

*Pukemiro Colliery* (Pukemiro Collieries, Ltd., Owners).—Mining operations during the year were confined solely to the extraction of pillars in the north mine section.

The straight-heading section was reopened for pillar-extraction, and, with a roof cover of 250 ft., the formed pillars are being crushed in places where the rate of retreat is irregular. In the north section the floors of the roadways are yielding to the roof-weight, and careful management is required to prevent fires and loss of coal.

Heavy supplies of props are required for the support of the roof during the process of pillar-extraction. The first break in the roof over the area being pillared usually occurs after the second pillar has been attacked, and after the first break the roof ordinarily breaks and falls within the excavated spaces following a succession of lifts.

Surface water runs down the breaks to the gob, from where it is drained into sumps, and, unless free drainage through an outlet to the surface can be effected, the water must necessarily be returned to the surface by costly means of pumping.

Operations are still suspended in the south mine section, where an extensive area of pillars, formed by a first working, remain for extraction.

No exploratory work for the opening-out of new ground has been carried out during the past five years, and the remaining reserves of coal within the company's boundaries are being depleted annually by approximately 120,000 tons.

Ventilation and haulage are satisfactorily maintained, and no serious accident to life or property occurred during the year.

*Glen Afton No. 1 Colliery* (Glen Afton Collieries, Ltd., Owners).—An output of 87,562 tons was won from pillars in K2 and K4 sections under ideal conditions as regards percentage of extraction and general safety.

The pillars are removed by a series of lifts taken from the gob ends of the 70 ft. square pillars. As the worked-out area increases, the roof gradually moves downward with the weight of the overlying roof cover of 400 ft. to 500 ft. of fireclay and limestone, and, if the stumps and ribs of coal left in support of the gob can be totally removed, the weight can then be directed into the gob in protection of the roadways remaining for the extraction of the succeeding lifts. If the adopted straight-line method of extraction can be maintained by regular work on the pillars, the gradual movement of roof-weight prevents sudden application of weight on the roof-supporting props, and the fractured props can be renewed in safety.

Heatings in the goaf have been reported, and the incipient fires have been suppressed by stoppings erected close up to the waste ground.

The workings are dry and dusty, and the roadways are treated with incombustible dust in accordance with the requirements of the regulations.

The average temperature of the mine atmosphere is 67° F., and satisfactory ventilation is produced in both working sections by a volume of fresh air taken from the entrance to the connected MacDonald Colliery.

The average thickness of the coal seam is 12 ft. The seam is moderately inclined, and mechanical haulage is applied close up to the faces. The main and the K section subsidiary haulage extend two miles and a half underground through the centre of the coalfield, which has yet only been attacked by a first working, with the exception of three depillared sections.

*Glen Afton No. 2 Colliery* (MacDonald State Coal-mine Reserve under lease to the Glen Afton Collieries Ltd.).—This mine has an average daily output of 750 tons. The output is transported, by means of an endless rope surface haulage, to the Glen Afton No. 1 screening-plant, a distance of approximately three miles.

The seam is in places 16 ft. thick. The coal is hard and relatively clean, with few impurities and stone partings. The roof cover is composed of jointy fireclay, which falls readily when the roof is exposed. The system of mining followed is bord and pillar, with approved barriers between the panels.

Two extensive districts have been opened out to the west and north of the mine-entrance, with numerous secondary sections, of approved panel size, left behind for pillar-extraction following a retreat from the outcrop boundary on the north side and MacKinnon's boundary on the west side. The standing pillars are 70 ft. square. Coal-cutting machines are employed to cut the coal-faces of the bords in the first working, which leaves 75 per cent. of the coal to be mined by pillar-extraction.

The pillars are being extracted in three separate sections by hand-mining, and as the rate of retreat is slow, due to single shifts, many renewals of roof-supports are required, especially in places lying in close proximity to the outcrop where water affects the overlying roof.

Indications of heating have been observed along the fringe of the goaf in No. 2 rise pillar section, and temporary stoppings held back the noxious gases until such time as the affected ground was surrounded by fresh falls induced by the adjoining pillars being totally removed. An average mine temperature of 63° F. is being provided and maintained by short air-inlets.

The water problem, arising from the extraction of pillars lying at shallow depths, has been solved by the driving of a drainage tunnel to the surface from the lowest point of the workings.

During the year the ambulance-room was completed, and a filtering-apparatus was established on the surface for purifying the miners' drinking-water.

Ventilation was maintained to the standard common to the Waikato District, and which was instituted many years ago by the installation of approved ventilation fans.

*Graham Colliery*.—Operations in this small mine have consisted of the extraction of the pillars in all sections. The coal was clean and easily mined and the roofs fairly strong. The seam varied in thickness from 4 ft. to 6 ft.

*Waikato Extended Colliery* (Roose Shipping Co., Owners).—A new drive has been commenced from the surface for purposes of winning an area of coal abandoned six years ago as a result of an underground fire.

Pillars were also extracted from a barrier lying between the old Waikato Mine workings and the extended old workings.

The output was used for bunkering the company's river steamers.

*Huntly Brick Works*.—An output of 30 tons to 40 tons of fireclay per day was won from the quarry for the manufacture of bricks and tiles on the property. The work was safely carried out, and the overburden was stripped back from the top of the face.

*Taupiri East Coal-mine* (Crown Lease).—The owner of the mine, Mr. J. Holland, recently obtained a lease to work 5 acres of Crown land contained in the Kimihia Lake area. Two headings have been extended through the boundary. The seam is 18 ft. to 20 ft. thick, and a strong coal roof remains in provision of overhead safety.

*Campbell Coal-mine* (Crown Lease, Whatawhata).—The field is being worked from a dip driven in the coal-seam to a fault, along which the south level has been extended 6 chains in a seam 7 ft. to 8 ft. thick, and overlain by a stratum of hard pumice sand. Ten men are employed, and the output is marketed in the surrounding district.

*Renown Colliery* (Renown Collieries, Ltd., Owners).—Operations during the year have been proceeding in No. 3 north section and No. 3 south section, including three subsidiary sections and the extension of the main haulage headings and No. 3 south headings.

In No. 3 north section the seam is thinning and preparations are being made to extract the pillars in the west panel where inflammable gas was detected in a roof cavity caused by a fall to the top seam.

Operations were suspended in the main headings, due to a thinning of the seam and to the fact that the south headings could be advanced under more favourable conditions.

The headings to the east, turned off No. 3 south section, were connected to No. 1 south section, where an area of thick coal remains for extraction and which will be connected to No. 1 haulage road following a reroading in the back heading occasioned by a collapse of roof in No. 1 main haulage road.