

The Solano—The Largest Ferryboat in the World.

The projection of this great ferryboat for the transportation of passengers and freight across the Straits of Carquinez, from Port Costa to Benicia, California, was noticed in this paper some months ago. Now that it is completed and afloat California may boast of the biggest ferryboat in the world. The dimensions of the Solano are:

Length over all, 424 feet; length on bottom—she has no keel—406 feet; height of sides in center, 18 feet 5 inches; height of sides at each end, from bottom of boat, 15 feet 10 inches; moulded beam, 64 feet; extreme width over guards, 116 feet; width of guards at center of boat, 25 feet 6 inches; reverse shear of deck, $2\frac{1}{2}$ feet. She has two vertical beam engines of 60 inch bore and 11 inch stroke, built at Wilmington, Del. The engines have a nominal horse power of 1,500 horses each, but are capable of being worked up to 2,000 horse power each. Upon the deck of the Solano are four tracks extending her entire length, with a capacity for carrying forty-eight loaded freight cars, or twenty-four passenger-coaches of the largest class. The rudders are worked by hydraulic steering gear, operated by an independent steam pump. These rudders are connected with the ordinary steering gear, so that in case of any disarrangement of the hydraulic apparatus the vessel may be guided by it. The advantage of this improvement is that the immense craft can be handled with ease by one man, whereas, if the ordinary wheel and system of steering were used, six men would be required at the wheel.

Lake Erie Vineyards.

The islands at the western end of Lake Erie and the neighboring shores of Sandusky Bay are largely devoted to the production of grapes and wine. The Sandusky Register's annual report, just published, for 1879, shows that there are in this district 4,000 acres planted with vines, the yield for the year being in round numbers 16,000,000 pounds of grapes. The wine houses report a production of 1,526,400 gallons. Of this by far the greater part is Catawba, which holds its own as the favorite American wine in spite of the efforts to popularize native red wines made from the Concord grape, the Ives seedling, and other varieties.

The Register estimates that not more than one million gallons of pure juice has gone with the million and a half gallons of wine. Some of the dealers, it says, make no secret of the fact that they use spirits, sugar, and water largely, and claim that this doctored stuff is more acceptable to their customers than pure wine.

NEW CAR STEP.

The annexed engraving shows an improved folding step applied to passenger cars to facilitate the ascent and descent of passengers from the platform, and to avoid climbing and jumping in getting on and off the cars. The folding step is connected with the lower car step, and when in position for use it is supported, when let down, by a yoke that passes under the fixed step.

The folding step comes within a foot of the ground, and permits of making the risers of all of the steps shorter, and the steps are of course much easier than the ordinary ones. When the train is ready to start the steps are turned up out of the way by means of a lever, which also holds them. In this position the steps cannot be injured or broken off by obstructions on the road or by snow or ice in the winter. Another important feature is that the step when folded up forms an effectual barrier against jumping on or off the train while it is in motion, and prevents a class of accidents that have been alarmingly frequent. Another advantage is that the step may be let down at one end of the car only, thus compelling passengers to enter at that end, and admitting of a more thorough scrutiny of the passengers and a complete inspection of the tickets.

This invention has been thoroughly tested, and the steps are now in use by the Delaware and Hudson Canal Company.

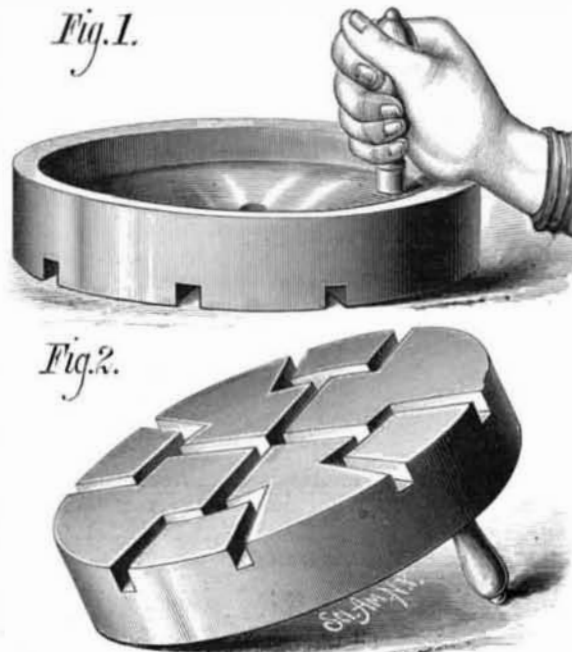
Further information may be obtained by addressing M. E. Skerritt, No. 4 High street Albany, N. Y.

