

How to Cross the Atlantic in less than Five Days.

[Concluded from page 275.]

The upper works should extend only about two-thirds the length, leaving the sharp razor-like ends perfectly free to battle the waves, without being encumbered with either weight or bulk. The large waves might therefore rise entirely over the ends, without raising or straining the vessel in the least. And when sailing such vessels would cut through the waves like a knife, instead of climbing and plunging over them. In fact, independent of any calculation, their very looks would warrant a rapid arrow-like speed, while their deep perpendicular sides would give them immense strength to bear the strain of waves, their sharp knife-like forms would give the waves very little power over them.

That part of the vessel which is more than ten or twelve feet above the water, may be two or even three times greater in breadth, so as to form comfortable rooms for passengers; but the upper works should also have the same curve, in order to lessen the resistance of the air, which is very great when a rapid vessel has to meet a high wind; in fact a very ordinary wind will move 25 miles an hour; and if the vessel also has a motion of 25 miles, the resistance will be over ten pounds for each square foot of flat surface that is carried against it. This will show how important it is, to properly shape that part of a vessel which has to cleave its way through an ocean of air, that oftentimes presents even a greater resistance than the water itself.

No. 1 could be tested for less than two thousand dollars: if it would move sixteen miles an hour, No. 2 would most certainly go twenty; for No. 2 could carry eight times the power, while the resistance would be only four-fold. No. 3 could carry 27 times the power of No. 2, while the resistance it would meet would be only nine times greater, and it could therefore as surely go twenty-eight miles an hour as No. 2 could go twenty.

I do not pretend that my estimates are mathematically correct; but I do maintain that what error there is, is on the safe side; that is, were I to oversee the construction of such vessels and their machinery; they would all of them go as fast or faster than the rates I have mentioned. I have not only the evidence that my theory is plainly based on the immutable laws of nature; but I have the further evidence of such rude experiments as I have been able to make. And I have the further evidence of having applied the same reasoning to a large vessel lately built, by estimating her speed from the pressure of steam on her piston; the volume of water displaced by her form in a given time; and the rate of motion she must give that water in displacing it. Her real speed was rather greater than my estimate.

And again I have the further evidence of having tested my theory by estimating the resistance of the wind against a flat surface, and comparing the estimate with the various experiments that have been made to show what that resistance really is; and as we would naturally expect, I find that the estimated resistance lies between the extremes given by authors, being less than their greater, and greater than the least they have given. Whatever may be thought of the theory, it can hardly be supposed that I have erred by undervaluing the resistance a vessel must meet; for I always allow eight at least, and under some circumstances fully twenty-fold power to double the speed of a vessel, and not four-fold, as many erroneously suppose. The best propellers known for such vessels would be chain buckets, so applied that the centre of the chain would dip far down into the sea. Paddle-wheels would not do for such vessels, because they would be, part of the time, buried in the wave, and the next moment entirely out of the water, as the vessel plowed its straight and arrow way, without scarcely at all rising and falling with the swell, as other vessels do.

We must now close. Perhaps at some future time we may explain the application of the theory to river boats—it requires a still more novel form for them.

I. J. K.

In the published rule for shaping vessels, on

page 83, there is an error: the number printed 9 should be 8. Also, in one of the articles the word "attraction" was printed instead of the words "a traction."

Mr. Layard's Discoveries.

