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OUR RELATION TO THE PEACE CONGRESS.

The formal announcement of the names of the delegates selected to represent this country at the meeting of the so-called disarmament conference reminds us that this epoch-making event is near at hand. That the conference will mark a new era in international affairs there can be little doubt—the general skepticism of naval and military men notwithstanding. That it will lead to any immediate disarmament, however, either complete or partial, is altogether unlikely, and, indeed, it is doubtful if such a result was contemplated by the Czar when he addressed his famous letter of invitation. The objects of the conference will be rather to arrest the present alarming rate of increase in naval and military armaments, and, at the same time, to determine upon some plan of international arbitration. If only the former of these objects be attained, it will be a great triumph for the cause of peace, and will carry the nations a long way toward the splendid goal of universal arbitration.

Evidently the first thing to be done is to stop the present mad competition, which is due chiefly to the rivalry between Russia and France and Germany on land and between Russia and France and England on the sea. In the determination to make her fleet equal to that of any other two, England has increased her average naval estimates from $75,000,000 in 1890 to 1894 to $132,972,500 in 1899, and other nations are increasing their naval and military expenditures in a similar ratio. If the Peace Congress is able to call a halt, it will open the way to the consideration of a gradual and pro rata reduction of armaments on sea and land.

It is rumored that, on account of the smallness of our army and navy, our delegates will be instructed to oppose disarmament and lend their strong support to a scheme of international arbitration. It is true that, in proportion to the size and wealth of the country, our forces are, judged by European standards, very inadequate; but this is a fact that will, no doubt, be taken into account by the conference. It is quite possible that in cutting down the European armies and navies to a "police" basis, it will be considered that the forces of the United States are only such as are necessary to protect the country's interests under normal peace conditions. If the nations would consent to cut down their armies from say the German basis of 1 soldier to 17 civilians to the United States basis of 1 soldier to every 445 civilians, disarmament would be within measurable distance.

FIRE PROTECTION OF TALL BUILDINGS.

The purpose of the editorial in our issue of March 25 on the fire protection of tall buildings is evidently not quite clear to our Boston correspondent, whose letter we publish on another page. In commenting on the fact that the New York Fire Department had succeeded in forcing water to the roof of a twenty-five story building by way of the building's own standpipe, we did not say that the building is therefore "amply protected from fire." What we did say was that the experiment shows our tall buildings to be better protected than is generally supposed. Provided that a standpipe of ample capacity extends through the full height of such a building, it will be possible for a strong force of engines to concentrate their combined pumping capacity at the seat of the fire, whether it be on the fifth floor or the twenty-fifth. Moreover, under normal conditions the water would be available immediately after the arrival of the engines, and long before the necessary lines of hose could be laboriously drawn up from floor to floor of the building. The wonderful way in which the Home Life building resisted the fiery furnace which was driven for hours by a northeasterly gale in through its unprotected windows proves to a demonstration that an adequate supply of water available on every floor would enable our fire department to control any fire that might originate within the building itself. At the same time we believe that the standpipe capacity of existing tall buildings should be at least duplicated, and each line of pipe provided with a sufficient number of couplings on the ground floor to enable its full capacity to be utilized by the fire engines.

The case of the Windsor Hotel, quoted by our correspondent, does not apply to the modern fireproof building. All the fire engines in Greater New York combined could not have saved such a tinder-box construction, when once the fire had fairly taken hold of the building. Hollow timber floors and hollow wooden partitions would defy all the standpipes, roof tanks, and other etcetera of fire protection that could be crowded into a building of this kind.

Literally speaking, there is, and can be, no such thing as an absolutely fireproof building. Even if doors, wainscoting, windows, and furniture were of metal construction, there would still be combustible material present in the shape of papers, letter files, and books in the office buildings, and general merchandise in the wholesale houses. The advantage of so-called fireproof construction is that it is slow-burning and renders impossible such a sudden conflagration as that which in the space of a few minutes wrapped the Windsor Hotel in flames. It tends to localize a fire and keep it within controllable bounds until the firemen can reach it. The fact that some of the semi-fireproof buildings have been destroyed merely proves that such construction, to be reliable, must be thoroughly carried out.

HIGH SPEED ON FRENCH RAILWAYS.

The compound locomotive is winning laurels for itself just now by its remarkable work in hauling express trains on some of the French railways. We have not been accustomed to look to France for record high speed performances, the trains in this country and in England having been up to a few years ago easily first in this respect. Of late years, however, a few of the French railroads, notably the Chemin de Fer du Nord, have been paying particular attention to their express train service, with the result that the last named now holds the leading place, running several of its crack trains at an average speed, including stops, of over 54·5 miles per hour.

Of the twenty-five expresses that are booked to run at a speed of over 50 miles an hour, there are six, including one between Amiens and Calais Ville, 102½ miles, with a speed of between 50 and 50·9 miles an hour; seven between 51·1 and 51·8 miles an hour; seven between 52·0 and 52·7 miles an hour; and five having respective speeds of 54·5, 54·8, 55·3, 56·3, and 57·7 miles an hour, including stops; the last named run is made between Paris and Amiens, 81¾ miles; while the average of 56·3 is maintained on a continuous run, without stop, between Paris and St. Quentin, a distance of 95¾ miles. What a splendid service this is will be understood when we bear in mind the fact that the five fastest trains exceed the speed of our own Empire State Express, which is timed to run from New York to Albany at the rate of 53·58 miles an hour, though they do not equal the Atlantic City flier on the Philadelphia and Reading Railroad. The trains are not so heavy as the Empire State Express, although some remarkable work has been done with trains of between 300 and 400 tons, running at speeds of from 40 to 50 miles an hour.

