

cotton in the bundle, but more recently commenced winding cotton on reels. In the course of their business a shipping merchant from Manchester asked them to supply a large quantity of cotton. In the course of the negotiation Mr. Brook was asked the price of 100, 200 and 300 yards. The merchant objected to the price named as being too high, adding, "for 100 yards you must give us 70, for 200 yards, 150, and for 300 yards 230." Mr. Brook could not understand it, and asked if they wanted to make his firm into a pack of rogues? The merchant said "there was no roguishness in it—it was the custom of trade," and closing with the remark that "unless the Messrs. Brook did it, they would never get on." Mr. Brook then went to Manchester to make inquiries, and did not find a house there, but what was carrying on the system; indeed it was carried on by men of the highest standing in the city.

In one shop in London the master told him he could not guarantee an honest article, and taking up a pocket handkerchief, as an example, which ought to have been square, it was found to be two inches narrower one way than the other. A roll of silk invoiced as 18 yards, was found to be not more than 17 yards. It was the same with cotton cloth.

One feature in this practice is that it entails very great hardship on the retailer. He must measure over each article, for, if he take for granted that the length is correct and deal out to his customer honest measure, the draper will find that he is selling at a loss rather than a profit, from the goods being short-lengthed. Braids were sold in lengths of professedly eight yards, yet few would be found more than seven yards and a half. Ribbons were sold by the piece and marked 18 yards, yet 17½ yards was deemed good measure. Damask table cloths were sold as 12-4. They should be three yards long, but in that instance the quarter of a yard was only seven and a half inches instead of nine.

The question is now occupying public attention, and an association has been established to suppress such dishonesty.

#### THE LARGEST VACUUM PAN IN THE WORLD.

Thomas Harrison, of No 260 West-street, this city, has just completed for a sugar refinery in Bristol, R. I., a vacuum pan which he says is the largest one in the world. It is nearly globular, being 10 feet, by 10 feet 4 inches in diameter, made wholly of copper 5-16 of an inch in thickness, standing in a cast iron jacket at the bottom, weighs 6½ tons, and is worth over \$7,000. It will evaporate the water from 25,000 lbs. of sugar in 2½ hours, that is about 50 tons per day.

In refining sugar, the brown material is dissolved and brought in contact with the purifying matters in a state of solution, after which the water in which it is dissolved must be removed by evaporation, and the sugar again granulated. In order that the evaporation may take place at a lower temperature than that at which water will boil under the pressure of the atmosphere, those tight and strong vessels called vacuum pans are used. The vapor as it rises is condensed by a jet of cold water, and the water is drawn away by pumps, by which means the pressure on the surface of the liquid is reduced, and boiling or evaporation goes on at a lower temperature. In the vacuum pans of sugar refiners this temperature ranges from 140° to 170°, instead of 212°, the boiling point in the open air. The heat is supplied by a coil of steam pipes in the bottom of the pan, and a small circular plate of glass is inserted in the pan near the top to enable the workman to watch the operation.

Mr. Harrison says that 14 years ago, when he commenced the manufacture, all the vacuum pans were imported from abroad, mostly from England and Belgium, but that now the importation has almost wholly ceased, excepting those which pass through this port on the way to Cuba.

#### THE CALIFORNIA PHILOSOPHER AND HIS STEEL BILLIARD BALL.

In the town of Sonora, California (according to the San Jose Reporter), resides a venerable philosopher, named Dr. ——. Although he is now about 70 years of age, yet he retains his faculties in full force and vigor, and is as buoyant as a man of 40 years. For 30 years the doctor practiced physic and surgery in Louisiana. But having the misfortune to lose every member of his family by sickness, thus being left to pass the remnant of his days in loneliness and sorrow, he con-

cluded to quit his practice and repair to the golden shores of the Pacific. He arrived in California shortly after the first gold excitement, since which time he has devoted his attention to scientific research and philosophical reflection. His unaided labors have resulted in the collection of the very finest cabinet of minerals, geological specimens and antiquarian curiosities to be found on this coast. In addition to this, he has gathered up a very creditable library of well selected volumes, all of which the citizens are permitted to read, free of charge. In fact this extraordinary man is building-up what he calls a "scientific institute," for the sole benefit of the community in which he resides. As he has good health and a competency, is temperate, and lives alone or nearly so, his expenses are very light, and even this he manages to defray by his skill in mechanism. He is not only a ripe scholar, a practical chemist, botanist, mineralogist, geologist, and a proficient in almost every other branch of science, but he is a finished mechanic. He manufactures guns, clocks, watches, steam engines, edge tools and a variety of other things. Recently the doctor has been engaged in inventing a machine for the purpose of making billiard balls of cast steel. The balls are to be hollow spheres, and are about the size of the common ivory balls now in use. The balls are first made and nicely turned into the shape of half spheres, and are then soldered or brazed together with gold. The doctor claims for his invention that he can give steel a greater elasticity than ivory has; that a more perfect sphere can be made of it; and, above all, that it is a much cheaper material. The machine for turning and fitting the balls is a most ingenious contrivance.

#### THE VALUE AND USEFULNESS OF RAILROADS.

Mr. Milner, in his late report survey, exemplifies the value and usefulness of railroads as follows:—

"In 1837, I was engaged on the Georgia State Railroad, just then commenced. I there became acquainted with the people along the road, their habits and their means. Beyond their actual wants of food, they raised nothing at all. The men moped around, and shot at a mark. The women seemed to do but little, whilst their children, poorly cared for, sauntered about from place to place, as if their largest thoughts were bent on catching rabbits, opussum, or some such small game. What was the use of working, when it would cost them two dollars per bushel to get their wheat to market, and then get only one?"

