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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 AMERICA'S CUP.

Securely locked away in some safe deposit vault in this city is a curious old silver cup, which shows in the fantastic crudity of its design all the earmarks of that Victorian age in which it was fashioned. Its cash value is stated to be five hundred dollars; which may be taken to be its probable value if melted up for the silver that is in it. Of no worth as an object of art, the cup is to-day probably the best known, as it was once the most eagerly sought-after prize in the world of international sport. Won over half a century ago by the epoch-making schooner "America," it has been the object of most strenuous competition, and has caused the expenditure of millions of dollars by yachtsmen on both sides of the Atlantic. With a persistency which is characteristic of the race, the British have sailed yacht after yacht over the ocean, in the hope of taking the "America's" cup back to English waters, and transferring the scene of future contests to those shores off which the "America" won her famous victory.

The effect of the "America" cup contests on the development of the sailing yacht, particularly in the later years, has been to produce a craft of such extreme proportions—vast sail spread, fragile hull and spars, and excessive draft—as to render her useless for ordinary cruising, and fit only for the marine "graveyard" and the junk pile. Truly a most amazing statement; but fully guaranteed by the fact that during the past decade no less than six challengers and defenders for the cup, costing altogether probably not less than a million and a half dollars, have been broken up and sold for old metal.

As far as the records of this half century of contests go, they have consisted of an unbroken string of victories for the American yacht; and the British must get what consolation they can out of the fact that the American designers, in their efforts to hold the cup, have had to forego the characteristic centerboard-hull and sloop rig, and come over to the English deep-keel and the cutter rig. The successive defeats of recent years have convinced the English yacht designers that they must abandon all hope of outbuilding and outsailing the American defending yacht, so long at least as there is no restriction upon lightness of hull and size of sail spread.

Some years ago our own yachtsmen and those of France, Germany, and England came to the conclusion that the time was ripe for making such changes in the rules of measurement as would modify, or control, those extremes of construction which have rendered the racing yacht an unseaworthy, unwieldy, and outrageously expensive craft to build and maintain in commission. Both here and abroad new rules have been adopted, which have resulted in the production of yachts that are in average weather as fast as the "freak" boats, and at the same time are suited for the average summer cruising. Sir Thomas Lipton, the most persistent of all contestants for the "America's" cup, has been told by the English designers that they are unable to build a yacht under the old rule for which they can give an assurance of any likelihood of success in the contests off Sandy Hook. They claim that a boat built of sufficient staunchness to take the chances of a stormy Atlantic crossing cannot compete with a craft which during her season's sailing never has to venture out of sight of land, and

does most of her racing in the sheltered waters of Long Island Sound and within a few hours' sail of the yard in which she was built. To this the reply has been made that, since the English yacht is towed across, carrying a reduced rig, the danger of her foundering in heavy weather is eliminated.

The writer once put it squarely to Mr. William Fife, designer of two of the challengers, whether he considered the ocean crossing to be a handicap. After a few moments' thought he replied, "Theoretically, no; but actually, yes; and this for the reason that, however keen a yacht designer may be in his desire to cut down weights, his humanitarian instincts will remind him that the lives of over a score of men are to be committed to that shell, to take the chances of a three weeks' crossing of the Atlantic." Be that as it may, the fact remains that the British have frankly acknowledged themselves beaten, under the present rules, in contests between yachts of unrestricted lightness, and Sir Thomas Lipton is in our midst to-day requesting that the New York Yacht Club sanction an "America" cup contest under their own new rule, under which for some years their regattas have been held.

The New York Yacht Club contends that, since the "America" cup stands for the fastest yacht that can be built, and since it has been proved that the fastest yacht can be built under the old rule; therefore for "America" cup contests the old rule is the proper one to sail under—and there can be no doubt that technically the attitude of the Club is correct. At the same time, we believe that under the present Deed of Gift the challengers and defenders may mutually agree to make certain changes in conditions if they so wish. All the same, we would suggest that, since racing for the "America" cup under existing conditions is at an end; and since, after all, the cup is merely an emblem of the sport, and it is the sport and not the cup that is the ultimate object of yacht racing, it might be as well to make a sufficient modification of the old rule to encourage the yachtsman, not merely of Great Britain but of that other great yachting nation, Germany, to make a try for the famous old trophy.

## DOVER'S GREAT ARTIFICIAL HARBOR.

The opening of Dover naval port marks the completion of the greatest artificial harbor ever built entirely in the open sea. The scheme includes an extension of the Admiralty pier for two thousand feet; the formation of reclamation works for the protection of the shore at the eastern end of Dover town, extending in the direction of St. Margaret's Bay for three thousand nine hundred feet; a protecting arm extending from the eastern end of the reclamation for a distance of two thousand nine hundred feet into the open sea; and an island breakwater approximately parallel with the shore line and extending from the end of the Admiralty pier extension on the west to the end of the easterly pier already referred to, with wide entrance openings between the heads of the several breakwaters. If we include the eighty acres which constitute the present commercial harbor, there is inclosed by these works a total area at low water of six hundred and ninety acres of deep-water harbor, capable of floating the largest of modern battleships and ocean liners. This is the largest area of the open sea ever inclosed by solid masonry protecting works.

