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THE UNDERGROUND TROLLEY IN THE RECENT SNOWSTORM.

The severe snowstorm of November 26 and 27 put the Underground Trolley System in New York to the severest test that it has undergone since it was inaugurated, and although the complete or partial paralysis of traffic on some of the lines would seem at first sight to suggest a failure of the underground trolley under such conditions, a review of all the circumstances shows that the new system lived up to its promises and did as well as could be reasonably expected. The delay in the running of the cars lasted from four hours in the case of some lines to a whole day in the case of others.

The blockade is explained very largely by the fact that such a heavy snowfall as 12 inches was not looked for so early in the season, and the company was to some extent taken unawares and was not able to concentrate its snow plows upon the various lines in sufficient force to keep them all open. Another fact that worked against the system was that the formation of ice on the rails caused the wheels to slip and brought the cars to a standstill. In this connection we are surprised to note that a New York electrical journal falls into the extraordinary error of stating that the ice on the rails prevented contact between them and the wheels, "thus preventing the establishment of a circuit." It is one of the chief merits of the underground trolley that both the feeder and return lines are placed in the conduit, and the current does not have to pass through the track and the wheels. Slipping of the wheels is a contingency to which every form of motor, whether steam, compressed air, or electric, is liable, and a blockade due to this cause does not reflect in any way upon the underground system as such.

THE LOSS OF THE "PORTLAND."

Out of over one hundred souls that were known to have sailed out of Boston on the ill-fated "Portland," on the eve of the disastrous storm of November 26, not one has escaped to tell of the loss of the vessel. All that is known is that she was sighted later that night making a futile attempt to breast the northerly storm, and that a few hours later scattered fragments of her wreckage were cast ashore at Cape Cod, many miles to the southeast of the point at which she was last sighted. The fact that no large portion of the hull has been found indicates that the vessel foundered in deep water; and to any one who is familiar with the type of vessel to which she belonged, it would have seemed a miracle if she had done anything else but go down in such a storm as that which overwhelmed her.

The "Portland" was a wooden, side-wheel steamer, of the true American river steamer type, with wide, overhanging guards, and a lofty tier of deckhouses covering the full width of the vessel from guard to guard. She differed from the river type in that the struts that extended from the hull to the guards for the support of the latter were planked in, with a view to preventing, or rather mitigating, the heavy concussions of the seas against the under side of the guards. The upper works above the guards were of the usual light construction, and, while admirably suited to river work, would be smashed into kindling wood if struck by heavy seas, such as were running on that fatal Saturday night.

Such a boat, particularly if built of wood, as the "Portland" was, is in every way unfitted to battle with an Atlantic gale. When plunging into a head sea, the overhanging guards present a broad, almost flat surface against which the seas would strike with terrific force, tending to lift the guards and superstructure bodily from the hull. That this is possible was proved a few years ago on the Pacific coast, when a side-wheeler of the same type as the "Portland" foundered during a trip from the Columbia River to San Francisco. On this occasion the guards and superincumbent deck were lifted bodily from the hull, allowing the water to rush into the hold, and causing the vessel to go down with great rapidity. We think it is more than probable that like causes led to a like result in the case of the "Portland."

The wooden side-wheel steamer is altogether out of

place on a coastwise or deep sea service. The paddle wheel and its cumbrous "box" are an element of danger in themselves; and when to these are added the broad flaring surface of the guards, and a towering pile of flimsy deckhouses, it is simply courting destruction to expose such a vessel to the fury of an Atlantic gale.

INCREASE OF OUR EXPORT TRADE TO AFRICA.

The rapid expansion of our export trade to Africa is the subject of a good deal of attention in the European nations which have hitherto supplied most of the articles imported into that country. A recent issue of a prominent European trade publication called attention to the fact that British exports to South Africa for the nine months ending September 30, 1898, show a decrease of \$3,000,000 or 12½ per cent as compared with those of the corresponding nine months of the preceding year. The figures of our Treasury Bureau of Statistics show that our exports to Africa for the same period have increased 13½ per cent. In 1894 our exports to Africa for the ten months ending October 31 amounted to \$4,380,425 and our imports to \$3,852,701. In 1898 our exports for the ten months had increased to \$14,986,476 and our imports amounted to \$7,267,317. The greatest increase has occurred in the exportation of such products as wheat, corn, canned beef, lard, and tobacco, and even American butter is being shipped in increasing quantities.

The growth of our exports to these comparatively new fields has taken place chiefly in the past decade. In 1868 the exports for the twelve months were valued at about three millions of dollars; in 1878, at four millions; in 1888 they fell to three millions; and in 1898 they rose to the present figure of over seventeen and a half millions.

THE PROPOSED ADDITIONS TO THE NAVY.

The additions to the navy proposed by the Naval Board on Construction contemplate an expenditure of \$36,100,000 distributed as follows: Three 13,500-ton battleships to cost \$3,600,000 each; three 12,000-ton armored cruisers to cost \$4,000,000 each; three 6,000-ton protected cruisers to cost \$2,150,000 each; and six 2,500-ton protected cruisers to cost \$1,141,000 apiece. Each of these vessels is to carry "the heaviest armor and most powerful ordnance for vessels of their class, to have the highest practicable speed, and great radius of action."

If the nation has any conception of the vast responsibilities which the acquisition of the Philippines has placed upon it, there will be no difficulty in securing the necessary appropriation for making this addition to our navy. In view of the fact that two or three years must elapse before the ships are completed, no time should be lost in making the appropriation; indeed, the question should form one of the very first subjects of deliberation at the forthcoming reopening of Congress.

The Naval Board shows great wisdom in recommending that every one of these fifteen ships be wood sheathed and coppered. We shall have no docking facilities in the Philippines for some time to come, and the ability to keep the sea afforded by coppering will be invaluable.

