Severe Task of Guarding a Railroad In Time of War; Russia's Line Through Manchuria and Japan's Korean Road

THE recent arrest by Russian patrols at a point near the Manchurian railway and the subsequent execution as spies of two members of the Japanese general staff disguised as Tibetans and the discovery in their tent of explosives, which they afterward admitted were intended for the blowing up of bridges, call attention to Russia's difficult task in guarding her thousands of miles of road in the far east. Not only are the Japs to be feared, but the Chinese brigands of the Manchurian mountains as well as other sections of the native population that are none too favorably disposed toward the interloping Slavs and their noisy locomotives. Whether the claim that the Japs had already mined the track at various points prior to the breaking out of hostilities proves true or false, the menace to the road is still very present. At several points the line is exposed to attack from the sea, while the patrolling force at other points is necessarily so scattered that a small hostile force would have little difficulty in striking the road and doing vast damage before it could be checked. Practically the entire line from Port Arthur to Harbin and from Vladivostok to Tsitsikar, aggregating thousands of miles in all, must be guarded from attack both from the Japanese and the Chunchuses, and to effectively patrol this vast length of track by day and night requires the services of a veritable army of men.

JAPANESE RAILROAD PATROL OFF DUTY.

RUSSIAN PATROL ON THE TRANSSIBERIAN ROAD.

Not only is the railroad across Manchuria imperiled, but the immense stretches of track over the bleak and uninhabited steppes of Siberia require watching. The cutting of the line of communications at any point would be fatal to Russia, and it would be comparatively easy for a few Japanese, properly disguised, to strike at any point where Russian surveillance happened to be light. Throughout its entire length, and especially in the transbaikal region, the Siberian road is rather loosely constructed, the embankments being steep, the ballasting poor and the ties light and far apart. It is less difficult to injure such a road than one better constructed. The total length of this line from Moscow to Port Arthur is 5,388 miles. Even when there is no outside interference accidents on the road are frequent. Due to deficient construction, there are broken rails, spreading tracks and other similar difficulties with almost every train, while from the roughness and insecurity of the line it is impossible to average more than ten to fifteen miles an hour. The trip from Moscow to Port Arthur thus occupies two weeks. The road as rapidly as possible is being improved, and these accidents are on the decrease, but the conditions are far from ideal, and it will be many years, with the most favorable circumstances, before the Transsiberian and Manchurian railways will be properly ballasted and well built lines.

Taking the mileage in Manchuria alone, it amounts in round numbers to nearly 2,200 miles, divided approximately as follows: From Port Arthur to Harbin, about 600 miles; Harbin east to Vladivostok, nearly 400 miles; Harbin west to the Manchurian boundary, nearly 600 miles; Vladivostok on the branch line north to Khabarovsk, nearly 500 miles; spur from main line to Yinkow, 25 miles; spur from main line to Kirin, 60 miles. The line from Vladivostok to Khabarovsk is, strictly speaking, in Siberian rather than in Manchurian territory. Neither is it so vital, as it is off the main line to St. Petersburg. But it is so near the Manchurian frontier as to be in the danger zone and is therefore included.

The manner of guarding this great length of track is illustrative of the expense and hazard of war. The actual patrols are mostly Cossacks. These are present in such numbers as to form a continuous picket line practically along the entire road. They inspect the track once or twice a day, and another relay of men performs the same service at night. The latter use powerful hand searchlights, which they throw on the track as they gallop along, one man on each side. At bridges the force of guards is doubled. In addition to the regular patrols, a large number of special police guards are maintained, whose business it is to arrest any suspicious characters found lurking anywhere in the vicinity. Garrisons of soldiers are maintained at all towns and stations, and other troops are placed at points where they can watch for the Chunchuses. Then large numbers of workmen, mostly Chinese coolies, are employed constantly in taking care of the road, ballasting the tracks, putting in new ties, making repairs, building bridges in place of those washed out by floods or destroyed by foes and in doing whatever other work is deemed necessary by the officers in charge. In case of a bridge being destroyed a temporary structure is thrown across the stream, so that traffic is as little delayed as possible. The supports to these hastily improvised bridges are usually made by piling up railroad ties or other timbers in the same manner that a log house is constructed. On this rather crude foundation girders and rails are laid. The mud embankments along the fills are also endangered from the floods that are common in Manchuria at this season, and this entails more work on the large gangs of section men that must be maintained.

