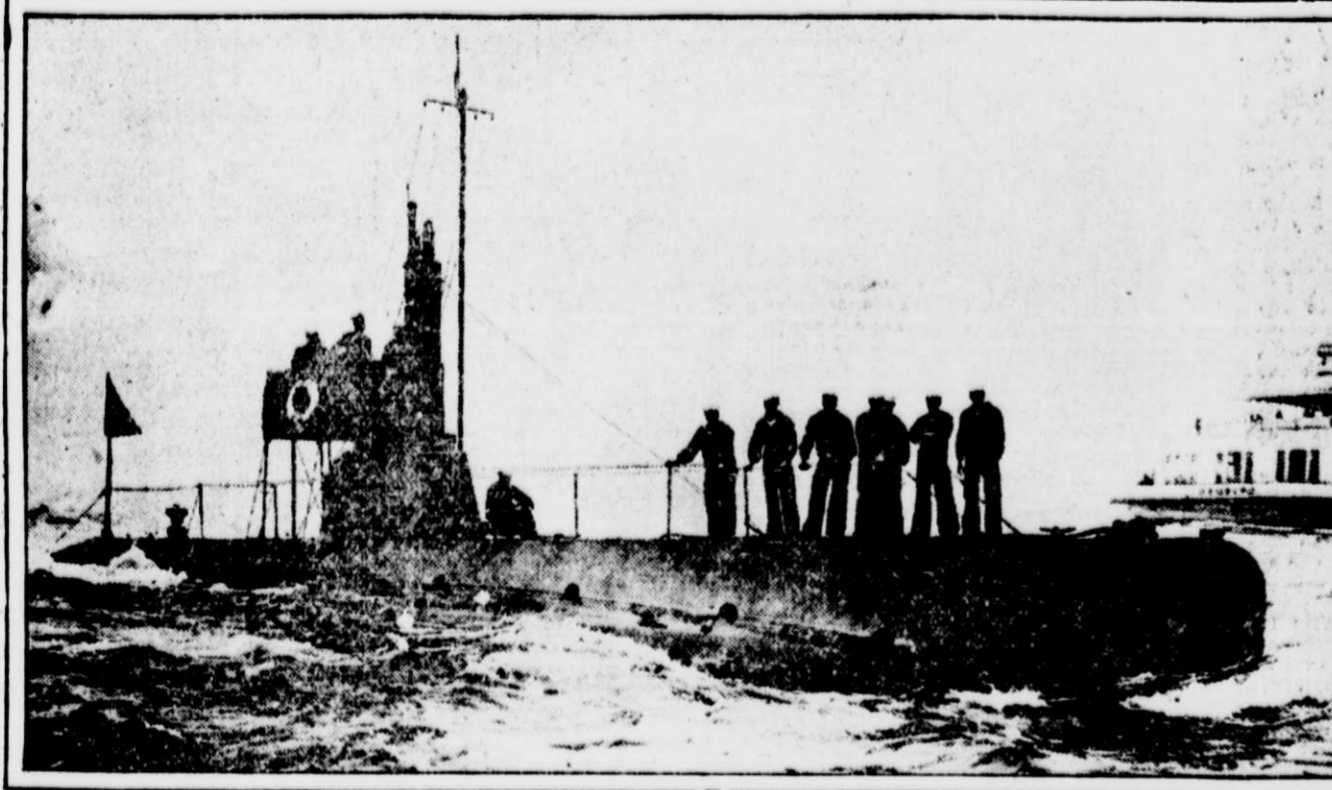


NEW SCHLEY CLASS SUBMARINES TO MARK BIG ADVANCE

Two Soon to Be Contracted For Expected to Be the Most Efficient Undersea Fighters Afloat--They Will Be 265 Feet Long, Will Carry Rapid Fire Guns and Have Many Novel Features