Ballasting for Railways.

With reference to "Roadmaster's Difficulties," a correspondent writes that there is no material for ballasting so good as the screenings of coal from mines or yards, either alone or mixed with some hard stone.

NEW STONE-DRESSING TOOL.

The dressing-tool shown in the accompanying engraving was recently patented by Mr. Louis C. Gilmore, of Shearman, Texas. Fig. 1 represents the upper side, and Fig. 2 the under side of the tool, showing the radial and angled grooves. The tool consists of a circular plate having in its upper surface a cavity or basin communicating with the grooves in its under surface by a central aperture. A handle is fixed to the upper surface of the tool at one side of the center. When the tool is in use the cavity in its upper surface is filled with sand or emery and water, and it is moved

**GILMORE'S STONE-DRESSING TOOL.**

by the handle in an elliptical path, giving it a gyratory motion. This double motion of the tool greatly facilitates the operations of sand rubbing and polishing, and the grooves are of suitable form to distribute the abrasive material to the best advantage, and to retain it until it is used.

This tool is inexpensive, and may be used for the successive operations of sand rubbing, gritting or honing, and polishing.

Where the Cold Waves Come From.

Meteorological observations have now become so extended that evidence is rapidly accumulating to enable us to de-

termine positively the source of the cold aerial waves which sweep across our country during the winter season. The indications are that we owe them to the great area of high barometer in Northeastern Siberia, where the pressure sometimes exceeds 31.50 inches, and the temperature falls as low as 76° below zero. The pole of greatest cold is in the neighborhood of Yokutsk, on the Lena, where the average thermometric reading in January is 41° below zero, and where

the severest cold exceeds by ten degrees that experienced by explorers in high arctic regions. This is also the region of the highest barometric pressure known in winter; and from it, doubtless, proceed the waves of intense cold which play so large a part in our winter experiences.

The International Dairy Fair.

The second international dairy fair was opened in the American Institute building, December 8, with a fine display of dairy products, cattle, and machinery. The exhibits included butter, cheese, dairy cattle, implements and machinery for butter and cheese making, and agricultural designs and models for creameries, cheese factories, dairy buildings and farms.

In his opening address Mr. Francis B. Thurber gave the following facts and statistics collected by him during a recent visit to Europe:

The number of milch cows in Germany, as given by the latest statistics, is.....	8,961,221
In France.....	4,513,765
Great Britain and Ireland.....	3,706,766
Denmark.....	800,000
Sweden.....	1,356,576
Norway.....	741,574
Switzerland.....	592,463
While in the United States the latest statistics and estimates make the number of milch cows about.....	13,000,000

