

to their places ; this is a very important precaution, as the flanches of the wheels are apt to catch the points of the plate rails, and thus to throw the engines and carriages off the line.

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“A drawing and description of a new Lewis.” By Henry Robertson (Glasgow.)

New form  
of Lewis.

The proposed Lewis consists of two pieces of iron, whereof each is a bent lever connected at a joint by a strong bolt. When the upper, or longer arms are drawn together, by the tension of the lifting chain, the under, or shorter arms, inserted into the hole, are forced against the sides, and by properly increasing the proportion of the upper to the under arm, any necessary power may be given to the instrument.

The advantages of this Lewis, as compared with those composed of three pieces, as usually constructed, are, that it can be inserted into and removed from the hole in less time ; it adapts itself to the form of the hole, all fitting and plugging with slips of iron being unnecessary ; and by exerting its pressure directly against the sides of the hole, it is less liable to chip off the edges and to endanger the falling of the stone.

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“Experiments on the strength of various kinds of American Woods, exposed to a transverse strain.”\* By Lieut. Denison, R.E., Assoc. Inst. C.E.

Strength  
of Timber.

These experiments were principally undertaken, with the view of establishing some common standard of comparison between the woods in general use in America and in England. Some of the results corroborate, in a remarkable degree, the experiments made by Mr. Barlow upon wood of the same nature ; but of very different scantling, and under different circumstances.

The results are given in a series of tables, and the calculations are according to the formulæ given by Mr. Barlow.

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March 7, 1837.

The PRESIDENT in the Chair.

“Account of a Machine for cleaning and deepening small rivers, in use on the Little Stour River, Kent.”† By W. B. Hays, Assoc. Inst. C. E.

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\* Vide Trans. Inst. C.E., vol. ii., page 15.

† Ibid. page 181.

The mode of application of this machine, to scour out small river, consists in taking advantage of an artificial head of water, with the assistance of a small current, to force on a boat armed with scrapers. River Cleaning Machine.

At the stern of the boat a vertical frame is lowered, with scrapers at the bottom, and to the sides of the boat, near the stern, are attached wings, which on being opened out form a dam. Thus a small head of water being obtained, the boat is forced forwards, and the mud and weeds are carried down to the mouth of the river by the action of the scrapers.

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“Drawing and description of a wooden Bridge erected over the River Calder, at Mirfield, Yorkshire,”\* By William Bull, Assoc. Inst. C. E.

This arch, which is composed of two ribs of fir timber, is 147 feet 6 inches span, 11 feet versed sine, 5 feet wide at the centre and 8 feet at the abutments. Wooden Bridge.

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“On experiments on the strength of Materials.” By Thomas Webster, M.A. ; Sec. Inst. C.E.

The object of this paper was to point out the importance, in making experiments on the strength of materials, of beginning with weights sufficiently small. In the series of experiments on the strength of various timbers by Lieut. Denison, which was laid before the last meeting of the Institution, the first weights were in some cases too large ; for, from the commencement, the deflection increased more rapidly than the imposed weight. Strength of Materials.

The points to be ascertained in all experiments of this kind were ; first, the weight which a beam could bear, the elasticity being unimpaired, or the Elastic Weight ; and, secondly, the Breaking Weight.

So long as the deflection increased, in exact proportion with the increase of the weight, the elasticity might be considered to be unimpaired ; but if the deflection increased in a higher ratio, that is, if the deflection for one cwt. was one inch, and for two cwts. more than two inches, it might be suspected, that some violence was done to the elastic force of the material. Thus a guide was furnished for observations ; the weight before which this ratio was observed to change, must be considered as the Elastic Weight. When a beam was to be broken, the effect of time should be noticed, and the increased deflection, after a given number of seconds, should be recorded.

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\* Vide Trans. Inst. C.E., vol. ii., page 87.