

length of sixty or seventy feet. Its home is in the northern seas, but sometimes it has been seen as far south as Maine. Its natural history does not appear to have been well worked out, though it is hunted, to some extent, for its liver oil. It is inoffensive in its habits, probably herbivorous, and exhibits none of the characteristics of the shark family.

**AGRICULTURAL INVENTIONS.**

Mr. Jacob Anderes, of Pacific, Mo., has patented a hand seed planter, to the base plate of which are attached spring-closed spouts and a seed box provided with discharge holes. The planter drops corn in three places in the hill.

Mr. Isaiah H. Reiner, of Line Lexington, Pa., has invented a harrow which can be readily transformed into a sled to facilitate its transportation from place to place, and which can also be used to carry grain and agricultural implements to and from the place where they are used.

Mr. David B. Eberly, of Boswell, Ind., has patented an improved harrow. It is so constructed as to cut in pieces lumps and sods and pulverize the soil. It will adapt itself to uneven ground, and can be adjusted wider or narrower as required.

Mr. T. C. Baxter, of Glenwood, Kan., has invented a potato fork, which is more efficient than a plow or an ordinary hoe or fork in removing potatoes from the hill. To the rear of a fork of ordinary construction is attached a foot piece, that is bent outward and upward and secured upon the handle. A front handle is in like manner secured to fork and handle. When used by two persons the fork is placed back of the hill and thrust beneath the potatoes by their combined action; then it is pulled and pushed forward and upward at the same time, lifting and dragging out all the potatoes from the hill. As the potatoes remain upon the fork, a shake or two given to it will separate them from the earth, which will fall between the tines.

A spring harrow tooth so constructed that it may be secured adjustably to the bars of the harrow frame, will be firmly and securely held, can be readily adjusted, and will economize steel in its manufacture, has been patented by Mr. Arthur P. Sprague, of Kalamazoo, Mich.

**Pearls in New Zealand.**

The Auckland *Evening Star* reports the discovery of pearls in Oakley creek, New Zealand. While passing along the bank of the creek, Mr. Benjamin Gittos, an old resident of the district, observed a peculiar and, to him, new shell fish in the sand. A little search disclosed a large number of them of various sizes. The inner coating of the shell was found to be mother-of-pearl of fine quality, and in several of the larger shells he found loose pearls. The pearls are described as unusual in form and color, not perfectly round, but far more brilliant than ordinary pearls.

**THE MOUSE-EATING SPIDER AT THE ZOO.**

This formidable insect is one of the latest arrivals at the Zoological Gardens, Regent's Park. It comes from Bahia, a maritime province of Brazil, and is common in the South American forests. Its body, which is covered with hair, is three inches in length, and its legs are in proportion; so that, when extended, it is about as big as a cheese plate. It feeds on mice and small birds, which it catches by springing suddenly upon them from ambush in the hollow of a tree or beneath a large leaf. At the Zoo it is fed chiefly on a large kind of cockroach (twice as big as those often met with in our kitchens), which comes to England in the cages in which certain animals are imported, and have hitherto been a great nuisance to the managers of the gardens.—*Graphic*.

**JAPANESE ART.**

The engraving on this page will be recognized by every one as an example of Japanese art. This vase stands about four feet in height. It is of bronze, a favorite material with the Japanese metal workers, who are certainly unsurpassed by any people in the world for originality of design and skill in execution. This is an excellent specimen of their peculiar method. In the grotesques at the base and in the relief ornamentation on the sides we see that peculiar exaggeration and distortion of natural objects which many people prefer to the conventionalism obtaining with Euro-



**JAPANESE BRONZE VASE.**

pean artists. Here, too, in the elaboration of minute designs on the collars and the rim and in the superbly executed handles, we see the evidence of a patient, painstaking labor such as only oriental workmen practice.