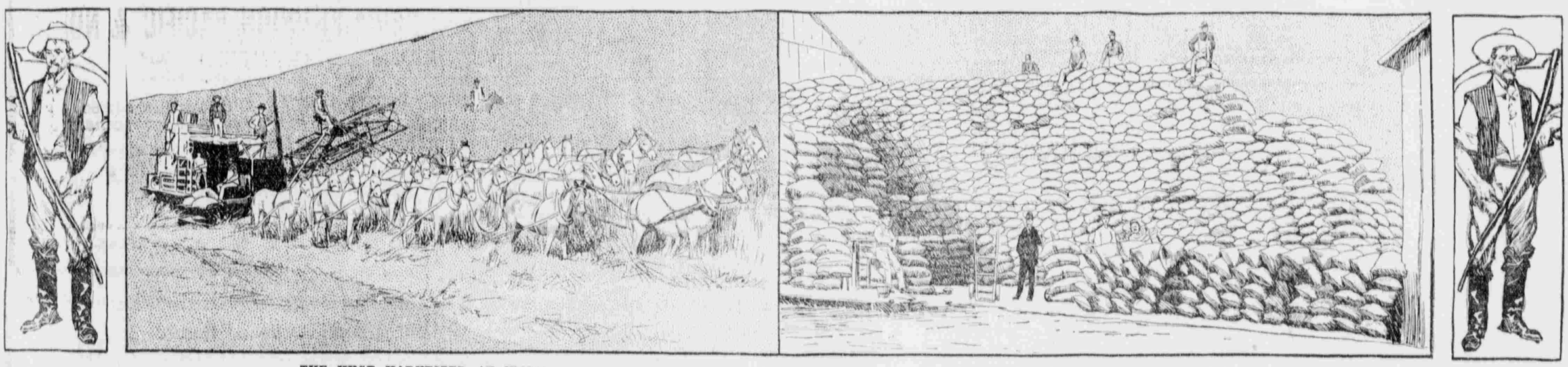
The importance of this railroad to Russia is inestimable. Over it must be transported all troops and military supplies. Because of the lack of adequate food for the soldiers, foodstuff must constantly be shipped from Russia. Naval ammunition and even boats are transported over this indispensable railroad. Thus the fate of the Russian empire literally hangs by a thread. That thread is over 5,000 miles long, and its name is the Transsiberian railway.

Scarcely less important are the lines of telegraph. Over these all orders and reports are flashed from the czar's cabinet rooms to the officers commanding on the far frontiers. These lines must be as carefully inspected and guarded as the road itself.

The Japanese are more fortunately situated in this regard, although they, too, have the care of a railroad in Korea. There is a short line leading from Chemulpo to Seoul which is in charge of the Jap troops. Then the Japanese are building a longer road from the southern port of Fusan to Seoul. This is a standard gauge, of which over fifty miles are completed, and the remaining 250 miles are being built at the rate of three miles a day. It is estimated that the entire line will be open for travel not later than the middle of June. From Seoul northward to the town of Wiju, on the Yalu river, a narrow gauge is being rapidly constructed for the purpose of shipping supplies to the front. The Koreans are used by the energetic Japs in building these roads, perhaps the first real work these dirt incased citizens of the Land of the Morning Calm ever performed.

ELBERT O. WOODSON.

From Field to Platform of the Railroad Station; An Object Lesson In Up to Date Harvesting Methods



THE HUGE HARVESTER AT WORK.

THE RESULT.

