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## THE METRIC SYSTEM IN CONGRESS.

Now that the House Committee in charge of the bill to substitute the metric system in place of our present system of weights and measures has decided to make a favorable report, the chances of our having to think and talk in terms of meters and kilogrammes become very real. The arguments in favor of the metric system are so many, so reasonable, and so well known, that it is not necessary to reiterate them now. Apart from the saving of time and labor among ourselves, there is the commercial advantage which will be gained by abolishing a system of weights and measures which seriously hampers us in our trade with almost all the foreign nations, and particularly with the Latin-American republics. The English-speaking races stand alone in the use of the old and largely discredited system; and although these races are far in the lead in manufacture and commerce, and have the power, if they wish, to perpetuate for many a decade to come a confessedly clumsy and antiquated system, every argument of utility and convenience calls for the substitution of a decimal system, which, by long use, has proved its all-round superiority.

It is scarcely likely, however, that such a change will be made during the present Congress, and the probability of the bill's becoming a law would be greatly increased if the other great branch of the English-speaking race could be induced to make the change simultaneously with this country. The agitation in favor of the metric system is as strong, possibly stronger, in Great Britain than it is here, and in view of the close trade relations and the enormous volume of business between the two countries, it is well worth considering whether an attempt at concerted, or rather simultaneous, adoption of the metric system would not be advisable.

## BOSTON AND THE "AMERICA" CUP.

Every one who is interested in the coming "America" cup contest was pleased to learn that Boston is to be represented in the races of 1901, for it was in this city that the celebrated Burgess boats were conceived and built, and it was to the generosity and sportsmanship of a Boston yachtsman that we owed that splendid trio of sloops "Puritan," "Mayflower," and "Volunteer," which, with the "Vigilant," were the last of the centerboards to maintain American traditions against the keel boats from over the ocean. We are glad to note that the gentlemen who will manage both the New York and the Boston yachts have intimated that they will be prepared to give to the public such information regarding the design and general characteristics of the yachts as may be made public without prejudicing the safety of the "America" cup. The announcement will be immensely popular with the public; for it is a fact that most of the secrecy, which has marked the preparations for the contests of recent years, was, as the disclosure of the models subsequently proved, quite unnecessary. When "Columbia" was taken out of the water, she proved to be merely a modified "Defender"; and "Shamrock," with the exception of her aluminum deck, possessed even less novelty of design and construction than "Columbia."

## FILTRATION OF OUR WATER SUPPLY.

Sudden and extremely heavy rains of a few weeks ago, coming after a period of rather long drought, brought down into the storage basin of the Croton watershed a large amount of decaying vegetation and various forms of organic debris, which had lain comparatively undisturbed during the summer and autumn months. As seen in New York, the result was such a turbid and malodorous condition of the water, that not even the most earnest assurances on the part of the officials that there were no typhoid or other disease-producing germs in the water, could render it palatable. The public may be at times unreasonable, but it can scarcely be called so when it asks that pure water shall look pure, and that its qualities shall

be something more than negative. Inasmuch as the Grand Jury has taken in hand the question of a better water supply for Greater New York, the present outcry comes at an opportune time.

Obviously the remedy is the provision of a first-class filtration plant, and the success which has attended filtration, notably in the case of Albany, is a guarantee that the outlay, though it might amount to several million dollars, would be money well spent. The report of the Merchants' Association Commission for the enlargement of New York's water supply, contemplates the erection of a vast filtration plant in the hills above Poughkeepsie, through which every gallon of water that comes to the city would pass. The construction of a filtration plant in connection with the Croton watershed would not be money thrown away, as provision might be made to incorporate it as a part of the larger scheme whenever the latter shall be carried through.

## IMPORTS AND EXPORTS OF THE COUNTRIES OF THE WORLD COMPARED.

The Treasury Department is preparing a statistical abstract which will show the imports and exports of every country in the world which has statistical reports. In doing this, the aim of the Bureau of Statistics is decidedly ambitious, since it is intended to present a comparative picture of the world's commerce, not only of to-day, but for a long term of years extending into the past. The opening chapter of the proposed volume shows the imports and exports from the earliest date for which figures are obtainable, down to the present time. In the case of Great Britain, the report begins with the year 1800; of France, in the year 1831; and of Germany, in 1872. As far as the work has gone, the figures that show the total commerce, country by country, afford material for some interesting comparisons with our own growth. The imports for home consumption of Great Britain, for instance, which in the year 1800 amounted to \$81,310,000, had risen in 1899 to \$2,043,896,450, an increase of 2,400 per cent, while in the case of the United States the imports for home consumption, which in 1800 were \$52,121,891, in 1899 had grown to \$685,441,892, an increase of 1,215 per cent. The contrast on the export side of the comparison is much more clearly in favor of the United States; for while the exports of articles of home production from the United Kingdom in 1800 were \$111,107,000, in 1899 they were \$1,287,151,345, an increase of 1,059 per cent; whereas in the case of the United States the exports of home products rose from \$31,840,903 in 1800 to \$1,293,931,222 in 1899, an increase of 3,681 per cent.

As regards France, the comparison is equally interesting. In 1831 the imports for home consumption into France were \$72,182,000, and they had increased 1,108 per cent by the year 1899, as against an increase during the same period in the case of the United States of 734 per cent. During the same period the exports of articles of home products in France showed an increase of 810 per cent, whereas the increase in the exports of the articles of home production in the United States during the same period was 1,933 per cent. Compared with Germany in the period from 1872 to 1899, while the German imports showed an increase of 64 per cent and the exports an increase of 42 per cent, during the same period the imports into the United States showed an increase of 24 per cent, and the exports of home products an increase of 181 per cent. A specially interesting fact developed by the study of these figures is that in the case of the United States they show with much greater frequency than in any other countries a favorable "balance of trade," or excess of exports over imports.

