

which there are a large number in the Southern District, many being of very small extent, and supplying fuel for private use or a limited community. The total number of persons ordinarily employed shows an increase of 131 as compared with the returns of the previous year.

In computing the average output per person employed, a further increase is noticeable—viz., 473·15 tons per person, as compared with 450·1 tons in 1902. No doubt the steady work which has been noticeable throughout the colony, together with the features referred to in last year's annual report—viz., the extensive use of coal-cutting machinery by the Westport Coal Company (Limited) and the amount of open quarry-work at lignite-pits—is responsible for the increased rate of production in comparison with the numbers of persons employed.

#### *Accidents.*

Only two accidents have occurred during the year which have been attended with fatal results. In one instance a youth was caught between two loaded tubs and received injuries from which he died two days later, and in the other case a young man was struck on the knee by a tub in motion. As the result of this apparently simple accident the injured person died three months and a half later.

The ratio of fatalities during the year is one for every 1,442·5 persons employed and 682,520 tons raised.

Of non-fatal accidents the greater number appear to have been in connection with the handling of tubs and from pieces of coal flying from the face and striking the eyes of miners. This latter class of accident, however, appears to be diminishing, the circular issued by the Mines Department (for posting up at the mines) dealing with eye accidents having evidently been of practical utility. As a further safeguard, the use of wire-gauze eye-shields is becoming more general at those collieries where "proud" coal has to be worked.

Accidents from falls of roof and side are not common, and, taken all round, there is undoubted evidence of the exercise of considerable care on the part of mine-managers to insure the safety of the persons employed.

#### *Prosecutions.*

A prosecution was instituted against a manager holding a second-class certificate for employing a greater number of persons at one time than is allowed by law under this grade of certificate. Defendant was fined and mulcted in costs.

Prosecutions of employees were also instituted by the manager of a colliery for violations of the general and special rules, and convictions obtained. It is to be hoped the action will have the effect of making the men more careful; and it cannot be too generally known by managers that where employees commit breaches of the general or special rules, which are framed for the general safety of mining operations, it is their duty to bring the offenders before a Court of justice. Some managers do not appear to understand this, and erroneously think that action can only be taken by an Inspector of Mines.

#### *Government Collieries (State Coal-mines).*

A considerable amount of my time was taken up during the year in supervising prospecting and other works at Seddonville, and also the Point Elizabeth property, near Greymouth. At the first-named place systematic prospecting by a trial drive, borings, and trial shaft-sinking proved a seam of coal averaging upwards of 14 ft. in thickness to exist under the tract known as "The Cave Area." A main tunnel to reach the coal was then commenced, and the necessary surface haulage-road surveyed and its construction put in hand.

Some prospecting was done and several preliminary surveys made at the Point Elizabeth property, in order to determine the most advantageous positions for opening into the respective sections of coal which can be won level-free, and towards the end of the year the several tunnels were commenced. Mr. A. B. Lindop (formerly of the Westport Coal Company, Limited) having been appointed general manager, I handed over both properties into his charge in December last. The completion of the partially constructed railway from Greymouth to the Point Elizabeth Colliery has been taken in hand by the Public Works Department, and good progress is being made with the work.

#### *Mechanical Ventilation.*

Two permanent installations have been made during the year—viz., at Nightcaps Colliery, Southland, and Millerton Colliery, near Westport, the colonial-type "Hayes" fan being adopted in each case. The fan at Nightcaps is designed for a working-speed of 200 revolutions per minute, and is 9 ft. in diameter. At my visit it was working at rather less than half the speed named, and circulating 38,000 cubic feet per minute. The airways are large, and consequently resistances are light. At Millerton the fan has a diameter of 9 ft. 6 in., and is designed for a working-speed up to 250 revolutions per minute. Its present working-speed is 150 revolutions, at which a current of some 65,000 cubic feet of air is circulated at a water-gauge of 0·5 in.

#### *Utilisation of Soft Coal and Slack.*

I have in former reports referred to the uses to which soft coal and slack may be put in the manufacture of briquettes, and am now enabled to give a description of a method of using the small and soft fuel—which goes to waste at some mines—without any other preparation than that of grinding it into powder. It will, of course, be seen that the ordinary method of hand stoking becomes inadmissible, but the means adopted appear simple, effective, and economical. The operation may be classed as one of "automatic coal-dust firing," and I am indebted to one of my engineering friends for the following description:—

For a long period efficiency and smokelessness in firing was a perplexing problem to engineers. In some degree the nuisance of intensely black smoke issuing from a factory or works chimney has been prevented or abated, but not without loss of efficiency. To attain both desiderata has