THE COLOSSAL ELEPHANT OF CONEY ISLAND.

(*Continued from first page*).

an observatory. The elephant is constructed of wood throughout, and is covered with sheet tin. The total length from the trough to the back part of the hind legs is 150 feet. The platform of the howdah is 88 feet from the ground, and the total height to top of crescent on flag pole is 150 feet. The height from ground to body, when standing immediately underneath, is 24 feet. The legs are 18 feet in diameter, and the two hind legs are provided with circular stairways leading to and from the rooms above.

The first room reached in passing up the stairs is termed the stomach room, and is dignified with this title, not because it is provided with the wherewithal to cheer the inner man, but owing to its special location in the body of the beast. The different rooms in the animal are likewise christened after their particular location, as the thigh room, brain room, hip room, etc. The grand hall, or auditorium, is reached upon ascending the stairs, and this is found to be very spacious and airy, the ceiling being very high and slightly dome shaped. A gallery passes all around the hall. At the further end of it a flight of steps leads to what forms, in fact, a continuation of the main hall, only on a higher plane. The main hall is 80 feet long and 32 feet wide, while the upper part of the main hall is 36 feet long and triangular in shape. There are 34 rooms in the structure in all, which are located principally between the walls of the hall and the outer walls of the structure. Most of them are quite small, and are very extraordinary in shape, their walls conforming to the shape without of that particular section of the colossus. The eyes, which form the windows of two of these rooms, are 4 feet in diameter. The tusks are 36 feet long and 5 feet 8 inches in diameter.

In laying the foundation of the structure the builders met with some difficulty, owing to the instability of the soil, it being simply a sandy beach. Piles were driven to a great depth, and a solid platform was raised on top of the piles and secured firmly thereon. A second platform, which was designed to bear the direct weight of the colossus was constructed above this, and was supported on vertical timbers strengthened by inclined braces reaching to the platform, with a view of resisting great lateral as well as vertical strains.

After the foundations were completed, work was commenced upon the visible portion of the building, the legs being the first point of attack. Yellow pine posts 12 x 16 inches were first raised above the platform, and being bolted to the flooring beneath were made self-supporting. Two posts 42 feet long were thus raised in each leg, and 12 smaller timbers placed in a circle so as to inclose the main posts were also bolted to the platform in a similar manner to form the outer wall of the leg. These timbers were joined at the top by connecting beams.

Cranes were mounted on the platforms thus formed, to which the material was raised as the work progressed. The difficulties increased, however, with the work, and it became necessary to secure the services of the most skilled workmen. Not only was this so on account of the dizzy height that the structure attained, but to the necessity of conforming the construction to the peculiar emergencies that arose, it being requisite to form nearly all the parts on the spot under the immediate personal supervision of the architect. The weight of the structure is carried, as may be seen by the engraving, by five supports, the four legs and the trunk.

Commencing at what is now the flooring of the main hall, trusses were raised on each side and at the two ends of the hall, and these trusses (the bottom chords corresponding with the floor and the top chords with the ceiling of the hall) constitute the principal support of the ribs. It will be seen from this that what might be termed an immense box girder was formed, the ends of which are supported by the front and hind legs respectively.

The ribs weigh directly upon the upper chords at the four corners, but at other points the ribs bear away from the chords, owing to the enlargement of the body under the howdah. At these points it was necessary to extend the vertical and horizontal members of each truss from the wall and ceiling until they intersected with ribs. In addition to this, an arched rib corresponding to the backbone is carried from the main support of the hind legs to the neck of the monster, where it bears indirectly upon the vertical support of the front legs. The ribs in the body of the colossus are 40 in number, and each consists of six sections bolted firmly together. As they serve to give consistency and rigidity to the whole structure, they form an important element in its construction. They are about seven inches in width, and are placed two feet apart, measuring from center to center. The head framing is similar in general construction to that of the body, and is supported by the trunk and forward supports of the front legs. It is provided with twelve ribs. Great difficulty was experienced in raising the ears and adjusting them in position in the head. This was principally due to their enormous weight, some six tons each, and the great height to which they had to be raised and the difficulty of securing such an enormous mass securely to the drums which had been prepared to receive them in each side of the head. In addition to being bolted firmly in position at these points, iron rods were extended from the main trusses within through the ears at two points below the drum. The ears are some 34 feet long by 20 feet wide.