At the ordinary meeting of the Royal Institute of Architects, London, on Tuesday, 26th ult., Mr. Bellamy, vice president, in the chair, Mr. Sidney Smirke, fellow of the institute, read "Some remarks on the style of ornamentation prevalent in the Assyrian sculpture recently discovered, and on some peculiarities of Assyrian architecture disclosed by Mr. Layard's discoveries." Mr. Smirke exhibited some admirable casts of portions of the sculpture which he had taken from the remains now deposited in the British Museum, representing amulets, bracelets, hilts of swords, a singular kind of foliage belonging to a tree apparently object of worship, the hems and borders of costume, human figures, horses, &c. Considering the extreme antiquity of these remains, the only moderate hardness of the material, and the lowness of the relief, these sculptures must be considered as remarkably well preserved. Major Rawlinson, who had mastered to a great extent the knowledge handed down in the strange characters found in these remains, entertained the opinion that the earlier ruins dated twelve or thirteen centuries before the Christian era. The love of ornament common to eastern nations was remarkable in these specimens. Every figure had some carved representation of ornament; even the common soldiers had their weapons covered with rosettes, bulls' heads, other figures, and the trappings of horses were most richly decorated. As the finger ring amidst these minute decorations was nowhere to be found, it was presumed that that was an ornament unknown to the Assyrians. Without going into the question of the antiquity of finger rings, he might state that they were mentioned in Esther and Jeremiah; and Pausanias, who wrote 422 years before Christ, related that he saw on a painting on the walls of a temple, a figure of Phocas, which had a ring on the hand. There was, however, no such example known to exist at the present time in Greek sculpture. Very few illustrations of domestic furniture had been found; but there were chairs with feet imitating the feet of animals—an ornament usually adopted in Greek art, and continued downwards through the mediæval period. The ornamental drawings exhibited frequently a spirit and artistic skill which would do no discredit to our best artists. They had a freedom of execution wholly unknown in Egyptian remains. The honeysuckle ornament, which appeared very commonly, was as perfectly classic in its execution as the numerous specimens which were to be found in Greek art. The most trifling and mean objects were profusely decorated, and the mass of drawings of this description was so immense, that they must have been the work of the ordinary artisans. He doubted whether there were five working sculptors in England, who could work on a piece of marble winged wolves and antelopes with such a freedom of execution, and boldness and accuracy of drawing. These figures had, in fact, a strong analogy to the works of the Greeks, and he believed that the banks of the Tigris and Euphrates were more entitled than the banks of the Nile and Egypt, to the honor of giving birth to Greek art. Mr. Smirke then proceeded to show, at some length, the connection of the Assyrian objects of worship, such as goats and bulls, with those of the Egyptians, and he drew an interesting comparison between a deity springing from a wheel, which is much represented in these Assyrian sculptures, and the wheels mentioned in the 8th chapter of Ezekiel. The total absence of columns was remarkable. Mr. Layard mentioned only one instance in which he had found them, and in that he presumed, from other circumstances, that they were of later date. In one of the casts now exhibited, there was a representation of a sort of tent roof, supported by three pillars, which were so slender as to lead to the presumption that they must have been of wood. At the top of these pillars were placed the horns of a goat, so arranged that they suggested the idea of Ionic capitals. The style of architecture to which the first Jewish

temple might be attributed, had long been a matter of controversy, but he was disposed to think that these magnificent ruins afforded a better clue than any we had hitherto possessed. Geographically and politically speaking, the kingdom of Israel had more connection with these people than with the Egyptians, and it was from the countries west of Judea that Solomon sought his "cunning workmen," who were employed in the building of the temple. In conclusion, he referred to the recent accounts from Nineveh, as being provokingly vague and meagre. There had been found, it would appear, a most miscellaneous collection of rich armour, antique vessels, costly apparel, and other treasures, put together in a manner perfectly perplexing. An ingenious pupil of his, Mr. Keitch, had, however, drawn his attention to a passage in Diodorus Siculus, which would perhaps help to explain so otherwise utterly unaccountable a circumstance.—Sardanapalus, as they all knew, when his danger was imminent, and the Median enemy in possession of this city, owing to a sudden irruption of the river breaking down 20 stadia of the walls, collected together all his valuables, his vestments, his armor, his gold and silver, and his treasures, and formed of them a grand funeral pile. On the top he placed his wives, his concubines, his servants, his eunuchs, and himself, and applying the torch, the whole were burnt together. Diodorus relates that one of the eunuchs, not yet tired of life, or at least having an insurmountable objection to so fiery a mode of going out of it, made his escape, and gave information to a Babylonian priest that under the ruins of the king's palace might be found enormous treasures. The priest went straight to Arbaces, who in the midst of his triumph was distributing rewards to his satraps, and reminding the monarch that he had predicted the fall of Nineveh, said that in the midst of the battle he had vowed a vow to Belus that, if the Babylonians were victorious, he would convey the ruins of the royal palace to Babylon, and erect there a temple to that god, which should be at once a monument of the destruction of Nineveh, and serve as a landmark to those who navigated the river that ran through the great city. The Median king, who was described by Diodorus as possessing a noble and generous disposition, granted him all the ruins of the royal palace for this purpose. The priest then, with the help of the eunuch, removed the greater part of the treasure, but the fraud was discovered and he was condemned to death. The operations of the priest, so far as the treasures were concerned, were surreptitious, and of course the investigation of the ruins could not have been so complete as if it had been conducted openly and deliberately, and that would seem to account for the incongruous heap of valuables discovered by Mr. Layard. Thus, if the eunuch had not had so natural a distaste to be one of the principals in the *auto-da-fé* of the monarch, Mr. Layard would have been by this time in possession of the treasures of Sardanapalus.

The Dead Sea.

