May 14, 1839.

The PRESIDENT in the Chair.

The following were balloted for and elected:—the Right Hon. the Earl of Orkney, and E. Lomax, as Associates; and W. Tooke, as an Honorary Member.

“A description of the Coffre Dam round the 13 and 14 feet piers of Westminster Bridge.” By Frederick Pollock, Lieut. Madras Engineers.

Coffre Dam
Westminster
Bridge.

It was the intention of Labelye, the builder of Westminster Bridge, that none of the foundations of the piers should be at a less depth than 5 feet below the surface of the bed of the river, but the effect of the removal of old London Bridge, and of the increase of the average difference between high and low-water, had in 1836 lowered the bed near the pier on the eastern side to within 18 inches of the platform, being 3 feet lower than in 1829; and but for the works done under Mr. Telford's direction by Mr. Swinburne, and those which are now going on under the direction of Mr. Walker and Mr. Burges, the piers would have soon become undermined. Labelye is supposed to have been deterred from attempting to lay the foundations by a coffre dam, from the difficulty of keeping it dry and of reaching the bottom; this is, however, now shewn to be a groundless alarm, as one has been constructed which is so tight that two men can keep it perfectly dry.

The Coffre Dam, the construction of which forms the subject of this communication, is formed round the 13 and 14 feet piers at the west end of the bridge, for the purpose of securing the foundations and repairing the damaged arch stones. Previous to the commencement of the work fender piles were driven 10 feet into the bed of the river, and are 5 or 6 feet higher than Trinity high-water mark; a trench was then dredged in the intended line of the coffre dam to the level of the highest caisson; the first gauge pile was driven on the 14th of July, the first sheeting pile on the 24th, and the water stopped out or the coffre dam completed in the short space of seven months.

The author then details the dimensions of the timbers and the construction of the various parts of the dam as represented in the drawing, accompanying the communication. There are about 40,000 cubic feet of timber in the dam. The mean depth of the mud in the dam, the water being let out, was from 4 to 5 feet; underneath

the mud, at about 3 or 4 feet above the caisson, is a stratum of red gravel of an average depth of 15 feet, and below this is clay. The weight of the piers has bent down the caisson as shewn in the drawing, but the timbers are still sound and good. The pressure against the dam, at an average high tide, is 1775 tons.

The President remarked, that there was frequently considerable ambiguity in the use of the terms, *rise of the tide*, and misconception as to the effect of the removal of old London Bridge upon the rise and fall of the tides. The water falls lower by between 3 or 4 feet, that is, by the height of the sill, which was removed, but the difference of level of high-water is very small, not more than a few inches. The old London Bridge caused a sort of weir, varying from 8 to 18 inches, as the water ran up, but depending in a great measure on the quantity of upland water which was coming down; sometimes there was scarcely any difference of level on the two sides of the bridge.

The President presented from Mr. Pryor a specimen of Straw ^{Straw} Coke, and Mr. Pryor stated the method of making it to be exceedingly simple, though but few attempts were successful. A mass of straw saturated with water is thrust into the farthest corner of the coke oven, previous to the oven being charged; the damper being kept close the smoke impregnates the straw, and it endures the heat for 48 hours: it is well sprinkled with water immediately on being withdrawn. Mr. Lowe described its production as the effect of smothered or subdued combustion. The carbon becomes deposited on the straw saturated with moisture, and placed at the part of the oven least exposed to oxygen. The difficulty is to account for the oxygen of the atmosphere not combining with it when hot; there must be some means of protecting it from the oxygen of the atmosphere on its being withdrawn, which is to him yet a mystery.