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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

PROPOSED RELIEF OF THE BROOKLYN BRIDGE TERMINAL.

It must be confessed that the plans which, after six months' work, have been drawn up by the engineers who were appointed to devise the best means for relieving the crush at the Manhattan terminus of the Brooklyn Bridge, are distinctly disappointing to the New York public. Of all conceivable remedies, it was certainly not expected that these experts would seek relief for the Bridge by adding more elevated structures to those which already disfigure the streets of the city and encumber its traffic. When we learn that the so-called improvements (which include, forsooth, an elevated structure down the already-crowded Park Row, across Broadway and down Vesey Street, passing the venerable and sacred inclosure of St. Paul's Church and Churchyard) are to cost three million dollars, the conviction is forced upon us that the disease is preferable to the remedy.

The recommendations, briefly stated, are that an elevated road be constructed connecting the Manhattan terminus of the Brooklyn Bridge with the termini of the two new bridges which are being built across the East River.

That a double-track elevated road be built down Park Row, across Broadway and down Vesey Street, to West Street, and the Cortlandt Street ferry.

That the second floor of the Brooklyn Bridge terminal be used exclusively as a trolley-car terminal; that a new stairway be made to the Bridge from Rose Street; that the present stairway from William Street on the south side be widened and a corresponding stairway be built on the north side; and, finally, that across the whole length of the Brooklyn Bridge the trolley tracks be separated from the driveway by curbing.

With regard to the proposed elevated structures between the three bridges and to the Cortlandt Street ferry, the last-named is, for reasons of unsightliness alone, altogether out of the question. Moreover, we very much doubt whether there is sufficient cross-town travel from the Bridge to the ferry to warrant the construction of a special elevated road to accommodate it. As to the proposition to connect the three bridge termini, it would surely be wiser to await the opening of these bridges and ascertain just what will be the natural flow of travel across and between them, before making any provision to handle or divert that travel on the Manhattan side. The construction of this elevated system would be very much in the nature of a leap in the dark, and as the new East River Bridge, if it is completed under an honest and capable administration, will be opened in less than two years' time, we think it would be wiser to wait at least that long before moving in this matter. So much for the proposed extensions (as they would actually be) of the Brooklyn Bridge trolley lines.

The other recommendations of the engineers, affecting the bridge itself, are, we think, generally to be commended, and the removal of the trolley-track loops to the second floor of the Bridge would be advisable, even if the elevated Bridge extension should never be built. The footway approach to the Bridge would be cleared of obstruction and dangers, and the car and foot-passenger travel would be placed on separate floors. The provision of extra stairways and the enlarging of the present stairways are also greatly needed. The proposition to place a curb for the full length of the Bridge between the trolley track and the roadways, however, is an improvement, the advantage of which would lie entirely with the trolley roads. Its object, of course, would be to prevent vehicles from pulling out onto the trolley tracks, in passing the slower vehicles ahead. At present a swiftly traveling carriage, if it overtakes a heavy dray, has to pull out onto the tracks if it wishes to move ahead. Although this is done continually, we have noticed that vehicles never remain longer on the trolley tracks than is necessary. Of course, the practice may occasionally cause delay to a trolley car, but the delay is slight and comparatively infrequent. If a curb were laid down, as suggested by the engineers, it would limit the space available for vehicles to 8 feet, and a dray moving at two or three miles an hour would have the whole of the traffic behind it at its mercy for the twenty minutes or more that it takes to cross from Manhattan to Brooklyn.

NAVAL ESTIMATES.

The naval estimates for the fiscal year ending June 30, 1903, call for a total appropriation of just under ninety million dollars. This is about twenty million dollars more than the appropriations for the current year. The principal increases are one of about two and a half million dollars for new construction, and another of two million dollars for armor. Although the Secretary of the Navy, in speaking of the estimate, stated that it did not cover any recommendations for increase of the navy over that already authorized, it is considered probable in naval circles that he will recommend the construction of three new battleships, two armored cruisers and several small gunboats.

It will be remembered that, although the last Congress did not authorize the construction of any new battleships or cruisers, the Construction Bureau was ordered to prepare plans for two battleships and two armored cruisers. The plans for these battleships are those over which such an animated controversy has been waged lately in the Naval Board on Construction, the majority of the Board being opposed to the incorporation of double-decked turrets in these designs, and adopting a plan which included four 12-inch guns in turrets and twenty 7-inch rapid-fire guns mounted in broadside. Plans for the two armored cruisers were also completed. The three new battleships and two armored cruisers recommended by the Secretary will be built from the above designs. If appropriations are made for these five ships, the naval list of the United States will show that we have twenty first-class battleships, under construction or authorized. Compared with the other first-class navies of the world, it will place us second to Great Britain, which has forty-one battleships, while Germany will come third with sixteen, followed by Russia with fourteen, France with thirteen, Italy with ten, and Japan with six. This preponderance in battleships is one of the most encouraging features in any comparison that we make of our standing with that of other navies; for although France and Russia very greatly exceed our navy in the total number and total tonnage of ships of all classes, and Germany about equals us, it must be remembered that it is the battleships that will have to stand the first and last shock of battle, and that by their numbers and excellence must be determined the ultimate issue of a great naval war. The Secretary is in favor, also, of the construction of a dozen gunboats, a type of vessel which, because of its light draft, he considered to be of special value for service on distant stations and in our new colonies.