**Large Cuttle Fish.**

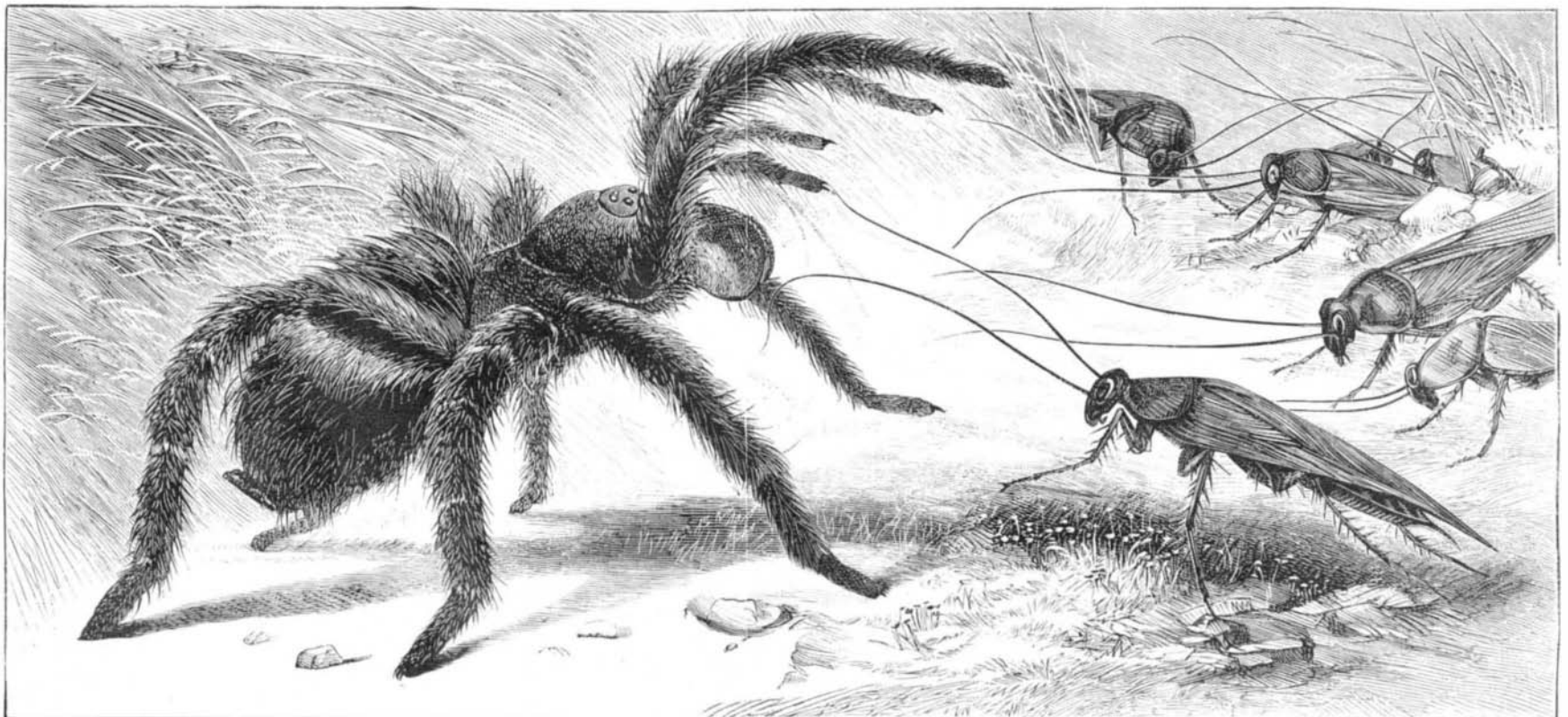
All exact information about gigantic Cephalopoda is of interest not only as showing what immense marine creatures do exist, but as preparing us for the possibility of meeting with still greater. Prof. Verrill has collected a great deal of accurate and recent information as to the North American species, of which he publishes a list in the April number of the *American Journal of Science*, from which we cull the following: On November 2, 1878, a fisherman was out in a boat with two other men near Leith Bay Copper Mine, Notre Dame Bay, when they observed some bulky object not far from shore, which they approached, thinking it might be

part of a wreck. To their horror they found themselves close to a large fish having big glassy eyes. It was making desperate efforts to escape, and was churning the water into foam by the motion of its immense arms and tails. Finding it partially disabled, they plucked up courage and threw the boat's grapnel, which sank into its soft body. By means of the stout rope attached to the grapnel and tied to a tree the fish was prevented going out with the tide; its struggles were terrific, as, in a dying agony, it flung its great arms about. At length it became exhausted, and as the water receded it expired. Its body, from the beak of the mouth to the extremity of the tail, measured twenty feet, and one of the tentacles, or arms, measured thirty-five feet. This is the largest specimen yet measured of *Architeuthis princeps*. Prof. Verrill mentions eighteen species as now known on the northeastern coast of America.

