

	Northern District.		West Coast District.		Southern District.		Totals.	
	Fatal.	Non-fatal.	Fatal.	Non-fatal.	Fatal.	Non-fatal.	Fatal.	Non-fatal.
Quartz-mining ... ..	5	28*	1	1	...	2	6	31
Hydraulic and alluvial mining ... ..	...	...	...	...	1	1	1	1
Dredge-mining ... ..	...	...	2	4	5	5	7	9
Totals ... ..	5	28	3	5	6	8	14	41

\* Some of these were only slight accidents.

#### OTHER MINERALS.

Beyond the usual output of scheelite by Messrs. W. and G. Donaldson at Macrae's, Otago, and some prospecting operations for antimony at Alexandra South, which may be considered fairly successful, little or nothing appears to have been done during the year.

The cinnabar lode near Waitahuna is not yet being worked. It is proposed to form a company to develop and work the mine.

#### MECHANICAL VENTILATION.

So far nothing has been done in the direction of providing by mechanical means constant and reliable air-currents for the complete ventilation of quartz-mines in this colony, most of the mines relying on natural ventilation, which is both uncertain and irregular.

The simple fan illustrated and described in last year's report has apparently supplied a want felt at several coal-mines. One of these fans, 9 ft. in diameter, has been erected at the Orepuke Shale-mine, and at 180 revolutions per minute circulated a current of 33,120 cubic feet of air, with a depression of  $1\frac{1}{10}$  in. W.G. The cost of this fan was only about £140 erected, the mine-owners providing an engine for driving it. Mining managers who have seen the fan at work consider that its efficiency and small cost should cause it to become very popular. Three others are now in course of construction for the ventilation of coal-mines.

#### THE ELMORE ORE-CONCENTRATION PROCESS.

The following is the text of a description of the above process. It is issued by the Australian Ore-concentration Syndicate (Limited), 4, Bishopsgate Street Within, London, E.C. The syndicate announce that they have a testing plant capable of treating 10 tons per day, and are prepared to make laboratory tests and to report results free of charge, and large scale tests at moderate fixed rates, which will be remitted in cases where the syndicate's process is adopted.

Metallurgists throughout the world have hitherto become accustomed to understand that the separation of the metalliferous and valuable portions of ores from the gangue with which they are associated must depend upon the difference of specific gravity of the mineral particles and the rocky constituents of the ore. It may come as a complete surprise to many when they are told that the latest improvement in concentration does not depend in the slightest degree upon specific gravity for the perfect separation of the rock from the mineral, and that the percentage recovery is equally good when treating slimes and finely divided minerals, such as would largely pass away as "float" in any ordinary process of concentration by water over mechanical jigs and vanners. Such, however, is the case, and it is the object of the following description to introduce to the notice of the reader the Elmore process for concentration of ore, slimes, and tailings by the use of oil, which is likely to inaugurate a distinct addition to the field of ore-concentration.

The process, as worked at the Glasdir Copper-mines at Dolgelly, North Wales, may be shortly described as follows: The rock from the mine, after passing through the usual stone-breakers, is crushed in a pair of Cornish rolls, and run thence to two Huntington mills, wherein it is reduced to pass through a thirty-hole screen, and issues therefrom with just sufficient water to make it into a freely flowing pulp. From the Huntington mills the pulp passes directly into the open end of a horizontal rotating drum, inside of which is fixed a helix with cross blades or buckets, which lift up the pulp to a certain height and drop it again, at the same time propelling it forward to the opposite end of the drum, thus keeping the pulp in constant agitation for the few seconds which are occupied in its progress through the drum. With the pulp is also admitted a small quantity of a thick, sticky oil (the residue left in the stills in the refining of paraffine-oil). This oil is, of course, subjected to the same agitation as the pulp, and is consequently tumbled about with it, and exercises the remarkable property of sticking to and buoying up the particles of mineral that are floating about or suspended in the pulp; but it does not stick to or have any effect whatever upon the particles of rock which are present in much greater number. The oil and pulp automatically discharge from the opposite end of the drum into a pointed box or spitzkasten, in which the tailings or rock at once settle down and flow off with the water at the bottom, whilst the oil, by reason of its buoyancy, floats to the top and carries up with it practically all the values which the ore contained. From the top of the pointed box the oil, with its load of mineral, flows off continuously to a specially constructed centrifugal machine, where the oil is extracted from the mineral (which is left in the machine), the oil being at once ready for re-use. For close extraction three mixing-cylinders are sometimes used, the pulp passing from one to another after floating off the oil and collected mineral, and receiving a fresh stream of oil in the next mixer. A second centrifugal