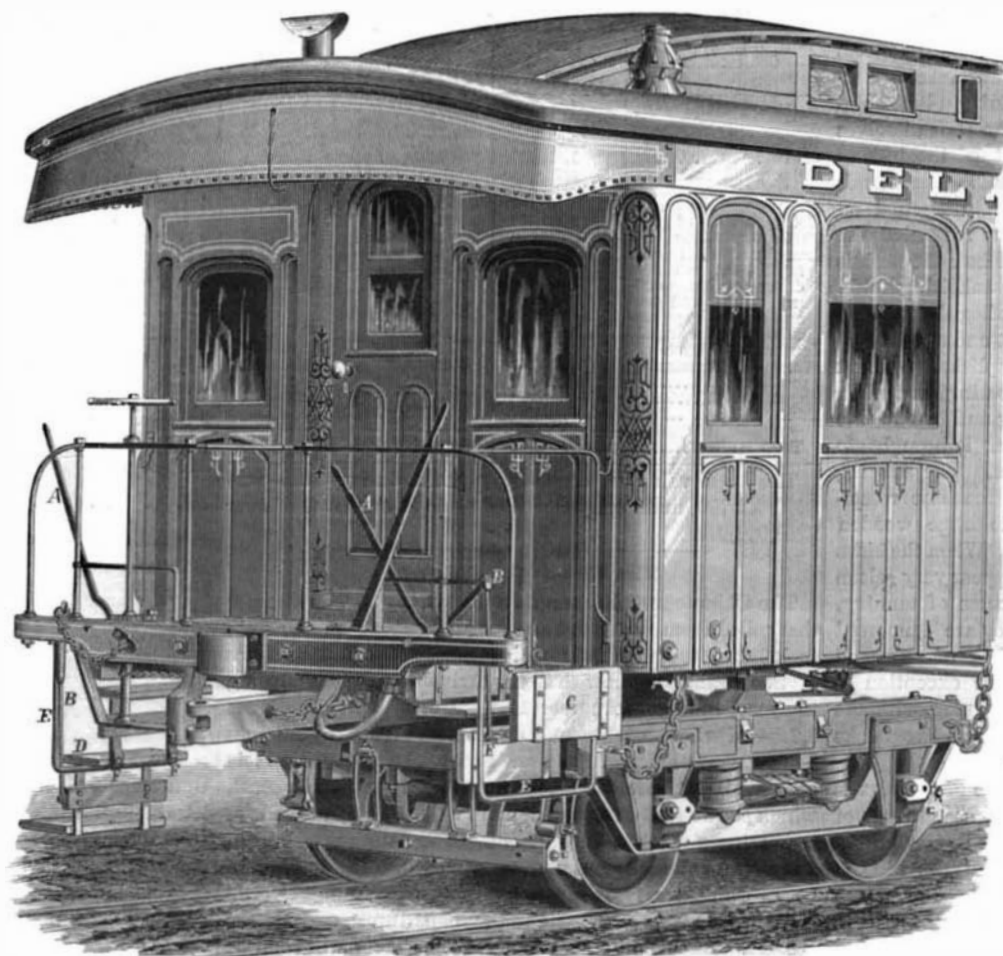
The quantity of butter and cheese per cow produced in the different countries varies so largely that no trustworthy average can be made, and the statistics, which embody only the quantities exported and imported, give but little idea of the total production. Some idea of the magnitude of the interest, however, may be formed from the fact that in this country alone, during the year 1878, three hundred and forty million pounds of cheese were produced, and nine hundred and sixty million pounds of butter. Of this but 3.9 per cent of the butter was exported, while of the cheese 41.6 was exported. Denmark, with but sixty million pounds total production of butter, exports thirty millions, or 50 per cent.

These export figures illustrate an important fact—namely that American dairymen have appreciated and catered to the tastes of cheese consumers in the great market of the world, Great Britain, while they have neglected to study the wants of the same consumers of butter. There is undoubtedly a difficulty in transporting butter long distances and delivering in perfect condition, but this is a difficulty which can be overcome, at least in a great degree. The great difficulty has been that so small a proportion of the immense production of butter in the United States has been of good quality, that really fine butter has commanded higher prices at home than abroad, and there is quite a sufficient quantity of poor butter to be found in most of the foreign markets.

