

ages which the system possesses over the crude methods employed in Wales. These advantages are of three kinds. The wire saw method is cheaper, less wasteful, and less dangerous. It is estimated that the cost of explosives is but an eighth of what is required when the "freese" and "freebottom" have to be cut by blasting. There is also much more less unproductive work. There is a great saving effected in the cost of removing waste, as where an ascending method of working is employed the waste can be almost all used to pack the spaces between the pillars. Something like 1-5th of the total stone mined is said to be wasted at Festiniog, while in the Maillon quarry, in the Pyrenees, the loss falls as low as 1-27th in underground chambers, and even less in the open workings. Much less damage is also done to the structure of the rock than by blasting, and less good stone has to be left to form pillars. As the majority of accidents in quarries arise from the firing of shots, the great reduction in the quantity of explosives used adds largely to the safety of the miner, whilst the necessity of frequently examining the roof, which has been calculated to amount to 4s. 6d. per cubic yard of stone mined, is entirely saved where the wire saw ascending method is adopted.

A MONSTER BLAST.

Big blasts are coming to be recognized as the cheapest and best way of removing rock, when they can be advantageously applied. The effect is always found to be

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better than a succession of smaller blasts. One of the largest blasts ever fired outside of this country was recently set off in a railway cutting at Tarana, New South Wales. A drive was made in the face of the hill 60 feet in direct line, and 20 feet at right angles. At the extreme end of the drive a chamber was excavated in the solid rock sufficient to hold $3\frac{1}{2}$ tons of powder, half a ton of gelignite and $16\frac{1}{2}$ cwt. dynamite. The charging of the hole was carried out by Mr. G. A. Colquhoun, of the Rand Drill and Rackarock Company. The last was an unqualified success and it is estimated that fully 60,000 to 70,000 tons of stone were shifted.

A NOTABLE STONE BRIDGE.

The longest stone arch bridge in the world is under construction at Luxem-

bourg, over the valley of Petrusse. This arch will have a span of 277 feet and a rise of 102 feet. The total width of the available roadway is 52 feet and this width is divided into two parts by a space 19 feet wide, covered by slabs of armored concrete carrying the footways. This bridge will have a span 41 feet wider than the famous arch over the Adda, near Trezzo, built in 1370 by Barnato Visconti, of Milan, but now no longer in existence.

CEMENT CONCRETE FLOORS.

By SANFORD E. THOMPSON, ASSOC. M. AM. SOC. C. E.

It is generally assumed that any country brick mason or stone mason can lay a good cement floor for a basement or other ground story, and frequently but little attention is paid to the selection of the ma-

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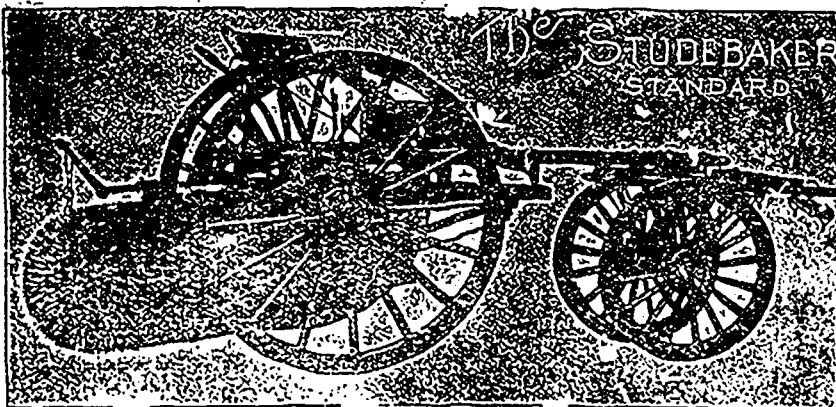
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