

In adopting this plan, the proprietors have been guided by considerations of present profit, which the competition of other neighbouring coal works renders indispensable.

There can be no doubt that, as regards the safety of the men in coal mines from injury consequent upon methane, ventilation is of the utmost importance

The gauze of one of these lamps had been heated all round for about 2 inches from the bottom, as if the methane had been burning inside at that part of the cylinder, and there was also on the side of the upper part of the gauze of the same lamp, an oblong spot of oxidation, exactly such as would have been produced at the first instance of increasing methane into the lamp. The subsequent elongation of the flame, supposing the lamp had been placed a little obliquely against rib or any other upright object. These appearances accord perfectly with the idea that the methane into the workings whilst this lamp (which had been given out that morning in perfect order) was there and in use.

In considering the extent of the fire for the moment of explosion, it is not to be supposed that methane is its only fuel. The coal dust swept up by the rush of wind and flame from the floor roof and ribs of the workings, would instantly take fire and burn, if there was enough Oxygen in the air present to support its combustion.

We found the dust adhering to the faces of the pillars, props and ribs in the direction of and on the side towards the explosion, increasing gradually as we neared the point of ignition. This deposit was in some places half an inch thick; and in others almost an inch thick: and it adhered in together in a friable state.

When placed under magnification the dust presented the fused round form of bunt coal dust; and when examined chemically with unburnt coal dust, was found to be deprived of the greater bituminous portion and in some cases totally deprived.

It will not be thought surprising that, in thinking of the means to preventing such calamity in the future, we should turn our attention almost exclusively to it.

The first idea is to ventilate the goaf. If a shaft could be sunk over the crown of the goaf, it might perhaps carry away all the methane.

Another mode of action has occurred to us, which, the more we think of it, seems the more practical.

“It is founded on the principle of drawing away the atmosphere of the goaf.

The first plan consists of laying a pipe from the goaf to the up-cast shaft, introducing the one extremity into the vault of the goaf at the uppermost edge and furnishing the other extremity with necessary means of drawing the air out of the pipe. Its place for the chief part would probably be in the return roadway as it could be best examined from time to time and would be safest from the effects of creep.

The goaf end of the pipe offers more difficulties, but we do not see at present that there are any that are not easily surmountable.

It has to rise up into the cavity of the goaf, at the nearest to the highest part of the edge, to enter into this cavity four, five, six feet, or even more if possible; and to be temporary movable and pipe joints tightly sealed.

The second plan which we propose is of the same nature, but more local in arrangement. In this plan we contemplate carrying the exit end of the drainage pipe only into the return airway into a part that where there is sufficient ventilation that the goaf gas is so to be thoroughly diluted and carried away.

The goaf termination of the pipe will be as described before. But in some part of the course of this pipe is to be placed a blowing apparatus so directed drawing from the goaf and blowing towards the return airway.

FURTHER MATTERS

It would be a very important addition to the information requisite to indicate and lead to the fittest means of guarding against such events, if the state of the atmosphere in the goaf vault were from time to time examined, and especially upon a falling barometer. This so that we might have a general knowledge of its nature.

“This would not be at all difficult in the hands of an intelligent man, for a piece of small copper pipe about 1/3 of an inch in diameter and 20 to 30 feet in length, might easily introduced by hand into the cavity of the goaf, at the place where the edge is highest, and this being to an air- pump syringe below, a few strokes of the hand would suffice to make the latter bring down the gas or air from the place reached by the upper end of the pipe.

If after the pipe and syringe were filled with such gas and air, a large and sound bladder or gas bag were screwed onto the syringe, it could then easily be filled with such gas and air drawn from the same place in the goaf.

The bag could then be carried away to the safe part of the mine, could easily have its characteristics examined by a Davy Lamp

Supposing such a ventilation arrangement as that proposed were established another place for examination would be at the at the exit end of the goaf ventilation pipe.

Both in the mines, and at the Inquest, our attention was called to the stoppings and the doors in the workings, upon which the curse of the ventilation depends.

At first, we were greatly embarrassed by the circumstances of the large number of deaths from chokedamp.

The blowing down of the stoppings by destroying the ventilation of the mine, caused all this choke-damp to be left for a time in the workings; and there is reason to believe from the circumstances, that the men met with a comparatively sudden death.

When these are blown away by an explosion, the ventilation is altered and at times such as this disaster, entirely withdrawn.

The Manager proposed to have dam doors so arranged that when the stoppings blown down, these could come into play.

We do not think that it would be impossible, or even very difficult to carry such a plan into effect in some of the permanent stoppings of the Mine, but, considering that if the stoppings were not blown down, the probable effects of an explosion would be the firing of the whole mine.

In conclusion, we cannot but express a hope, that some step may be taken without delay, with a view to better afford a better education to the persons engaged to working in Collieries.

When attending the late Inquest we were very much struck with the fact that more than half of the pitmen who gave evidence, some of them of great intelligence, and one master wasteman were unable to write, or even to sign their name as witnesses.

In other States and Countries, where a far less amount of capital is embarked in Mining Enterprises, there are great schools of mines and scientific establishments, in which professional men of different grades are carefully instructed in those branches of knowledge which are closely connected with the art of mining.

Particular difficulties attend the organization of schools for the mining population, owing to its migratory habits, and because the workers are often congregated suddenly at places distant from cities and towns, and do not remain at fixed points. It is more necessary to endeavour to overcome these obstacles perhaps by appointing teachers whose duty is to visit in succession the different localities are opened from time to time.

Among the very many thousand who are now continually engaged in the coal mines, there will always be individuals of strong natural powers, who if they had mastered the elements of the sciences, might be enabled to invent new methods, or at all events, would be far more capable than people unconnected with the business, to appreciate the dangers to which they are exposed and to correctly judge of the adaption of philosophical principles to practice.

We believe therefore, that if the education of the miners generally and especially those that act over them, can be materially raised, it will conduce to the security of the lives of the men, and perfecting the art of mining, more effectively than any system of Parliamentary Inspection which could be devised.

There is no reason to fear but that the Owners and all the Authorities high and low, if their minds were prepared by instruction, to estimate the true value of the new methods proposed, and if, by that Instruction, those prejudices were removed which disincline the the ignorant to every change of system.

There are here no conflicting interests to contend with, for the Owners are always anxious to prevent explosions and accidents, not only by their feelings of humanity, but by a regard to the property they have at stake.

While the Managers. Under-managers and other Officers, are continually risking their own lives, and share in every danger with the men.

We perhaps ought to apologize for this lengthened statement, especially as we have no right to assume that we have the kind of knowledge that can be gained only by practical men.

We have been encouraged to proceed by the hope of being useful and have endeavoured to write this Report, not in technical phrase, but in plain and simple language, which if useful in its suggestions, may be comprehended at all