"In 1857, I went back again, and what a change! The rivers were the same—the Kenesaw Mountain had not changed—the 'Crooked Spoon' still rolled along—the men and women that once I knew were there—the boys had grown to men, and the girls to women; but their mien was changed. The old men stood erect, as with conscious pride they looked upon the waving fields of grain. The matrons busied themselves about their dairies and their looms; whilst the sturdy boys were grappling with the plow.

"What had brought this change about? Listen for a while, and soon you will hear the iron horse come snorting along. He stops at a station for fuel and water—a man gets off the train. He is a Charleston man, or perhaps the agent of the Montgomery Mills. The cars go on, and he goes to the house. He meets the farmer—they have met before. His business is to buy his grain. Strange, but true, that the demand for wheat should be so great as to induce the merchant to buy at the farmer's door. He offers one dollar and a half per bushel, cash, for the entire crop and furnish the sacks to put it in. That won't do. Savannah was here yesterday, and Columbus the day before, and they offered more. Here is the key to this great mystery. The great State road—the iron horse—the dollar and a half per bushel, cash, tells the tale. This is literally true, as any one can ascertain, by inquiring of the man that knows."

#### ETCHING ON STEEL.

MESSRS. EDITORS:—I now send you a process of engraving on steel, which I have worked with success: Dissolve one quarter of an ounce of corrosive sublimate and the same of alum, both powdered finely, in half a pint of hot water, strengthened with a little nitric acid. When cold, pour it on your plate and keep stirring it with a camel's hair pencil; rinse the plate after every biting. Delicate tints are obtained in two or three minutes, stronger ones in proportion. L. W. A.

#### SNAKES.

MESSRS. EDITORS:—In your "Column of Varieties," in the SCIENTIFIC AMERICAN of the 17th inst., it is said that "one of the large anacondas in Barnum's American Museum has recently been delivered of a litter of young," and it is added that "snakes are ova-viviparous, that is to say, eggs are formed and hatched in the body of the animal. This has probably given rise to the popular notion that these reptiles swallow their offspring." Will you or some of your correspondents inform us which snakes are ova-viviparous, and which are not? For ourselves, we have had reliable testimony and ocular proof that some snakes do lay eggs. In New England, we have repeatedly seen the eggs and crushed them, and found young snakes in them. A friend at my elbow, who was, some three years ago, a clergyman, in Franklin county, Mass., found a large number of them under a flat stone; they were not shaped like birds' eggs, but were nearly flat at one end and were as hard as baked pipe-clay. The eggs were brought to the house and each egg contained a live snake, between two and three inches long. The only kind of snake that we ever saw in that part of Massachusetts was the checkered snake. In Taunton, Mass., we once saw, in company with others, a large blacksnake, stretched the entire length across a cart path in a lane, sunning itself and family of little snakes, and were surprised that instead of fleeing from our presence, the mother opened her mouth and the young snakes all ran down her throat. One of our number broke a long withy stick, from a bush at hand, and killed the old snake, which seemed incapable of moving with her burden. A gentleman who was visiting us, from the city (since dead), opened the snake and killed about thirty of the little snakes; they were about a quarter of a yard long, and seemed, judging from their activity, abundantly able to take care of themselves. A few made their escape in spite of all efforts to the contrary.

Mr. O. M. Bullock, of this place, tells me that he has repeatedly found snakes' eggs, and seen little snakes run down the old snake's throat. The old snake is seldom found near the eggs; they are apparently abandoned to be hatched by the warmth of the sun, though it is probable that she is watching, somewhere in the vicinity.

We send you this as a proof that there is some foundation for the popular notion that snakes swallow their young, when danger is near; just as the hen calls her's under her wing, the snake bids her's run down her throat.

M. C. T.

Tonica, Ill., March 26, 1860.

#### AN INVENTOR SENSITIVE ABOUT HIS NAME.

MESSRS. MUNN & Co.—In publishing the claim of my Hand Corn Planter, in the SCIENTIFIC AMERICAN of March 17th, you misspelt my given name. I am receiving communications every mail, and it makes it inconvenient. You have printed my name "Herman," it ought to be "Heman," minus the r; if you see fit to make a correction, it will be thankfully accepted by your client. The patent referred to was got through "my agency," and believe me that the expense that I had with it was a valuable lesson. I was over four months getting the case through; it was once rejected, as is the case now in your charge; had I employed you in both cases it would have been greatly to my interest. I shall not solicit Letters Patent through "my agency" after this, but confide them to the care of MUNN & Co.

H. B. H.

Bristolville, Ohio, April 2, 1860.

PRESERVE YOUR NUMBERS.—We believe most of the subscribers to the SCIENTIFIC AMERICAN do keep the numbers and have them bound; but, occasionally, we hear old subscribers complaining at their short-sightedness in not having preserved their numbers and having had them bound. Some of the back volumes of the SCIENTIFIC AMERICAN can be sold for \$10 each. Eight or ten years hence we would not be surprised if this year's volume will be worth as much; so preserve your numbers, reader, and have them bound. You will regret it if you do not.

THE Leipsic Common Council has, under heavy penalties, interdicted the sale of cotton goods for ball dresses of a green color, on account of their being dyed with Schveinfurt's green, which is arsenate of copper, and a deadly poison.