Twenty-two days' close examination was expended upon the sea and its shores, i. e. from April 19th to May 10th. We can only advert to a few of the interesting facts. The sea and shores were accurately examined in all directions. The distance in a straight line from the fountain 'Ain el-Feshkhah directly across to eastern shore was nearly eight statute miles. The soundings gave 696 feet as greatest depth. Another line was run diagonally from the same point to the S. E. to a chasm, forming the outlet of the hot springs of Callirrhoe. The bottom of the sea was found to be a level plan, extending nearly to each shore, with an average depth of 1020 feet all across. The bottom was blue mud and sand; and a number of rectangular crystals of salt were drawn up, some of them perfect cubes. In a line from the springs of Callirrhoe to 'Ain Turabah, at a depth of 1044 feet, the temperature of the water was 62°; at the surface immediately above it, 76°.—From 'Ain Jidy directly across to the mouth of the Arnon, the distance was about nine statute miles, the greatest depth 1120 feet.—On the eastern side of Kashim, Usdum (Salt

Mountain) one third of the distance from its north extremity, a pillar of solid salt was discovered, capped with carbonate of lime, cylindrical in front and pyramidal behind. The upper or rounded part is about forty feet high, resting on a kind of pedestal, from forty to sixty feet above the level of the sea. It crumbles at the top and is one entire mass of crystallization. On the sea the tendency to drowsiness was nearly irresistible. The sensation amounting almost to stupor, was greatest in the heat of the day, but did not disappear at night. A horse and a donkey, swimming in the sea, turned a little on one side, but did not lose their ballance. A muscular man floated nearly breast high, without the least exertion.—The Arnon (el-Mojeb) where it flows into the sea, was eighty-two feet wide, and four feet deep. It runs through a chasm ninety-seven feet wide, formed by high, perpendicular cliffs of red brown and yellow sand-stone, mixed red and yellow on the southern sides, and on the north a soft rich red. The chasm runs up in a direct line 150 yards, then curves gracefully to the S. E. A little north of the entrance of the Arnon, on a beautiful little stream, were twenty-nine date palm trees. Wherever there was a rivulet, lines of green cane, tamarisk and an occasional date-palm marked its course.—Zurka Main forms the outlet of the hot springs of Callirrhoe. The stream, twelve feet wide and ten inches deep, rushes with great velocity into the sea. Temperature of the air 77°, of the stream 94°. The chasm is 122 feet wide at the mouth and for a mile up. The sides are eighty feet high. Among the plants found on the western shore, between 'Ain el-Feshkhah and 'Ain Jidy, were the lily, the yellow henbane, the lamb's quarter (used in the manufacture of barilla,) a species of kale, a single pistachia tree, and many tamarisks in blossom. In sailing round the southern part of the sea, many fatigues were encountered.—On one occasion, at 8 P. M., the thermometer was more like the blast of a furnace, than living air.—[Lynch's Expedition.]

Home Truths.

Dr. Bethune, at the anniversary of the "Fountain of the Dead Sea," held in this city, said: "When he looked upon the poor, and witnessed the hardships and privations to which they were subject, his only wonder was, that there was not more crime.—The respectable man, surrounded by his luxuries and his comforts, had no inducement to commit crime," &c. All who study human nature and observe the incidents of life concur in this opinion, that the basis of popular virtue is physical comfort, and that the more prosperity a people enjoy the less prone are they to vicious indulgence and criminal excess.—Hence the origin of societies to make some provision for emancipated felons, when thrown back into life from the solitude of their cells, to prevent want from driving them to a repetition of crime. Even the work of the religious missionary proves an abortion, unless preceded by some measures to secure the physical comfort of the convert. In crowded cities, a visit to the haunts of vice is but a visit to the last refuge of poverty, and whether vice has led to poverty, or poverty has been the mother of vice, one thing is indisputable, that neither can be cured without the preliminary of physical comfort. Of the thousands whose hearts throb with no passion but the enviable ambition to do good, none will shrink from the performance of this "home" duty, who reflect that it will bring a harvest of blessings, order, quiet and social security, under their own eyes, among their neighbors, who have a claim to kindness; and their own countrymen, who can expect no missions from abroad, to bring them light, succor, or comfort. How the poor are made—who makes them—or what made them, is it not a question with the true christian philanthropist who aims to produce practical reforms from a vicious course of life, or to restore the reign of law and order to riotous cities desolated by mob outrages. The first element of a prosperous city is health—this implies cleanliness, which implies industry, physical comfort and a busy population. There is work enough in these objects, and of sufficient moment, for the exercise of all the philanthropy that ever undertook to benefit society.