

Fourth: "To cause one current of air to cross another one without mixing with it." The general method consists in taking down the roof of one of these galleries for a certain distance on each side of the point of crossing, and at that point to make an artificial roof by means of an arch of masonry or a timber platform at the height of the original roof, and, lastly, to cause the air-current to cross over in the empty space existing above the arch or the planks. The insulation of the current is completed by setting up two stoppings, or by two single or double doors under the part in which the roof has been taken down, according as it is necessary to stop the air or allow it to continue travelling through the gallery.

Fifth: "To preserve a passage for air amongst old workings." It may often be necessary to preserve a passage for air through the old workings, for the sake of shortening the distance which the air has to travel. For instance, if the method of working is one by which falls of roof are liable to occur, the gallery so preserved will require to be maintained by strong timbering, and it should be low and trapezoidal or rectangular in section. It should be surrounded on the sides and top with a certain thickness of stowing taken from the adjoining waste; and when the heavy falls of roof take place ultimately this stowing will resist the impact of even large masses of roof, and the gallery will be able to be kept open for a considerable time. If the method is with stowing, the air-way will be simply a gallery left in the midst of this stowing. If the air-way which has to be preserved is of little importance it can be made by means of wooden boxes or iron pipes, around which stowing is carefully packed; and this will prevent the pressure causing them to collapse when the body of the stowing is subject to the weight of the roof.

Sixth: "To compel a current of air to divide itself between two galleries in a given proportion." When an air current arrives at a point where two galleries branch off and constitute separate passages until the "upcast" shaft is reached, it rarely happens that these two air-ways are identical in every respect. They may differ as regards their length, or their section, or their temperature, which they impart to the air in passing through them. The result is that one of the air-ways offers less resistance to the air than the other. The air takes the easier way, and is therefore more or less withdrawn from the more difficult passage, which may be the very one requiring the larger supply. Where the difference of resistance is very considerable, so is the difference in the proportion of air which traverses each of the galleries.

For example, if a direct passage were opened between the downcast and the upcast shafts, the whole of the air would travel through it, and the distant working-places would be ventilated by diffusion only. The same result might follow if a door was not sufficiently air-tight; because the resistance offered by the door to the passage of the air might not be so great as that encountered in a long air-way. It is evident, therefore, that the air ought to be divided at a point where the two air-ways branch off, according to their individual requirements. This is done by leaving the more difficult passage entirely open, and placing the door (having a regulator in it) in the other one, varying the regulator as required. It often happens that an ordinary door is sufficient, either on account of leakages, or on account of the quantity of air which passes through it when it is opened for the requirements of traffic.

MINING SURVEYS.

VICTORIA.

The mining surveys in Victoria are all done by officers of the Mines Department, and plans and record of every survey are in the head office in Melbourne. The system on which mining surveys are conducted is as follows:—

There is a Mining Surveyor appointed for every mining district, who holds a certificate of competency; but these surveyors do not receive stated salaries—they are paid by fees fixed by regulation, as follows:—

Mining Leases or Claims.

	£	s.	d.
Surveying boundaries of any block under twenty acres	3	3	0
Twenty acres and under forty acres	4	4	0
Forty acres and upwards, at per mile of boundaries	3	10	0
Interior lines, to fix the position of objects within the block, at per mile	2	10	0
Connection to nearest fixed point, at per mile	2	10	0
Travelling expenses to the block to be surveyed, for any distance after the first three miles from the Mining Surveyor's office, at per mile one way	0	4	0

Water-right Licenses Regulations.

Survey of water-races or channels not exceeding half a mile in length	2	0	0
Exceeding half a mile in length, at per mile	3	0	0

These are the fees paid for mining surveys in all districts with the exception of Gippsland, where the fees are about double the above rates, and the travelling expenses 5s. per mile one way after the first three miles from the Mining Surveyor's office. These fees include in all cases the making and furnishing of plans and reports.

When Mining Surveyors are required to do any work outside mining leases, &c., they are paid £2 per day, and 15s. per day is allowed for travelling expenses when away from home, in addition to the cost of locomotion; they are likewise paid for any necessary labour that they may employ, and assistance to prosecute the work.