How to Cross the Atlantic in less than Five Days.

[Continued from page 83.]

We will give one or two more illustrations of our theory, and then describe the vessels resulting therefrom.

Make a groove on the side of a board ten or twelve feet long: place that board on a table, then make several model vessels; one of them in accordance with our theory, and with their keels so made that they will run easily and securely in the groove; suspend over each side of the groove a row of say ounce balls from the top of the room, (the higher the room the better,) and in moving the vessels along they will part the balls to the right and left. As the balls are suspended freely, almost their whole resistance to the motion of the vessels will be from the power of inertia; and as we increase the speed of the vessels the balls will be thrown further and further to the right and left; as it requires force to throw the balls, of course that vessel is shaped best that throws them to the least distance. Water will part freely to the right and left; so will the suspended balls. The resistance offered by both is caused by the power of inertia; but the balls show by the distance they are thrown how much inertia is overcome by the different forms of the vessels. In order to be certain that the vessels move at the same rate, two grooves and sets of balls may be provided, and two vessels moved at the same time by lines running over the same wheel.

Another proof of the theory may be obtained in the following manner:—instead of the two rows of balls, suspend one ball so that the vessel will pass under it; or rather, for convenience, suspend a block of wood about four inches square, having a hole downwards through it to admit a pencil; then place a long light board on one of the vessels covered with paper, so that the pencil in the suspended block will mark a line as the vessel passes under.

Next fasten a small cord to the suspended block, and carry it horizontally to the right or left; thence over a pulley and down to another similar block that rests on a support that is easily overthrown. If we now so arrange it that a projection from the vessel will overthrow the support of the last mentioned block, just at the moment the pencil reaches the bow, then the second block will draw the first to one side by a steady and equal force, and the pencil will mark on the paper the curve of least resistance, or the true form for the bow of a vessel. It would in fact describe exactly such a curve as our rule gives. To make the pencil keep clear of the side lines of any differently formed vessel, would require a greater force, and of course an irregular one; and in all irregular forces there is a waste of power. When a vessel sails through water it pushes a body to one side that is floating freely, with nothing to hinder it moving but inertia, and in the experimental case with the pencil, we pull by an even force to one side a body that is freely suspended, nearly the whole of its resistance being also from inertia.

It is evident from our theory that we must not only form the sides of our vessels with that waving curve, the rule of which was given on page 83 of the present volume, but also that we must contract the breadth and increase the depth and length as much as is consistent with the purposes for which a vessel is employed, and the nature of the element through which it passes. Reference should also be had somewhat to the manner in which it is propelled; because where the point of traction is above the water and the centre of resistance below the surface, there is a tendency to plunge the bow under and raise the stern, which must be counteracted by a large excess of length as compared with the depth. The true proportion between the length, breadth and depth being a compromise, in which inertia should be favored as much as possible.

We give our estimate of such a compromise in the following table:—

	No. 1.	No. 2.	No. 3.
Length,	160	320	960
Depth,	5	10	30
Greatest breadth,	2½	5	15

Here follows a table, but as it is somewhat long, we leave it out: it makes the central breadth of No. 1, 30 inches; No. 2, 60 inches, and No. 3, 180 inches.]

No. 1 could easily carry power sufficient to move her sixteen miles an hour; but in the present state of science could not carry fuel enough to cross the Atlantic.

No. 2 would require four-fold the force to propel it that No. 1 required, but being of eight times the tonnage, it could therefore carry two-fold the proportionate power, which would move it about twenty miles an hour.

No. 2 could carry coal enough to cross the Atlantic, and might have her upper works made as wide as a canal packet, so as to lodge with comfort fifty passengers.

No. 3 would require nine times the force to move it that No. 2 required, but being twenty seven times larger it could therefore carry three times the proportionate power, and could easily cross the Atlantic at the rate of 28 miles an hour. I forget the estimated distance from Halifax to Liverpool, but suppose it is not far from 2,500 miles. If that be the distance, then No. 1 could traverse it in seven days; and No. 2 in five days and five hours, and No. 3 in about three days and seventeen hours.

[The last of these articles will be concluded next week. We have had an answer on hand for them for some time, and it will follow the next article. It was fortunately delayed until this article arrived.—Ed.

The Silks and Teas of Japan.

