

Mr. J.
Milne.

Mr. Milne stated, that the piling machine was worked by a steam engine, which was situated at a distance of 300 feet from it, and was used for pumping. The power required for driving the piles, was equal to about three or four horses, using a ram weighing 12 cwt., and giving six or seven blows per minute; the greatest height of fall was between 13 feet and 14 feet.

Mr. Rendel

Mr. Rendel said, that the machine worked remarkably well at Montrose, and it might be advantageously used, whenever a steam engine was erected for pumping. He found in practice, that when the ram was heavy, and the fall low, the piles were driven better and more correctly, than when a light ram was used, falling from a great height. In a work now executing, a ram weighing 14 cwt., on being lifted 25 feet high, shattered the piles; but with a ram of 35 cwt. raised only 7 feet, none of the piles were injured, even in very strong ground.

He recommended the use of conical cast iron pile shoes, instead of those of wrought iron; with the former, in driving a very large number of piles, scarcely any had required to be drawn, but when he used the latter, the work was constantly stopped by the piles splitting.

Mr. Giles.

Mr. Giles had found, that piles, traversing sand or silt, should be driven very rapidly, so as to prevent the ground from settling round them; with steam power this could be easily accomplished. In strong ground, a steady, hard blow, would be more effective, and he agreed in the propriety of using a heavy ram with a low fall. In sand, the common ring engine was frequently used, on account of the rapidity with which the blows could be given.

Mr. Cubitt,
V.P.

Mr. Cubitt said, that cast iron piles were driven better, and with more safety, by a ram which exceeded the weight of the pile, and with a low fall, than by the ordinary method.

Mr. J.
Green.

Mr. Green corroborated these statements, as to the use of a light ram, with a quick succession of blows, in sand or silt, and a heavy ram and a low fall, in strong ground, especially when driving iron sheet piling. He found, that conical cast iron shoes preserved the timber piles from splitting; he preferred them also for sheet piling, as he found, that wrought iron shoes were frequently driven into the feet of the piles and destroyed them.

Mr. J. B.
Hartley.

Mr. Hartley said, that at the Liverpool Docks he generally used a ram of 13 cwt. to 14 cwt., falling through a distance of 30 feet to 40 feet, upon beech piles, with wrought iron shoes; in driving them through sand, he seldom found that any of the piles were injured. He had sometimes used a ram weighing 20 cwt.

Mr. Clark said, that in sinking wells, it was sometimes necessary to Mr. Clark. apply considerable force, in order to make the cast iron cylinders and pipes descend; he found, if a ram was used, that when it fell from a considerable height, the cylinders were frequently fractured; but if the ram was heavy and fell from only a moderate height, the cylinders descended more regularly, and they were not so often broken.

Mr. Vignoles was of opinion, that steam power was not sufficiently Mr. Vignoles. applied, either for driving piles, or for other engineering works. He had frequently used a spare locomotive engine, blocked up from the rails, for driving piles, and always found economy of time and labour to be the result of such an application of power.

Mr. Rennie stated, that the application of the steam engine to driving piles, was not of recent origin. He believed that it was first used for that purpose by the late John Rennie, in 1801-2, for driving the piles of the cofferdam of the Bell Dock entrance of the London Docks. The steam engine employed was of 8 H.P. and was constructed by Messrs. Boulton and Watt.

Mr. Rennie presented a drawing (No. 3628), showing the same Mr. G. Rennie. application of steam power also by the late John Rennie, in 1804, to two pile engines simultaneously, in forming the cofferdam at the entrance of the Hull Docks. A steam engine of 6 H.P. was used, and by it, in six weeks, thirteen hundred whole timber piles were driven, to an average depth of 16 feet in the ground.

In both these instances the piles were shod with cast iron shoes.

April 23, 1844.

The PRESIDENT in the Chair.

No. 673. "Account of a series of experiments on the comparative strength of solid and hollow Axles." By Charles Geach.

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