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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.

DYNAMITE CRUISER FIASCO.

The announcement from Washington that the Secretary of the Navy is likely soon to order the dismantling of the once-famous dynamite cruiser "Vesuvius" will cause no surprise to students of naval matters who have kept in touch with the latest history of the much-vaunted "dynamite" gun. It was at a time when the pneumatic guns of Zalinsky for throwing guncotton in large quantities were at the very height of their premature reputation, that Congress, in spite of the recommendations of the naval experts to the contrary, ordered the construction of a fast cruiser which was to be armed entirely with pneumatic dynamite guns. At the same time large appropriations were made for the emplacement of batteries of the same type of gun at various commanding positions on the United States seaboard, such as Sandy Hook, the entrance to San Francisco harbor and the entrance to the Sound. If, as is likely, the dynamite guns of the "Vesuvius" and the costly, complicated apparatus for working them are removed from that vessel and sold for old junk, there will be a precedent for such action in the recent fate of the dynamite guns at Sandy Hook which, costing originally hundreds of thousands of dollars, were sold for the paltry sum of \$20,000. Those who were responsible for the construction of the "Vesuvius," and who still have faith in the annihilating powers of the dynamite gun, cannot complain that their theories have not received every encouragement to demonstrate their practical value. The "Vesuvius" was sent to Santiago for the avowed purpose of blowing the Santiago forts into submission; but although she threw a few tons, more or less, of guncotton upon the Cuban coast, it has yet to be proved that any material damage was done to the Spanish fortifications. It is to be hoped that in the dismantling of this vessel, we shall hear the last of this ill-advised exploitation of a costly fad.

THE INSPECTION OF THE BROOKLYN BRIDGE.

It is gratifying to note that under the present administration the shameful neglect of the Brooklyn Bridge, which occurred under Tammany rule, has given place to a very thorough and systematic care of this, the most monumental engineering work in America. One immediate result of the appointment of a thoroughly qualified engineer as Commissioner of Bridges is, that the structure is now inspected and kept in repair with the same business-like methods that characterize the maintenance of a first-class railroad. In his recent report, Commissioner Lindenthal states that there is now a careful and systematic inspection of the bridge made each working day by a gang of men, acting under the supervision of the assistant engineer in charge, who keeps a daily record of what is done. A force of riggers, riveters, carpenters and painters is constantly employed in making repairs and general improvements. It will be remembered that some eighteen months ago, when several of the suspender rods broke at the middle of the span, the bridge came very near to experiencing a colossal disaster. The public will be glad to know that these rods and their connections (always a faulty feature in the construction of the bridge), are receiving special attention. Every suspender rod, and each stirrup rod of the wire-rope suspenders, is subjected to minute inspection. This involves the removal of the rods one at a time; and if there is the slightest sign of corrosion and rust, the rod is either repaired or replaced by new material. The hinged bearings of the short suspender rods are now kept oiled and thoroughly lubricated. Moreover, a number of tests have been made on full-sized rods which have been removed from the structure, and we are informed that, in every instance when the rods were tested to destruction, it was found that they developed from ten to twelve times greater strength than the maximum load which the rod would be required to

sustain in the bridge. This result, by the way, fully bears out the conclusions reached by the SCIENTIFIC AMERICAN when we inspected the hinged bearings and broken rods at the time of their failure. We pointed out that these members were amply sufficient for their work, provided only that the hinged bearings were protected from rust and kept in a well-lubricated condition.

THE ARMSTRONG ORLING WIRELESS TELEGRAPH.

Some time ago we described in the SCIENTIFIC AMERICAN the wireless telegraphic and telephonic apparatus devised by Messrs. Armstrong and Orling of London. This invention has now been perfected sufficiently to be placed on the market, and two factories are being erected, one in Buckinghamshire, England, and the second in France.

Since our description was published one or two important improvements and alterations have been made. At that time, the inventors were experimenting with new receivers and transmitters of greater sensitiveness, since the ones they were using were only efficient for a distance of about 2 miles, but by continued investigations they have increased the efficiency to 20 miles.

When telegraphing over a greater distance the inventors intended, as described in our previous article, to place automatic relays at intervals of 20 miles which would receive and re-transmit the impulses with regenerated potential. Now, however, they have devised an alternative and apparently superior process, similar to that of Marconi, i. e., by high poles, from the upper extremities of which the electrical impulses are transmitted. The one advantage of the Armstrong-Orling system, however, is that the poles do not need to be so lofty, nor is it necessary to increase the height as the distance from station to station increases. This is due to the high efficiency of their capillary relay, the mechanism and principle of which we also fully explained. This relay has been submitted to comparative tests with the Siemens' relay, which is used by Marconi, and the results have been very startling in character. A Siemens' relay with a current of 8 volts was affected at a maximum distance of 1,600 miles; the Armstrong-Orling relay recorded electrical impulses of only 0.1 volt potential at a distance of 12,500 miles.

It will be recollected that Marconi failed to validate many of his inventions in the European countries. The reason for this has since been proved to be due to the fact that Armstrong and Orling were exploiting in the same field, and had protected their inventions before Marconi began his investigations. Nothing has been heard of the Armstrong-Orling invention until lately, owing to the fact that the inventors were sufficiently wealthy to pursue their investigations without seeking any extraneous financial assistance. Consequently they have not placed their apparatus upon the market until the invention has been sufficiently advanced and perfected to render it practicable and of commercial utility.

ELECTRIC TRACTION ON ENGLISH SUBURBAN ROADS.