Butter makers in other dairy countries have, however, made great progress in improving their product, and the average quality is much better than it was five, or even three years since. Improved dairy appliances and machinery, much of it of American origin, have been extensively introduced both on the Continent and in Great Britain; more attention has been paid to using the best salt; governmental dairyschools have been established in the continental dairy countries, even Russia having the enterprise to take this step, and scientifically educated dairymen are furnished by these schools to the principal dairy districts of their respective countries. Margarine butter, or oleomargarine as it is called here, has also assisted in bringing about this result, as it competed successfully with the poorer grades of ordinary butter, and obliged European butter makers to make an effort to produce a superior article.

In Great Britain, the amount of intelligent effort which is being directed toward the improvement of dairy products, especially butter, is surprising, and if American butter-makers would enlarge their foreign market, they must in the same manner strive to increase the supply of good butter which is produced, and thereby lower prices to a point which will enable us to compete in the principal butter markets in the world. That we have the ability to do this no one can doubt who knows the progressive spirit of

the American people. Touching the scope for profitably enlarging the variety of cheese made in this country, Mr. Thurber remarked that a prominent English dairy authority has said that "cheese is made in the dairy," meaning thereby that almost any variety of cheese can be manufactured in countries other than those in which it originated. This has been proved by the successful manufacture in the United States and in France of the Gruyère, which, as we all know,

**IMPROVED CAR STEP.**

termine positively the source of the cold aerial waves which sweep across our country during the winter season. The indications are that we owe them to the great area of high barometer in Northeastern Siberia, where the pressure sometimes exceeds 31.50 inches, and the temperature falls as low as 76° below zero. The pole of greatest cold is in the neighborhood of Yokutsk, on the Lena, where the average thermometric reading in January is 41° below zero, and where

originated in Switzerland. It has also been proved by the successful manufacture in Russia of the English Cheddar and the Dutch Edam cheeses, and even the odorous Limburg confirms this assertion, for its manufacture has been so successfully domesticated in the United States by our German fellow-citizens that, as suggested by a member of the Paragraphers' Association, "the difference from the imported article cannot be told unless you are off to the windward three miles."

THE SEA SERPENT ACCOUNTED FOR.
BY DANIEL C. BEARD.

The New York Sunday *Sun* of November 30 gives the following description of the Sandy Hook monster, as related by eye witnesses, who are all members of a Sandy Hook life saving crew:

Samuel Kittell was the first to see it. He says: "I looked out and saw a large head and portions of the body of a most terrible looking monster. It was wriggling slowly along like a snake, the head and several portions of the body showing above the water. It was not a whale, as there was not more than twelve feet of water where it was, and a whale as large as that would necessarily have been in view all the time. But this thing would disappear altogether at intervals. No fin could be seen anywhere on the back. The body looked round and much larger than a pork barrel. It was of a blackish-brown color. I am sure it was not a whale, but cannot say what it was. It was a stranger to me."

could walk. I took a pair of strong glasses and followed it along the beach. It was not more than 300 yards from the shore. With the glasses the head looked as large as a hog's-head. The front of the head looked square, and was about three feet high, with a projection two feet long extending from the top of its head. The eye toward the shore was as large as the top of my hat, was shiny black, and had a white edge. It had a very fierce look. . . . From the head to the tail it was at the least calculation 300 feet long. It was moving along the water the same as an eel. The head and several parts of the body were constantly out of the water. It was some species of serpent. It was certainly not a whale. . . . This thing did not spout, and showed no fins on any part of its body excepting on the tail, which was formed like that of an eel."

Well authenticated facts now prove that nature produces monsters as wonderful and startling as the most vivid imaginations of the romancer can invent. Victor Hugo's devil fish has its counterpart in the great cephalopod which was for a long time on exhibition in the New York Aquarium. There is no doubt, in my mind, that the monster lately seen off Sandy Hook by the crew of the life-saving station was no other than a large cephalopod. That these animals often attain enormous dimensions is a well established fact, but that this one was "three hundred feet long" is scarcely probable.

One seen in the neighborhood of Van Diemen's Land is described as resembling a cask, its long arms having the ap-

1st. The body is large and round, and described as resembling sometimes a cask, and again a bale of goods.

