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NEW YORK, SATURDAY, OCTOBER 5, 1901.

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 TOWING TANK AND THE DEEP SEA.

Yachting enthusiasts who compared the behavior of "Shamrock II." and "Columbia," in the lumpy sea and light wind that prevailed in the first inconclusive contest of the season for the "America" Cup, must have been impressed with the great difference in the movements of the two yachts. The strong wind of the preceding day had died down and left a short, broken sea rolling in from the ocean. Beating to the outer mark, the yachts were taking this sea alternately on the starboard and port bow. They had no sooner crossed the line than it was evident that the relatively sharp bow with its V-sections of "Columbia" was better suited to meeting and lifting the yacht over the seas than was the more round and flaring bow of "Shamrock II." As "Columbia" pushed her nose into a sea she would rise with a gentle rhythmical motion, and as the crest passed amidships she would drop with the same easy swing into the trough of the next wave. The rise and fall of the vessel gave her mast something of the even beat of a pendulum. "Shamrock II." as we have often remarked in these columns, is unusually full in her forward sections and unusually lean in her afterbody, the center of displacement, with regard to the length of the vessel, being considerably further forward than in "Columbia." Hence, when she met the seas her great displacement forward caused her to rise with a sharp jump, which was accentuated by the rapid drop into the trough of the sea as the wave passed to her shallow afterbody. She came down with a crash that must have tried every spar and rope throughout the vessel, and the effect was instantly noticeable, especially as the wind grew lighter, in a distinct checking of her way. As long as the breeze held true the result was not disastrous, and, indeed, for the first three hours of the beat to the outer mark she held her own fairly well with the "Columbia." During the last hour of the beat the breeze lightened rapidly and the "Columbia" drew away with remarkable ease, the pounding of "Shamrock II." serving to bring her at times almost to a standstill.

The peculiar lines of "Shamrock II." were determined by towing-tank experiments; and we have no doubt that for sailing in smooth waters, such as she has preferred in her tuning-up trials inside Sandy Hook, she is an admirably modeled craft. Yachting contests, however, are not carried on in towing tanks; and while we have not the slightest doubt that Mr. Watson had fully in mind the great difference between towing a model in smooth water and driving the full-sized yacht in a troubled sea, we cannot but think that the abortive contest on Thursday showed that theory has been pushed a little too far. We have already stated in this journal that "Shamrock II.'s" form would indicate that she would have difficulty in holding her own with "Columbia" when close-hauled in a short, broken sea, and the first attempt to sail a race has abundantly confirmed this impression.

The weather conditions were an exact repetition of those which rendered the contests of 1899 so enormously wearisome and disappointing—a fair sailing breeze at the start, which steadily fell away as the race proceeded, and dropped entirely when the leading boat was yet several miles from the finish. While the Sandy Hook course is, in the absence of shoals and currents, one of the finest and fairest in the world, we consider that for September and August racing the weather conditions are about the worst that could be conceived. Should the Cup remain on this side, as it seems more than likely to, we think that future contests should be arranged to be sailed in the earlier part of the summer, when better weather conditions are likely to prevail.

The first completed race of the series proves that there is little to choose between the two yachts under the prevailing weather conditions. In place of the short sea of Thursday there was a long ground swell, and the wind held true, with a force of from 7 to 9 knots an hour. At the start "Shamrock II." was slightly to weather of the "Columbia," but only two seconds ahead over the line. This advantage she held to the outer mark. She pointed equally high with the "Columbia," and for two hours and a half there was witnessed a magnificent contest between the two boats for the weather position, "Columbia" making three unsuccessful attempts to cross the "Shamrock's" bow. It was noticeable that "Shamrock" showed to best advantage when the wind strengthened—a fact which suggests that in breezes of over 10 knots she will prove the faster boat. To the outer mark "Shamrock II." made six tacks and "Columbia" twelve. After two hours' sailing they were so close together that the shadow of "Shamrock's" topsail was thrown on the mainsail of "Columbia." On the last board to the outer mark, "Shamrock II." because of her windward advantage, was sailed with a freer sheet, and gained 41 seconds in two miles. Running home in a falling wind, "Columbia" pulled up and passed the "Shamrock II.," crossing the line about two lengths or 37 seconds in the lead, and 1 minute and 20 seconds, corrected time.

THE ROYAL TOMBS AT ABYDOS.

Recent Babylonian discoveries have challenged the primacy of Egyptian civilization. There is not, however, the same continuity of record in Mesopotamia as there is in Egypt. There was a time when scholars were apt to look askance at everything which antedated the Greek historians, and the first three dynasties were considered as a tissue of fables. The last two years have seen wonderful discoveries in Egypt, for the tombs of the kings at Abydos have been opened, and the treasures which have been found place us face to face with the beginnings of history. Dr. W. M. Flinders-Petrie describes the recent discoveries in the current issue of Harper's Monthly Magazine. He says that the oldest record of human history is the statement that ten kings reigned at Abydos in Upper Egypt during a period of 350 years before Menes, who has usually been considered as the founder of the first dynasty. In reality these earlier kings were the real founders of the Egyptian state, and we now know not only their names, but are able to obtain some idea of their mode of life and the culture which they attained. The date which Dr. Flinders-Petrie assigns to the pre-dynastic kings is from 4900 to 4800 B. C., and the names of the four whose tombs have been examined are given as Ka, Zeser, Narmer and Sam. Among the remarkable finds were a carved slate slab showing King Narmer smiting his enemy, an ebony tablet, a bar of gold, gold jewelry, including bracelets, and a royal scepter. The oldest group of jewelry in the world is undoubtedly the four bracelets of the Queen of King Zer (4715 B. C.), which was discovered with a portion of the mummy in a hole in a wall. This is 2,000 years earlier than any other jewelry thus far identified. The bracelets show a wonderful perfection in the soldering of the gold. In no case can the joint be detected with a magnifying glass, either by color or a burr edge. The proof that solder was used is in the inside of the ball buttons, where a wire shank is joined in and not hammered in one piece; the wire is hammered and not drawn.