Owing to the severe competition with which the English trunk railroads are threatened in their suburban traffic around the big cities by electric street railroads and deep level electric tubes, one or two of the big railroads are preparing plans for the electrification of their suburban tracks to meet the competition. The Lancashire and Yorkshire Railroad, which serves several busy cities, such as Liverpool and Manchester, have prepared elaborate plans for the conversion to electricity of many of their short tracks. The first experiment with this system is to be made upon a branch line running from Manchester to Liverpool through residential districts. The population is more dense in this area than in any other part of England except London. Between Liverpool and Southport there is already a fifteen minute service, and around Manchester some branches have trains nearly as often. With electric traction a four or five minute service or less would be inaugurated; and by having motors fitted to each car, the train could be made long or short according to the exigencies of the traffic at different hours of the day. When the Mono Railroad between Liverpool and Manchester is completed, by which the journey of 36½ miles is to be accomplished in twenty minutes, the electrification of this section of the main track of the Lancashire and Yorkshire Railroad will probably be completed in order to meet the mono-rail competition. The journey with steam traction occupies at present forty minutes. The North Eastern Railroad, another large concern serving the busy portions of Northeast England, are going to convert to electricity at once a number of their branch tracks, commencing with the Newcastle to Tynemouth, the Gosforth to Ponteland, and the Quayside branches. The North Eastern will be the first great English railroad to adopt electric haulage, though the other trunk railroads are contemplating a similar conversion upon an elaborate scale. At the present moment there is a great movement in Great Britain toward the adoption of electric traction upon an extensive scale.

THE GREATEST OF BATTLESHIPS.

We wish to call particular attention to the magnificent United States battleship, of which we present an illustration elsewhere in this issue. It may be stated, we think without fear of contradiction, that the design which has been drawn up by the Navy Department of the "Connecticut" and "Louisiana" represents by considerable odds the most effective fighting craft, both for offence and defence, that exists anywhere in the world to-day, either afloat, on the building ways, or on paper. Seeing that the first duty of a battleship is to fight—to work the greatest possible amount of injury to the enemy in the shortest possible time—it is evident that in this respect the measure of the efficiency of the ship will be the weight, number, and disposition of her guns. From revolutionary times to the present day America has realized this cardinal fact, as proved by the number and weight of the guns with which her war vessels have always been armed. It was to their crushing superiority in gun fire that the American ships in the sea fights of the war of 1812 owed their brilliant and oft-repeated victories; and it is a gratifying fact that, when it came to the question of the creation of an entirely new navy, our naval constructors never lost sight of the advantage of carrying a more numerous and powerful armament than your opponent. Witness the tremendous battery of the "Oregon" and her sisters with their four 13-inch and eight 8-inch guns in the main battery; or note the eight 8-inch guns carried by the "Brooklyn," a main battery the like of which is not to be found in any other cruiser of her displacement in foreign navies. The same characteristic is seen in the "Kearsarge" and in the admirable designs of the "Alabama" and "Maine" classes.

Now the "Connecticut" and "Louisiana," which, with the great British battleships "Edward VII.," "Commonwealth," and "Dominion," are the five largest warships in the world, mounts a battery which is so heavy as to place these vessels practically in a class by themselves. Each carries four 12-inch, eight 8-inch, twelve 7-inch and twenty 3-inch guns. The next most powerfully armed vessel is probably the "King Edward VII." She also carries four 12-inch, but instead of the eight 8-inch she is armed with four 9.2-inch guns. This, of course, is a much more powerful weapon than the 8-inch gun, but the rapidity of fire from the eight 8-inch, that is to say, the number of shots delivered in a certain time, will be so much greater that there will be far more likelihood of getting in an effective blow. It is the broadside battery of twelve 7-inch guns, however, that renders the "Connecticut" so much more powerful than the "King Edward VII." which carries only ten 6-inch against the greater number of 7-inch. An increase of an inch in caliber, when you get to the size of a 6-inch, means a great increase in power. Furthermore, the "Connecticut" will carry twenty of the 3-inch guns, as against ten or twelve of the same caliber carried by the latest British battleship. The "King Edward VII." will have about the same amount of armor protection as the "Connecticut" and half a knot greater speed. Outside of the latest British design there is no foreign war vessel that can compare in size, battery and protective qualities with our latest designs. The "Connecticut" is to be constructed at the government navy yard, Brooklyn, a fact which is a guarantee that the workmanship will be of the very highest quality throughout.

FESSENDEN WIRELESS TELEGRAPH PATENTS ALLOWED.

The last issue of the Patent Office Gazette contains thirteen patents on wireless telegraphy apparatus which have been granted to R. H. Fessenden, who is an expert of the Weather Bureau at Washington. Among the patents are included a device for signalling by magnetic waves, a current-actuated wave-responsive device, and also a conductor for wireless telegraphy apparatus. This is the apparatus to which reference was made recently in the SCIENTIFIC AMERICAN as having been employed by Mr. Fessenden in competitive tests of the wireless system which were made on the Carolina coast some little time ago. It was stated at the time that the results secured by Mr. Fessenden's device were superior to those of any other systems included in the tests.

The tallest steel chimney in the city of New York was recently torn down. The stack, which was 18 feet in circumference, consisted of thirty sections, each weighing a ton. In taking down the chimney, the workmen rigged up a scaffold about 10 feet from the top. Perched upon this support they punched out the rivets that held the adjacent sections together, and lowered the two sections, weighing two tons, by ropes connected with windlasses. The scaffold was then lowered to the next two sections, where the disjuncting work was continued. The removal of the chimney was effected at a cost of about \$2,000.