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REPORT ON THE ESTABLISHMENT OF AN IRON AND STEEL INDUSTRY IN NEW ZEALAND.

IN accordance with the instructions received from the High Commissioner in London, 31st December, 1938, an investigation has been made of the quality and reserves of raw materials available in New Zealand for the production of iron and steel, the location for the establishment of the iron and steel works, and the economics of steel manufacture on a scale commensurate with the internal steel demand of New Zealand.

Previous discussions have established that the steel demand of the country covers such a wide range of sizes, shapes and types of product, that any attempt to establish a steel works to supply this entire demand would be definitely uneconomic owing to the small tonnage required for many of the individual types or size of product. This situation is found in all steel-consuming countries and the problem presented is to determine how far the steel imports can be classified into groups suitable for economic production in the same rolling mill equipment. The first installations should be designed to supply those sizes and types of product which are consumed in sufficient tonnages to enable the manufacturing operations to be carried out on an economic basis, and the demand for small tonnages of certain types or sizes should be met, as in the past, by importation. Once the steel industry has been established, the works should be enlarged and extended in scope as soon as the demand for any particular product is sufficient to justify the installation of the necessary equipment.

Examination of the Import Statistics shows that the New Zealand steel demand gives an excellent basis for the establishment of such an industry, and the following manufacturing programme has been agreed as the basis for the first stages of production.

Manufacturing Programme.

Coke	..	..	..	..	..	120,000 tons per year.
Pig Iron	..	..	..	..	..	120,000 "
Steel Ingots	..	..	..	..	..	130,000 "
Steel Products :—						
Rails	..	..	..	..	..	11,000 "
Blooms and Billets		..	..	..	..	2,000 "
Sections	..	..	..	..	..	21,500 "
Merchant Bar	..	..	..	..	..	28,500 "
Sheets	..	..	..	..	..	26,000 "
Wire Product	..	..	..	..	..	15,000 "

RAW MATERIALS.

In establishing an iron and steel works, the first step must be to secure a supply of the necessary raw materials in sufficient quantity to maintain the works in regular production and to ensure an adequate length of life to the plant installed. While various parts of the plant are repaired or replaced from time to time in the normal operations, it will be clear that, with modern developments, the main factor in determining the economic life of a steel plant must be that of obsolescence and it is generally accepted that provision should be made for a forty year life of the general installation.

The first object of the present investigation has been to determine whether there are available sufficient quantities of these necessary raw materials to guarantee this life of forty years, and to what further number of years this period will be extended by the reserves in sight.

The main raw materials required for the manufacture of iron and steel are coal of suitable coking quality, iron ore, limestone and dolomite. The results of the investigations made to determine the extent and quality of the reserves of these materials, are summarized herein and given in detail in the Appendices which accompany this report.

COAL.

The amount of coking coal required for the manufacture of the proposed 120,000 tons of coke per year, will be about 180,000 tons per year, or for a life of forty years, *7,200,000 tons*.

The examination of the coalfields in the Greymouth and Westport districts, shows that there are large deposits of coal in these areas which have good coking properties, and while in some cases the sulphur content is too high to permit the use of this coal for making metallurgical coke, yet the large proportion of the reserves are of excellent quality as regards both coking properties and sulphur content.

To obtain the most economical operation, the coals should be drawn from more than one mine and blended so that full advantage can be taken of the particular properties of the different types of coal, in order to give the most suitable quality of coke, to utilise a proportion of the higher sulphur coals, to minimise the excessive swelling properties in some of the coal, and also to facilitate the rapid assembly at the ports and dispatch of the coal required.