

by the Transvaal Royal Commission, and is thus described in Dr. Haldane's "Report on the Health of Cornish Miners":—

At the mouth of the level a piece of 6 in. iron pipe or a small cylinder, provided with a side tap, is let into the ordinary 2 in. iron pipe for carrying the compressed air for the drill (*vide* Diagram 1 and Fig. 1). Before the blast this is filled with water through the side tap from a cistern after the compressed air has been turned off. Immediately after the blast the compressed air is suddenly turned full on. The water is thus driven along the pipe with great velocity, and a mixture of finely divided water and air is discharged from the open end, which is directed towards the face which has just been blasted. By this means the dust is entirely cleared from the last 30 ft. or 40 ft. back from the blast, the air leaving quite clear immediately after. If a ventilating-pipe (*vide* Diagram 2, Fig. 1) is carried forward about as far as the compressed-air pipe, any dust which has been driven out beyond the reach of the jet can be rapidly carried off. This plan has the great merit that it implies scarcely any trouble, and no extra apparatus except the piece of 6 in. pipe and tap for filling it. The rock blasted is also thoroughly wetted, so that no dust is produced in shovelling it. The water partially washes out from the air any nitrous fumes which may be present, but, of course, no carbonic oxide, and for this reason, if no other, a ventilating-pipe is desirable in cases where the level or rise has been driven more than a few fathoms beyond the air-current.

Diagrams of these appliances accompany this report. The more adequate ventilation of all mines to a standard of quality, quantity, and fixed temperature is dealt with under the heading of "Ventilation" in this report.

The use of bath and change houses is elsewhere recommended by us.

The prevention of indiscriminate spitting appears to be a matter requiring urgent attention by local bodies and by the Government. The dissemination of directions regarding the destruction of tuberculous sputum is very necessary.

Improved housing conditions for miners and the definite treatment of tuberculous persons are matters which are being strongly advocated by many medical practitioners of this Dominion.

The exclusion from work underground of persons infected with tuberculosis of the lungs is a matter insisted upon by all authorities.

We therefore make the following recommendations:—

#### *Preventive Measures.*

Every working-place where rock-drills are in use shall be furnished with an approved waterblast or suitable appliance for laying the dust, smoke, and gases after a blast; and no man shall return to an end, rise, winze, or other close place until the air is free from dust, smoke, and fumes caused by blasting.

#### *Measures of Relief.*

That miners suffering, or suspected to be suffering, from fibrosis or superimposed tuberculosis of the lungs shall have free medical advice from the Government, such advice to be given by a medical expert appointed for the purpose.

That in addition to the homes and sanatoria already established adequate relief be provided from the Gold-miners' Relief Fund for those suffering from miners' phthisis, which for that purpose shall be subsidized £1 for £1 by the Government.

The qualifications for the above measures of relief to be five years' residence in New Zealand immediately prior to the application for relief, two years and a half of which shall have been occupied in mining underground or working at a crushing-mill in New Zealand.

## VI. THE PROFITABLE UTILIZATION OF THE SOFT BITUMINOUS AND LIGNITE COALS OF THE WESTPORT DISTRICT OF NEW ZEALAND.

The question of the profitable utilization of the soft coals of the Westport district is one upon which little evidence was forthcoming.

Upon investigation we found that, approximately, there is an area of 5,000 acres of unmined soft coal carrying seams varying in thickness from 5 ft. to 20 ft. In addition to this there was produced in 1910 from the Westport