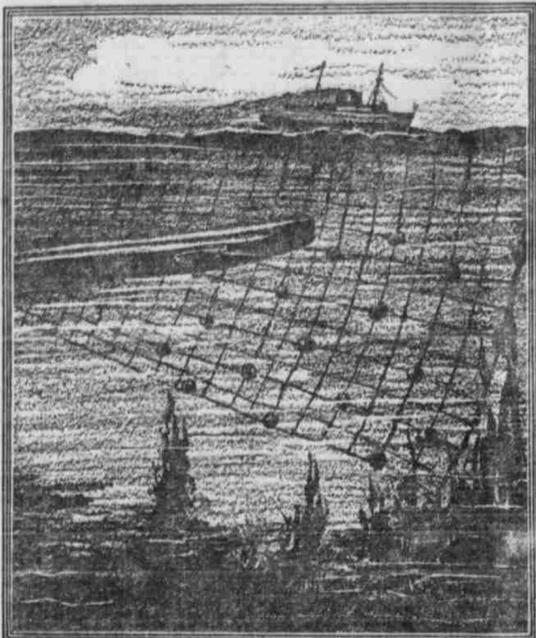


Fighting the Deadly Sea Mine and Submarine

Human ingenuity has been taxed the limit in developing these instruments of destruction and finding means to overcome them



NET DEvised BY BRITISH TO LOCATE AND TRAIL SUBMERGED SUBMARINES



DECOY PERISCOPE ON TOP OF CONTACT MINE

OUT-OF-ORDINARY PEOPLE

HAS DUTY OF PROTECTING SOLDIERS



Drink and immorality have been the bane of the soldiers' camps in all countries. At times as many as one-fourth of the enrollment have been in the clutch of one or the other. In Europe, during the present war, the ravages of disease and the effects of inebriety have been so extensive at times that the most stringent regulations have been established. But in the main the measures adopted have been repressive and curative after the fact. The attack on the camp evils was not begun until their inroads made action imperative.

In the United States the problem of camp evils is to be attacked in a way and on a scale never undertaken in the world before. Greatest emphasis is to be placed on prevention, on effective action before the fact, instead of after it. To achieve this, to evolve a new kind of soldiers' training camp, is the task of the newly appointed federal commission on training camp activities, with Raymond B. Dick at its head. Already this work has begun, with the opening of the training camps for the preliminary officers' training corps.

Immediately around the camps will be zones, according to the plans of the commission, to bar out infections and alcoholic excess, but the aim will be, in following out the later principles of psychology, to withdraw, so far as possible, the attention of the soldier from the rigid restrictions of the zones by the organized presentation of better means of recreation and enjoyment.

MASTER OF TRANSPORTATION



Samuel M. Felton, president of the Chicago Great Western railway, has been selected to take charge of arrangements for sending the regiments of American railroad men to France.

Mr. Felton some time ago was appointed adviser to the chief of army engineers in relation to railroad affairs. As such, it was said, he will be in charge of arrangements for sending the American railroad men abroad.

It is understood that Mr. Felton will not necessarily accompany the forces.

The plan is to send 10,000 skilled men to operate and maintain the French roads behind the battle lines. They need reconstruction and expert operation, for which the French military forces cannot spare their own men.

Regarding these plans Mr. Felton declined to make any extended statement.

"There is nothing more that can be said, and nothing that will be said. It is to the interest of all concerned that no details be printed."

One report had it that Mr. Felton had been appointed by the council of national defense. That is incorrect. He was aiding the government before the council of national defense came into existence.

He was selected by the secretary of war when the Mexican trouble started as adviser to the army engineers in transportation and railroading.

GIVES SERVICE TO RED CROSS

Robert S. Lovett, chairman of the board of the Union Pacific railroad, has volunteered "the whole of his time during the war to any work to which he might be assigned," by the American Red Cross. In a letter to Henry P. Davison, chairman of the war council of the Red Cross, Mr. Lovett said he was "too old to go to the front," but was anxious to do his "bit" in whatever manner he could be made useful.

Accordingly, Mr. Davison asked him to come to Washington for a conference preliminary to the formation of a committee to prevent duplication and waste in all activities of relief and alleviation resulting from the war. He also was asked to accept the chairmanship of this committee.