**NATURAL HISTORY NOTES.**

*A Monstrous Seaweed.*—Of all marine algæ, the *Nereocystis* is most wonderful. Its stem occasionally attains a length of three hundred feet, though it is extremely slender even at the top, where it is surmounted by an enormous floating bladder six or seven feet long, which affords a favorite resting place to the sea otter. The account, indeed, is apparently so fabulous as given by Mertens in an interesting paper on the botany of the Russian possessions in America, that it could not be believed did it not depend upon unquestionable authority. The filiform stem (which is about as thick as pack thread) when two or three feet long, swells suddenly above into a globose bladder. From the top of this springs a tuft of germinate leaves, mostly rising on five petioles. These leaves are lanceolate and membranaceous, from one to two feet long, and two inches broad in the center. As the plant grows older, the stem increases enormously in length, but only slightly in thickness. The globose bladder swells into a turnip-shaped or retort-like cylinder, six feet long and four feet six inches or more in diameter, in the widest part, the lower extremity gradually passing into the stem. The leaves, which at first were marked with a few faint nerves, split in the direction of the latter, cover a large space by their entangled mass, and attain a length of twenty-seven feet or more. Where the plant grows in any quantity, the surface of the sea becomes impossible to boats, in consequence of the dense floating masses of vegetation. The stem is employed for fishing lines when dry, and the large cylinder is used as a siphon for draining water out of boats, in the same way that another seaweed—the *Ecklonia buccinalis*—is used frequently at the Cape.

*Bees and Flowers.*—A writer in the *Midland Naturalist* says: "Bees, when gathering honey, seem to me (and I make the remark after many observations) to confine themselves during any given excursion to flowers of the same family. Thus, when I have watched a bee or butterfly gathering honey from a rose I have found that when it next alights it is invariably on another rose, and on no other flower." To this the editor adds the following notes from Kerner: "Flying insects in their search for nectar frequently confine themselves during their rapid visitation of successive flowers to the blossoms of one and the same species. For example, in a meadow at Trins, in the Gschnitz Valley, I saw *Bombus montanus* visiting only the inconspicuous flowers of *Anthyllis alpestris*, whilst the numerous and far more striking nectar-bearing flowers of *Pedicularis Jacquinii* and *P. incarnata* were passed over. Contrariwise in another place, in a meadow in the Padail Valley, I saw this same species of bee buzzing from one *Pedicularis* flower to another, whilst passing over the intermixed *Anthyllis alpes-*



**THE GIGANTIC MOUSE-EATING SPIDER AT THE ZOOLOGICAL GARDENS LONDON.—(Natural Size.)**

*tris.* On this passage, Dr. Ogle, the English editor of Kerner's work, remarks that a similar observation as to the habits of bees was made by Aristotle. "A bee," he says, "on any one expedition does not pass from one kind of plant to another, but confines itself to a single species, for instance to violets, and does not change until it has first returned to the hive."

**Hybrid Fishes.**—According to Mr. R. B. Roosevelt, the fish hatching Commission have raised hybrids between the following species of fishes: Salmon trout with whitefish; salmon trout with brook trout; brook trout with fresh water herring, with California salmon, and with the California mountain trout; shad with striped bass and herring. Of these crosses there are the young, now in the hatching house, of the salmon trout brook trout, brook trout California salmon, and brook trout California brook trout. It is observable of all hybrids that they are usually more shy and wild than either of their parents, and that in appearance they generally favor their larger parent. The cross between the brook trout and California salmon, and the salmon trout and brook trout bid fair to be fine fish. Those now in the hatchery are eight inches long. It is to be hoped that further careful experiments may be made to ascertain whether these hybrids are fertile and capable of producing fertile offspring.

