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THE BERDAN TWIN TORPEDO.

The Berdan system of torpedoes, illustrated and described elsewhere in this number, is both novel and interesting. As will be seen, it consists of sending twin torpedoes against an enemy, and is especially devised for service where torpedo netting is used as a protection. Its inventor claims that it possesses the accuracy of the best models now in use, while, unlike them, it cannot be thwarted in its purpose of destruction.

If Gen. Berdan can make good this claim, the science of attack in naval warfare will have been materially advanced, and, where his system is in use, the biggest warship be compelled to keep to the high seas.

It is difficult, however, to see how he can sustain his assertion that his system embodies the virtues without the fatal defects of the systems now in use.

The successful operation of the two torpedoes—supposing them to be safe from shot fired from the vessel, by being submerged—depends upon the continuous and perfect working of several mutually dependent parts, the failure of any one of which would render the attack abortive. The system resembles a train of wheels—one imperfect tooth stops the whole.

Again, the torpedo netting can be made to protect the bilges as well as the sides of a vessel. It is arranged at present to stop the ordinary torpedo, but it could readily be made to swing off from both sides of the anchor chains, encircle the ship, and be lashed to a floating bit swinging to a bridle in tow astern. In fact, the general use of such a torpedo would compel a remodeling of the torpedo netting. That seems to be all.

The nature of the twin torpedo, that is to say, a pilot torpedo towing another at the end of a line, would positively forbid an attack being made by means of it from any direction save with or against the current. For it will be readily seen that however straight a course the pilot may steer, the second torpedo must make leeway when towed athwart the tideway. This would, of course, serve to make its aim uncertain when close aboard the enemy, and there is reason to believe that it would be more likely under such circumstances to fetch up broadside on rather than nose on. But, if it can only attack with or against the current, it can only hope to strike the bow or stern of the enemy, for vessels invariably swing to the tide or current, and consequently it can only attack the two smallest surfaces, those most easily defended, and where the chances of miscarriage in its aim would be the greatest.

To attack at slack water would be too nice a calculation to offer any promise of success. The weight and dimensions of this torpedo would also seem to be against it when working in a heavy seaway, for there would be times when the pilot would be caught in the roll, and made to stand on end and constantly lose its course, while, were it made larger, it would offer a greater surface to attract the aim of the gunners, and consequently have less chance of bringing its convey up to the enemy.

AMERICA TO KEEP THE CUP.

The great International Yacht Race between the Puritan and Genesta has finally been accomplished, and the victory of the sloop at both trials leaves the cup still in America's possession. The greatest interest has been manifested on both sides of the water over the result of this contest, and when it became known that on two occasions the Puritan had proved herself the faster boat, the general enthusiasm seemed to reach all classes of people, and on this side of the water at least to cause great rejoicing.

As most of our readers know, the race was to be awarded to the yacht making the best record twice out of three times; and as both trials gave the victory to the Puritan, the third or 40 mile triangular race was not deemed necessary.

After four ineffectual attempts to sail a race, the first came off on Monday, the 14th, over the inside course of the New York Yacht Club, from Owl's Head in the Narrows between Staten and Long Islands to the Sandy Hook Light Ship, and return to the buoy off Fort Tompkins, on Staten Island, a total distance of 38 miles. The wind was light until Sandy Hook had been passed, and the conditions generally were regarded as slightly favoring the Puritan, as the Genesta is thought to sail under greater advantage when the sea and wind are somewhat heavy. The Puritan kept ahead from the start, making the course in 6 hours 6 minutes and 5 seconds, thus beating her rival 16 minutes and 19 seconds corrected time.

As the Genesta cracked her masthead cap in the first race, the second trial did not take place until Wednesday, the 16th. This was over the outside course from Scotland Lightship to the turning buoy, 20 miles to the southeast. There was a lumpy sea and strong lower sail breeze that made the friends of the Puritan who had never seen her in heavy weather somewhat doubtful about the result.

