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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.

## THE SIGNING OF THE PANAMA CANAL TREATY.

That great national work, the Panama Canal, has moved another important step forward by the signing of the treaty between the United States and Colombia, providing for the construction of the canal by this government. The event will cause the greater satisfaction because of the apparently unalterable position taken by the Colombian government through its representative, in demanding an exorbitant price for the concession of the six-mile strip along the route of the canal. There is some talk of opposition in the Senate to the ratification of the treaty; but in view of the clearly-expressed will of the people of the United States to have the Panama Canal built, we do not apprehend that any considerable portion of our Senators will be so fatuous as to oppose the signing of the treaty. It is pretty safe to say that long before the canal is completed, this country will have very great need for this short cut from the Atlantic to the Pacific seaports, particularly if complications over some future Venezuelan or similar incident should fail of such easy adjustment as the present trouble in South America.

## EXPLOSION OF A 12-INCH GUN AT SANDY HOOK.

The premature detonation of a high-explosive shell at Sandy Hook has completely wrecked a 12-inch army gun, valued at about \$50,000, and has served, incidentally, to shatter the expectations which had been based on a new form of high-explosive, and a new type of high-explosive shell. We say "new," although as a matter of fact both shell and explosive have been before the public for several years, and have received considerable notoriety because of a generous appropriation granted by Congress for the purpose of testing them. The high explosive was very much behind the times, because in comparison with the army explosive shell-filler it was over-sensitive to shock, while the shell was equally out of date, by virtue of the fact that it aimed to prevent detonation from shock, by dividing the shell internally into a number of cellular chambers, each containing its share of explosive. Even had the shell and its filler proved successful in these tests, there would still have been no call for them in army service, for the reason that in Maximite and Dunnite the army has secured a high explosive which, combined with absolute insensitiveness to shock, gives most terrific bursting effects, as was shown two years ago at the Proving Ground, when a 12-inch Krupp plate was perforated and the backing completely wrecked. Maximite and Dunnite require no special construction of the interior of the shell, since they possess in a high degree the insensitiveness which is indispensable in a satisfactory shell filler.

Both the shell and the explosive which caused the wreck of the army gun at Sandy Hook were condemned by ordnance experts before Congress made a lavish appropriation for the purpose of testing them; and herein we see another of those costly lessons (the damages in the present case amounting, as we have said, to some \$50,000) as to the folly of Congress in rejecting the opinions of the very ordnance experts upon whose judgment it is supposed to rely. There are a multitude of technical questions in which the average layman, in the very nature of things, is at best but slightly instructed; and when appropriations are asked for the purpose of testing experimental devices of a complicated or highly technical kind, it would be well to let the word of the ordnance officers be final as to whether the device is worthy the expense (usually very great) of a proving ground trial.

## SHIPBUILDING DURING 1902.

The returns of shipbuilding that are available for the year 1902 prove that although it has been a busy season among all the shipyards of the world, it does not reach in total output the figures of the year preceding. During 1902, 2,393 vessels of a total tonnage of 2,699,000 tons were launched, whereas in 1901, 2,192 vessels of 2,763,000 tons were launched, an increase in the number of vessels, but a decrease in the total tonnage of 64,000 tons. As usual, considerably more than half, in fact sixty per cent, of the world's output was built in British shipyards, from which, during the year, was launched a total of 1,368 vessels of 1,619,000 total tonnage. Next to Great Britain in amount of construction came the United States and Germany. There were launched in this country in 1902, 162 vessels of 315,000 tons, which is a decrease of 10,000 tons compared with the previous year. Germany launched 259 vessels of 272,000 tons, an increase during the year of 6,000 tons.

The prosperity of the shipping trade has been practically world-wide, the tonnage launched in France having risen from 32 vessels of 86,000 tons in 1901, to 102 vessels of 190,000 tons in 1902. Italy, Japan, and Holland all show a considerable increase. There is not much to be said regarding the character of the ships that were built, for there have been no radical changes either in form of hull or in motive power. Perhaps the most interesting feature of the statistics is the increase in the number of sailing ships, the proportion of sailing to steam tonnage built in British yards having risen from 2.2 per cent in 1900 to 3.9 per cent in 1901, and 5.6 per cent in 1902. Unquestionably the most interesting sailing ship of the year was the seven-masted schooner "Thomas W. Lawson." The steam turbine is not making the rapid advance in the mercantile marine that was expected, although it is being applied to a few passenger steamers and steam yachts. The most interesting steamship of the year was, of course, the new North German Lloyd liner "Kaiser Wilhelm II.," of 26,000 tons displacement and 24 knots speed.

