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CONGRESS AND THE TECHNICAL BUREAUS.

The fact that in this advanced age of warship construction we should be committed to the building of four vessels of the ancient monitor type simply proves that there are some subjects with regard to which the two Houses of Congress ought to rely entirely upon the judgment of the technical bureaus.

The question as to what types of ships are best suited to the needs of the navy is a purely technical and professional question which can only be decided by the men who design the ships and the men who handle them. Naval architecture is, perhaps, the most complex and difficult of all the exact sciences. Its problems are complicated by the fact that because of the long periods of peace and the comparative absence of the practical test of war, much of the designing is done on theoretical lines. Hence the experience of the late war was of inestimable value. One of the earliest lessons we learned was that for most naval operations the monitor is worse than useless. The fact had long been suspected and Admiral Sampson proved it when he took the monitors with him on his cruise to the eastward in search of Cervera. They kept down the speed of his fleet to five knots an hour on the way to San Juan, and when he reached his objective point and commenced to bombard they made such poor gun-platforms that the gunners were unable to hit anything. In his report of these operations Admiral Sampson condemned the monitors, and in doing so was indorsed by every officer of the new school who witnessed the misbehavior of these embryo craft during the war.

When the time came for the Naval Board (which is an expert board) to make recommendations for new vessels, it very naturally called for ships of a modern type—battleships, cruisers, and torpedo boats. The bill authorizing the construction of these ships passed the House; but when it reached the Senate, instead of confining itself to its proper function of authorizing or refusing the expenditure necessary for the construction of the ships, it undertook to ignore the opinion of its naval experts by inserting in the bill a provision for constructing four of the very type of ship that the navy was practically unanimous in condemning.

Now, we think that the Senate could not more effectually have stultified itself than by assuming to know more about a purely professional matter than professional men themselves. It is certain that such an assumption will always result, as in the present case, in foolish expenditure of the public moneys. The truth of the matter is that these gentlemen, in their admiration of the monitor, are guilty of a kind of fetish worship, for they will not bring themselves to believe that a craft which did such sensational work in the sheltered bays and rivers of the South cannot contend successfully with modern battleships in the vastly altered conditions of modern warfare.

The tendency of Congress to go beyond its proper sphere by setting up its own judgment against that of the technical bureaus or boards by which it is advised is greatly to be regretted. Any attempt to do more or less than control the expenditure of the sums necessary for construction will almost inevitably, as in the case of the monitors, reflect unfavorably upon the good sense of Congress and be prejudicial to the best interests of the country at large.

THE NAVAL BILL FOR 1899.

It is sincerely to be hoped that in dealing with the new Naval Bill, Congress will not make the mistake of interfering with the technical features of the bill. If it considers that the appropriations are too great or too small, it will be perfectly within its province in reducing or increasing the number of ships of the various types suggested by the Board; but it will repeat the error of last year if it calls for changes in the character and make-up of the ships themselves, or deliberately authorizes the construction of ships which are viewed with disfavor by naval authorities.

The bill calls for the construction of the following vessels: Three sea-going battleships, to carry the heaviest armor and most powerful ordnance for vessels of their class upon a trial displacement of 13,500 tons.

They are to be sheathed and coppered and have the highest practicable speed and great radius of action.

Three armored cruisers of about 12,000 tons trial displacement, carrying the heaviest armor and most powerful ordnance for vessels of their class, to be sheathed and coppered and have the highest speed and steaming radius.

Six protected cruisers of about 2,500 tons trial displacement, sheathed and coppered, to have the highest speed compatible with good cruising qualities and great radius of action. The armor for these vessels is to cost not more than \$545 per ton.

The provisions of the bill, as far as the new ships are concerned, show the effect of the new foreign policy upon which we have entered. We can no longer be content to design vessels of a purely coast defense type. The acquisition of the far distant Philippines has necessitated the construction of vessels that are capable of steaming for long distances and arriving at our new possessions in a serviceable condition, with clean bottoms, an ample supply of stores and ammunition on board, and enough coal to enable them, if need be, to go into immediate action. Hence it is that all the new vessels are to be sheathed and coppered, and are to carry specially large supplies of coal, and consequently there is an increase in displacement. The battleships are to be 1,000 tons larger than the new "Maine," and over 3,200 tons larger than the "Oregon." Their speed will probably be 18½ knots and their coal supply from 2,000 to 2,500 tons with close stowage. It is not likely that the armament will be increased over that of the new "Maine," which is already equal to, if not slightly superior to, that of any ship now built or building.

The armored cruisers will be magnificent vessels of 12,000 tons and 21½ to 22 knots speed. We are in a position to state that in the disposition of their armor they will probably be enlarged vessels of the "Christobal Colon" type, which we consider to be to-day the best type of vessel for her size in the world. They will have a complete water-line belt, above which will be a central citadel extending from the belt to the main deck with complete athwartship bulkheads, in which will be carried a powerful battery of the new 6-inch smokeless powder rapid-firers. The bulkheads will inclose the turrets for the main battery of armor-piercing rifles, which will probably be of an improved rapid-firing 8-inch type of great power.

The protected cruisers will be enlarged "Cincinnati," with a larger coal supply and carrying the new smokeless powder rapid-firers. The greater power of the new weapons will render these six cruisers far more formidable than the "Cincinnati" or her sister the "Raleigh."

The total amount carried by the bill is \$44,158,605, a large sum on the face of it; but not so large if we bear in mind that it represents the insurance upon our new possessions and the merchant fleets which we expect to place upon the seas in the coming years.

THE MINERAL RESOURCES OF THE PHILIPPINE ISLANDS.

