

Iron-ores.

From an economic standpoint, the only iron-ores which require notice are the deposits of black-sand. In some localities—*e.g.*, in the neighbourhood of Paritutu—very large accumulations of almost pure magnetic ironsand occur. At many places, however, the pure ironsand has been sorted by the action of the waves and the wind, so that it forms only a thin covering to a more heterogeneous sand. It would therefore be advisable, before any erection of smelting-works is undertaken, to carry out a thorough and exhaustive sampling of the ironsand deposits. In such examination mere surface samples should not be allowed to predominate unduly, but the character of the sand from various depths should be fully taken into account.

Tests of ironsand from the Patea district have been lately made in the Dominion Laboratory, with the result, *inter alia*, that 0.16 per cent. of vanadium was found to be present. It is probable that the New Plymouth ironsand also contains vanadium, and, if so, its commercial value as a source of steel may be notably increased, provided that not more than 50 per cent. of the vanadium is lost in the smelting and steel-making processes.

COAL IN THE CHARLESTON AND BRIGHTON DISTRICTS.

During the last week of March I made a hasty examination of coal outcrops in the Charleston and Brighton districts. The report then supplied was placed under the headings of—(1) Charleston lignite; (2) Brighton lignite; (3) Bullock Creek coal; (4) Fox River coal and anthracite; (5) Porarari River coal; (6) Extent of coal areas; (7) Economic value of coal-areas; (8) General remarks; and was substantially as follows:—

(1.) *Charleston Lignite.*

A lignite-seam which affords a good household fuel, locally sold at 5s. per ton, occurs over a considerable area in and near the Township of Charleston. It lies almost flat, and, as a rule, has very little cover, so that it is mined opencast. The seam in many places is at least 12 ft. to 20 ft. thick, but the floor is hardly anywhere visible, and therefore the maximum thickness may be much greater. In some pits the seam exhibits dirt bands and partings which, where it thins out towards the west and south, pass into shaly bands of some thickness. At one place the lignite contains numerous lensoid inclusions of clay, shale, and flinty material. Resin is everywhere abundant in the form of small bands and lumps.

An analysis of the Charleston lignite, made upon a partly air-dried sample, is as follows:—

	Per Cent.
Fixed carbon	33.55
Volatile hydrocarbons	44.53
Water	19.17
Ash	2.75

	100.00
 Total sulphur	 6.0

The Charleston lignite is decidedly younger than the steam-coals of the Greymouth and Buller districts, and is probably of Upper Miocene age. It may be correlated with the lignite at Addison's and near Cape Foulwind, and perhaps also with that at Brighton, twelve miles to the south.

The Charleston coal, like most lignites, is very easily set on fire, and hence the numerous outcrops form a source of danger. From time to time one or another becomes ignited through surface fires, and some expense has been incurred in extinguishing the burning coal, but so far no serious damage has been done by these fires.

A mile or so south of Charleston the lignite thins out on an old land-surface of gneiss. Farther south there are other outcrops, but the lignite appears to lie in small basins, and only in one or two places to be of any great thickness.

(2.) *Brighton Lignite.*

On the terrace slope facing the sea near Brighton a lignite-seam of good quality outcrops at a height of about 50 ft. above sea-level. The seam, which lies almost flat, is 10 ft. thick. It is overlain by sandstone, above which comes limestone. The immediate floor could not be seen, but at a horizon a few feet below conglomerate appears. This conglomerate probably rests on granite or gneiss, rocks which are seen along the coast-line two or three miles to the north and to the south.

The Brighton lignite has been mined to some extent for household purposes, and has also been used by the small steamers that at one time traded to Brighton. The following analysis shows its composition:—

	Per Cent.
Fixed carbon	29.48
Volatile hydrocarbons	48.64
Water	17.36
Ash	4.52

	100.00
 Total sulphur	 5.65