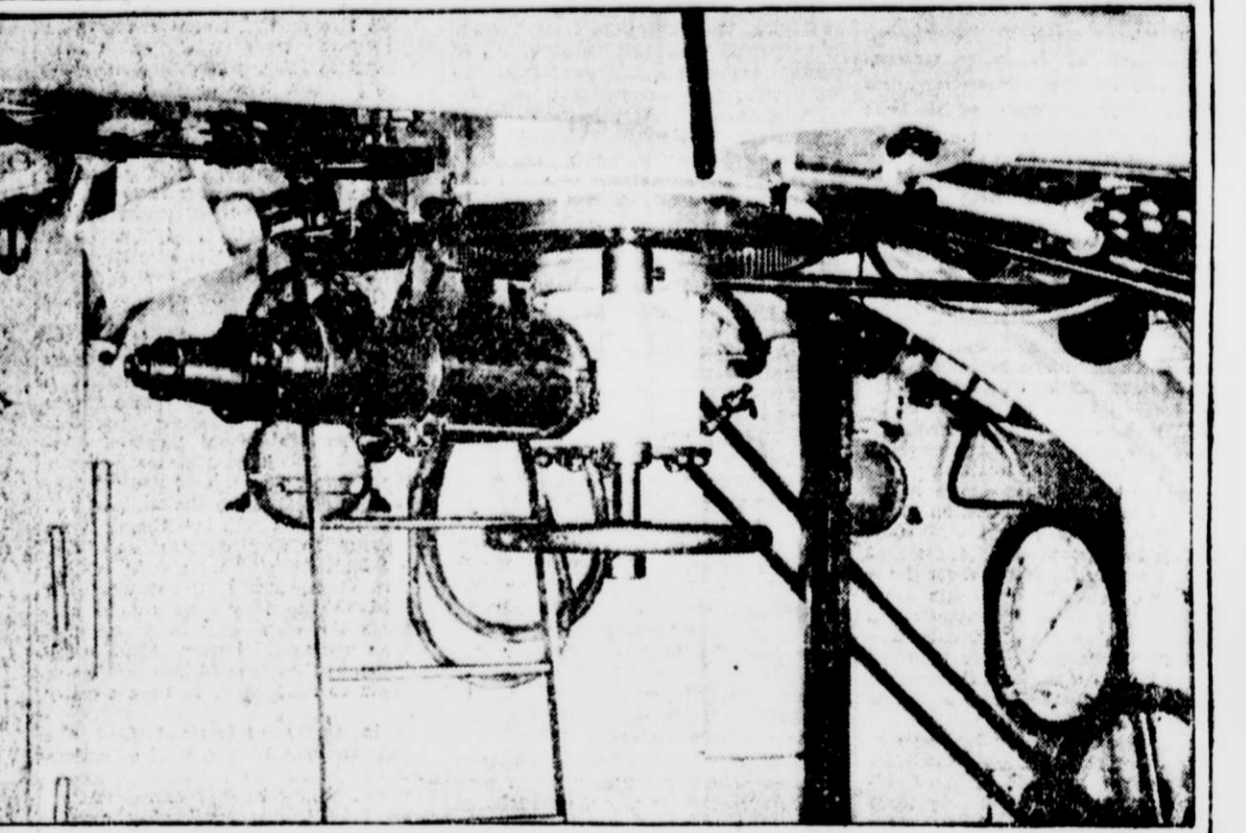


U. S. submarine C 4. The present class is "M," each successive letter representing improvements.



The gasolene engine room of a submarine. Above--Mr. Edison visits a submarine with Secretary Daniels.

comparable to the largest submarines now operating in European waters. Within the last month German U-boats of unprecedented size, perhaps representing a new class, are said to have appeared in British waters. The Schley will be provided with a diving compartment, from which, in case of accident, her crew can escape in diving dress. This is another very im-



The eye of the submarine. Binocular telescope, through which the steersman surveys the surrounding sea.

portant new departure in submarine construction. She will be habitable and even comfortable, the ample living space furnished with upholstered bench seats that are swung up at night and converted into beds. The mess tables will be collapsible. Plate glass mirrors and electric lights will lend cheerfulness. Aft of the living space and separated from the gas panelled deck will be the galley, provided with electric cooking apparatus. Adjoining the galley will be a storeroom pantry for the stowage of pots, pans, dishes and other table equipment, as well as food supplies. The U-boats some of which were sunk at Honolulu are 140 feet long. Those of the L class are twenty feet longer. This gives a notion of the great increase in size represented by the newly planned Schley and her sisters. The L boats carry twenty-seven men and two officers; the complement of the Schley will be about forty-seven men and five officers. This is an approximate estimate. The three giant submarines will have an under water speed of at least thirteen knots and will be able to travel on the surface at a rate of twenty-two knots.

In discussing the question of improvements in submarine construction it should be made clear that for many years past almost all efforts have been made to remedy the battery difficulty. Thus in each succeeding class of boats the battery instalment has been better and safer. In the L boats it is decidedly better than in the P boats. But the present type of battery can never be made really safe. Though supposed to be as tight and water tight, sea water will seep into its cells, or seep in from the water containing chlorine which combines with the sulphuric acid in the cells to form a deadly gas. Only a small amount of this gas let loose in the interior of a submarine will suffice to kill everybody on board. Under certain conditions particularly when the batteries are being recharged, hydrogen gas may be developed in large quantities, and there is danger of serious explosions. One theory in regard to the loss of the F-4 at Honolulu is that she was destroyed by the ignition of hydrogen from her batteries. With the latter there is frequent trouble due to the stopping of the electrolyte out of the cells during stormy weather, and under the best of circumstances it is necessary that the outfit shall be overhauled at frequent intervals, the boat being man- uled out of commission. So long ago as 1910 the Navy Department asked Mr. Edison to see if he could not manage to contrive a better and safer kind of battery for use in submarines. The inventor said that he would try. He believes, and so do naval experts, that the problem is solved by his new nickel battery, which for a long time past has been under experimental test at the New York Navy Yard.

