

The present estimated reserves of the coals suitable for the manufacture of metallurgical coke are shown in the following table :—

New Zealand Iron and Steel Works.—Summary of Estimated Coal Reserves.

District.	Mine.	Coal in Ground.	Recoverable Coal.
		Tons.	Tons.
Greymouth	Strongman	8,626,000	4,313,000
	Liverpool	5,228,000	3,114,000
	Paparoa	4,526,000	2,569,000
	Dobson	17,472,000	9,200,000
	Wallsend	6,000,000	3,715,000
	Other areas	4,600,000	2,300,000
Total Greymouth		46,452,000	25,211,000
Westport	Denniston	12,000,000	7,000,000
	Millerton and Stockton ..	not suitable coal.	

Total Recoverable Coal suitable for Metallurgical Coke, 32,200,000 tons.

Coking Coal required—

Per year 180,000 tons.

For 70 years 12,600,000 tons.

or 40% of Recoverable Coal in areas covered by the Estimates.

These estimates show that there are adequate reserves of coal of good coking quality and suitable sulphur content to give security to the establishment of the Iron and Steel Industry and to meet the normal requirements of other industries demanding this type of coal.

It is our opinion that this estimate is conservative and that further reserves will be found as exploratory work continues, but even on this basis, there are reserves of recoverable coal of the desired quality equivalent to over one hundred and seventy years of the steel works demand. There is no doubt that there are ample reserves of coal of excellent quality, but it is recommended that the Government should consider a long-term policy for conserving these high quality coals for use in those industries in which they have special value and utilising the large resources of lower-grade coals to meet the market demand where the ordinary qualities are quite satisfactory.

IRON ORE.

The quantity of metallic iron required for the manufacture of 120,000 tons of pig iron is about 115,000 tons. The quantity of iron ore which must be used will naturally vary according to the quality of the ore, ranging from 287,500 tons per year with ore of average 40 per cent. iron to 230,000 tons per year with ore of 50 per cent. grade. The total quantity of ore required for forty years' life of the works, therefore, lies between 9,200,000 tons and 11,500,000 tons, or for seventy years' life, between 16 and 20 million tons.

The two main sources of iron available in New Zealand are the iron ore deposits at Onekaka and the iron sands of Taranaki.

The iron sands hitherto have not proved of economic value owing to the difficulties which have been experienced in the attempts made to produce pig iron or steel, using this material alone, due to the presence of titaniferous acid in the sands. Recent developments show, however, that these difficulties can be readily overcome when the iron sands are mixed with iron ore in such quantities as to eliminate the bad effects of the titaniferous acid and smelted under acid slag conditions. It is recommended that the iron sands should be used in the proportions of one part iron sand to four parts of iron ore in the mixture of ores charged into the blast furnaces.

It can be assured that one-fifth of the iron required can be drawn from the iron sand deposits, leaving four-fifths to be supplied as iron ore. Investigations are now being carried out to determine how far this proportion can be further increased.

The quantity of iron sand available amounts to many million tons. The Geological Survey have made an examination of the Patea district and estimate at least 16 million tons in this area alone. This raw sand can be readily concentrated and will yield from 4 to 5 million tons of concentrate with 55 per cent. iron. This quantity will be adequate to meet the requirements of the proposed programme for a period of seventy to ninety years, without attacking the reserves in other areas.

The exploration work carried out at Onekaka has shown that the estimates based on the surface exposure of ore are greatly in excess of the tonnages of ore which will be realized in mining. In several cases, massive outcrops have proved to be merely large blocks of ore resting on the surface and in other cases the ore exposed consists only of boulders scattered over the surface and with no continuity of ore. This work has, however, proved the existence of large blocks of ore of good quality and established the persistence of the ore body to considerable depth.

The main purpose of this investigation has been to establish the presence of reserves of ore to guarantee the supplies required for the period of seventy years' operation of the steel works. The work already done has been mainly confined to the more easily accessible blocks at Rinonui, Rinopai