Although that portion of the inclosing breakwaters which is visible at high water gives an impression of their great length and of the wide extent of the harbor, it is a fact that the visible masonry represents only a small proportion of the work actually done. The total length of the sea works is two and a half miles, two miles of which are in exceptionally deep water. Thus, the two-thousand-foot extension of the Admiralty pier measures from the top of the parapet to the foundation nearly one hundred feet in height and the eastern pier has a total height above foundations of eighty-seven feet. The total width at the base of the piers is over fifty feet and at the top forty-seven feet six inches.

It is an interesting historical fact that it was Sir Walter Raleigh who first drew attention to the strategic and commercial importance of Dover, speaking of it as "situated on a promontory next fronting a puissant foreign king and in the very straight passage and intercourse of almost all the shipping in Christendom." It was as far back as the year 1840 that a Royal Commission recommended a scheme of harbor construction at a cost of ten million dollars. Out of the deliberations of this and subsequent commissions came the decision to construct the Admiralty Pier, so well known to Americans who visit or return from the Continent by way of England, for which a contract was let in 1847, but which did not reach completion until twenty years later. It was not until the year 1895 that the plans for the present fine harbor took definite shape; the contract was let in 1897, and active construction commenced shortly afterward. The fears which have been expressed that this, like other harbors won from the open sea, might be subjected to shoaling up by drifting sands have not been verified, the depth remaining practically constant.

## IMPROVEMENTS IN NEW YORK'S HIGH-PRESSURE FIRE SERVICE.

A recent order of the New York Fire Department relieves the fire engines of the various companies in the district protected by the high-pressure water service from responding to alarms of fires, and may be considered as a practical and official indorsement of the complete success of the system. Soon after the high-pressure was installed the right of way in going to a fire was given to the hose wagons over the engines, and while the latter answered alarms they were held in reserve or used merely for washing down after the high-pressure lines had extinguished the fire.

The successful and intelligent use of the high-pressure by the Fire Department was accompanied by a careful study of the actual workings of the system by the engineers of the water department with a view to detecting any possible defects. As a result the new extension, now beginning to be installed and aggregating some twenty-one miles of mains, represents a marked improvement over the part at present in use, which, as the largest and most complete plant of the kind, is serving as a model for other cities. The most important improvement is a duplicate arrangement of mains so that in case of a break or other failure one-half of the system can be cut out immediately without impairing the efficiency of the other half in any way. This is secured by gridironing the territory with two independent systems whose mains are laid in alternate streets. Thus in the case of a break in a main supplying a hydrant on a certain street, that half of the system to which it belongs can be shut off at once and the firemen only have to stretch their hose from a hydrant connected with the other set of mains, usually to be found on the next street. The two systems and their hydrants, which will probably be painted a different color or otherwise marked, are so arranged that a hydrant of the second system is never over 500 feet from any given point, just as under normal working conditions there is a hydrant within at least 200 feet of any possible fire.

The desirability of such an arrangement was apparent to the water department engineers at a fire on December 16th, 1908, at Grand and Mulberry Streets, when the high-pressure service had its only failure and was temporarily out of service. This was due to a break caused by the giving way of a temporary end of a main in an excavation for the Centre Street subway, where the supports for the main had been cut away by the subway contractors.

While it is possible to locate and cut out any section where a break occurs by means of valves located at street intersections, yet this process may require considerable valuable time when the water is seriously needed at the fire. The valves themselves are ponderous affairs moved by hand, and to close the two, three, or four required to cut out a broken section may consume from twenty minutes to half an hour. Accordingly after studies by the engineering staff of the high-pressure division of the water department it was decided to install an independent system of two mains as outlined.

Normally, both systems will intercommunicate and connect with the present system so that there will be a complete circulation of water, supplied at any desired pressure from the pumping stations at Gansevoort and West Streets and at Oliver Street and East River. Now, in case of a sudden break the gage at the Oliver Street station connected with the outlet of the half of the system involved will be immediately apparent and that portion can be shut off at the station. This is accomplished by closing the appropriate valves on the outlets at the station and two distant controlled valves at the Bowery and Houston Street or at New Chambers and Cherry Streets, depending on the part involved. All of these valves are electrically worked and can be operated simultaneously so that one system or the other can be isolated in less than a minute. This increased measure of safety, the importance of which cannot be overestimated, is rendered desirable not through any inherent defect in the high-pressure system but largely on account of the conditions under which it must be installed and operated in a city like New York, where frequent excavations and gas explosions are likely to damage the mains or produce weakness that only service conditions may develop. If the break is detected in season it is of course possible to isolate the crippled section and notify the firemen accordingly, but failure in service is a serious matter which the new duplex system will render much less dangerous.

Few pieces of municipal engineering have been better planned, constructed and operated than New York's high-pressure service, and that it is capable of still further improvement would indicate that when this form of fire protection is provided for the entire city it will eliminate the possibility of a large conflagration, which Chief Croker states is no longer to be feared in their present protected district. Further extensions besides the one under way are contemplated in the near future, and additional pumps will be installed.