WAR BOOMS "CORK LEG" INDUSTRY

NO industry considered relatively to date pattern is an ingenious piece of apparatus, and there is many a man today who wears one without betraying the fact to the casual observer. If the foot of the natural limb has been cut off high up the artificial one must be in two parts, connected by a knee joint. If one must lose a portion of one's ambulatory machinery, the most desirable place for the amputation is between the knee and the ankle. Under such circumstances a false member may enable one to walk without limping, or one may even travel satisfactorily, but loss of part of the foot or of the whole foot at the ankle joint means that one must go halting through life. The foot of the artificial leg is in itself an exceedingly clever contrivance. It is a part of the same piece of wood that makes the body of the leg. Enveloping this core is rubber, vulcanized in a series of thin layers, the result being to give the foot a lively springiness, rendering it comfortable for walking and helping to give the wearer a natural gait. An artificial arm is of similar construction, with a wooden core for the hand, which is of vulcanized rubber. But as a substitute for the natural limb it is a poor thing compared to a false leg. The hand is useless for purposes of manipulation and has to be kept covered with a glove. Wires extend through the fingers, so that the latter may be bent into any desired position. Under the law any person who has lost a leg or an arm, a foot or a hand in the service of the United States Government is entitled to an artificial member every three years. This is a very liberal allowance, because a false leg if not properly cared for, may last only a few months. The leg is made hollow for the sake of lightness, and also to provide room for the introduction of a strong spiral spring and other elements of the mechanism that is to render the limb useful and comfortable counterfeits of a real one. An artificial leg of up-

whereby the submarines may obtain some power of vision under water. Under present circumstances it is blind course only by compass. It is understood that a sub-aquatic searchlight is now being developed whereby the near surroundings of the boat at least or its course for a moderate distance ahead will be illuminated to the eye of the navigator. The first practical trials of Mr. Edison's nickel battery are to be made on the submarine E-2. This is not one of the newer boats. The navy now has built or under construction fifty-one submarines, six of the A class being the oldest. There are three of the B class, five of the C class, three of the D class and so on down the alphabet, terminating with eight in the K class, ten in the L class and one in the M class. Each class, as might be supposed, represents certain definite improvements and augmented size as compared with the class alphabetically preceding it. It is the same way in other navies, which, as a rule, designate their submarines by letter. The most advanced German submarines are (or were when the war broke out) of the U class. Hence the term U-boat--though many people imagine that the U is an initial abbreviation for "undersea." The biggest German U-boats at the beginning of the war were not over 200 feet long--by no means approaching in size the Schley, which will represent a new departure in submarine construction. Though plans for her were completed long ago her construction has been delayed for reasons unexplained, possibly in order to take advantage of such hints for improvement as experience in the present conflict might be expected to offer. The Schley and her two sister boats are designed for service as fleet submarines, meaning that their special duty will be to accompany a fleet of battleships. In order to do this, of course, they must have speed, stability and large fuel capacity. They will carry rapid fire guns and a most important feature is to be built along the deck when not in use will provide for wireless. Although the navy has five L boats now in process of construction no one so far as can be ascertained were contemplated for any of these years ago. But it may be taken for granted that such provision will be made for them, as well as for other submarines of the K, L and M classes. A sub-

BIG BEND COUNTRY OF TEXAS SCENE OF MANY RAIDS

Present Troubles Repetition of Many Fights Between Mexicans and the Cattlemen

NOWHERE in the United States perhaps is there an area better adapted to sudden raids and swift escapes than the Big Bend country of Texas, where for the past three months bands of Mexicans have had frequent fights with United States soldiers, Texas Rangers and parties of citizens. It is a region which settlers have let severely alone. Its traditions and customs in 1915 are much the same as its traditions and customs of 1860. Although the Big Bend country proper is really that part of Texas lying along the border and extending from El Paso to Del Rio, a distance of some 350 miles where the Rio Grande makes a big dip into Mexico, the name



Five prisoners at Barreda, 12 miles from Brownsville, Tex., caught in a Mexican raid by the Twenty-sixth U. S. Infantry.