METAL RAILROAD TIES CHEAPER THAN WOOD TIES.

In view of the enormous demand made by the railroad companies for timber suitable for railroad ties, the question of providing a suitable metallic tie assumes increasing importance as the railroad systems of the world are extended. One of the most valuable contributions on the subject is that recently communicated to the International Railway Congress by M. Ch. Renson, and published in the Bulletin of the Association. It recounts the experience gained during some twenty years of experimental work carried out by the Liège-Limburg Railway, Belgium, on which various kinds of metal ties have been tested on different sections of the road. For purposes of comparison a section of the road was laid with oak sleepers, care being taken that the conditions as to nature of the roadbed, drainage, weight of rail, care in maintenance, etc., should be identical.

The metal ties varied in shape and quality from the crude forms of the earliest ties to the more scientifically designed later ties, in which the experience gained with the earlier ties was embodied. It was found that the average life of the oak ties was thirteen years, while the average type of the earliest and crudest metal ties was eighteen years. Allowing four per cent interest on the first cost, it was found that the oak ties cost 41 centimes and the metal ties 19.5 centimes. The metal ties showed, on the other hand, a greater cost for maintenance, and correcting the figures accordingly it was found that the metal ties showed a yearly economy of 10 centimes.

This, it must be remembered, was for the early form of ties, which were little more than a straight rolled channel. The later ties have their width decreased and their vertical flanges deepened at the center, thus providing a maximum bearing surface immediately beneath the rails, and increased girder depth at the

center. By the use of round drilled holes for the fastenings and the insertion of wearing plates between the rail and the tie, the life of the ties has been greatly lengthened. M. Renson states that the Liège-Limburg experiments have proved that, not only on the score of economy, but on every point of comparison, the metal ties are superior to those of wood.

If any one in this city wishes to test the comparative riding qualities of wood and steel ties, he can do so in passing over the stretch of the New York Central tracks lying between the north end of the Park Avenue tunnel and the new steel viaduct. The first stretch of this piece of road is laid on wood ties, and the latter half of it on metal ties. The portion of the track laid on metal ties is the smoothest riding; but it is not so silent as the other.

SECRETARY LONG'S REPORT.

The recent report of the Secretary of the Navy is of special interest as being the final official statement regarding the extensive and complicated operations of the war. In the opening paragraph attention is drawn to the fact that for the first time since its rehabilitation the navy has been put to the "supreme test of war," and that years of persistent training and development had brought it to a point of high efficiency, which resulted in the "unparalleled victories of Manila and Santiago."

The forehandedness of the Navy Department is shown by the early date at which preparations for the likely contingency of war were made. Early in the year, the department directed the commander-in-chief of the European station to retain those men whose terms of enlistment were about to expire. The "Helena," on her way to Asia, was sent to Lisbon; the "Cincinnati" and "Castine," on the South Atlantic station, were moved from Montevideo to Para on the north coast of Brazil; the commander-in-chief of the European station was directed to bring the newly acquired "New Orleans" with him to the United States; and the commander-in-chief of the Asiatic squadron was ordered to assemble his squadron at Hong Kong. The "Olympia," under orders to proceed to San Francisco, was retained on the Asiatic station, and the "Oregon" was ordered from the dry-dock at Brewerton, Wash., to San Francisco to prepare for her voyage to the Atlantic. Meanwhile orders were given to husband ammunition and keep all vessels filled with the best coal obtainable; the North Atlantic fleet was stationed at Key West, and the flying squadron, organized for the protection of our coast line, was stationed at Fortress Monroe. On March 9 the emergency appropriation of \$50,000,000 was made, and three days later a board was appointed for the purchase of auxiliary vessels.

"The squadrons, ships, officers, and crews," we are told, "were in admirable condition and training," and "the bureaus of the department had, by wise forethought, prepared them with every facility in the way of men, supplies, ammunition, information, and drills, and as early as April 15, four weeks before Admiral Cervera's fleet reached Cuban waters, the navy of the United States was ready for the outbreak of hostilities. The North Atlantic fleet at Key West covered Cuba; the flying squadron at Hampton Roads stood ready to defend our own coast or threaten that of Spain, and the Asiatic squadron at Hong-Kong only awaited information of the outbreak of hostilities." On April 20 the northern patrol squadron was organized for the protection of the Atlantic coast between the capes of the Delaware and Bar Harbor, Maine.

War was declared April 21. On April 24 the following telegram was sent to Commodore Dewey: "War has commenced between the United States and Spain. Proceed at once to the Philippine Islands. Commence operations at once, particularly against the Spanish fleet. You must capture vessels or destroy. Use utmost endeavor." On the 27th the squadron set sail, and on May 1 it had not only followed out the Secretary's order to the letter, but held the capital of the Philippines at its mercy. This "brilliant and electrifying victory at the very outset of the war infused confidence throughout the country and into the personnel of every branch of the service," and "it removed at once all apprehension for the Pacific coast."

On April 29 Cervera's fleet set sail from the Cape Verde Islands. Sampson at once sailed east with a part of his fleet for observation, having received instructions not to risk the loss of his ships in bombardments. Returning from San Juan (which he had reached May 12) without finding Cervera, Sampson was informed that Cervera was at Curacao, West Indies, and was himself ordered back with all speed to Key West. On May 19 the flying squadron under Schley was ordered to Cienfuegos under the impression that Cervera had entered that harbor. On May 20 the department thought Cervera was at Santiago, and told Sampson to order Schley to proceed thither. This order was sent by the "Marblehead" on the 21st. On the 23d Sampson sailed east to occupy the Nicholas Channel. On the 26th Sampson received a dispatch from Schley stating that "he was by no means satisfied that the Spanish squadron was not at Cienfuegos,