Though the sloop was not as well sailed as the English cutter, she made the course of forty miles, beating half the time against a heavy sea, in 5 hours 3 minutes and 14 seconds. When the turning buoy was reached, the Puritan was decidedly behind,

but she made up the intervening distance on the home stretch, coming in 1 minute and 38 seconds ahead of the Genesta, and making the closest race, over so long a course, that has ever been sailed. The opinion prevails in Boston that though we don't build many boats, we build them pretty well. The Genesta has won in the race for the Commodore Cup, but the future of the Puritan is undecided, as she is to be sold shortly at auction.

Though the race is ours, its principal object—to determine which boat is the better model—does not seem to have been gained, for one cannot call a forty mile race conclusive where the rival yachts cross the line within two minutes of each other, even making all due allowance for the reported bad handling of the winner. Another trial over the triangular course would have left impartial judges better satisfied.

EXAMINATIONS OF BEER.

The New York State Board of Health recently sent to the brewers in this vicinity for samples of their beer for purposes of analysis. These analyses are complete, and the Board finds that the beer sold hereabout is of excellent quality. What the Board really means must be that the beer brewed hereabout to stand analysis by State boards of health is of excellent quality. The brewers, we are told, are well satisfied with the fair manner in which the Board has conducted the examination.

This is not at all astonishing. It would be very surprising, indeed, if they were not satisfied, for they could scarcely attain better results had they made the examinations themselves.

The only people that will be dissatisfied with the way the Board has conducted their examinations will be the general public, or at least that portion of it which drinks beer and ale. These will be apt to regard the Board's efforts to discover bad beer as being more novel than effective.

Yet much was to have been expected from the act of last winter. This act was, in reality, an amendment to the already existing law relating to the adulteration of food and drugs. It was made to include spirituous, fermented, and malt liquors, and was deemed necessary by reason of the discovery of a very general adulteration of the articles specified. So far as beer is concerned, it was found that the existing rivalry among the brewers was leading to a cheapening, not only of processes of manufacture, which is not necessarily unlawful, but also to the use of inferior and even unhealthful ingredients. Lager beer, as its name implies, is beer that has been kept in store or lager, and is really quite unfit to drink immediately after being brewed. Nevertheless, it is very generally sold to the public in this condition; the brewers saving themselves the expense of from three to six months' storage by means of a process which they have discovered of artificially aging or maturing their beer.

When hops were dear, they substituted glucose, and though glucose is an entirely healthful ingredient, it may scarcely be regarded as a proper or natural constituent of lager beer; and now that hops, which fetched \$1.25 per pound but a year ago, are a drug in the market at 15 cents, there would seem to be no excuse for using a substitute. Private analyses which have been made of lager beer sold hereabout show a very general use of grape sugar and glucose where the ash, and especially the phosphoric acid, is low as compared to the extract; and the excess of carbonates which they contain are said by the authorities to indicate the use of bicarbonates. The extract of catechu, used in some cases as a substitute for hops, though not necessarily injurious, may, under certain conditions, really prove so.

It may be set down as a rule that to secure a really good beer there should enter into the composition good water, good malt for body, good, sound hops for flavor, good yeast for fermentation, and plenty of time should be given it to age and mature.

In order to learn what was being done in this matter by the New York City Board of Health, the writer called at its office at Police Headquarters. Dr. Cyrus Edson, a careful and experienced man, said that so far he had devoted himself to the mode of drawing beer in the saloons and beer halls, for in this there was even more danger to the public health than was likely to be found in the adulteration of the beer. Lead pipes, he said, were generally used in drawing the beer from the cellar to the tap, a pernicious practice that often led to making really good beer injurious to health. He showed the writer a long copper spigot or tap similar to those in general use, and which he had taken out of a beer saloon. He had had it cut through lengthwise, in order to exhibit the corrosion that had taken place from the constant presence of beer. Its interior was a mass of corrosion, green and spongy. Beer, he said, which passes through such a spigot must always be more or less injuriously affected, that which remains the longest being, of course, the most contaminated. The first person who calls for beer in the morning, where such a spigot is used, would get beer which has stood all night in these poisonous surroundings. In other words, he would