

Locomotive
Engines.

Mr. Harrison gave, at the request of the President, some information respecting the fuel and fire-boxes of the locomotive engines on the Stanhope and Tyne Railway. From long experience it was found that coal, which contained much bitumen, caused the tubes of the fire-boxes to leak in a very short time. They obtained coal as free from sulphur as possible, and the consequences had been most advantageous; for during two years and a half, not more than one hundred and twenty tubes had been required for seven engines, of which four were always at work. The tubes were of copper, and $1\frac{1}{8}$ inch in diameter. The usual speed was about 10 miles an hour. One engine weighing 10 tons, on six wheels, conveyed 128 tons of coal. The consumption of fuel was $2\frac{1}{10}$ lb. of coal, per ton of goods, per mile. The gross load was more than double the weight of the goods. The cheapness at which they were able to carry goods was to be attributed to the low speed.

Stone
Planing
Machine.

Mr. Carnegie, in reply to a question from the President, stated that Hunter's Stone Planing Machine had not originally answered for sharp sandstone; but by endeavouring to imitate the mason's tool, and making the machine work in the same manner as the mason, it had succeeded completely. This tool resembled a comb with short teeth, and curiously enough, he had found at Dresden, a tool which had been in use from time immemorial, exactly similar to that which they had adopted.

May 9, 1837.

The PRESIDENT in the Chair.

“On the application of Steam as a moving Power, considered especially with reference to the reported duties of the Cornish and other Engines.” By G. H. Palmer, M. Inst. C. E.*

Steam as a
moving
power.

In this paper, Mr. Palmer first considers the maximum duty which can be done by atmospheric steam, and then, by reasoning analogically from certain theories, some of which are recognised as established, he infers that highly elastic steam, worked expansively, cannot be as economical as atmospheric steam. The reasoning by which the first question, namely, the amount of duty done, is treated, is as follows: One bushel of coal, weighing 84 lbs., will convert 12 cubic feet of water into atmospheric steam, or each cubic foot of water is

* Vide Trans. Inst. C. E., vol. ii., page 33.