**The Mullein.**—The common mullein, regarded as but a common coarse weed in this country, and so common in fields as to often prove a nuisance, is cultivated in England for its beauty. A writer in the *Gardeners' Chronicle* says that it "is well worth the attention of both amateur and professional gardeners." It seems that it is known in England by the common name of "Aaron's Rod." "There are two reasons," says this writer, "why it should be called by this name: first, the Romans dipped the stems in tallow, and burnt them at funerals. Secondly, the simple spike is long, cylindrical, and on it is a quantity of densely packed, very large, handsome golden-yellow flowers. The stem is five feet high. The flowers, when dried in the sun, give out a fatty matter, which is used in Alsace as a cataplasm in hemorrhoidal complaints. Formerly the plant was called *barbascum*, from *barba*, meaning a beard, an allusion either to the shaggy nature of its foliage, or else to two of the five stamens, which are hairy."

#### Private Patents.

Secret processes in manufacture are not uncommon now and here, notwithstanding the reasonable cost of a patent and the facilities for obtaining it. In England, where the cost and trouble of procuring a patent is much greater than here, these secret processes and receipts are very common, and the visitor to manufacturing establishments is frequently interdicted from a thorough exploration. The practice is a perfectly proper one, as an inventor as much owns the product of his brain and skill as the money he has earned; but there is always more or less risk attending the attempt to keep secret any profitable knowledge. If only one man possesses the secret, it is liable to be lost by his sudden death, to be possessed again only by a re-discovery. And although a certain prominent public lecturer may have attached undue importance to what he calls "the lost arts," it is undoubtedly true that there have been lost to the world really valuable facts in mechanics and chemistry and other arts and sciences by these attempts at secreting facts.

But there are patents in use which belie the term. Anything that is patent is "known" or "seen," the terms being synonymous. Yet there are methods of manufacture, compositions of materials, and machines for operation which have been patented and yet have never become known to the public. In some of these instances this withholding of public information is designed and intentional, the holders of the patents working it for their own profit, and believing that to be better for them than sharing it and receiving a royalty. It must be acknowledged that these are wiser than those who depend for their monopoly on their confidence in human nature—in human fealty—and run the risk of losing their advantage by death or unfaithfulness; for at the worst those who would share in the profits of the patented article may be compelled to pay fairly for it.

The number of these private patents which are held and used would surprise one who did not have good opportunities to ascertain the facts. And some of them are wonders of ingenuity and skill. One noted only a few days ago is a case in point. Among the productions of a busy concern recently inspected was that of drawer-knobs of wood. The extremely low price at which these knobs were sold was a surprise until the process of manufacture was witnessed; then it was apparent that the trifling price asked allowed a handsome margin for profit. A boy sat at a machine placing bored cubes of wood on a projecting pin that presented itself almost as fast as he could conveniently handle the blocks. Yet, every time he placed a block on the pin, a finished knob was thrown off, requiring only the insertion of a plug with which to secure the knob to the drawer, and vouching to be ready to pack for the market. When the machine is prepared with the proper cutters it will turn almost any form of knob required, and being fed with the material in blocks it is absolutely automatic. "Only two of these machines were made," said the superintendent. "Where is the other?" was asked. "Out in the barn," was the answer. Here was a combination of self-acting tools that had been patented, and yet not used except in the concern where it originated, and so prolific was it in product that a second machine had been found unnecessary.

This is but a single instance of the use of an unknown though patented article. Some of the work done and some of the modes of work and action of these machines are very curious. It would quite astonish the reader if it was proper to describe the action of machinery seen in operation recently at a bolt-making concern. Some of the processes in the production of "bright goods"—those from stiff polished wire—practiced in certain concerns, and some of the operations in sheet metals, although patented, are unknown to "the trade" generally.

There is another class of unknown patents which are very like undeveloped mines of legally enjoined enterprises, of no profit to the owners and of no use to the world. Some of these patents lie useless because the holders have not the wisdom, energy, or money to push them. There are men who are keen enough to see the failures and note the shortcomings of others and cover their unprotected openings, yet who cannot understand their own advantage. They can invent and discover, perfect and improve, but they hardly know what to do with their creation or improvement. To be of any profit to them it should be made of use to others; but they neglect proper means of publicity, and eventually the invention or improvement is forgotten until some "live" man brings it out in different form, but perhaps no better shape, and claims the honors and reaps the profits. It is then, if ever, these slow coaches heave in sight. Then they begin to bluster about prior claims and prior discovery. But generally the enterprising reinventor takes all the honors, gives his own name to the invention, and gets the emoluments that attend on success.—*Boston Journal of Commerce.*

