

ELECTRIC PERCUSSION AND ROTARY DRILLS.

THE accompanying illustration shows in operation at the Windsor Gypsum Quarries, Windsor, Nova Scotia, portable electric percussion and rotary drills which have lately been introduced and are being manufactured by the Canadian General Electric Co.

The percussion drill in general external appearance conforms very closely to the regular type of steam and air drill; in fact the tripod and shelf are of the standard steam drill form. Electrically, it is arranged in the form of a solid piston reciprocating in a magnetic field and controlled thereby. The piston is provided with a standard air drill rotating rifle-bar and the usual form of springs to protect the front head of the drill from blows. The drill has a piston diameter of $3\frac{3}{4}$ ", a length of stroke from $6\frac{1}{2}$ " to $8\frac{1}{2}$ ", length of feed 24", number of blows per minute, 360 to 380.

The first of these drills was installed on the Canadian "Soo" Canal last winter, when the contractors, Messrs. Hugh Ryan & Co., were greatly pleased with its performance. On these works the performance was equal to that of a 3" steam drill, and the facility with which the drill could be moved, owing to the complete flexibility of the connections, was especially remarked. As far as economy goes, it far surpassed any other drills on the works. The cost of operating, including power for operating the generator and labor of the attendant at the power house, was somewhat under the average operating expenses of the steam drills. Bearing in mind that the attendance at the power house is the same whether one drill or fifty are in operation, and that the increase of power is by no means in proportion to the number of drills, it will be readily seen that a very great saving will be effected over steam drills where the number in operation is the same.

In the Windsor Gypsum Quarries, Windsor, N. S., where one of these drills is in operation, every satisfaction is being given by it. The best day's work of one drill on record is ten 10 ft. holes in 9 hours and 20 minutes. This was in glow lime stone.

The rotary drill is designed especially for use in coal mining, but has also been used with great success in the Gypsum Quarries of the Windsor Gypsum Co., where the clayey nature of the material tends to clog the drill and imposes the severest test on the capability of the machine. The drill is similar to the well-known Howell's drill with an electric motor geared to it in such a way as to form a light and efficient tool. The control of the motor is effected by a small plug switch. No rheostat being used, power may be taken from the same wire supplying current for lighting, pumping or haulage.

Feed screws of different pitch are furnished for varying the speed of boring and a friction clutch protects the motor should any particularly hard obstacles be struck suddenly.

The columns are made in different lengths and each is adjustable for about two feet variation. The construction of the drill and its method of mounting enable the operator to drill close to the roof, floors or walls as well as in any direction.

The drill weighs with post complete only about 160 lbs., the drill itself weighing 100 lbs. In bituminous coal this drill shows a speed of drilling of 7 to 10 feet per minute.

COLLAPSE OF BUILDINGS.

THE records of failures in the Middle Ages rather indulge in religious than in practical explanations of the causes, and so, says the Builders' Reporter, we do not gain much practical knowledge from these examples, such as the fall of the towers of Winchester Cathedral in the twelfth century; of Gloucester Cathedral, in 1160; of Worcester Cathedral, in 1175; of Evesham, in 1215; of Dunstable Priory, in 1221; the smaller towers of Worcester Cathedral, in 1222; the tower of Lincoln, in 1244; of Ely Cathedral, in 1322; of Norwich Cathedral, in 1361; and the west front of Hereford Cathedral, in 1786; the central tower of Hereford would have fallen had not its impending ruin been observed and remedied. The old tower of Thurston Church, Suffolk, fell in 1860. Then we have the Chichester tower in 1861. The above small list of towers awakens the thought that special care is needed for all structures that are

carried upon piers instead of upon continuous walls. But the description that has been given of the cause of failure in the Chichester tower would have been very applicable to many of the other cases. The lesson derived from the Chichester fall seems to be that rubble masonry should never be used in piers carrying towers or other heavy work; it is a masonry suitable where bulk and weight are main objects, but it is inadmissible where unyielding vigour of pier is to be attained; it also suggests that in any such case a soft kind of stone is scarcely safe even if it be of a sound nature; and the stone forming the facing at Chi-



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IN OPERATION AT THE WINDSOR GYPSUM CO. S. QUARRIES, WINDSOR, N. S.

chester, though in some respects a good stone, was not suitable where a crushing force was the chief force in action. It was from near Binstead, in the Isle of Wight, and it is the only tertiary building stone in England; but if we want a thoroughly good freestone we must get it out of the secondary beds. The stone in the piers of the French Panthéon was of a rather weak quality, but that with which the inner and intermediate domes were formed was tertiary, from the quarries of Conflans, about eighteen miles from Paris, and for which latter purpose it is particularly suitable.

PERSONAL.

Mr. E. L. Horwood, architect, Ottawa, through our advertisement columns, invites manufacturers to send him copies of their catalogues.

Mr. E. B. Merrill, who was for many years instructor in electricity at the Toronto Technical School, has been elected principal of that flourishing institution.

Mr. William Robinson, who for 21 years occupied the position of City Engineer of London, Ont., died in that city on the 10th of October. Mr. Robinson at one time practiced as an architect and land surveyor in Toronto.

In considering simply the proper and best use of color for house interiors it is not necessary to include the question of ornament or elaboration either of walls or ceiling. These may follow, but tint must go before, and if thoroughly studied and well chosen, can very well dispense with ornament.