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MARITIME MINING RECORD.

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SCIENCE AND ART OF MINING.

VENTILATION.

Q.—What is practically the best—A large number of small air-ways, or a fewer number of large air-ways? State your reasons.

A.—In comparing a large number of small air-ways with a small number of large air-ways there is very little that can be said in favor of the former, and very much that can be said in favor of the latter. In fact, it seems to me that the only circumstances which can warrant the maintenance of a large number of small air-ways in a mine are those in which the air-ways, having been made through the goaf, have greatly contracted, due to the crush of the sides and roof and the upheaval of the floor of the seam.

In such circumstances, if the resources of the mine are nearing exhaustion, and there is plenty available power in the fan and fan engine, without the installation of larger plant, it may be urged that the expense of enlarging the air-ways was not warranted by the benefits that might result. Except in such extreme cases as this, however, no sensible being can recommend a large number of small air-ways as being preferable to a fewer number of large air-ways; and I cannot conceive of any colliery manager or mining engineer who chances to have the laying out of the workings of a large colliery, adopting a large number of small air-ways as the best system, from any point of view, on which to ventilate the mine under his charge. True it is, that very large air-ways are very impracticable in some mines where

the height of the seam is small and the nature of the roof tender and friable. The size of mine air-ways greatly depends upon the thickness of the seam through which they are to course, and the nature of the roof plays a great part in determining their width. It is often possible to maintain a narrow air-way without the roof breaking down when, if the air-way were made of greater width, the roof would very likely break down, and considerable expense be entailed in thereafter repairing and maintaining it.

However, even in thin seams, the air-ways ought always to be of a fair size. The roof or floor should be ripped, and the air-ways generally should be of such a size that a person can traverse them without getting down on his knees, or even full length, and performing the wriggling process which has so often to be resorted to in passing along the underground air-ways in mines.

Perhaps the greatest and most potent objection, however, which can be urged against a large number of small air-ways, is the great ventilating pressure required to force the air through them, as compared with the comparatively small power that would be absorbed in coursing the same quantity of air through a fewer number of large air-ways.

To elucidate this point so that the reader cannot fail to clearly understand it, let me assume a concrete case. Suppose we have ten small air-ways, each 2 feet high and 4 feet wide on the average, and we have also two air-ways 5 feet high and 8 feet wide, and we wish to determine the relative powers absorbed in coursing a certain quantity of air per minute through the ten small air-ways and through the two large airways respectively.

It will be noticed at the outset that the sectional area of the combined small air-ways is exactly the same as the total sectional area of the two large air-ways, and this I have arranged so that the comparative merits of the two systems may be more justly considered. Had I made the total sectional area of the small air-ways less than the sectional area of the two large air-ways, the former would have been placed at an unfair disadvantage, because the air would have had to travel at a greater velocity in the small air-ways than in the large