IT has repeatedly been predicted that within the next few years the labor problem so far as it applies to large farmers will have ceased to exist. This condition was expected to be brought about by automobile harvesters run by steam, naphtha or gasoline. The ideal machine, it was predicted, would harvest many acres a day with the labor of but one man. It is needless to say that this machine has not yet been perfected, and yet it is a fact that its wildest promise has in some respects been surpassed by a reaper which is every day working on several Oregon farms. This reaper, herewith illustrated, after it has passed through a field leaves behind it a trail of sacked grain, which a following wagon immediately picks up, so that frequently within an hour after the grain is standing in the field it is on the platform of the railroad station awaiting the coming of the train which shall carry it to its destination. This particular machine is drawn by thirty horses, which should serve to give an idea of its enormous size and capacity. Naturally no driver in the world could handle the "ribbons" ordinarily necessary for so many animals, and therefore the intelligence of the horses is an important factor in the successful working of the machine. All that is required of the animals, however, outside of docility, is that they be sufficiently intelligent to "follow the leaders." The outside horses of the front row must, of course, be well trained, for if they go wrong all go wrong. When the grain is cut it is carried by a traveler up the runway into the thrasher, being properly straightened on its way thither. There the grain is separated from the hulls and straw, and, after going through the same processes as in an ordinary stationary thrashing machine, it is carried down a shoot into the bag. When the bag is filled it is pushed to the edge of the carriage by the man whose sole duty, aside from that, is the tying of a piece of string around the neck of each bag. When several bags have accumulated they are pushed off to the ground, whence they are promptly picked up by a wagon following a short distance behind. Five men are required to properly operate this reaper, but when one reflects upon the enormous amount of work in a given time of which it is capable and the saving which often is attained by harvesting a crop before a rainfall it will be seen that, despite its hauling crew of thirty horses, it really makes for economy. Another strong point in favor of these huge machines is that they make the large farmer comparatively independent of labor. It is almost always possible to get five farm hands—and even ordinary labor, unused to the work of the farm, will do in a pinch—but it might be a serious problem to find thirty or forty or perhaps a hundred men to hustle a crop into the barns in short order. And even then there is more work to be done. The grain, including its enormous bulk of straw, must be stored in the barn, and when one can secure the services of a thrasher man it must all be taken out again, fed into the thrashing machine and put back in the mows whence it came. After the grain is thrashed it must be put into bags, and the farmer is then exactly where he would be three minutes after one of the large reaping machines entered his field, so far, at least, as a small portion of his crop is concerned. What is more, it is only the straw which he would have to store, and when once put away that is not taken out except as it is required for bedding, etc. It is said that the originally designed automobile harvesters will now be modified to conform to the broader scope of this machine, and there can be no doubt that when this shall be done a long step in the direction of making possible farming on a very large scale will have been taken.

Is the Modern Battleship Doomed to Extinction? Arguments For and Against Huge Seagoing Men-o'-War