2d. The eyes are large and staring.

3d. The arms or tentacles are of great length, and have a snake-like appearance and motion.

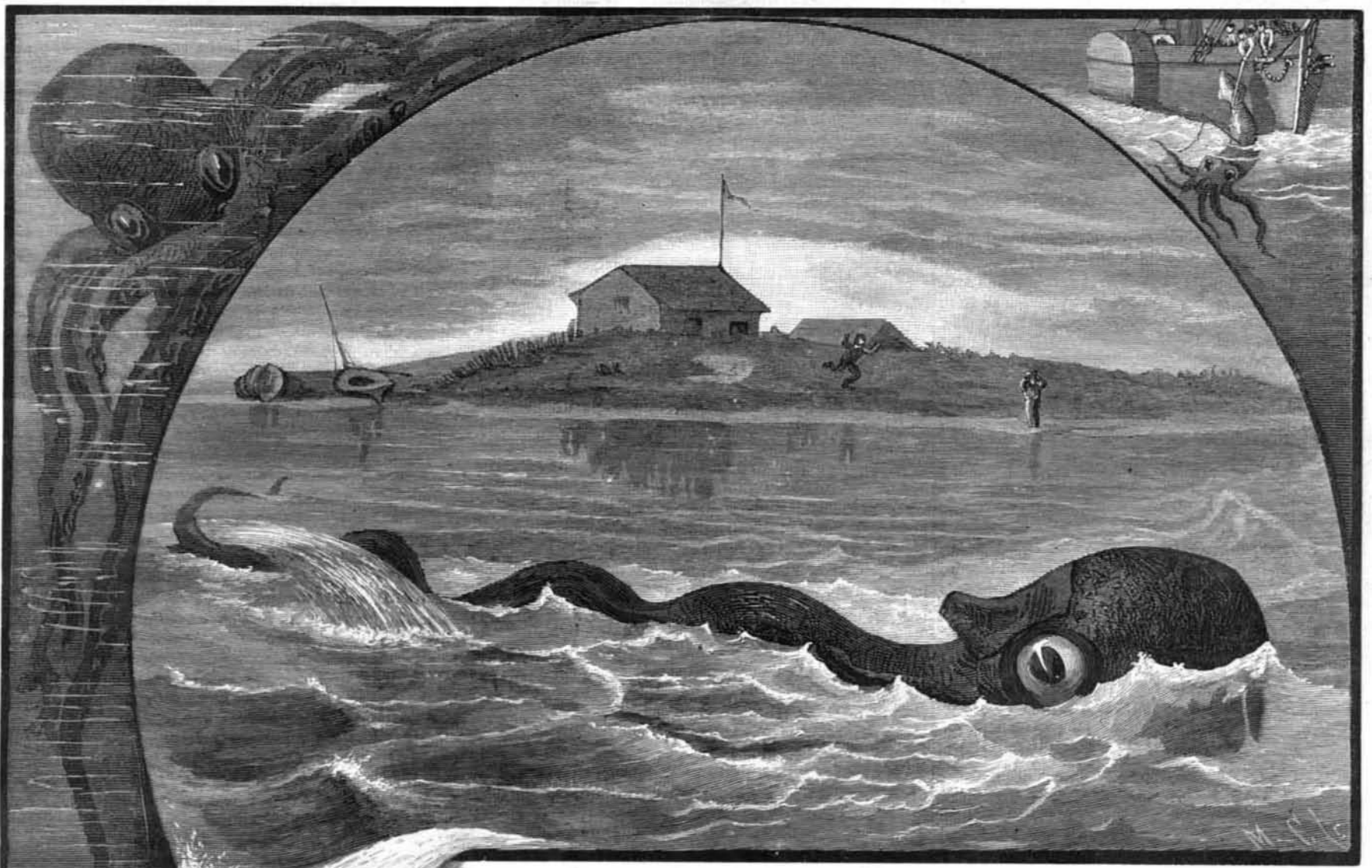
On comparing these peculiarities with the descriptions of the Sandy Hook leviathan, as obtained through the enterprise of the *Sun* from eye witnesses, the similarities, even to the expressions used, will be apparent.