Others requested to join Mr. Lovett at the conference in Washington, according to Mr. Davison, are Rt. Rev. Charles H. Brent, Protestant Episcopal bishop of the Philippines; A. D. Hodderpyl of Grand Rapids, Mich.; George Wharton Pepper of Philadelphia; Edward D. Butler of Chicago, and John F. Moors of Boston.

"It is singularly in keeping with the stupendous things which the Red Cross is already being called upon to do, and is planning to do, not only to relieve sufferings, but to help win this war, that big men of affairs like Mr. Lovett should feel it to be worth their while to place themselves thus unreservedly at the nation's service," said Mr. Davison.

HIS TASK TO TRAIN OFFICERS



Without any thought of even suggesting a comparison that might be odious to the thoroughly trained officers of the United States regular army and with full appreciation of the fact that three months of drill and instruction can never produce the results of four years of hard work in what Joffre has called the greatest military school in the world, it may still be said that the country now has 16 new military schools working full-blown for the manufacture of personnel to officer the great army that will be evolved out of the selective drafts by the end of the summer. They might be called new West Points to the extent that the officers of the army who have planned them, and who are managing them, are determined that the spirit of these great camps shall be the spirit of the academy on the Hudson.

"In any attempt to appraise the qualities of these young men in the training camps," said Brig. Gen. H. P. McCain, adjutant general of the army, "we must remember that the 40,000 enrolled were selected from 200,000 who applied for enrollment. And this very carefully selected raw material is to be subjected to the severe test of three months of experience and instruction to the tune of something over 47 hours of hard work a week, with all the work and all the leisure under strict military discipline."

OR many months after the outbreak of the war abroad the submarine mine was a close second to the torpedo in achieving the destruction of all kinds of shipping. Thereafter the mine fell somewhat behind, not because it lacked power to do harm, but for two other reasons—first, the wholesome dread inspired by the prescribed mined areas and next because of the various expedients adopted by the belligerents to neutralize these subaqueous weapons. Even so, the mine is playing a big part in marine warfare, and we shall have to count with it and against it now that we have joined forces with the entente allies.

It is a matter of record that the Germans got the jump on the British by their prompt and even daring employment of the submarine mine. Within a very short time after the declaration of war Teuton mine planters were operating on the English and Scottish coasts and were busily engaged in sowing these weapons at the very entrance of enemy ports and rivers.

For this purpose it was rather easy then to have recourse to North sea fishing craft that had all the outward complexion of innocence; indeed, for weeks these boats went about their work well-nigh unsuspected. It was only when British battle craft were mysteriously damaged and sunk that the British authorities awakened to their peril.

Even then the belief prevailed that the damage was more or less a matter of sheer chance—chance in the nature of a friendly defense mine that had got adrift. Then the next explanation was that a particularly daring U-boat commander had managed to get within striking distance, and finally it dawned upon the British coast patrol that enemy mines were being freely planted right under their very noses.

Every fishing boat was then an object of suspicion, and prompt investigation proved in a great many cases that there was ample warrant for this attitude. Neutral trawlers became more and more infrequent in certain of the waters contiguous to the north and east coasts of Scotland and England, and for a time the mine menace was held pretty well in hand.

The resourceful Teutons, however, were not checkmated, and it was only a question of time before they developed a method with which to offset the vigilance of the British coastal patrol. Then the German submarine mine layers got to work. How many of these the kaiser's experts have built and sent to their fields of service in the waters of the North sea especially, is not known. It is safe to say too many of them have been built and dispatched upon their missions and the general character of them all is probably much akin to that of the U-C-5, which was captured and taken into a British port.

By chance a British destroyer discovered the U-C-5 on the surface and in distress at some point along the east coast. When summoned by megaphone to surrender the crew of the submarine mustered on deck and held up their hands in token of submission, but curiously before a relief boat could be sent to them they jumped overboard.

The cause of their action was soon explained. Another member of the submarine's complement suddenly appeared upon deck and threw himself into the water and almost immediately afterward there were a number of violent explosions within the U-C-5. The last man had exploded bombs which blew holes in the craft. But for prompt action on the part of a British sublieutenant, who, protected by a gas mask, went dauntlessly down into the injured U-boat, the mine planter would have filled and gone to the bottom in water too deep for her recovery.