Among other items of importance in the estimates, we notice the following: For reserve guns for the ships of the navy, $500,000; for a floating drydock at Portsmouth, N. H., $500,000; and for new works at the Boston navy yard, $1,127,700; while for the New York navy yard the estimates call for an expenditure of over $3,000,000, in which is included $2,000,000 for the purchase of land, and $200,000 for barracks for the enlisted men. Over a million is asked for the Norfolk navy yard; the estimates for the naval station at San Juan call for over two and a half million dollars, the improvements including a new masonry drydock to cost a million dollars. Appropriations are also asked for a naval station at Tutuila, Samoa, for the Cavite naval station near Manila, and for a complete new naval station at Olongapa.

It will be observed that a considerable portion of the appropriations is rendered necessary by the enlarged responsibilities and wider field of operations of the navy, due to our West Indian and Philippine possessions. The naval stations are an absolute necessity, for, in case of our being plunged into a naval war, drydocks, coaling stations and store depots would be just as essential to the efficiency of our ships as coal and ammunition. Although the sum asked for is a large one, we must remember that the country is being favored with a period of unparalleled prosperity, and that the increase in appropriations does not begin to equal our expanding commercial activity, and our phenomenal increase in wealth.

VIBRATIONS OF LONDON UNDERGROUND.

The new London underground electric road has been giving considerable trouble of late in the way of vibrations. It will be remembered that the trains circulate, from the City to Shepherd's Bush, in tunnels formed of cast-iron tubes 11 feet in diameter situated at an average depth of 60 to 75 feet below the street. Since the trains have been running a great many complaints have arisen from the inhabitants of the houses along the route, and it is stated that the vibrations are sufficiently marked to have caused cracks in several buildings. No such effect of vibrations has been noticed for the other underground systems. A special commission was appointed to look into the matter and has lately made its report. The commission, after a careful examination of the locality, is convinced that serious vibrations are produced in a number of houses situated along the route of the Central London Railway, and their experiments lead to the conclusion that these vibrations are due to two causes: first, the too great proportion of non-suspended weight in the locomotives, and second, the want of rigidity of the rails. In order to obviate the first difficulty the company has ordered a new type of locomotive which is shortly to be tested. On the other hand, the engineers are studying the means of giving greater rigidity to the rails. When the results of these tests have been made clear, the committee will be in a position to indicate the measures to be taken in order to suppress the vibrations on the Central London system, as well as the rules to be imposed in the case of new concessions. In any case the committee is of the opinion, according to the present experiments, that by taking special measures the vibrations of the new lines projected on the tubular system may be practically suppressed, but cannot indicate the exact measures to be adopted before the present tests are finished.

MINING CONDITIONS IN SOUTH AFRICA.

Representatives from a large number of mining companies of South Africa have recently arrived in this country, and report that, in all probability, the output of gold from the Transvaal will not for many years equal the amount reached when the Boer war began. In August, 1898, 483,000 ounces of refined gold was produced. The output at the present time is merely nominal. In anticipation of the early cessation of hostilities, and immediately after the capture of Johannesburg by the British, large orders for material were sent by the companies to replace that which had disappeared or deteriorated during the enforced idleness of the war; but the supplies, though received at adjacent ports, have not been forwarded, owing to the continued raids of the Boer forces. The warehouses at Delagoa Bay and Durban are crowded with these shipments waiting for a conclusion of hostilities. Even were there no interruption to railroad traffic, mining could not be resumed at once on account of the dispersal of the laborers, both black and white. In October, 1898, the mines employed 116,000 black "boys" and 10,000 whites, and of these not more than 20 per cent are left. The balance have either disappeared or emigrated.

The condition of the 51 milling plants on the reef which were in operation at the beginning of the war is good. Only one was destroyed, though several of the plants were run by the Boers to provide funds for defensive purposes. Those mines producing the highest grade ore suffered most. The highest number of stamps working was in October, 1898, between 4,000 and 5,000, having increased from 3,567 in 1897.

The value of the surface plants of the mines of the reef is estimated at $125,000,000, and the cost to place them in as good condition as when closed down is estimated at fully 40 per cent of the original value.

The purpose of the visit of the South African mining agents to the United States is to inspect the latest improvements in deep mining. The introduction of electrical hoisting on the Comstock has greatly interested them, and will lead to the general adoption of this agent as a motive power in South Africa, though cheap water power is not accessible there. The latest improvements in shaft-driving have been sought, and in some instances orders for such machinery have been given.

The agents say there is no improvement in gold-mining adapted to South African conditions that the companies are not prepared to adopt. They admit that their initiative and suggestion of improved mining methods comes from the United States, which supplies them with the latest inventions and most efficient machinery.

It is said as soon as peace is assured that South African mining development will reach enormous proportions. Outcroppings of the Johannesburg extend for a length of 45 miles, with base dimensions of unknown breadth or depth. The "Catlin" shaft, near Elandsfontein, 8 by 28 feet, has been sunk to a depth of 3,750 feet, and is now the deepest in South Africa. It will be continued until the reef is intersected. At its present depth the rock temperature is 80 deg. At Turfontein a diamond drill has struck the reef at a depth of 4,800 feet, and a shaft equal in dimensions to the "Catlin" will be sunk immediately. Projects are being entertained to sink to depths of 10,000 feet, or even more, if necessary. South African engineers are willing to undertake these abnormal projects, provided there is a reasonable assurance of