Perhaps the most interesting feature of this express service is the fact that it is worked by compound locomotives of the four cylinder type. These engines have generous grate surface; a large total heating surface, in some cases approaching 2,000 square feet; and employ steam pressure as high as 227 pounds to the square inch. The high pressure cylinders are within the frames, beneath the smoke box, and are coupled to the forward pair of drivers, while the low pressure cylinders are outside the frames and connect to the rear pair of drivers.

M. De Glehn, the designer of the locomotives, says that he adopted the compound system because, within the limits of weight imposed, he can secure a more powerful engine than is possible with the simple system. This is due to the superior economy of compounding, which he has found enables the same weight of boiler to supply an engine of from 15 to 20 per cent greater power than it could if the simple high pressure system were used.

LATEST BATTLESHIPS AND CRUISERS FOR THE BRITISH NAVY.

The annual statement of the First Lord of the Admiralty, recently made to Parliament, announces that the British naval estimates for the coming year are $132,972,500, an increase of over $14,000,000 over those of the fiscal year now drawing to a close. The total force is to be raised to 110,640 officers and men, an increase of 4,250 men over numbers for the present year and of 10,590 over the authorization of the year preceding.

Of the battleships authorized and under construction (see articles on British navy, Scientific American of November 26 and December 10, 1898) the six vessels of the "Canopus" class, 12,950 tons and 18¼ knots, will all undergo their trials between June of this year and July of next year. Of the six ships of the "Formidable" class, 15,000 tons and 18 knots, five are building and the sixth is about to be laid down. Special interest attaches to the four battleships of the latest type, which will be known as the "Duncan" class. They show the effects which improvements in armor and motive power are having in increasing speed and coal capacity and reducing the thickness of belts and barbettes. The particulars of the new ships are as follows: Length, 405 feet; beam, 75½ feet; mean draught, 26½ feet; displacement, 14,000 tons; speed, 19 knots with 18,000 indicated horse power under natural draught. The belt will be 7 inches, decreasing toward the bow. The barbettes will have 10 to 11-inch and the casemates 6-inch armor. The armament will be four 12-inch, twelve 6-inch rapid-fire, twelve 3-inch and six 3-pounders. The remarkable feature of these battleships is their high speed of 19 knots and the fact that it is to be obtained without the use of forced draught on a continuous run of 150 knots. The splendid qualities of Krupp armor are shown in the reduction of the belt to 7 inches in thickness.

The eight first-class protected cruisers of the "Diadem" class, 11,000 tons and 20½ knots, are all about completed, and the "Diadem" has recently made a run from Gibraltar to the Nore, a distance of 1,320 knots, at an average speed of 19·27 knots. Six armored cruisers of the "Cressy" class, 12,000 tons and 21 knots speed, are under construction. All of the above vessels are illustrated in the second of the articles above mentioned.

The latest cruisers are four huge armored ships of the same size as the "Terrible," but of higher speed and more powerful armament, and two armored cruisers of the same speed but smaller size. The larger vessels are known as the "Drake" class. Their particulars are as follows: Length, 500 feet; displacement, 14,100 tons; speed under natural draught, 23 knots; horse power, 30,000; side armor, 6 inches; casemates, 6 inches; armament, two 9·2-inch, sixteen 6-inch rapid firers, fourteen 3-inch, and three 3-pounders. The coal bunker capacity will be 2,500 tons loose stowage, with a maximum capacity of about 3,500 tons. The smaller armored cruisers will be of 9,800 tons and 23 knots (natural draught), and they will carry four 6-inch guns in turrets and ten in casemates. The side armor will be 4 inches in thickness. Two new battleships, of a design not yet completed, two 9,800 ton armored cruisers and three smaller cruisers are also to be laid down this coming year.

To any thoughtful observer of the present trend in naval design, the most remarkable fact, as shown by these new vessels, is the gradual merging of the two types battleships and cruisers into one. Here we have a battleship of 14,000 tons and a cruiser of 14,100 tons with only an inch difference in the thickness of the side armor and with a total energy of gun-fire distinctly heavier for the cruiser than the battleship. We think it is likely that the two types will in two or three years time be merged into one, to be known by the name of cruiser-battleship. Such a vessel will be of 20 to 21 knots speed and will possibly carry nothing heavier in the way of ordnance than improved 10-inch rifles of extremely high velocity and great rapidity of fire.

A CRITIC ANSWERED.

We find in the columns of our contemporary The Electrical Engineer, London, a criticism of an article upon "Electric Fuses," which recently appeared in our columns. The criticism, summed up in a word, is that the subject is not new, and the subject matter is elementary. We plead guilty to both counts of the indictment, and shall probably need to do so in numerous cases in the future. Since The Electrical Engineer and the Scientific American were young a new generation has come forward, who require the same instruction upon the same practical matters that we required, and the large number of acknowledgments that we receive for these efforts in our columns from time to time prove to us that such educational work is needed and is regarded by many readers as valuable to them.

We are proud to be classed as an educational journal, and no letter which comes to our office is answered with greater care than one which has evidently been written by some school boy who shows an intelligent desire for enlightenment on any subject that comes within the province of our work.

OUR NAVAL CONSTRUCTORS TO BE EDUCATED ABROAD.

The course in naval architecture at Annapolis which was started two years ago by Lieut. Hobson has been abandoned, and now young graduate constructors will be sent abroad to complete their education. For many years it has been the practice of the Navy Department to select several of the scholars of high standing of each class at the naval academy and send them abroad for supplementary instruction in Europe, usually in Great Britain or France. The American students nearly always won honors in the foreign schools, and this is said to have caused jealousies which resulted in closing the Royal College in England and the National School in Paris to Americans. Our naval authorities also reached the conclusion that the American officers need not depend upon foreigners to learn an art which was already being brought to a high state of perfection