Annexed is a description of an artificial ballast obtained by burning clay, which was employed where the country did not afford natural ballast. Its expense slightly exceeds that of the ordinary ballast; blue clay burnt in kilns was found to answer the purpose best, but it does not appear to form a successful substitute for gravel. The results of experiment show it to form a very imperfect drain. The author states that he has always observed the quality of this ballast to suffer in proportion with the quantity of lime contained in its composition.

The Paper is accompanied by four Drawings, illustrating the construction of the permanent way.

“Description of a Water-pressure Engine at Illsang, in Bavaria.”

By William Lewis Baker, Grad. Inst. C.E.

The machine described in this Paper is the most perfect among nine Water-pressure Engine. engines constructed by M. de Reichenbach, for the saltworks at Illsang, in Bavaria. These important works are situated in the most southern part of the kingdom; they are supplied from a mine in the valley of Berghesgaden, and the salt-springs at Reichenhall. The salt was procured from the former in two states,—that of rock salt, which was extracted by blasting, and that of brine. The rock salt was conveyed to Reichenhall, and there underwent the purifying process. But both these methods were attended with disadvantages from the scarcity of fuel; the old method was therefore abolished, and a line of pipes of 7 inches diameter was substituted, which was laid between the two places; a distance of about 60 miles.

A series of water-pressure engines, each working a forcing pump, and being themselves worked by a head of water, were placed in convenient situations upon the line. The mine is now worked by forming cavities in the beds of salt, and filling them with water, which soon becomes strongly saturated brine; it is then pumped up, and forced through the pipes to Reichenhall, where a portion of it is retained, and the rest is sent on to Frauenstein, which is at the extremity of the line. At these places, the process of evaporation is carried on, and the salt is manufactured in the usual manner.

The Paper is illustrated by a Drawing of the Engine, showing the details of construction alluded to in the communication.