## "AMERICA" CUP CONTEST.

There are certain facts connected with the 1903 series of contests for the "America" cup that will render the coming season particularly interesting. Hitherto it has been so much a matter of settled conviction with the majority of the American people that the defending yacht cannot be beaten, that the existence, as in the present case, of any conditions favorable to the English boat, are welcomed as rendering the contest a closer one and, therefore, introducing that element of uncertainty as to the result which is the very soul of all true sport. Gradually the competing yachts have been drawing closer together in speed; and the increase has been, of late years, more rapid in the English than in the American yacht. This is shown by the fact that in 1901 Herreshoff failed to produce in "Constitution" a faster yacht than the two-year old "Columbia"; whereas "Shamrock II." pushed the American boat so closely at times that the more the observer knew about yachting, the more doubtful did he feel as to the final issue. On this side of the water Herreshoff is engaged in a second attempt to improve upon "Columbia," and whether he will do so or not, is just as much a matter of uncertainty as was the ultimate victory of "Constitution." There is a popular rumor abroad, which is shared, by the way, by many yachtsmen, that the latter boat has never shown her best speed. Why, we could never understand. She was in charge of one of our most skilled amateur yachtsmen, who had won golden opinions in the previous series of contests by the way in which he handled "Defender" against "Columbia." And as to the sailors on "Constitution," were they not all American seamen, selected in obedience to the popular wish that the American-built yacht should have an American-born crew from skipper to cook? Hence, if "Constitution" failed of selection to defend the cup, the fault must surely have been more in herself than in those who had charge of her. However, this is a moot question that will lend special zest to the trial races of the season, quite apart from the fact that the new cutter now in course of construction will come to the line prepared to show that what "Constitution" can do to "Columbia," she in turn can do to "Constitution." But what a sensation if the four-year-old boat, under her brand-new suit of canvas, should steal home, once more a winner, with the few necessary seconds to spare!

So much for this side of the water. In England, we only know that another costly cutter is being built, this time from designs by Fife, the designer of "Shamrock I." It is stated, probably with truth, that Watson, who designed "Shamrock II.," has collaborated with Fife to the extent of giving him the benefit of his experience. The third "Shamrock" is being built in the same yard as her predecessor; and although there have been rumors of radical changes in material and model, we shall be greatly surprised if the new challenger turns out to vary in any but a few minor

details of form, construction, and sail plan, from the boat of 1901. There is one fact, however, that should put the challenging boat in a very much better position for a cup contest than any before her, and this is that she is so far advanced that probably she will be launched some time in March, and therefore ahead of the American yacht. This has never happened before, and it means that the English boat, if she is properly managed and handled, will receive a very thorough tuning up before the contests of August. The present programme is to try her on the Clyde in actual races sailed for prizes against "Shamrock I.," a vessel of pretty well-known speed and capabilities. She is then to be sent over here and tested outside Sandy Hook against "Shamrock II.," whose speed will give, by way of "Columbia," an excellent line on the respective merits of the challenging and defending yachts. Except for purposes of exhibition, it would seem to be a mistake, however, to try out the new boat in British waters. It would be better as soon as she is launched to ship her spars, sails, etc., to this side, bring the boat over, rig her, anchor her inside Sandy Hook and try her every day in every kind of weather over the New York Yacht Club's course. A single day's sailing under cup conditions outside the Hook is worth a whole week's drifting on the Clyde or in the Solent. The year 1903 gives promise of being the most notable yachting season since the memorable time when "Colonia," "Vigilant," "Jubilee," and "Pilgrim" were launched for the purpose of cup defense.

## THE DISEASES OF DUST.

The recent experiments in this country and Europe with the disease germs collected on gelatine plates from the dust of city streets demonstrate almost to a certainty that our municipal health would be greatly improved if there were some simple method provided to keep the dust from entering our homes and lungs. The tests made with the germs thus collected indicate that people in large cities are practically living directly over a "Cave of Furies," and that all around exist the bacteria and microbes of a score or more of dangerous diseases. If this dust remained spread over the streets of the city, it would do little harm; but every wind blows it around, and every street cleaner sweeps up enough of it to destroy a whole household of people. There is something insidiously dangerous in the street sweeper's broom. Death actually lurks therein far more than in the filthy corners of the streets left untouched by broom or wind. Sunshine destroys more disease germs than any other agency of nature, and when the direct rays of the sun can penetrate to the heap of filth and dirt the destruction is great. The street sweeper's work of stirring up the disease germs of the avenues is consequently partly checked in its direful results by the action of the sun's rays, which have a better opportunity to reach the floating particles of dust than when they are covering the streets in thick layers. But the dust disturbed by the broom in dark streets and alleys is not thus purified. The experts appointed by the Paris Medical Society to investigate the subject of street dust in its relationship to diseases and their spread, reported recently that the only safe way to cleanse the public thoroughfares was to flush them with water. One good hydrant, with a fair pressure of water, would do more toward cleaning the streets than half a hundred sweepers. The latter would merely collect the coarse and more visible pieces of dirt and cart them away, while the fine, impalpable dust which contained the disease germs would be left floating around in the air or distributed in our open windows. Flushing the streets with a good force of water would carry the germs away through the sewers, and in the case of consumptive germs they would be effectually prevented from rising into the upper air for the people to breathe. A pile of filth may reek with poisonous disease germs, and yet if kept moist the danger to those living nearby may be comparatively small. When the dry, warm weather comes, however, the germs are separated from their environments and float in the air.

One of the most satisfactory solutions to the dust problem comes from Germany, where a number of chemists have been making extensive experiments with the germs collected from the dust of Berlin and Vienna. By sprinkling chemicals of a powerful nature in the streets once a week, or once every fortnight, all disease germs are destroyed. These chemical disinfectants of the streets, or as they might more properly be called, insecticides, are prepared for ordinary disease germs that are found in the dust of streets, but there are other mixtures suited to specially virulent disease germs that may occasionally find their way into particular streets or cities. In this way it is supposed that there would be little danger of the diseases spreading further by means of the dust. There is every reason to believe that in many of our disease epidemics the dust-laden wind has been an effective agent in carrying them from one street or town to another. Sometimes the clouds of dust have been blown several hundred feet away, and small particles in the