As it was, she represented a desperate task for her would-be salvors and it was necessary to secure a couple of mines within the boat that had been set free by the explosions before it was safe to tow the submarine into harbor and to dock her. Upon examination this new order of submarine was found to be charged or laden with a dozen powerful contact mines housed in six vertical wells passing directly from deck to bottom of the craft.

Each well held two mines, one on top of the other, and both were kept in their places by locking devices which could be released from within the submarine. The controlling station for this operation was found to be in the conning tower, so that the commander of the boat with only her periscopes above water could see just where to sow his weapons.

In this way the Germans have been able upon many occasions to approach certain sections of the waters about the British Isles and to plant there mines that have accomplished the destructive work cut out for them. How many ships have been sent to the bottom by mines sown by boats of this sort is, of course, a matter of conjecture, but there can be no doubt that submarine mine planters are actively employed today.

One thing about them that makes them of special interest, even concern, to us is that there is nothing to prevent their operating in a similar manner upon our Atlantic coast. What is to prevent a submarine somewhat after the order of the Deutschland from being equipped for work of this nature? Instead of carrying some hundreds of tons of commercial freight she could just as easily divide that weight among mines, mine-plant-

ing apparatus and an increased supply of fuel and food which would make it possible for her to perform her service for longer periods and over wider zones of action.

The whole subject of submarine mines, offensive and defensive, and the subaqueous protection against enemy submarines is one with which our naval and military authorities are deeply engaged. It is safe to say that we are going to see some remarkable developments, and largely because our allies are going to give us the benefit of their own experience so that native ingenuity can start to improve upon the fruits of the labors of others. Indeed, our subaqueous defenses must of necessity be of the best types possible because of the extent of our seaboard and the comparatively limited number of vessels that the navy has for patrol work.

The recent presidential order prescribing defense zones at the approaches of certain ports and waterways had to do with the army's part primarily in this matter of subaqueous safeguards. The mine fields controlled by the military authorities, those of the Coast Artillery corps, are as a rule protected by observation mines or electric contact mines that are made active or inactive by the operation of a switch. That is to say, the vitalizing current comes from a central station ashore, and neither of these types of mines will explode unless the electric current reaches them by way of a submerged cable.

In the case of the contact mine with the current turned on the mine will explode when bumped and tilted over to a prescribed angle. The observation mine, on the other hand, does not have to be touched by the enemy craft, but is subject to the will of an observer on shore.

Observation mines are planted in groups and are laid out in definite checkerboard areas, and each group is set off separately and simultaneously. The observer, by means of range marks or bearings, knows just when the approaching foe reaches any one of these squares, and accordingly the one within which the enemy lies at the moment determines the group of mines to be detonated.

The contact mine, as may easily be understood, does its work where an observer might fail, after dark, and for that reason the electric current is turned on with set of sun and the whole area so sown becomes instantly a menace to friend or foe. It is quite likely that observation mines were employed by the Turks at the Dardanelles, and therefore by approaching from under water it was possible for the British submarine B-11 to dive beneath five rows of mines, probably showing their cables aside and tilting the weapons, and then pushing on so that she could rise to the surface and torpedo the Turkish battleship Messudiyeh, which was stationed to guard that very mine field.

Had those mines been of the contact sort, the displacement of their cables would probably have caused their detonation and likewise the destruction of the B-11. Other British submarines succeeded in passing submerged through those Turkish defenses, the enemy observers being unable to see the underwater boats. It was the exploits of the submarines at the Dardanelles that disclosed to the British the weak spot in their own mine defenses and led a short while afterward to the development of other protective agencies in dealing with the German underwater boats.

Unquestionably the most spectacular part of submarine mining is that in which the weapons are resorted to in open waters, especially in those offshore areas where a defense of that sort is not ordinarily employed. The Italians were the pioneers in this order of subaqueous warfare, and they developed the art in peace to such a point that other nations realized that the mine was no longer limited in its potential usefulness either to the defense of a port or for blocking the ships in an enemy harbor.

