THE VENTILATION OF COAL MINES

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AND

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PREFACE.

THE object of the following articles is to give to the practical miner as clear an idea as possible of the general principles of mine ventilation. The subject is one of the most important that can engage the attention of the mining engineer, and is one that should be well understood by all who are engaged underground. It is to be feared that this is far from being the case—that great ignorance still prevails in mining quarters on the subject, and that there is much need of a dissemination of information on the art of ventilating engineering.

The fact that 586 lives were lost in 1880 by explosions of fire damp emphasizes the remarks of the writer as to the

importance of the question, and a consideration of the circumstances under which some of those explosions occurred force upon him the opinion that much has yet to be learned by many officials who are treated as competent.

Every ordinary miner should have a knowledge of the subject, because—in fiery mines especially—the safety of the whole number depends upon the individual action of each man employed.

The writers have attempted to explain as much as possible, by the working out of examples arithmetically, the various principles taken into consideration.

To those who are masters of the subject, some of the explanations given may be considered unnecessary; their reply to this is, they have not written for them, but for those who do not understand it; and, for the sake of those practical men who are anxious to grapple with the question,

they have treated it as much as possible according to the simple rules of arithmetic. The most that will be required of the student in working out the examples given is a practical acquaintance with the manner of extracting square and cube roots.

The cause of motion in air has been explained in the first section, where it has been shown arithmetically that pressure may be expressed either by feet of air column, inches of water gauge, or pounds per square foot.

The friction of air has then been dealt with, and several new formulæ have been given, which will be found useful in working out practical examples.

An explanation of splitting has been entered into, and the difference between equal and unequal splitting has been explained.

Ascensional ventilation is a matter

which deserves the attention of all mining engineers, and no doubt a proper knowledge of this art would enable ventilating engineering to be conducted practically in a much better and far more economical manner than it usually is.

Next, it has been considered necessary to draw particular attention to *Velocity*, and to endeavor to fix some medium as the speed at which air should travel. Many practical men think the pit is well aired if the current is traveling at a high speed, but there is a medium in this as in other things.

The co-efficient of friction, referred to especially, depends on the nature of the sides of the channel through which the air passes, and even in the same pit the co-efficient may be different, according to the rubbing surfaces of the roads; the smoother the sides the less the friction, and roads formed with brick work have

only about one-half the friction of ordinary underground roads.

The writers do not profess to have exhausted the subject, but they hope by thus drawing attention to it that they will be the means of increasing amongst miners a knowledge of it.

There are one or two other points in the subject which they would like to have gone into, but circumstances do not permit them to go further into the matter at present.

Their desire in compiling these articles has been to make them of utility to practical men, and they will be glad to know if they have in any degree succeeded in their object.