The architect depends upon the enormous weight of the elephant and upon iron rods that pass from the trusses above, through the legs, and connect with the foundation platform, to hold the colossus in its position. He has kindly furnished us with a few statistics that may be of interest. The colossus, he informs us, weighs about 100,000 tons. It contains 1,500,000 square feet of timber, and 700 kegs of nails were consumed in its construction. In addition to this, 7 tons of bolts were disposed of, and it required 35,000 square feet of tin to cover its surface. In size it compares favorably with many of the large hotels and other structures in its neighborhood, and some idea of its magnitude may be had by comparing it with Jumbo, which is drawn in scale by its side, and which would find plenty of room for a promenade within one of the legs of the colossus.

The Fastest British Cruiser.

The fastest cruiser is the Mercury, and we are right, says *Iron*, in saying that she is the fastest full-sized ship afloat. The vessel has attained an average speed of over 18½ knots, or 21·275 miles, an hour, and thus surpasses by half a knot the Chilian ram cruiser Esmeralda (18 knots) and the French cruiser Milan (also 18 knots, launched in 1884), as well as the Phaeton and the Iris, the latter her sister ship, but launched a year before her (in 1877). As the Mercury is 300 feet long and 46 feet in breadth, with a draught of water of 22 feet, this is an exceedingly high speed for so large a vessel. She and the Iris thus stand unrivaled as regards speed by any vessel of their size; the Esmeralda being only 277 feet in length, while the French vessel has a length of 303 feet, but a beam of only 33 feet. An authority on these matters says of the English cruisers that they are the first of a new type designed for high speed as the pre-eminent requisite. All other requirements have been subordinated to this important element. They present a beautifully sharp bow and long, exceptionally clean run, and are altogether admirable specimens of a design for a swift and lightly sparred vessel. They are special screw dispatch ships, and are unarmored, of course; the Mercury, which is to join Admiral Hornby's squadron, has an armament of 10 64-pounders. She is built of steel, and in proportion to her tonnage has been one of the most costly vessels afloat. Her hull and machinery cost altogether somewhere about £199,000, almost $1,000,000, or within £10,000 or £15,000 of the Iris, which has been said to be as costly per ton as the ironclad Inflexible. Notwithstanding what has been written and stated to the contrary, the above statement shows that England still stands in the front rank as regards naval construction. Those who affirm the contrary should at least take the trouble of scanning the official navy lists of other maritime powers, when they will find—to their astonishment, probably—how rashly they have made assertions they are unable to substantiate.

Black Enamel for Iron Goods.

For the last few years, says the *Genie Civil*, it has been sought by different processes and various material, to protect iron and give it a brilliant black coating. These attempts have not been very successful; the coating being generally not sufficiently elastic, and peeling off too rapidly under the the influences of changes of temperature. M. Puscher, of Nuremburg, has described a very simple process whereby he claims to cover iron and any other metals with a black coating similar to enamel, and very much more equal in thickness and regularly distributed, as it is not laid upon the metal with a brush or any similar tool. M. Puscher places in a vase about 18 inches high sufficient finely powdered coal to cover the bottom of the vessel to a depth of about ¾ inch; and over this at a height of about one inch, is placed a grating which carries the objects to be treated. The vessel is then covered and luted down tightly, and placed upon a brisk fire. The vessel is at once filled with steam, which soon evaporates and is then charged with bituminous vapor. The firing is maintained for about half an hour, so that the bottom of the vessel is kept at dull red heat; after which it is removed, and when cool opened. The remainder of the coal is found in the form of coke; and the objects placed upon the grating, which have been at a fairly high temperature for a considerable time, are found to be covered with a black coating having all the appearances of enamel, but of extreme tenacity and a considerable degree of elasticity. Objects thus treated may be bent and exposed to great variations of temperature, without in the least affecting the coating deposited on their surfaces. It is, in fact, a simple process for stove blacking iron goods, and possesses the advantages and drawbacks of this method of treating metallic surfaces. In any case it is a cheaper and, on the whole, more effective process than dipping, which is so largely practiced with cheap iron articles.