The silk of Japan has long been celebrated throughout the world, though often produced under circumstances the most discouraging.—The little now exported finds its way chiefly to Java, where it is worn by the native chiefs and the wealthy Dutch officials. Occasionally some few pieces are brought to Holland, where they are regarded rather as curiosities than as merchandise. Supposing the trade opened, the silk dressing gowns of Japan would, no doubt, become a considerable article of export. They may be regarded as the most extraordinary article of dress in the world, being from an inch to an inch and a half thick, which suggests the idea of immense weight, though in reality they fell, when worn, as light as gossamer. The thickness is produced by wadding, composed of some substance so fine and delicate that, like the "woven wind" of the ancients, its separate fibres are almost invisible.

We must not, in this slight sketch of Japanese exports omit the tea, the costlier kinds of which are, on all hands, admitted to be more richly flavored than those of China.—Very few specimens have for the last two hundred years appeared in the English market, and these, at the India house sales have brought from fifty to sixty shillings a pound. In all likelihood, however, these were not by any means the finest specimens, since what are called on the island Imperial teas are consumed almost exclusively by the princes and nobles. Strange stories are related of the means of producing this courtly beverage, and there is probably in all of them no small admixture of the fabulous. Still, as they are characteristic of Japanese manners and ideas, our readers may not dislike to be presented with a sample of it.

The tea shrubs intended for the use of the Imperial court are grown on a mountain near Meaco, that is, in the district supposed to be the most favorable in the world to the production of this article. This mountain is fenced round from vulgar intrusion by a ditch and thick hedge; and none but those employed in the cultivation of the tea are permitted to enter. The shrubs are laid out so as to form avenues, which are daily swept and kept scrupulously clean.

So far the precautions taken are intelligible, but in much of what follows the reader will detect the influence of an oriental and imperial imagination. The young leaves which begin to put forth about the first of March which commences the Japanese year, are gathered when only a few days old—that is, in their most tender and delicate state. The persons employed in collecting them are subjected, under the most rigid discipline. During the operation they must not eat fish, or any other article of food likely to affect their breath. They are next compelled to bathe twice or thrice a day and, after all, are not permitted to touch the leaves with their hands. They therefore work in gloves; and the delicate green treasure, when collected, is deposited in corners of white paper, till subjected to the drying process analagous to that employed in China.—Into an account of this, it would be beside our present purpose to enter; but we may mention that there are three gatherings of the tea leaf—the first, which takes place as we have said early in March; the second at the end of the same month or the begining of April; and the third in the begining of May, when the leaves are two months old. This last gathering produces the coarsest kind of tea, appropriated to the use of the humbler classes.

The cultivation of this delicate shrub is conducted among the Japanese upon principles somewhat different from those that regulate its growth in China. It is not commonly laid out in distinct plantations, but in lines, which serve as hedges between the corn and rice fields. The seeds are thinly sown in drills, four or five inches deep, and when the shrub has attained its full growth, that is in six or seven years, and is about the height of a man it is cut down and succeeded by fresh shoots.

For various reasons, the trees are not planted close—first, because they would then cast too dense a shade; secondly, there would not be around them a free circulation of air, which would impart a rankness to the leaves. In many cases the cultivation is carried on upon the most arid mountains, which probably stunts the shrub, but improves the flavor of the tea. In most cases, the excellence of vegetable productions is proportioned to the aridity of the soil, which occasions a diminution in quantity, whilst it improves the quality.—Thus the olives of Attica were the most prized in antiquity, as the honey was the sweetest and most fragrant. For the same reason, it can scarcely be doubted that the superior teas of Japan are unrivalled for aroma and delicacy of flavor. It is no way inconsistent with such an opinion that the wealthier Japanese set a high value on the finer teas from China, because, all the world over, mankind are fond of variety, and especially commodities brought from a distance.

Coal in California.

Los Angles has been previously celebrated for its "Coal Springs," as they are called.—They are thus described by a gentleman who lately visited there:

"Along the base of a hill, or range of hills, some miles in extent, at intervals of a few hundred yards, were issues of bituminous tar o Naptha, which had accumulated in immense quantities on the surface, and changed by exposure to a dark colored solid, called by mineralogists Petroleum. We collected several fragments of it and placed them upon a fire kindled near the spot. They readily ignited and burned with a clear flame, melting slightly as they consumed, and generating a strong heat. This experiment we repeated several times with the same result.

