

It is accompanied by ten sheets of drawings of the machinery.

The preceding communication having been laid before the meeting, a discussion took place on the relative strength of the cables of Huddart's and the ordinary manufacture. The strength of two-inch rope of Huddart's, when compared with that of the ordinary manufacture, is as 8 to  $5\frac{1}{2}$ . The increase in strength was greater for large ropes than for small. The best test of the wear of ropes are those of mines. A five-inch Huddart's rope has been found to last twice as long as a six-inch rope; the weight of the former is much less, consequently there is a great saving in power as well as in durability. It was stated that there was danger of the tar being of such a temperature as to char the yarns; tar of the temperature of boiling water was the best.

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May 8, 1838.

The PRESIDENT in the Chair.

George Tremenhare, Lieut. Bengal Engineers, and W. S. Inman, were elected Associates; and Professor Willis, an Honorary Member.

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On Huddart's Rope Machinery. By E. Birch.

In this communication the author has described the general mode of manufacture, prior to the improvements introduced by Captain Huddart, and the establishment of the works at Limehouse. Huddart's  
Rope Ma-  
chinery.

It is accompanied by fifteen sheets of drawings of the machinery.

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“On the relative Heating Powers of Coke and Coal in Melting Glass.” By Apsley Pellatt, Assoc. Inst. C. E.

The object of this paper is to confirm some statements of Mr. Parkes,\* as to the calorific power of coke and coal from experience of the author's in melting glass. The great loss of heat arising from the flame and unconsumed gaseous portions of the fuel being driven up the flues, when the furnaces are heated by coal, and the fact that coke succeeds better than coal in annealing glass, determined the author to persevere for a month in heating the furnaces with coke, and to compare the result with those obtained when the best coal was employed. Heating  
Power of  
Coke and  
Coal.

The construction of the furnace and the arrangement of the pots and flues are described. The furnace is somewhat reverberatory,

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\* See *Minutes*, p. 19, March 6, Session 1838.

being between an air furnace and an oven; the smoke and flame not escaping at the top, but being drawn to flues betwixt the pots, which are set round in a circle. For the purpose of obtaining sufficient heat about the points and sides of the pots, there are small holes, called "bye-holes," through which the flames should play outward in a length of 5 or 8 inches. The healthful action of the furnace is indicated by the length of the flame issuing from the bye-holes and tops of the flues. Great care is requisite in regulating the supply of air, too much air endangering the pots, too little checking the heat of the furnace. The bars were obliged to be placed at 2 inches apart instead of  $1\frac{1}{2}$ ; the greater concentrated heat of the coke not only requiring more air, but having a tendency to melt the bars; lumps of fire-brick also were thrown in to supply the deficiency of clinkers. To make, however, the flues and bye-holes draw well, it was necessary to use  $\frac{1}{3}$ <sup>th</sup> of screened coals with  $\frac{2}{3}$ <sup>th</sup> of good coke, by measure. The following is the result:—For nine months the consumption of coals for a 7 pot furnace was 18 tons per week. For four months, on the new system, the consumption was  $10\frac{1}{2}$  tons of coke, and 5 tons of screened coals per week. Deducting then these 5 tons, it appears that  $10\frac{1}{2}$  tons of coke are of the same value as 13 tons of coal, or there is a saving of near 20 per cent. in the weight of fuel, and a superiority of 25 per cent. in the heating power of coke above that of coal. Considerable advantage is also derived from the saving of the pots and in other incidents peculiar to the manufacture of glass.

Mr. Parkes observed that the preceding statements had more than confirmed his results. From the statements of Mr. Pambour, on whose data his calculations had been founded, it appeared that gas coke was inferior to Worsley coke by  $12\frac{1}{2}$  per cent.; in his reasonings he had allowed 20 per cent. as the difference betwixt good coke and coal; but according to the results given by Mr. Pellatt, that allowance ought to be  $32\frac{1}{2}$  per cent. He was of opinion that the advantage to be ascribed to the screenings was part chemical and part mechanical. The coal would fill up the interstices of the coke, and prevent the air from escaping unconsumed.

Mr. Pellatt remarked, that the safety of the pots was a very important consideration. By the terms hard and soft coke, he understood foundry and gas coke; the former gave a much more intense heat, and lasted longer. The coke he had used was gas coke, and about 14 cwt. to the chaldron. Mr. Fox stated that the coke in use on the London and Birmingham Railway is about the same weight. It was stated that coal which lost  $\frac{1}{4}$ <sup>th</sup> in weight gained  $\frac{1}{4}$ <sup>th</sup> in bulk by coking.