The fin, or what was supposed to be the serpent's tail, can be readily accounted for by the fact that in some species of the cephalopod the longest tentacle widens and flattens at the end, and might easily be mistaken for a caudal fin. When moving through the water these animals bring their many arms together in a line, thus affording the least possible resistance, and propel themselves by ejecting water from their siphons.

Imagine one of these horrible creatures, with its sac-like body half submerged in the shallow water, its large protruding eyes above the waves, swimming with its long snake-like arms or tentacles trailing far behind, and you have a very fair picture of the wonderful gigantic hydrophidian or marine serpent of which we have had such thrilling accounts.

A Singular Specimen.

Mr. E. L. Wood, of Eastland City, Texas, sends us a drawing and description of a curious bone, through which



THE SANDY HOOK SEA SERPENT.

pearance of snakes wriggling upon the surface of the water. This creature, says Kent, was probably a large poulpe or octopus. In December, 1861, the crew of the French corvette *Alecton*, engaged in battle with a calamary, whose body alone was estimated to be twenty feet in length, and its weight 4,000 pounds! It escaped, leaving a portion of its flabby body in the possession of the brave sailors, who were only restrained from following it in small boats by the officer in command, Captain Boyer.

October 26th, 1863, two fishermen noticed off Great Bell Island, Conception Bay, what they supposed to be a large bale of goods from some wreck. It was not until they actually struck it with a boat hook that they saw the terrible staring eyes of an immense poulpe; two of its numerous arms were thrown across the boat; one of the men severed these with a hatchet, the creature then moved off backwards. The amputated arms left in the boat were brought to St. Johns. The Rev. Mr. Harvey, who was the first to examine and describe these limbs, found that one fragment measured nineteen feet, although a large portion of it had been destroyed before it was rescued from the fishermen, and there is no way of determining how much more remained attached to the body of the animal.

Many other well authenticated instances could be enumerated to prove the immense growth of this family of marine monsters, but those given are sufficient to establish the fact that these "monarchs of the ocean," as Kent calls them, do exist, and that their main characteristics are as follows:

passes an iron ring, now on exhibition in a drug store in that town. It appears to be a shank bone, the iron band being so interlocked with it that to separate them one or the other would have to be cut or broken.

Mr. Wood says: "The side of the bone encircled by the band has a smooth appearance, while its opposite side is rough and serrated. The band is about 12 inches in circumference, 2 inches wide, $\frac{3}{8}$ of an inch thick, and is beveled from its upper edge downward. At the square opening near where the bone is supposed to have joined the hoof, and extending upward several inches, is a porous formation, of the appearance and consistency of bone. Did the iron band pass through the foot and ankle, and is this linking together the result of ossification?"

The Last Number.

This issue closes another volume of this paper, and with it several thousand subscriptions will expire.

It being an inflexible rule of the publishers to stop sending the paper when the time is up for which subscriptions are prepaid, present subscribers will oblige us by remitting for a renewal without delay, and if they can induce one or more persons to join them in subscribing for the paper, they will largely increase our obligation.

By heeding the above request to renew immediately, it will save the removal of thousands of names from our subscription books, and insure a continuance of the paper without interruption.

George Lohsen makes the following statement: "I took the glasses and ran down to the water's edge and leveled the glasses at the monster's head. The front of the head was square, with a projection about two feet long extending from the top of the head. The eye was seven or eight inches in diameter, of a shiny black, and it appeared bulged out considerably. There looked to be a white rim around it. The animal's length was at least 300 feet from the head to the tail, as seen by us, not making allowances for the crooks in the body."

Harry Foster, another of the crew, says: "I got up and looked out, and saw the devilish looking fish I ever put my eyes on. It was moving along about as fast as a man