

The main dip sections have been extended 6 chains under the Hikurangi Swamp, and drainage difficulties can only be overcome by the introduction of larger pumps and pipes to cope with the increasing accumulations of water. The passage for air in the return airways is somewhat constricted, due to the fretting of the sides, intensified by the action of the humidity of the air in the return.

Mine equipment and baths for workmen have been maintained in good order and condition.

*Kerr and Co. (Phoenix Colliery).*—Mining operations ceased in this colliery in the month of May. The pillars have been extracted to the road-boundary and the plant was withdrawn to the surface. The mine-plan was extended to show the workings up to the date of the cessation of operations.

*Silverdale (Foot's Crown Lease).*—Operations in the established mine were suspended, due to a dispute between the owner and the miners. A new mine section was subsequently opened out, and a seam of coal 4 ft. in thickness was developed to give employment to four miners. The output is carried over the county roads for a distance of three miles by means of motor-lorries.

*Northern Co-operative Colliery (Cunningham's Crown Lease).*—The mine was idle during the winter months, due to a creeping movement over the pillars, but it was reopened in the month of September to win an isolated area of thin coal left by a former working. The output is transported over the county roads to Hikurangi Railway-station.

*Glen Nell Colliery (Crown Lease).*—The mine only produced coal during the first quarter of the year. The seam is 2 ft. in thickness, and it is worked by a system of longwall for the better extraction of the pillars. The output was conveyed by motor-lorry to the Hikurangi Station, a distance of three miles and a half.

*Hillside Colliery.*—A dip was driven from the surface to recover a small area of thin coal abandoned by Kerr and Party when working the "Rocks" Mine. The workings were exhausted and the plant withdrawn four months from the commencement of operations.

*Belton's Colliery (Freehold).*—Two thousand tons of coal were won by four men from an area abandoned by the Hikurangi Coal Co., Ltd. Short drives were driven from the surface to reach the shallow outcrop pillars on free drainage. The drives were adequately timbered, and the jig connecting the mine with the county road has been properly maintained.

*Christie's Colliery.*—This colliery was reopened during the year to win an area of coal proved by boring to exist on the hill above the workings which were abandoned two years ago. The seam is 3 ft. 6 in. in thickness, and is conveniently situated for the operation of the tramway laid down to connect the mine with the railway-sidings at Hikurangi Station. A shaft for ventilating purposes was sunk to the coal-seam during the year.

*MacKinlay and Party's Phoenix Colliery (Crown Lease).*—A small mine was opened out on a Crown-lease area proved by prospecting to contain several thousands tons of coal. A water-free drive was driven from the lowest level of the seam, and four miners produce 20 tons per day from bords turned away from the main drive. A stone band in the roof affords an ideal roof for pillar-extraction. The output is carted over the county roads to the Hikurangi Railway-station.

*Ruatangata Colliery (Freehold).*—Operations at this mine have been confined to the unwatering and reopening of No. 2 section of the old Kamo Mine workings, abandoned during the year 1894. The recovered places are in good condition. A slant dip has been driven 25 chains through pillars and falls, and at the face an area of comparatively solid ground 4 chains square, has been exposed for the extraction of the coal. Two pumps are in commission for the unwatering of the old workings.

*Ngunguru Fireclay and Coal Co., Ltd. (Fireclay-mine, Kiripaka).*—The open-face mine was worked intermittently during the year to provide large loads of fireclay for shipment to Auckland, a distance of 120 miles by sea. The overburden was stripped back from the face, and generally the face was maintained in good order.

*Kiripaka Fireclay-mine (Crown Lease).*—Eighty-two tons of fireclay was produced during the year from an elevated outcrop connected to the river-wharf by a jig tramway.

*Doels' Kiripaka Coal-mine (Freehold).*—A small colliery situated on Stephen's land, 5 miles from Whangarei, on the main Kiripaka road, is under course of development to market an output in Whangarei. Thirty chains of surface tramway have been laid down to connect the mine with the county road.

*Harrison's Waro Colliery (Freehold).*—Operations at the mine have been chiefly confined to the driving of a diversion dip heading, for the provision of storage-room for water, to permit the driving of the main dip. The electrical transmission-cables and other apparatus installed underground have been replaced by modern machinery designed to give better working results. Generally the plant and machinery of the mine have not kept pace with the requirements of the mine.

*Rotowaro Collieries.*—Two seams are being developed in this colliery, and three separate mine sections are producing 750 tons per day. In No. 1 section (top seam) the development headings have explored and proved the existence of a large field of coal lying at shallow depth to the south-east of the property. The pillars have been removed in a number of the sections, and the entrances to the sections have been sealed off with brick stoppings. No. 2 section has been extended by the advance of the main dip into the bottom seam, which is of better quality than the coal worked in the top seam. In No. 3 section the lower seam has been followed to a faulted area, and working-sections have been opened out on the east side of the main haulage heading. Modern equipment is used in all the sections. The endless-rope system of mechanical haulage is employed throughout the mines, and no horses are in use underground.

One Arc Wall and one Sullivan electric coal-cutting machines are in use, and another Arc Wall machine will shortly be installed. The workings are stone-dusted, and, generally, good conditions have prevailed during the year. I should mention that a high percentage of pillar coal has been won from the sealed sections. Several small fires in the goaf were arrested and suppressed by stoppings erected ahead of requirements. In some cases it was advantageous to erect more than one line of temporary stoppings in sections where the coal was thick and liable to spontaneous combustion. The roof is composed of jointy fireclay, which fractures easily and breaks off at the pillar-ends when the roof-supporting props are removed to induce a pressure. No creeps occurred in the sections. In Loft's jig section, where the pillars were being removed slowly, a crushing movement disturbed the roofs of the roadways leading to the faces. The thrust was subsequently checked by the settlement of the roof in the excavated spaces behind the working-faces.

No. 3 mine is being developed on the panel system throughout. Barriers of solid coal are being left round each district. The supporting coal pillars vary in size, but are mostly 70 ft. centres, with bords 14 ft. wide by 8 ft. high driven on direction bearings to the determined barriers.

Oldham's electric safety-lamps (cap type) are in use throughout No. 1 and No. 3 mine sections. The advanced workings in No. 1 section have been connected to the surface at two points. These outlets simplify the provision of fresh air to the faces, and also afford a third escape for workmen in the farthest inbye places.

*Pukemiro Collieries.*—The output from the company's mine has been fully maintained to the average of previous years. In the north mine the pillars have been extracted from several panel sections to the east of the main haulage-road. A systematic withdrawal of the props in the pillar spaces induces clean falls of the roof against the face row of props, consequently the roof-weight is relieved and there is little risk of accident when the remaining pillars are being attacked.

The Brickyard section near Glen Afton is being developed in a seam 7 ft. in thickness. The roadways are connected to the north mine haulage and ventilation systems. In the south mine the first workings are proceeding towards the barriers. It was realized from the results of a slight crushing movement over the main roadways that the formed pillars were too small to support a roof-cover of approximately 500 ft., and much larger pillars and barriers have been provided during the past two years to afford favourable conditions for the extraction of the pillars. During the year a small quantity of inflammable gas was discovered at the face of a heading in Horne's No. 2 section. Oldham's electric safety-lamps, of the cap type, were subsequently introduced into the west section of the mine. All the districts in the mines are sealed off when finished to the boundaries of the first workings, and the stoppings are frequently examined for leakages of contained gases.