

The line of least resistance not exceeding one foot, a charge of 2 oz. is sufficient; the line not exceeding 4 feet, and the rock not being highly chrystalline, 3 oz. per foot will be sufficient.

The charges will vary with the tenacity of the rock, but the following may be a general guide :—the line of least resistance being 1, 2, 3, 4, 5, 6 feet, the charge will be 4, 8, 14, 20, 26, 36 ounces.

On comparing the charges used at Delhi, where stiff clay was used as tamping, with those in the Jumna where sand was used, the following table is the result :—

Line of least resistance.	With clay tamping.	With sand.
2 feet	8 oz.	26·8 oz.
2½	10	33·5
3	12	40·2
4	20	53·6

The charges in the last column are to those in the second as 3 to 1, nearly; they are not, however, given as the least required, but are those actually used.

The author is of opinion, that notwithstanding the increased expenditure of gunpowder when sand is used as a substitute for tamping, the saving of time and labour is such as may, under some circumstances, counterbalance that disadvantage. This is stated to have occurred on the Jumna, where, owing to the rise of the river during the periodical rains, it was required to execute the greatest possible quantity of work with large bodies of men in a given time.

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May 1, 1838.

JOSHUA FIELD, V. P., in the Chair.

Peter Rothwell was elected a Member; Sir George Cayley, Bart. and James G. Marshall were elected Associates.

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On Huddart's Rope Manufacture. By George Drysdale Dempsey.

Huddart's  
Rope Ma-  
chinery.

The above communication on the improvements in rope manufacture, introduced by the late Captain Huddart, contains a general account of the successive improvements introduced, and a description of the machinery invented by that celebrated man and erected at Limehouse.

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.