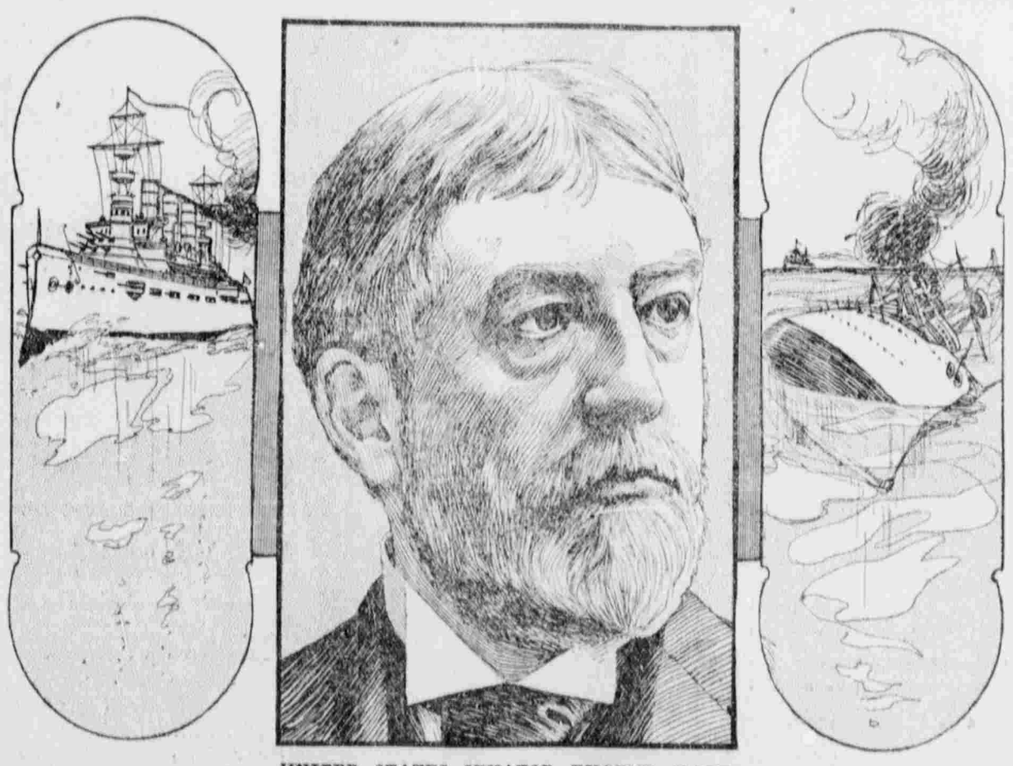
SENATOR HALE'S recent sweeping characterization of the battleship as a failure in naval warfare has started a controversy of which Mr. Hale, as chairman of the senate committee on naval affairs, is likely to be the central figure. This controversy has already assumed such proportions that it is expected that the president will delay action on the battleship authorized by the current naval appropriation bill until the value of such vessels can be better determined by events in the far east. It was the disasters to the Russian fleet at Port Arthur, coupled with the explosion on our own Missouri, in which thirty-one men lost their lives, which furnished the text for Senator Hale's diatribe against the heavily armored man-of-war. So convinced is he that the Japanese have conclusively demonstrated the superiority of the torpedo boat to the battleship that, backed up by his senatorial colleagues on the conference committee which considered the disagreements on the bill just passed, he declared that if the provision for another battleship had not been already accepted by both houses he would demand its withdrawal.

Other naval experts, both in the congress and in the service, have taken issue with the antibattleship senators, asserting that the war between Japan and Russia has not so far offered sufficient data to justify a change in the naval programme followed for the past ten years not only by the United States, but by every other naval power. They point out that the first Japanese attack on Port Arthur was in the nature of a surprise, not an action in which a battleship could show what it was worth, and assert that but for the heavily armored ships which accompany the Japanese torpedo boat flotillas the Russians would have emerged from their refuge early in the game and wiped the Japs from the sea, giving an entirely different turn to the tide of war. As to the explosion on the Missouri and the earlier accidents on the Massachusetts and the Iowa to which Senator Hale refers, they say that the occasional explosion of the boiler of an engine has not impelled the railroad companies to abandon the steam locomotive.

Senator Hale's principal charge against the battleship is that it is top heavy and likely to turn turtle if its equilibrium is greatly disturbed. It is well known that this opinion was held by the late Admiral Makaroff, one of the greatest theoretical naval constructors the world has known. Shortly before his departure from Russia for the east to take command of the fleet at Port Arthur he delivered a lecture on this very subject to a class in naval construction, illustrating his views with the model of a battleship in a tub of water. In the modern battleship the center of gravity is, through the enormous weight of the armament and armor of the superstructure, so nearly coincident with the water line that the vessel practically hangs on a longitudinal pivot.

Admiral Makaroff demonstrated how the impact of a projectile from a gun of large caliber striking the resisting armor of the battleship above the water line might easily heel the vessel over enough to prevent its regaining a level keel. The same effect would follow a shot below the water line piercing the hull and filling some of the compartments with water. If the compartments on only one side of the ship should be flooded it is not hard to see that the ship might roll sideways until the great weight above would drag it down. This is apparently what happened to the Petropavlovsk, the ill fated flagship with which Admiral Makaroff was lost. Whether the explosion which sunk the Petropavlovsk was due to the impact of a Japanese torpedo or to a derelict Russian mine, the fact remains that the vessel heeled over, turned turtle and sank, just as Makaroff had feared it might.

Admiral Makaroff was as firm in his belief in the possibilities of the torpedo as he was in his distrust of the battleship and often said that with a large fleet of torpedo vessels escorted by swift unprotected cruisers he would not be afraid of any collection of armored ships. During the time that he was in command at Port Arthur he habitually used as his flagship the unarmored cruiser Novik and with it made several brilliant dashes into the outside seas. It is not reported that he had flown his flag from a battleship at all until the day of his death.



