Mr. F. Pellatt exhibited a number of specimens of iron covered with zinc and copper by the process of electro-deposition, which he described. The pieces of iron were first rendered perfectly clean and free from oxide by plunging them into a bath of heated sulphuric acid and water: they were then placed in a cold solution of sulphate of zinc. The positive pole of a galvanic battery being attached to a zinc plate, and the negative pole to the piece intended to be covered with metal, the deposition commenced equally all over it, and was continued as long as was considered necessary. By this process the pure metal alone could be deposited, and the amalgamation of the zinc and iron, which occurred when the iron plates were dipped into melted metal, was avoided. For zinging, he preferred an acid to an alkaline solution of the metallic salts. Some thin plates, which had been exposed for eight months, on roofs in London, did not exhibit any appearance of rust. The process could be applied on any scale, as all the apparatus that was necessary was some wooden troughs to contain the solution and the pieces of metal to be covered.

He had not made accurate experiments as to the efficacy of the process, when applied to iron exposed to the action of sea-water, but he feared the result, on account of the formation of muriate of zinc.

The President said that the subject was one of great importance to the engineers, as if the deposited coating was found to stand the test of time, it would enable the use of iron to be extended; but the main point to which he would direct Mr. Pellatt's attention was the defence of cast-iron from the destructive action of sea-water.

May 28, 1843.

The PRESIDENT in the Chair.

No. 638. "Account of some Egyptian Bricks from the Pyramids of Dashoor," by J. Perring. Communicated by William Newton, Assoc. Inst. C. E.

The author states that the ancient Egyptians used bricks for every purpose, except for the erection of temples and tombs; that they were generally crude bricks dried in the sun, and in the dry climate of Egypt they sufficed for all ordinary purposes. The only instances in which he found they had been subjected to the action of fire, were for a quay-wall, and for the foundations of a town near the Nile in a damp situation.

From the drawings in the tombs, and the narrative of Holy Writ, it would appear that the captives were generally employed in manu-

facturing bricks, and as many are found with the name of the reigning monarch stamped upon them, it is not improbable that they constituted a government monopoly. It is a curious fact in connexion with the Biblical account of the labours of the Jews, that more bricks bear the stamp of Thothmes III. than of any other monarch; and according to Wilkinson and other learned authors, it was during his reign that the exode of the Israelites took place.

The bricks, which are 16 inches long, 8 inches wide, and about 5 inches thick, are made of the alluvial soil of the valley of the Nile, mixed up with chopped straw to bind the whole together. They were formed in wooden moulds, and dried in the sun. It would appear from drawings, that the earth was tempered and the straw was mixed in, by men treading the mass with their feet. With such bricks as these the Egyptians formed the walls of their towns, using the alluvial earth also as mortar.

The author states that he found some remarkably well-formed arches, of 12 feet to 14 feet span, built in concentric half-brick rings, at Thebes, the bricks of which were marked with the name of Sesostriis; consequently they must have remained uninjured by time upwards of 3,180 years. They all have a cavity in the sides to retain the mortar, similar to what is practised in modern bricks.

The pyramid from whence these bricks were taken, was built, according to Herodotus, by a king named Asychis, who lived about 2,000 years before the Christian era. The body of the pyramid is composed entirely of crude brick, but it had an external casing of limestone as a protection from the action of the weather. The author says that not a single brick appears to have settled from its place, and that it is difficult to imagine a mass more solid and compact, in spite of the great pressure the bricks had to support in a pyramid of 215 feet high.

Deposit in
pipes from
a Brewery

Mr. Davison presented a piece of copper pipe, six inches diameter, through which the wort had been forced during a considerable period, at Messrs. Truman, Hanbury, and Co.'s brewery. It was nearly stopped up by a deposit of a black substance, which opposed such resistance to the passage of the fluid as to induce an examination of the pipes, and the discovery of their state.

Dr. Ure.

Dr. Ure said that the deposit was a good example of what Leibig called 'Eremacausis'—product of slow combustion. The substance was a carbonaceous matter, resulting from the slow combustion of the gluten and starch contained in the brewers' worts.