ANNEXURE A.

SUMMARY OF REPORTS BY INSPECTORS OF MINES.

NORTHERN INSPECTION DISTRICT (Mr. William Barclay, Inspector).

In compliance with the Coal-mines Act I have the honour to submit the following report:—

The total output of coal produced from coal-mines in the Northern Inspection District for the year 1928 was 781,889 tons. The average total number of persons employed in and about the mines was 1,606. The following pre-war comparison of the figures of annual output and output per person employed underground shows a substantial increase both on output and on coal produced by each person employed underground. In 1913 the total output was 349,586 tons, and the output per person employed underground was 550 tons; in 1922 the total output was 430,578 tons, and the output per person employed underground was 582 tons. During the year 1928 1,200 persons employed underground produced 781,889 tons, equal to 651 tons for each individual. There were no fatal accidents during the year, and the number of fractures, four, sustained in the various collieries was notably low considering the number of men engaged in pillar-extraction. The number of reported minor accidents disabling for one day or more for purposes of payment of relief from the Coal-miners' Relief Fund was extraordinarily high considering the low percentage of serious accidents. No serious fires occurred in any of the collieries, and the workings generally have been free from the destructive effects of crushing. These satisfactory conditions are attributable wholly to the adoption during the past four years of better methods for the control of roof-weight. The question of "weighting" as affecting the formed coal pillars and roads is one of great importance, both as regards the extraction of the coal and the subsequent expense in maintaining the roads up to the faces. In the early days of coal-mining it was customary to drive wide and high places in the coal-seam and to leave small pillars of coal standing for the support of the roof. The sizes of the pillars varied, but they did not exceed 30 ft. square in any of the collieries. As the workings advanced to greater depths, with increasing roof-cover, no provisions were made to increase the size of the supporting pillars or to provide barrier pillars of adequate strength. Under these conditions, when an extensive area was undermined, the strata began to move, and the weight due to the subsidence generally extended over a wide area in the mine. In many cases the weight thrown on the weak pillars effected a closing of the workings and exposed the workmen to grave dangers from falls during the periods of final crushing, and several large collieries in the Waikato and Whangarei districts extracted less than 30 per cent. of the available coal prior to abandonment, that amount being obtained from the first workings. During the past six years the question of the influence of thickness of roof-cover upon the coal-pillars has been specially studied in the light of past experience of the irrecoverable loss of several million tons of coal under the old methods of mining. Subsequent to the crushing of the working-sections of a large colliery in the Waikato district during the year 1922, the important question of the size and inadequacy of the coal-pillars in relation to the thickness of the roof-cover was discussed at a meeting convened at Huntly by the Chief Inspector of Mines and myself, and attended by the managers of the local collieries. Although we had no power under the Coal-mines Act to enforce new methods of mining, we had sufficient grounds, in the light of that occurrence, to demand the formation of much larger pillars in the first workings of future mining operations. Since that meeting we have been successful in the majority of the mines in establishing requisite conditions for the control of the roofs. Pillars of 1 chain square in size, together with the "panel" system, and 1½-chain barrier pillars round three sides of the panels, have been adopted in most of the large collieries. From the results so far obtained we have enjoyed a freedom from serious crushings and fires in the mines during the past two years. With 1-chain pillars in the panel system it is possible to get 20 per cent. of the available coal in the first working and 60 per cent. in the second from the extraction of the pillars, thus outweighing the old methods of mining by 50 per cent.

The following is a general summary of the operations of each colliery for the year 1928:—

Hikurangi Coal Co., Ltd. (Shaft Colliery).—The output for the past year, 98,554 tons, shows an increase of 11,549 tons when compared with the figures of the previous year. The quality of the coal produced from this colliery is sub-bituminous. The Railway Department, in its policy to use larger proportions of local coal, takes fully 1,000 tons of coal per week for use in the locomotives in the Northern District.

There are three separate working sections in the mine—namely, McKenzie's dip section, west section, and east section. In the dip section the face of the slant dip has been extended 32 chains from the shaft level into an area of clean hard coal of a thickness of 14 ft. The direction of the dip is along the fringe of the Hikurangi Swamp area, and the inflow of water at the face has increased considerably during the past year.

In the west section the pillars to the rise of the seam have been extracted to a line within safe limits of the main-heading roadway. Several pillars were extracted in the east section in recovery of a portion of the section which was abandoned three years ago, due to crushing. In both the east and west sections there is a considerable area of solid coal to be worked under free-drainage conditions. The ventilation was satisfactory throughout the mine-workings. I should explain that the pillars extracted in the west section during the year were removed from a panel of 8 acres where the formed pillars of the first working were at least 55 ft. in size, and practically the whole of the available coal was extracted, with excellent results as regards safety and fires in the goaf.

In comparison, I should state that when the pillars of the east-section area of 13 acres were attacked the weight of the roof-cover—a thick, hard stratum of limestone roof—forced the small pillars, 30 ft. in size, downwards into the floor, and a soft layer of friable fireclay, of 2 ft. in thickness, lying immediately above the roof of the coal, filled the roadways and airways to the extent that the workings could not be kept open. The ventilation was impeded, fires ensued, and the workings were sealed off when only one-third of the coal was extracted. With the view to preventing crushing and creeping, still larger pillars are required on the dip side of the shaft in support of the increasing thickness of the coal cover, which is 500 ft. of limestone.

Wilson's Colliery, Hikurangi.—This colliery produced 61,345 tons during the year for use as powdered fuel in the kilns of Wilson's Portland Cement Co. works at Portland. The output was won from three sections—the stone-drive pillar section, No. 6 section, and the main dip section. In the pillar section another example of successful pillaring operations due to large pillars may be given as showing the results as compared with previous experiences under small-pillar conditions. When the mine was acquired by the company, eight years ago, an area of small coal pillars in No. 1 section was opened out with the view of extracting the remaining coal. Several pillars of soft coal were extracted, a disturbed movement of the roof followed, and the intensity of the weight caused a movement over the main haulage-road and airways. The pillars in the subsequent Nos. 6, 7, and 8 sections were made slightly larger in size—40 ft.—but many difficulties were again encountered during the period of extraction. The roof-weight over the tender coal-seam crushed the supporting pillars into dust, and high air-temperatures and fires in the goaf affected the workmen to the extent that only six-hour shifts could be endured at the coal-faces. I can also recall that several fractures to limbs were sustained by workmen from roof-falls in the disturbed places. From this experience it was realized by the management that larger supporting pillars should be formed and left in the stone-drive section and succeeding sections to the dip. In the stone-drive section the pillars were made 120 ft. by 50 ft. in size, and during the past two years the pillars have been extracted to within 5 chains of the main roadway without loss of coal, and under good working conditions. In fact, I was informed during a recent visit of inspection of the mine that fully 90 per cent. of the available coal had been extracted, and that during the period of extraction no difficulty had been experienced in the control of the roofs at the faces. Similar results should be obtained from the dip sections, where the pillars are even larger in size and of better shape.