It is surprising that this valuable jewelry should have been found, as the king's tomb was repeatedly plundered. It is probable that one of the looters thrust this fragment of the mummy into the hole in the wall, intending to return at some subsequent period and remove it. The bracelets show the turning point in the development of Egyptian art, the finest bracelets being formed of alternate plaques of gold and turquoise, each surmounted with a royal hawk. The turquoise plaques have a more archaic and lumpy form of hawk than do the gold pieces, and show that during a comparatively short period, little more than half a century, rapid crystallization in art took place, and at the end of his reign the forms are practically identical with what continued for more than 4,000 years later. Dr. Flinders-Petrie considers that this is comparable to the sudden fixation of the final forms which is seen in Greek art, where an interval of only forty years, between the time of the Persian war and the Parthenon, sufficed for the evolution from archaic work to the greatest perfection.

Each of the royal tombs had two large tombstones, bearing the name of the king, and private tombs of all the court and domestics were placed around that of their royal master. They are nearly all built of brick, in most cases with a timber lining to the chamber, sunk in the ground. They were originally roofed over with beams, matting and sand. They lie about a mile back from the Temple of Abydos and they were excavated by the Egyptian Exploration Fund. It is possible that many of the objects found will pass into American possession. Dr. Flinders-

Petrie justly states that we now know far more about the civilization of these oldest-known kings than we do about the Saxon kings of England, and the reality of the very earliest part of the history of the world is now placed beyond question by these discoveries.

THE TRUE POINT OF VIEW.

One cannot but be struck, sometimes, with the fact that of late the English, or a large section of them, have shown an almost brutal frankness in criticising their own industrial methods and comparing them with those of this country to the disadvantage of the former. According to the popular idea, this betokens a want of patriotism; whereas, as a matter of fact, it is patriotism of the highest order. If there is one branch of its engineering work which the citizens of that great manufacturing country have been proud of, it is its railroads, and particularly the motive power. Although, judged by itself, the English engine is a beautifully finished and highly economical machine, it is not so strictly economical when considered as a part of the whole administration and operation of a railroad system as such. Col. Constable, the manager of one of the great railway lines of India, recently visited the United States to study her railway system. He is one of those British officials who are getting to look at the question of locomotive economy from the broader standpoint. In his report recently submitted to the Indian government and, through it, laid before the British Board of Trade, he states that while there is no doubt that the American engine burns more fuel and goes to the repair shop sooner than the English locomotive, the American builders do not construct their engines with the expectation of their lasting more than fifteen years, since they consider that at the end of that time the development in the size and power of engines, and in the loads to be hauled, will be so great that the fifteen-year-old locomotive will be somewhat out of date, unequal to the increased demands of traffic and therefore ready for the scrap heap. Col. Constable states that the great hauling capacity of our engines makes up for any defects in their details. He is further of the opinion that locomotives of light weight and small power are kept too long in service on the Indian railroads. The report hits the nail upon the head when it says that the first duty of the engine is either to run fast or to pull a big load. Its author says that he would rather have a roughly finished engine that would haul 3,500 tons than a highly finished, spick-and-span beauty that could only haul 600 or 700 tons in England or 1,200 tons in India. He considers that since the cost of coal is only one feature in the cost of carrying a ton of freight, the East Indian railway would be benefited by using cheap coal, and using engines that could haul loads of American dimensions, even should its coal consumption per engine-mile be doubled, and its engines have to be sent to the scrap heap at the end of fifteen years. The report concludes by saying that, as a matter of practice, the American lines prefer to run an engine for all it is worth, provided traffic is offering, merely allowing sufficient time for cleaning and repairing.

It is certain that American methods, as thus outlined by this British official, are destined to become prevalent in the colonies of Great Britain wherever the loading gage permits the use of more powerful locomotives. In Great Britain there is a limit set to the size of the engines by the low bridges and the comparatively narrow width between station platforms; but even under these restrictions, it is possible for British locomotive builders to greatly increase the size and power of their boilers above the limits which generally obtain to-day.

THE HOLLAND SUBMARINES FOR THE BRITISH NAVY.

The first of the five submarine vessels of the Holland type, now being constructed by Messrs. Vickers' Sons & Maxim for the British navy, will be placed in commission in the course of a few weeks. Each boat will measure 63 feet 4 inches over all, with a beam of 11 feet 9 inches, while the displacement will be 120 tons. The crew will comprise seven officers and men. The motive power consists of a 4-cylinder vertical gasoline engine for surface propulsion. The motor will have a speed varying from 200 to 300 revolutions per minute, and its maximum brake horse power will be 190. The storage capacity will enable the boat to travel 400 knots at 9 knots per hour on the surface. On the surface the boat will have a maximum speed of approximately 10 knots, while the speed when submerged will be about 3 knots less. For propelling the vessel when submerged a main motor of electric waterproof type is provided, the current being supplied from accumulators sufficient in capacity to enable the vessel to remain under water for a four hours' run at maximum speed. The accumulators are charged from a dynamo driven by the gasoline motor while traveling on the surface. At the bow of the boat is the torpedo-launching tube placed about 2 feet below the load line, while the vessel is on the surface, and in addition to the torpedo, which will always lie