#### Submarine Topography.

The coast survey steamer *Blake*, Commander J. R. Bartlett, United States Navy, recently returned from a cruise taking soundings, serial temperatures, etc., in the course of the Gulf Stream, under instructions from C. P. Patterson, Superintendent of the Coast and Geodetic Survey, has brought some very interesting data in regard to the depths of the western portion of the Caribbean Sea. The depths and temperatures obtained last year in the "Windward Passage" between Cuba and St. Domingo were verified, and a few hauls of the dredge taken directly on the ridge in this passage. The data obtained render it very probable that a large portion of the supply for the Gulf Stream passes through this passage, and that the current extends in it to the depth of 800 fathoms. A few lines of soundings with serial temperatures were run from Jamaica to Honduras Bank, via Pedro and Rosalind Banks, and it was found that the temperature of  $39\frac{1}{2}^{\circ}$ , obtained at all depths below 700 fathoms in the Gulf of Mexico and the Western Caribbean, could not enter through this portion of the sea. But the temperature at the depth of 800 fathoms on the ridge in the "Windward Passage," between Cuba and Hayti, was found to agree with the normal temperature of the Caribbean and Gulf of Mexico, viz.,  $39\frac{1}{2}^{\circ}$ . Soundings were taken between Hayti and Jamaica, developing a general depth between these islands not exceeding 800 fathoms, except where broken by a remarkably deep channel connecting the waters of the main Caribbean south of St. Domingo with those north of Jamaica. This channel runs close to Hayti with a greatest depth of 1,200 fathoms, and a general depth of 1,000 fathoms. Its course is northerly along the western end of Hayti, where it does not exceed a width of five or six miles; thence westerly, south of Navassa Island, with a tongue to the northward between Navassa and Formigas Bank, and another to the westward between Formigas Bank and Jamaica. A line of soundings was run from St. Iago de Cuba to the east end of Jamaica, where a depth of 3,000 fathoms was found twenty-five miles south of Cuba. This deep place was found by subsequent soundings to be the eastern end of an immense deep valley extending from between Cuba and Jamaica to the westward, south to the Cayman Islands, well up into the bay of Honduras. The Cayman Islands and the Misteriosa Bank were found to be summits of mountains belonging to a submarine extension (exceedingly steep on its southern slope) of the range running along the southeastern side of Cuba. This deep valley is quite narrow at its eastern end, but widens between the western end of Jamaica and Cape Cruz, where the soundings were 3,000 fathoms within fifteen miles of Cuba, and 2,800 fathoms within twenty-five miles of Jamaica. Near Grand Cayman the valley narrows again, but within twenty miles of this island a depth was found of 3,428 fathoms. The deep water was carried as far as a line between Misteriosa Bank and Swan Islands, with 3,010 fathoms within fifteen miles of the latter. On a line between Misteriosa Bank and Bonacca Island there was a general depth of 2,700 fathoms, and a depth of over 2,000 fathoms extended well into the Gulf of Honduras. Between Misteriosa Bank and Chinchorro Bank the soundings were regular at 2,500 fathoms. North of Misteriosa and Grand Cayman to the Isle of Pines and Cape St. Antonio the soundings were generally 2,500 fathoms. The serial temperatures agree, in relation to depth, with those obtained in the Gulf of Mexico by Lieutenant Commander Sigsbee, and in the Eastern Caribbean by Commander Bartlett; decreasing from the surface to  $39\frac{1}{2}^{\circ}$  at 700 fathoms or less, and constant at that temperature for all depths below 700 fathoms. At depths greater than 600 or 700 fathoms the bottom was always found to be calcareous ooze composed of pteropod shells with small particles of coral. These pteropod shells, as noted in previous expeditions by different nations,

appear to be an important factor in the determination of the movements of great bodies of sea water. The ridge at the "Windward Passage" is bare coral rock, and on the south side the pteropod shells were found to be much more numerous than to the northward of the ridge.

Soundings and serial temperatures being the special objects of the cruise, dredgings were only incidentally attempted, for the purpose of reconnoitering, as it were, the ground; and it was found that the area passed over was not nearly so rich in animal life as that in which dredgings were made last year under the lee of the Windward Islands, at the eastward of the Caribbean Sea.

