

*Quantity Standard.*—From the foregoing table it will be seen that air-measurements were made in the returns from thirty-seven ventilating districts at nineteen collieries in the North and South Islands. It was found that the average quantity of air per person employed in such districts which passed the last working-place into the return airway amounted to 333 cubic feet per minute, being more than twice the quantity required by the law. In six districts only was less than 150 cubic feet per person measured, and in all but one of these the shortage was due to leakage through defective stoppings constructed of brattice-cloth.

At collieries where plastered-brick air-stoppings were used the proportion of the air, induced by fans, which passed the last working-place into the return airways (which I have termed "the percentage of effective ventilation) is very marked, as the following table will show:—

Name of Colliery.	Percentage of Effective Ventilation.	
Pukemiro ...	92·2	} Brick stoppings.
Waipa ...	85·1	
Liverpool No. 3 ...	78·0	} Brattice-cloth and sawn timber-stoppings.
Taupiri Extended ...	71·2	
Rotowaro ...	68·5	} Brick stoppings.
Liverpool No. 1 ...	66·0	
Kaitangata No. 1 ...	63·0	} Stoppings of brattice-cloth or sawn boards.
Blackball ...	47·0	
Kaitangata No. 2 ...	37·0	
Coalbrookdale ...	17·0	

As the effective air may be used, after ventilating the working-places, for "scaling" areas of old workings or standing pillars, there is absolutely no excuse for inducing air by a fan and then carelessly permitting much of it to be ineffective owing to leakage.

It is important that air shall be confined to the intake airways, and not to be used for "scaling" until it enters the return, for in the event of a "blower," or an accumulation of gas, the maximum quantity of air induced may be required to remove the gas.

Without proper distribution of air to the working-faces by means of brattice-cloth, miners may not receive the full benefit of the air induced by the fan and effectively directed to the returns. At the majority of collieries I found the brattice to be satisfactory, but at three collieries—viz., Coalbrookdale, Kaitangata No. 2, and Nightcaps—the brattice was frequently not fastened to the roof, permitting leakage of air to a large extent.

*Quality Standard.*—In this Dominion the quality standard for colliery ventilation is—as a maximum, 1 per cent. of carbon dioxide; as a minimum, 19 per cent. of oxygen; and as regards inflammable gas, no person is permitted to work where firedamp may be detected by a safety-lamp, which is approximately from 1 to 2 per cent. CH<sub>4</sub>. During my inspection I found no instance of failure to comply with the above standard.

In no working-place could I get a gas cap (*i.e.*, about 1½ per cent. CH<sub>4</sub>). In the return airways the minimum percentage of oxygen found by analysis was 19·45, the maximum percentage of carbon dioxide was 0·47, and the maximum percentage of methane (CH<sub>4</sub>) was 0·37. All these, however, occurred at Kaitangata No. 1 Colliery, which is gaseous, and where underground fires exist. At all the other collieries the quality of the return air (after it had passed every working-place) was found after analysis by the Dominion Analyst to be almost as pure as atmospheric air.

In conclusion, I am gratified to state that as a result of my searching investigations I find that the ventilation at our principal collieries is of a high order, but it would be still improved if brick air-stoppings were more frequently used and greater attention was paid to the erection and maintenance of brattice-cloth.

(b.) INFLAMMABLE GAS AND SAFETY-LAMPS.

[Section 40 (46).]

During the year inflammable gas was reported at seven collieries, as follows:—

Name of Colliery.	Number of Days on which Gas was reported.	Maximum Estimated Quantity of Inflammable Gas reported.
Taupiri Extended .. .. .	125	Cubic Feet. 2,000
Kaitangata No. 1 .. .. .	44	500
Liverpool No. 1 .. .. .	25	480
Liverpool No. 3 .. .. .	7	1,000
Ironbridge (Denniston) .. .. .	7	80
Millerton .. .. .	4	2
Wairaki .. .. .	2	Small.

At the three last-named naked lights were then in use.