

(or iron and carbon simply), as was generally believed. In smelting, the carbonic acid was driven off, the simple oxide remaining; the oxygen of which, being carried off by the heat, left the pure iron, which, combining with the carbon of the coke, formed a fusible carburet of iron, or the pig-iron of commerce.

Mr. Taylor. Mr. John Taylor observed that his brother, Mr. Philip Taylor, being sensible of the advantages to be expected from the use of Anthracite in smelting iron, made a series of experiments several years ago, from which he derived the opinion that the carbon absorbed by the metal, and which is necessary to produce it in the shape of pig-iron, must be presented in a gaseous state to the mass in fusion; and as Anthracite did not afford a sufficient supply of coal-gas during combustion to produce the proper effect, he proposed to adopt a very ingenious method, by which this gas would have been thrown into the furnace in such proportions as might be found necessary, mixed with the common air employed as the blast.

Circumstances interrupted the course of these experiments, or it is possible that the use of Anthracite for this important application might have taken place at a much earlier period than it has happened to do.

February 15, 1842.

The PRESIDENT in the Chair.

“Description of Chelson Meadow Sluice.” By Theodore Budd,
Grad. Inst. C. E.

Chelson
Meadow
Sluice.

The Sluice which is described in this communication was erected from the designs of Mr. Rendel, for the Chelson Marshes in Devonshire, which, being very low, had previously suffered much from floods, but now are entirely relieved. The novelty in the construction consists in hanging each of the doors respectively by two hinged flat bars of iron, of 18 feet 6 inches, and 15 feet 3 inches in length, and thus, by placing the centre of motion so high above the centre of gravity of the doors, to give greater freedom of action than by the modes usually adopted in similar works.

The dimensions of all the parts, and the method of construction, are given in great detail, and are illustrated by a drawing.

Mr. Rendel. Mr. Rendel explained that the sluice-doors which had been superseded by those described by Mr. Budd, were of the ordinary description, placed side by side. They were frequently hinge-bound and clogged up; which caused the land to be flooded sometimes for three months

during the year ; the hinges were attached in the usual manner to the frames, close at the head of the doors, and they required a pressure of at least 6 inches of water to act upon them either way. He considered the principal advantages of these doors to consist in the freedom of action given by the length of the bar-hinges by which they were suspended, their giving the full extent of opening, and the pressure of 1 inch head of water sufficing either to open or close them.

Mr. Prior inquired whether there was any similarity between these sluice-doors and that erected by the President near Blackfriars Bridge, at the bottom of Fleet Ditch. That door was so well hung as to be even acted upon by the wind ; and the slightest pressure of water sufficed to open or to close it. Mr. Prior.

The President explained that the principle was not the same ; at the Fleet Ditch sluice double hinges were used, or rather hinges with a link between the part attached to the frame, and that which was screwed to the door ;—that form of hinge always acted freely, and allowed the doors to open with a slight pressure. The President.

“ On the mode practised in India for obtaining solid Foundations for Bridges, &c., in sandy soils, by means of Wells.” By Captain Goodwyn, B. E., Assoc. Inst. C. E.

Pileing for the foundation of buildings appears to be entirely unknown in Hindostan ; the ordinary mode of securing a foundation, where the super-stratum is tenacious and rests upon loose sand, is to dig a well until water is reached ; a curb of timber is then placed, and upon it a cylinder of brick, $7\frac{1}{2}$ feet exterior, and $3\frac{1}{2}$ feet interior diameter, is built to the height of 3 or 4 feet above the ground. As soon as the masonry has hardened sufficiently, the well-sinker fixes a plumb-line to the top of the cylinder as a guide, and descends within-side, carrying an instrument called a “ Phaōra, or Mamooti,” somewhat similar in shape to a hoe ; with this he excavates the earth until the water is too deep ; he then commences the use of the “ Jham,” which resembles the “ Phaōra ” in shape, but is about 36 inches long and 27 inches wide, and is suspended to a cord passing over a pulley above the cylinder. Upon this instrument the well-sinker descends, and diving into the water excavates with the “ Jham ” the soft earth under the sides of the curb, and is at intervals drawn up with the instrument. The cylinder descends gradually from 6 inches to $2\frac{1}{2}$ feet per day, as the earth is withdrawn from beneath it, and relays of workmen keep it constantly going, lest the sand should settle around it, and cause it to hang up. The natives are very expert in this

Wells used
for founda-
tions in
India.