The development of the extraordinary submarine valley in the Western Caribbean Sea is a matter of great interest, considered as a physical feature. This valley extends in length 700 statute miles from between Jamaica and Cuba nearly to the head of the Bay of Honduras, with an average breadth of eighty miles. Curving around between Misteriosa Bank and Yucatan, and running along between Cuba and the ridge of the Caymans for a distance of 430 miles, with a breadth of 105 miles, it covers an area of over 85,000 square miles, having a depth nowhere less than 2,000 fathoms, except at two or three points (the summits of submarine mountains), with a greatest depth, twenty miles south of the Grand Cayman, of 3,428 fathoms; thus making the low island of Grand Cayman, scarcely twenty feet above the sea, the summit of a mountain 20,568 feet above the bottom of the submarine valley beside it—an altitude exceeding that of any mountain on the North American continent above the level of the sea, and giving an altitude to the highest summit of Blue Mountain, in Jamaica, above the bottom of the same valley, of nearly 29,000 feet—an altitude as great, probably, as that of the loftiest summit of the Himalayas above the level of the sea.

For the deepest portion of this great submarine valley, the Superintendent of the Coast and Geodetic Survey has adopted the name of "Bartlett Deep."—*N. Y. Herald.*

#### CAPT. DOBBINS'S SELF-RIGHTING LIFE BOAT.

Capt. D. P. Dobbins of the Life Saving Service reports the practical success of the life boat built on his plan, the construction and testing of which was provided for by Congress last spring. Capt. Dobbins reports as follows to Supt. Kimball:

"The self-righting surf boat authorized by letters of March 3 and 4, was completed and tested Thursday, June 17, by the keeper and crew of Life-Saving Station No. 6, under my personal supervision. The boat proves to be a perfect success. It will right instantly and carry her entire crew around with her when full of water as she is, on righting, and with her crew at their stations. She shows a side of over six inches out amidship, so she can be bailed readily. She is very stable or stiff under foot and in a seaway. It was quite difficult for the seven men to capsize her, full as much so as it is for the crew of the English self-bailing and righting life boats to capsize them. The prescribed beam of the boat made it difficult to secure the ready righting I claim for my own dimensions, but I have succeeded at the loss of a heavier boat than I designed for a practical surf boat. She will weigh not over 1,000 pounds, however, which is 600 pounds less than our ordinary surf boats weigh. She is roomy, stout, stanch, and strong, and pulls easily, and is a most beautiful sea boat."

This boat, which is not to be patented, dispenses with the heavy keel of the life boats now in use by the Service, and is "self-fighting" by virtue of its model.

#### Walnut Timber from Arkansas.

The towboat *Ida* reached New Orleans, out of the Arkansas River, on June 8, with a walnut log raft of unusual proportions. Additional interest attaches itself to this raft on account of it being part of an order for 10,000,000 feet from a Bridgeport, Conn., sewing machine factory. The growing scarcity of this desirable wood in the Eastern States, and the demand by European furniture makers has developed distant sources of supply. The raft in question had been ninety days making the trip from the forests along the White and St. Francis rivers, in Arkansas, and in that time drift, five feet deep, had accumulated beneath the logs. Of these the raft contained 2,500, 2,000 being walnut and 500 cypress. The latter are used as buoys for the heavier timber. This log island measured 400 by 208 feet, and many of the walnut logs were over six feet in diameter. They were cut by a band of 200 Canadians who are adepts at working in hard timber, and can get out 500 logs per day under favorable circumstances. From New Orleans the logs go by rail to New England, this transportation being found to be just \$2 per 1,000 less than by steamship. Col. S. M. Markel, of Missouri, has this contract, and has orders for walnut logs from Liverpool parties. The raft in question contained 600,000 feet, and is among the first shipments of the kind to the East.

#### A Sale of Fancy Cattle.

An important sale of short-horn cattle took place at Chicago the last day of June. The cattle were the property of Hon. M. H. Cochrane, of Compton, Canada, and Col. Le G. B. Cannon, of Burlington, Vermont. The Seventh and Eighth Duchesses of Hillhurst brought eight thousand dollars each. There were sold altogether thirty-two cows, averaging \$995, and bringing in all \$31,680. Eleven bulls were sold for \$6,845, an average of \$622.