Correspondence.

To the Editor of the Scientific American:

In your article on the Herreshoff yacht Stiletto, you state that there are now building by Yarrow two torpedo boats expected to run 24 knots an hour. Taking the figures of the Stiletto, 6½ feet pitch, with 450 turns of screw per minute, it does not need much calculation to show that with an allowance of 10 per cent slip (which is ample) the Stiletto is capable of doing much better than is claimed for the Yarrow boats. Please make a calculation, and see if on the above basis the Stiletto should not have a speed of 29$\frac{11}{12}$ statute miles an hour. In nautical miles the reduction would be as 60 nautical is to 69½ statute miles.

J. B. H.

New York, June 18, 1885.

[The slip amounts to 20 per cent. With the above figures this gives a speed of 26$\frac{14}{22}$ miles per hour.]

Fertilization of Red Clover by Bees.

To the Editor of the Scientific American:

I notice a corespondent of your paper says that honey bees do not fertilize red clover blossoms. They are often very busy working on red clover, especially the Cyprians and Italians, and why do they not fertilize it? They may get honey too far from the base of the tube, while the bumble bee's tongue reaches to the base. If the scarcity of bumble bees accounts for the lack of seed on the first crop of clover, why not cultivate and domesticate the bumble bee, and winter them so as to have enough of them to fertilize the first crop? It would certainly be advantageous to the hay, also seed the ground by shattering.

We need not cultivate bumble bees if we could find some other insect that would answer the purpose, and one that would combine some other points of usefulness would be preferable, but clover seed in first crop is a prize worth some labor to secure, is it not?

[A valued correspondent, who is an experienced agriculturist, to whom the foregoing was submitted, gives the following reply: Italian bees and some other varieties of honey bees gather some honey from red clover blossoms, when the secretion of honey is profuse, but no race of bees has yet been introduced or produced having a tongue of sufficient length to *exhaust* the honey secretion from red clover blossoms. The honey gathered from red clover is of superior quality and very fine color.

The fact that not more than one-fifth of the first crop of red clover blossoms contains seed seems to prove that honey bees do not fertilize that variety of flora.

This failure probably results from the insufficient length of the ligula in honey bees to properly deposit the fecundating pollen.

May it not, in a measure, be due to some singularity of the form of the pistils) which may only be entered by the longer and stronger ligula of the bumble bee?

It would also appear that the fertilization of red clover blossoms is chiefly, if not wholly, performed by bumble bees.

Darwin, in his "Origin of Species," alluding to this fact, says: "We may infer as highly probable that were the whole genus of humble bees to become extinct or very rare in England, the hearts-ease and red clover—which they fertilize by carrying pollen from flower to flower—would become very rare or wholly disappear."

The cultivation of red clover was not successful in Australia until after the importation of bumble bees to that country.

In suggesting the cultivation and domestication of the bumble bee, in order that a sufficient number may be present in time to fertilize the first crop of red clover, the correspondent introduces a subject full of interest and stings, particularly stings. He also apparently overlooks the fact that the bumble bee belongs to the solitary species, and, as is the case with the wasp, ordinarily only the queen survives the winter.

The partial domestication of the bumble bee, even to the extent of furnishing warm winter quarters and the stimulation of early breeding, would be attended with such difficulty that economy would suggest that the matter be left entirely to nature.]

Clearing of Water Mains by Chemicals.

At Leipzig, last year, the pipes experimented upon were those conveying water from the pumping station to the town reservoir. This main is about 15½ inches in diameter, and 2 miles 1,444 yards long; and the incrustation was from one-half to 1 inch thick, and in some places still thicker. The operations lasted more than nine weeks; and during that period, at intervals, the pipe was filled with dilute hydrochloric acid eight times, with soda solution three times, and with a solution of chloride of lime once (being washed out thoroughly with water, between the successive applications). It is stated that the incrustation was entirely removed; the practical effect of the cleaning being indicated by pressure gauge—a decrease of from 1·8 to 2 atmospheres pressure at the pumps.