The Italians showed that the submarine mines could be used offensively, so to speak, if planted secretly and placed where by strategy the unsuspecting foe could be lured over and into them. The Japanese during their war with Russia made good use of what the Italians had taught them, and when the present conflict began Germany was fully prepared to carry the practice still further.

German mine layers were ready and numerous on August 1 three years ago; and as we now know the kaiser's navy lost no time in mining the marine approaches to the fatherland. Not only that, but these craft, in various guises, planted mines over wide areas in the North sea and in the waters of the British Isles.

The Hague convention of 1907 among other things provided that "it is forbidden to lay anchored automatic contact mines which do not become harmless as soon as they have broken loose from their moorings;" and it was also prescribed

at that time that no unanchored mines should be used which would be dangerous more than an hour after they had been dropped into the sea. The mines in question are self-contained contact mines that are not controlled from any shore or observing station and are well-nigh instantly menacing when cast overboard.

Just before the war the Germans, with their usual technical cunning, developed a naval offense and defense mine which could be used either in a fixed position or be planted haphazardly in water traversed by enemy shipping. This mine is the type which has done such destructive work and is designed to be fired by an electric battery placed inside of the mine, this battery being inactive until the mine has been submerged and then struck by a passing craft.

A development of the contact mine which the Germans have at times employed successfully is one surmounted by a dummy or decoy periscope. The object of this ruse is to invite ramming on the part of a patrolling vessel or even a merchantman when the deceived navigator believes that the chance is good for sending a U-boat to the bottom. Of course a vessel attempting to ram that dummy periscope is sure to strike the contact mine and cause it to explode, the result being disastrous to the ramming craft.

This lure has not worked so well latterly because the observer is able in a few moments to establish the fact that the periscope is stationary, and the work of getting the underlying mine out of the way is left to the fairly safe process of sweeping—trawlers linked together by a loop of wire rope doing the work.

In order to deal with both the submarine torpedo boat and the submarine mine planter the British admiralty has had recourse to defense nets of a novel character. These have been very well described by Rear Admiral William S. Sims. According to this authority:

"We did not find out for a long time what those nets are like and I think it is necessary that it should be understood in order to realize the great danger submarines run in the presence of light surface craft.

"The net is a very light one, made of little wire rope, probably not as big as a lead pencil, probably not more than a quarter of an inch in diameter. The meshes of the net are 12 to 15 feet square. On top of this net are floats and on the bottom are little weights.

"The moment this net—'unbeknownst' to the submarine commander, of course—is in the water in front of him, the floats keep the net on the surface and the weights keep the bottom down, and if he runs into it his bow goes into one of the meshes and the net falls back around him, and it may foul his propeller or may not.

"The net is 300 or 400 yards long, and as the submarine proceeds the floats will trail on the surface, so that even if he dives deeper he leaves these on the surface and his trail is plain and there is no difficulty then in capturing him. He knows when he runs into a net that his capture is practically certain. If he goes down 200 feet the floats of the net are still on the surface."

These nets are used in two ways, either passively at chosen points in guarded waters or they are dropped overboard by patrolling vessels that discover a submerged submarine in motion. It is a fact that even though a submarine be running totally submerged 20 or 30 feet down, it still causes a disturbance at the surface, not a wake in the usual sense of the term, but a type of wave which is easily distinguished from the regular surface waves, and this phenomenon is readily discernible from the bridge of a ship or from a hydroplane.

To return to the submarine mine. We have so far considered only that so-called offensive type which can be anchored in fairly smooth waters, such as prevail extensively in the North sea, but now let us take up that kind which can be dropped overboard in much deeper water. This sort is capable of being planted from a speedy ship seemingly bent upon escaping from her pursuers, and her strategy consists in inviting chase while dropping these stumbling blocks right in the path of her oncoming enemies.

Generally the ship hitting weapons of this sort does so bow on, and that part of a vessel is the least vital section. A craft may have her bow blown off and yet be able to make a haven, and besides the damage may be susceptible of speedy repair. Our mines, on the other hand, have a delayed action, and after being hit by the stem of a craft roll sternward in contact with her bottom for some distance before they explode. In this way the blow, when the mine does burst, strikes some vital area and the damage is well-nigh certain to be fatal.—New York Sun.