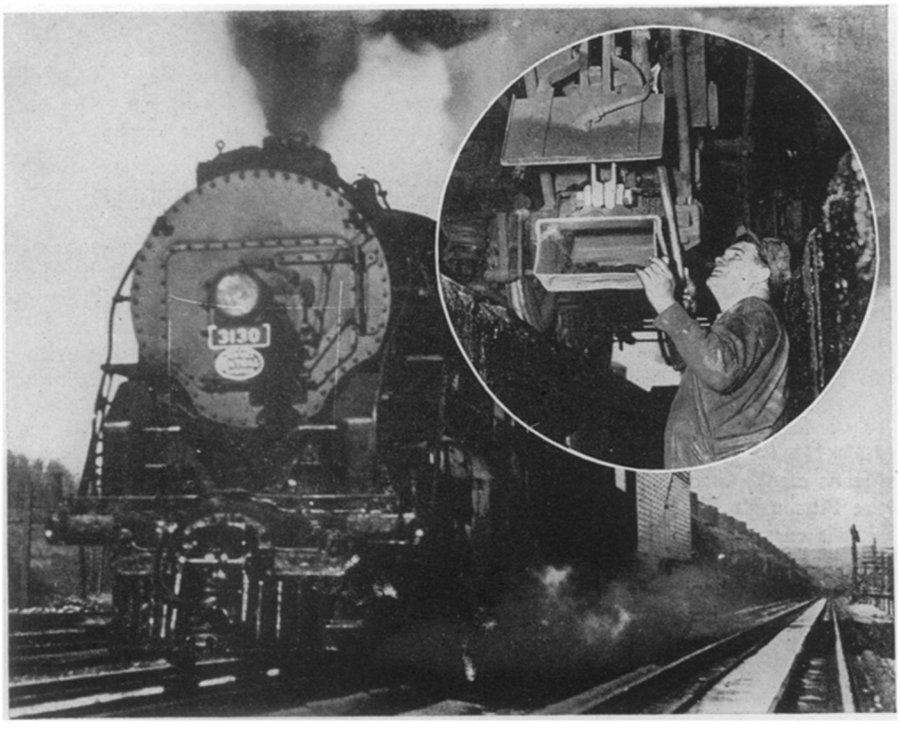

***80 MILES AN HOUR!**—Water is taken on the fly at jerkwater towns by this New York Central locomotive. When the water scoop was first used, trains had to slow down to 35 miles an hour. It is now possible to take on 5,000 gallons in less than 20 seconds while traveling at 80 miles an hour. As the locomotive reaches the track pan, the scoop is lowered into the trough by a compressed air control. Proper functioning of the scoop, being inspected in the insert, saves precious minutes in meeting train schedules.*

ENGINEERING

Underwater Welding Now Photographed

See Front Cover

➤ PRACTICABILITY of welding and cutting underwater has been proven successful by a number of recent applications, such as salvage work on damaged war vessels. However, such work has literally been done in the dark, as no one except the diver or a companion has been able to see the actual operation of this modern technical development of the arc welding process. Now, for the first time, so far as known, underwater welding has been successfully pictured.

Shown in the picture on the front cover of this SCIENCE NEWS LETTER is R. L. E. Cook, representing the Lincoln Electric Company, arc welding under 15 feet of water. The welding is being done with a mild steel electrode having a special coating that is impervious to water.

The photograph was taken through a porthole in the specially designed tank used for training welders in underwater welding and cutting operations in the Mechanical Division of the Panama Canal Zone Authority.

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