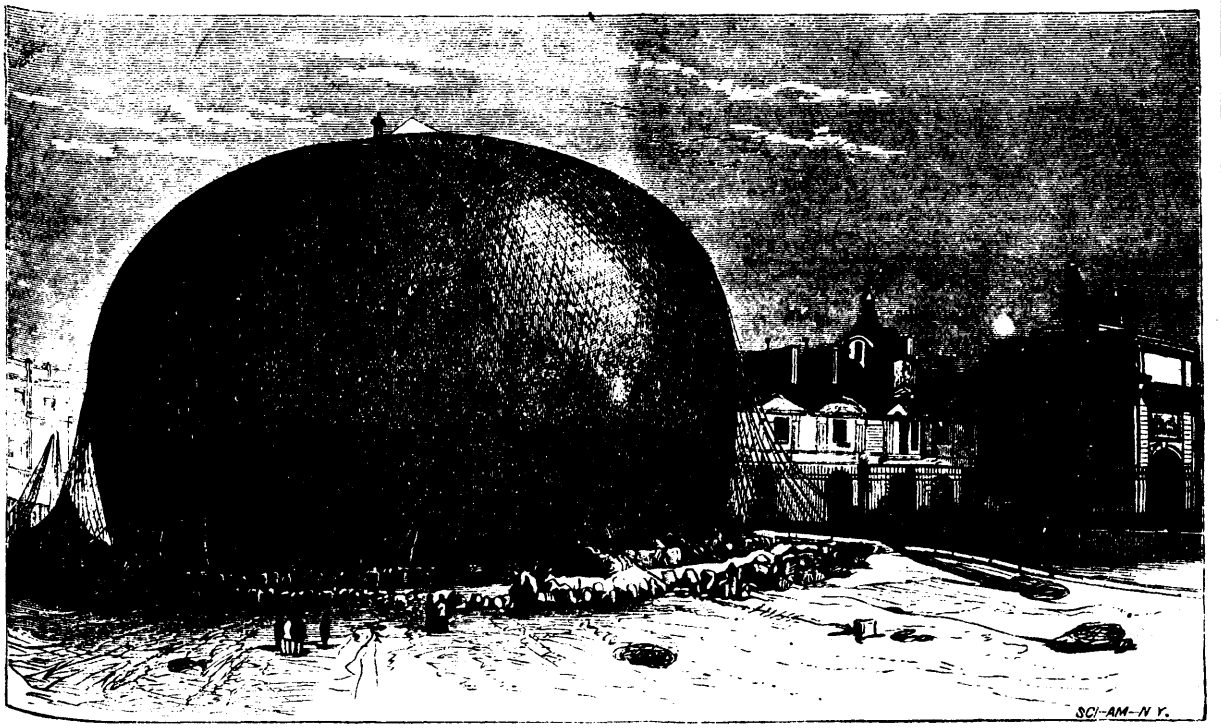

THE INFLATION OF THE BALLOON.

CAPTIVE BALLOON OF 1878.

The "captive" balloon now inflated in the Place du Carrousel of the Tuileries is an object of wonder to Paris at the present time. Viewed from the Arc de Triomphe or any part of the main drive of the Champs Elysée, half of its full height shows above the western façade of the Tuileries, and we observed it plainly in view a day or two since when at Petit-Bourg, 30 kilometers (19 miles) from Paris, when attending the trial of plows at that place.

Its size is something extraordinary, and we shall merely give the figures, omitting the glowing description of the appearance of this remarkable city, which shows better than most others at a bird's-eye view, owing to the size of its main streets, the large buildings and parks, the green avenues, and the winding course and wide quays of its beautiful river.

The balloon has a diameter of 118 feet, and stands, when inflated, 180 feet high. It has 43,057 square feet of surface, and the weight of the envelope is 8,800 pounds. It has eight superposed adherent tissues, of alternating silk and caoutchouc, the outer fabric being varnished and painted with zinc white; 4,000 meters of material which is 1·10 meter wide, are used for each layer, the excess of 0·10 meter being overlap for sewing the silk or uniting the gum goods, as the case may be. Each meter of surface costs 14 francs. The cord netting is 11 millimeters in diameter and weighs 6,600 pounds.

The cubic contents are 847,598 cubic feet, and the cost of the whole enterprise a little over $100,000. The height of ascension is 600 metres (1,968 feet), and the charge for each person 20 francs. The car is annular, being 6 meters in diameter, forming a circular gallery 1 meter wide, with partitions, around a central aperture of 4 meters. It carries 50 persons at a trip, estimated at an average of 60 kilos each; total living burden 3,000 kilos (6,600 pounds).

The cable traverses an underground tunnel in its passage from the winding engine to the balloon. The inflation takes a week of time, at a cost of 62,000 francs, the gas being hydrogen, obtained by the chemical reaction of 100,000 kilos. of iron, 200,000 kilos. of acid, and 500,000 liters of water. The gas traverses a series of purifiers, and is collected in a large reservoir and thence passes to the balloon.—*Scientific American.*

A REMARKABLE FOSSIL.

The August number of the *American Naturalist* contains a description by Prof. E. D. Cope, of this city, of a new Saurian, from the Rocky Mountains, which even exceeds in proportions the monsters already discovered in any region of the earth. A vertebra of this beast has been received in Philadelphia which, when complete, measured over six feet in elevation, which gives a thigh-bone of twelve feet in length. The construction of this vertebra is astonishingly light; the walls and processes being as thin as pasteboard and paper. In fact, such a structure was clearly incapable of sustaining the weight of the muscles, so that it becomes an interesting question as to the mode of life of such a being. As the bones are somewhat like those of deep-sea fishes, Prof. Cope suggests that this and similar species walked on the bottom of the sea and browsed on the algæ and other vegetation which grows on the shore or banks. This animal is called *Amphicœlias fragillimus.*

A MASSIVE DRAIN PIPE MACHINE. — Prof. E. V. Gardner lately delivered a lecture in London on "Clay and the Potter." We find therein a description of what is called the plunger drain-pipe making machine. It occupies two floors of a large building, and consists of a steam cylinder 3 feet 6 inches by 4 feet; within the cylinder is a piston. The piston-rod is attached at its lower end to a plunger. This plunger stands over and fits a dough chest. The bottom of the dough chest has a mold attached, which forms the socket of the pipe. At one time the cylindrical portion of the pipe and the socket were made in two distinct operations, and were afterwards luted and joined together. The dough chest is first filled with dough, then the engineer actuates a steam lever, when with a mighty blow down comes the plunger, and forces the clay into every crack and crenny of the socket mold. The next motion of the machine removes the socket mold and raises a table to support the pipe in its passage out of the machine. A second blow from the plunger delivers the pipe socket complete, a wire cuts off the pipe to a proper length, and a travelling table removes it from the machine. This machine will turn out from 12 to 50 drain pipes a minute, according to their diameter. Pipes of 18 inch or 2 feet diameter are manufactured at the rate of 40 or 50 an hour.