UNITED STATES SENATOR EUGENE HALE.

The tendency in all naval construction, and particularly in the American navy, has been steadily toward heavier ships. As the piercing power of projectiles has increased, the armor of battleships and first class cruisers has necessarily been added to, while the weight and number of guns aboard have been as constantly growing. Since the sensational cruise of the Oregon around the Horn just before the battle of Santiago speed in battleships has been demanded by popular opinion, and to gain speed while retaining the heavy armor and armament it has been necessary to make the hull as light as possible. Every step in this direction has raised the center of gravity of these floating forts, until now the limit of safety has certainly been reached if not passed.

The ordinary cruiser and the protected cruiser relatively to the battleship are in little danger of capsizing. The system of watertight compartments has been so successfully developed that the greater part of the hull of such a ship must be destroyed to cause her to sink, and a shot above the water line to inflict serious damage must either disable a gun or explode a magazine.

The armored cruiser has followed the battleship in its increase of weight above the water line, but has not gone so far, though the California, recently launched at San Francisco, the first of a new type, will displace 13,440 tons when ready for service and will carry thirty-six guns in her main battery and thirty in her secondary battery. The largest guns will be eight inch rifles, however, where the battleship carries twelve inch guns. The speed of the California called for in the contract is twenty-two knots.

The latest type of battleship, the Connecticut, has a trial displacement of 16,000 tons and a maximum displacement of 17,770. The Connecticut will carry sixty-eight guns of all calibers, four of them eight-inch and eight eight-inch. Of this class are the Vermont, Kansas, Minnesota, Idaho and Louisiana. The total weight of armor on each of these ships will be 3,992 tons, of armament and ammunition 1,536 tons. They have a maximum coal capacity of 2,200 tons, which will take them 7,000 miles at eleven knots an hour or 2,500 miles at eighteen knots.

The next largest battleships—those of the Virginia class—have a displacement of 15,320 tons.

The earlier battleships Maine, Missouri and Ohio displace 12,300 tons. The Illinois and Kearsarge classes, authorized in 1895 and 1896, have a displacement of 11,540 tons, while the Texas, laid down in 1889, has a displacement little more than a third of that of the Connecticut.

The first ironclads of the American navy were single turreted monitors in which the greater part of the weight was below the water line. When the building of the new navy began, the double turreted monitor with a low freeboard and little superstructure was adopted, and cruisers of 3,000 and 4,000 tons displacement were built. These examples are sufficient to show the tendency toward the enormous and complicated vessels of which Senator Hale complains.

The United States is now building more battleships than any other nation. The cost of those built and building totals $150,000,000. A battleship may cost $8,000,000 and require a complement of 800 men. The Connecticut will cost $4,212,000 exclusive of armament. The armored cruiser California will cost, with her full inventory, $5,000,000. A torpedo boat can be built for $200,000 and a destroyer for $500,000. The number of men needed to man these mosquito craft is very small. It is evident that if the battleship is really a failure and the torpedo boat is to be the warship of the future there has been wasted a vast amount of money. The United States has only thirty-seven torpedo boats and sixteen destroyers, with eight submarines.

Senator Hale, who seeks to change so signally the policy of ship construction in the American navy, has been for some years at the head of the senate committee which has charge of naval appropriations and is regarded as an authority on naval construction, so far as a statesman can be such, though his belief that congress should have control of the designing of vessels of war naturally excites derision from the technical experts of the department.

He was born in Turner, Me., in 1836, attended Bates, Colby and Bowdoin colleges and was admitted to the bar in 1857. He was attorney of Hancock county for nine years and served in the Maine legislature in 1867, 1868 and 1880. From 1869 to 1879 he was a member of the national house of representatives. Since 1881 he has been in the United States senate. He was twice asked to become a member of the president's cabinet, once by Grant and once by Hayes. He is a man of wealth and lives in one of the finest houses in Washington, where, with his popular wife, he entertains lavishly. In addition to his reputation as a naval expert, he has that of being the best mixer of cocktails in the capital.

A. W. FERRIN.