53. From what I can gather it is quite a practical thing to produce. They may probably in time produce grey pig iron, but it is the matter of cost that is going to block them?—Yes, they can produce pig iron of a kind quite easily.

54. But you are satisfied the cost is too great?—Yes.

55. It has been the custom in Australia and Canada for the State to offer a bonus for the production of iron and steel: would that not be practicable here?—Yes, it has been done here.

56. It has been offered here?—There was an Act of Parliament passed providing for that. Yes, the date when applications for such bounties expired, I think, in 1916.

57. Do you recommend that that Act should be re-enacted—that a further offer should be made?—The maximum bounties offered by the Government were 12s. a ton for pig iron and 12s. for steel, and that would not make up the difference, in my opinion, between the retail price of the imported article and the cost of production in New Zealand.

58. What would be the difference?—That is difficult to say. I could only give you a guess. I do not think they can produce pig iron at Taranaki under £6 10s. per ton, and at Parapara under £6 per ton. These are only approximate estimates.

59. Have you any idea of what the interest and depreciation would be?—No; it would be very considerable. Iron and steel works require a lot of money to lay down.

60. Would you care to make a statement with regard to new industries?—I prepared a list of subjects for investigation in connection with the industries of New Zealand—the mineral industries which I consider are the most important for investigation. To begin with, I would draw your attention to the great value and quantity of mineral oils—burning, lubricating, gas-oil, and paraffin—imported into this country. For 1917 the value of these oils imported was £892,083. That is the Customs value of the oils and paraffin imported into New Zealand. The value is estimated at the fair cost value plus 10 per cent.

61. That does not include freights, which are enormous?—That does not include the freights. There have been attempts made for many years to obtain a supply of crude petroleum in New Zealand. Up to the present time about twenty-five deep boreholes have been drilled in New Zealand—in Hawke's Bay, Taranaki, Canterbury, and Westland. The deepest of these bores is 5,274 ft., at Moturoa; it is named the Blenheim Well. None of these boreholes have yet proved oil in quantity of commercial value. One company—the Taranaki Oil Wells (Limited)—gained the Government bonus of £7,250 for the production of a million gallons of crude oil, but it took them six years to obtain that quantity from three or four boreholes, which have now greatly declined in productiveness. So that up to the present the results of our deep drilling have been negative. But it cannot be said that the drilling should be stopped or that the operations must be condemned, for throughout the world it has been proved that a great percentage of unsuccessful boreholes are drilled before a payable supply is obtained. I have here a leading article from the English *Colliery Guardian* upon a paper recently published by the Smithsonian Institute of the United States upon oil-prospecting and the results of oil-prospecting in different countries, and it is here stated that nearly all the successful oilfields were discovered by what is called "wild-catting" or boring haphazard. It states that in the United States every field has been located only after hundreds of holes have been drilled. It does not, however, support haphazard in preference to scientific boring, but it states the above as a fact nevertheless. So that as regards drilling in New Zealand we must not condemn the prospects entirely on account of the twenty-five deep holes that have not secured a commercial supply. The difficulty of drilling in New Zealand in many places is owing to gravel and alluvium preventing the formation of the underlying rocks being observed and the best positions for drilling being determined. In Canterbury a borehole has been drilled through 1,500 ft. of gravel and conglomerate. At Taranaki the rocks are covered with volcanic debris, and they have drilled there 5,274 ft., but no rocks outcrop. The Government has subsidized the undertaikng very well indeed by loans or grants. That is all I can tell you about the drilling. I consider that the prospects of petroleum shale are very much better. Last week I returned from Orepuki. There has been expended in connection with the shale-works there £124,000. The works have been shut down for many years. The deposits of shale there require further boring to prove their extent. The cause of the failure may be attributed to the defective treatment of the shale and to the fact that the mine was laid down in an unsuitable place. To restore the works and reopen the mine, I estimate, will cost £55,000. That will permit £15,000 for working capital to go on with. The developments at Orepuki are easily the most promising in New Zealand for the production of petroleum. The works there, if they were in operation, would not, however, supply more than a small proportion of our requirements—possibly one-fifth. Boring has also been done at Waikaka, in Southland. It is stated that twenty-two boreholes have been put down to develop a shale-seam varying from 1 ft. to about 18 ft. In quality the Waikaka shale is not quite so good as that at Orepuki, judging by the analysis of the Dominion Analyst. I certainly think that encouragement should be offered for the development of shale-oil, because we know that we have got it of high quality, whereas we do not know anything for certain regarding oil-wells yet. I believe that to encourage the oil-shale industry is well warranted.

62. *Mr. Hornsby.*] I suppose you know the cause of the first failure of the Orepuki shale-works?—Yes; one cause was the import duty on kerosene being removed, but the quality of the oil produced was not marketable; also the mine caught fire. There were several things which caused the failure. The 5d. per gallon duty being removed would not make any difference to them.

63. Do you think if that deposit were properly developed there is a future for the shale industry in this country for the production of oils and paraffin-wax? We had specimens in the lobby many years ago. I think it was about 1901. We had the crude oil, paraffin-wax, and the completely refined article?—Yes, we have the full analysis. Fifty-seven tins were sent Home