At a time when information regarding our new possessions is so much in demand, the memorandum by George F. Becker, of the United States Geological Survey, on the mineral resources of the Philippine Islands, will prove of great interest and value. The pamphlet, which will be given at full length in the next issue of the SCIENTIFIC AMERICAN SUPPLEMENT, covers all the main discoveries in the geology of the Philippines which are of economic interest. The data was obtained from various sources, including unpublished records in the Spanish Mining Bureau, mine reports by the late William Ashburner, verbal information obtained in Manila, and from various technical publications.

The valuable minerals, as far as present knowledge goes, are confined to about a score of the islands. Luzon heads the list with deposits of coal, gold, copper, lead, iron, sulphur, marble, and kaolin, while coal and gold are the two minerals most commonly found in the other islands. The Philippine Islands coal is a highly carbonized lignite, analogous to the Japanese coal and that of the State of Washington, but not to the Welsh or Pennsylvania coals. It is thought that the native coal might be made to supplant the English or Australian coal for most purposes. Petroleum is found in Cebu, where a concession has been granted, and there are evidences of natural gas, while oil and gas are reported on Panay.

Gold is found in a vast number of localities in the archipelago. It is generally detrital and found in watercourses or stream deposits now deserted by the currents. There are placer deposits, some of which are worked in a crude way by the natives, and some of the gravels are adapted to hydraulic mining. In one of the islands a gold quartz vein has been worked which is six feet in thickness and has yielded from \$6 to \$7 to the ton.

Copper ores are reported from a great number of localities, northern Luzon containing a copper region of unquestionable value, where the ore has been smelted by the natives from time immemorial.

Other of the deposits are described as veins of rich ore 23 feet in thickness.

A lead mine has been partially developed near the town of Cebu on the island of that name, while at Torrijos, on Marnidugue, a metric ton of argentiferous galena is said to contain 96 grammes of silver, 6 grammes of gold, and 565.5 kilogrammes of lead.

Iron ore exists in abundance in Luzon, Caraballo, Cebu, Panay and probably in other islands. The finest deposits in Luzon are near Camachin, where wrought iron is produced and manufactured into plowshares. Charcoal pig might be produced to some advantage in this region, but the lignites of the archipelago are probably unsuitable for iron blast furnaces.

Of non-metallic substances, sulphur deposits abound in Luzon and other islands, while marble of fine quality occurs in the island of Romblon and in the provinces of Manila and Marong. There are concessions for mining kaolin in Laguna province, and the pearl fisheries in the Sulú archipelago are said to form an important source of wealth.

Taken altogether, the above statement, coming from an official source, establishes the fact that the Philippine Islands have a solid mineral as well as agricultural value. When the pacification of the islands is effected, a promising field will be open in the exploitation of the actual extent and value of these resources.

TRANSPORTATION IN THE RECENT SNOWSTORM.

When we consider what a splendid series of weather prognostications is sent out to the railroad companies by the United States Weather Bureau, we think that the immediate blockade which follows a snowstorm of more than usual severity is, in many cases, quite inexcusable. The receipt of the warning of a snowstorm should be followed by the placing of "snow-fighting" trains, with plows and properly trained and equipped crews, at stated intervals along the main lines, whose duty it should be to pass to and fro over their own sections of the line. Had this been done on the great trunk lines which enter New York city, they would have been able to keep at least the suburban tracks clear and prevent the drifts from accumulating. Instead of this the storm was in many cases allowed to run its course before the plows were sent out. To any railroad man who is acquainted with the elaborate snow-fighting preparations of some of our Western roads, it was evident that the New York, New Haven and Hartford Railroad, for instance, could have readily kept open its suburban lines, had the company sandwiched in an occasional snowplow between its regular and frequent passenger trains. Instead of this the company appeared to be content to let its suburban service come gradually and inevitably to a standstill.

In the city the most significant fact was the contrast presented between the two systems of traction in use on the lines of the Metropolitan Street Railway Company. The cable cars, thanks to their positive connections by cable to the full available horse power at the power stations, were able to grind their way steadily through the heavy snowdrifts without a single blockade; but the underground trolley, after a desperate struggle with its old enemy, had to give up the unequal contest. It is only fair to state that the breakdown was not due to failure of the electrical features of the system so much as to the fact that the adhesion of the driving wheels was destroyed by the accumulation of snow on the rails. Generally speaking, there was ample power at the motors, at least in the earlier stages of the storm, and it was not until most of the snow had fallen that the old trouble of short-circuiting and clogging of the conductors was experienced.

While the underground trolley is inferior to the cable in a snowstorm, it surpasses it under every other condition of service, and the delays in winter storms do not equal the ever-recurring breakdowns to which the cable is liable at any time of the year.

Every snowstorm of any severity that strikes New York city suggests the immense advantages that would be afforded by an underground system of rapid transit, which would of course be entirely unaffected. A suggestion of this is afforded by the fact that it was the underground mail tubes that saved the local postal service from a blockade. According to the Assistant Postmaster, the tubes made possible the delivery of large quantities of mail which under the old mail wagon service would have been delayed in the main office. An underground railway running the length of Manhattan Island would have been an inestimable boon during the many storms of this winter—it would prove an inestimable boon indeed at any time of the year.

THE SINKING OF THE WHITE STAR STEAMER "GERMANIC."

Everyone who takes any interest in Atlantic navigation will feel a pang of regret that such a splendid veteran of the transatlantic service as the "Germanic," after successfully buffeting the storms of twenty-five winters, should be condemned to sink ingloriously while at her moorings in the port of New York. The accident is attributable indirectly to the bitter cold and the storms of the last few days. When