## REPORT OF THE CHIEF OF THE BUREAU OF ORDNANCE.

The report of Rear-Admiral O'Neil, Chief of the Bureau of Ordnance, states that satisfactory progress has been made in the manufacture of the new long-caliber guns with which our latest battleships and cruisers are being armed; it also shows that the important work of converting the old slow-firing weapons to rapid-fire guns is being carried through as fast as the capacity of the gun shop at Washington will allow.

During the year the last of the 13-inch guns ordered, making thirty-four in all of that caliber, has been completed, while of the twenty 12-inch guns of the new 40-caliber pattern ordered for the ships of the "Maine" and "Arkansas" class, one has been tested at the proving grounds and has given admirable results. The test showed that this weapon is the most powerful of its type in the world, for under a powder chamber pressure of only 16½ tons, a velocity of 2,854 feet per second was developed, with an equivalent muzzle energy of 47,994 foot-tons. The power of this gun is shown by comparison with the 12-inch gun of the "Iowa," which with brown powder has a muzzle velocity of 2,100 foot-seconds and a muzzle energy of only 26,000 foot-tons; or with the 13-inch gun of the "Kearsarge," which with smokeless powder develops an energy of some 2,000 or 3,000 foot-tons less than the new weapon. Our new ships of the "Maine" and all

later types will unquestionably be armed with the most powerful 12-inch rifle in the world.

**EIGHT-INCH GUN.**—The mention in the report of the 8-inch nickel-steel gun, 35 calibers long, which has been fitted with a new conical breech mechanism, calls to mind the late lamented Lieutenant F. J. Haesler, who, like the late Lieutenant Dashiell, was one of the most promising of our younger ordnance officers. The breech mechanism of the 8-inch gun mentioned was designed by the former officer. The threads of the plug are continuous and wind about a conical breech block. There are no slotted-out spaces, as in the cylindrical block, and its conical form enables the block to be swung on its hinge immediately into position, a single pull of the lever closing the block, turning the plug 225°, and engaging the thread throughout its whole length. Remarkable results for velocity of fire were shown by this gun at its trial. Beginning with the gun loaded, a rate of fire was obtained of six unaimed shots per minute.

**SEVEN-INCH GUN.**—We note with satisfaction that a set of forgings for a 7-inch experimental gun of 45 calibers has been delivered at the naval gun factory. The call for a gun intermediate in weight and power between the 8-inch and the 6-inch is occasioned by the wonderful improvement in armor due to the introduction of the Krupp process. Time was when the 6-inch gun was more than a match for the light armor carried by the cruiser class; but to-day it is questionable whether the 6-inch shell, even when fired from guns of the highest velocity, will have, at the ordinary fighting ranges, sufficient penetrative power to get through the Krupp plates of the modern cruiser. The 7-inch or 7½-inch gun combines something of the penetrative power of the 8-inch with much of the handiness of the 6-inch weapon, and we confidently look to see it adopted as one of the standard guns of the navy.

**SIX-INCH GUNS.**—An experimental 6-inch gun of 46 calibers has been tested, and with a chamber pressure of half a ton more than the 12-inch gun, or 17 tons to the inch, has developed a muzzle velocity of over 3,000 feet per second. The new guns of the battleship "Maine" and all later ships are to be 50 calibers long, and this increased length will no doubt enable them to secure the same velocity with a chamber pressure considerably below the specified regulation pressure. These results are, if anything, more creditable than those achieved with the 12-inch gun; for the muzzle energy corresponding to 3,000 foot-seconds is over 6,000 foot-tons. The muzzle energy of our early 6-inch guns is only 2,773 foot-tons, so that the introduction of its own special powder and improved methods of construction have enabled our Ordnance Bureau to more than double the striking energy of this caliber of weapon.

Good progress has been made with the new 50-caliber guns of 5-inch, 4-inch, and 3-inch caliber, and the present indications are that the armament of the many new vessels under construction will keep pace with the progress of the ships themselves.

A most valuable work of reconstruction, of which but little is known, is the task of converting the old slow-firing guns of the earlier ships of our navy to rapid-fire guns, thereby enormously increasing their efficiency. During the year twenty-five 6-inch, 30-caliber guns have been converted, making a total of eighty of this class which have been thus improved, while four 8-inch, 30-caliber guns which were removed from the "Chicago" to make way for a more modern type have been fitted with new and improved breech-mechanism. The time is approaching when the batteries of every ship in the navy will be of the rapid-fire type.

As was recently mentioned in these columns, the Bureau has been successful in securing satisfactory contracts for the armor required for the three battleships of the "Maine" class, the five battleships of the "Pennsylvania" and "Virginia" classes, the six armored cruisers of the "West Virginia" class and for the three protected cruisers of the "Milwaukee" class. It is highly gratifying to learn from the report before us that the ballistic qualities of the Krupp plates which have been made by the Carnegie and Bethlehem companies for Russia show that the armor makers of this country are capable of reaching the highest standard in the manufacture of face-hardened armor.

## THE GREATEST IRON ORE MINE IN THE WORLD.

With a record to its credit of 1,000,000 tons of iron ore mined during the past twelve months, the Norrie mine on the Gogebic range may be considered the greatest iron ore producing mine in the world. This output represents about one-fifth of the annual ore supply of the Carnegie Steel Company, Limited.

The Norrie mine has been in operation during the past fifteen years. Several years ago the Oliver Mining Company, under which name the ore plants of the Carnegie interests are operated, obtained control of the Norrie mine, and since that time there have been wonderful improvements in the methods of mining and handling the ore and preparing it for lake shipment to the Carnegie docks at Conneaut. More than 3,000 tons