

MINING RECORD

and exploding the charge it is best to make a chalk mark on the roof when boring the first hole so that its direction is shown when the next one has to be started. The two wires from the detonator of the missed shot should be tied to a prop by a piece of string so that if the second shot does not explode the first the detonator may be found by that means. If the missed shot is not exploded care must be taken to search for it after the second one is fired and if it cannot be found the stuff that the search can be continued on the surface. Serious consequences have been known to result through unexploded charges being loaded away and sent to tank

When a squib or a fuse is used and the shot does not go off it is not safe to approach the hole until a considerable time has elapsed. Shots have been known to 'hang fire' and then go off after standing nearly twenty-four hours, which shows the risk attached to going back too soon. Many miners are reckless enough to go back almost immediately, but the great number of accidents due to this practice ought to be sufficient warning against it. The place where the misfire occurred ought to be fenced off and allowed to stand twenty-four hours. The remarks with regard to boring a new hole, finding the first charge if it does not explode when the second shot is fired, and other precautions mentioned also apply in this case.

In some cases where a high explosive is used with only a short stemming, it may be practicable to put the second charge into the same hole and stem it without touching the original stemming. The detonating of the second charge would then be nearly certain to set off the first one. All cases of misfire should be reported to the management and the cause stated in the report. However, in case of a detonator, it should be taken out of the mine before trying to discover the reason of its not exploding, i. e. if it is recovered.

Blown out shots—The force of an explosive is always exerted along the line of least resistance, that is to say the material is always broken down at its weakest point. Should the stemming be the weakest point the stemming material together with the flame and gases from the explosive are ejected from the shot hole in the same way as the charge is ejected from a cannon. The danger of such an occurrence cannot be too much enlarged upon especially in mines which give off CH₄, or which are dry and dusty. The Hebburn tests already described show that even with the so called 'Safety' explosives an explosion can be caused in this way when CH₄ is present, and Mr. Henry Hall's experiments with coal dust proved that dry coal dust alone could be ignited by a blown out shot and cause an explosion. The most recent and most disastrous explosions which have occurred in England have been traced directly to blown out shots and air-way close to the shaft bottom and where it was impossible for gas to be present owing to a large volume of air at a high velocity traversing the airway. The following shows the experiments carried out by the

Prussian Fire-damp Commission in an experimental gallery built of masonry and 180 ft. long.

In pure air a blown out shot travelled	9 ft.
With 3 p. c. CH ₄ a " " " "	30 ft.
With 7 p. c. CH ₄ a " " " "	125 ft.
If air was dusty a " " " "	180 ft.

wholly length of gallery.

A blown out shot may be caused by:—
1 Careless placing of the shot hole. 2 Making the shot hole deeper than the 'mining' or 'kirk'ing'. 3 Careless, or in efficient stemming. 4 Blasting in the solid. 5 Too small a charge of explosive. 6 Too large a charge of explosive.

Prevention lies in avoiding the causes named and every precaution should be exercised to prevent so dangerous an occurrence.

The following are some general precautions to be observed in order to prevent accidents from shot-firing in mines:—(In addition to those already mentioned in course of "paper")

1 Carefully comply with the requirements of the C. M. R. A.

2 In mines giving off CH₄ use no other explosive than a 'Safety' explosive.

3 When using a 'Safety' explosive always remember that the danger is only lessened and not abolished, therefore do not run risks by firing them amongst gas or unwatered coal dust.

4 Use only explosives, fuses, or detonators made by a reliable firm so as to be sure of having the best material.

5 Examine for gas immediately on returning to the seat of the shot, also examine the roof and sides and pull down any loose stone or coal.

6 If any timber has been knocked out by the shot, have it replaced at once.

7 If a shot is likely to 'hole' into the next place see that there are no workmen there and that it is clear of gas.

8 In using 'high' explosives always use the proper detonators.

9 Appoint only careful and reliable workmen to superintend shot firing operations, the shotfirer to do the charging, stemming, and lighting himself except it be a non-flery mine where the men fire their own shots.

As will be learned from the announcement in their regular space in the Record, the fire which occurred in the B. Greening works did not cause any interruption to the business of the Company. The Company's many customers will be glad to learn of this.

J. Inglis & Co. of Toronto have secured the contract for the new pumping engine for the Stelarton water works, being \$200 below the estimate of the Canada Foundry Co. It is claimed that the engine to be erected is the first of its kind in the lower provinces.

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