In burning, the smoke and flame were similar to that of bituminous coal. Vast quantities of the Petroleum lay on the ground in solid masses. The strata above and below the issues are sand stone and coarse clay slate.—From the fact that bituminous matter is constantly emitted from the springs. I have little doubt that the hill contains an immense quantity of bituminous coal from which the liquid bitumen proceeds. A subsequent examination strengthened the conviction.—The next day Mr. Swan, who has commenced mining there, proceeded to sink a shaft on a depression of the hill a few rods above one of the springs. At the depth of a few feet masses of solid matters were thrown out, similar in appearance to bituminous coal. Upon trial, it burned freely without melting.

The hill lies within thirty miles of the port of San Pedro, by a level road, and it could be readily transported thither in quantity sufficient to supply the demand of steam navigation.

Ohio Wine.

The Horticultural Society of Cincinnati are about to issue certificates or premiums upon samples of superior wine produced in that State.

Destruction of the Great Cathedral of Saragossa.

By recent accounts from Spain it appears that on the 7th of April, according to the custom of the townspeople, the whole poupulation, gaily attired, had assembled in the cathedral to follow the procession of the Holy Sacrament. The crowd was immense, and the procession was preceded by a band of music and a guard of honor. Scarcely had the procession issued from the massive portals of the cathedral, ere the heavens became clothed with darkness, a huge black cloud hung like a pall over the town, and suddenly the floodgates of the skies were opened, and the rain descended in such torrents that the whole procession was forced to take shelter within the cathedral.—The people told their beads, and were overwhelmed with terror at the Cimmerian darkness which enveloped the sacred edifice. Presently there was heard a terrific crash, accompanied by a noise loud as the roaring of artillery. It was found the lightning had struck the spires of the catheral, and entering through one of the numerous interstices of the light and graceful archetecture, struck dead the bell-ringer, and penetrated to the timber roofing, which immediately blazed forth with a fury admitting of no control, although the heavens continued to pour down their waters upon the burning rafters. The crowd preferring even water to fire, rushed forth into the streets, through which the water was pouring in torrents, and left the unquenched flames to do their fiery work. The roof fell in towards the afternoon, and then the priests incited the people to attempt the preservation of the interior, and the course of the flames was at length arrested. Thus has perished the noblest specimen of ecclesiastical architecture in all Arragon, perhaps in all Spain.

A Human Body and the Hour of Day.

Seat yourself at a table. Attach a piece of metal (say a shilling) to a thread. Having placed your elbow on a table, hold the thread between the points of the thumb and fore finger and allow the shilling to hang in the centre of a glass thumbler, the pulse will immediately cause the shilling to vibrate like a pendulum and the vibrations will increase until the shilling strikes the side of the glass; and suppose the time of the experiment be the hour of seven, or half past seven, the pendulum will strike the glass seven times, and then lose its momentum and return to the centre; if you hold the thread a sufficient length of time the effect will be repeated; but not until a sufficient space of time has elapsed to convince you the experiment is complete. We need not add that the thread must be held with a steady hand; otherwise the vibrating motion would be counteracted. At whatever hour of the day or night the experiment is made, coincidence will be the same.

[The above extract we have seen in a hundred different papers, we suppose. At the first glance, we thought it savored so much of the old hocus pocus nonsense, that it would be worth an experiment, for the sake of its antiquity. The result was, complete proof its authenticity, (not truth, mind.)

A New Propeller Steamship.

Mr. Wm. Cramp and Joseph Vogel, Esq., are now engaged in laying down the moulds of a new propeller steamship about to be built for the Philadelbhia and Atlantic Steam Navigation Company. She will be about 600 tons burthen, and her dimensions 170 feet long, 28 feet beam and 19½ feet hold. The contract for the construction of the hull has been given to Mr. Cramp, who will lay the keel as soon as the steamboats now on the stocks at his yard in Kensington are launched. Mr. Vogel is to superintend the construction of the hull; the model for which has been supplied by Ambrose H. Thompson, Esq., the President of the Company.

Library of the British Museum.

The Atheneum, in referring to the recently-issued and bulky parliamentary volume, says the library of the British Museum contains 450,000 volumes, and that it has been calculated by an officer of the institution that, if they were all required to be placed on one shelf, that shelf would be at least twelve miles in length.