

railway-trucks by means of an inclined chute. The coal passing through the upper bars goes on to another screen, having a mesh of about $\frac{3}{4}$ in. All the coal that will not go through the $\frac{3}{4}$ in. mesh is termed "nuts"; and the coal that passes through the second screen falls on a third one, with $\frac{1}{2}$ in. meshes; and what does not pass through the $\frac{1}{2}$ in. mesh falls into another truck, and is termed "peas" which is sold at a cheaper rate than nuts; and after this the residue is all a waste product. But were there proper compressing coal-brick machinery the whole of the coal refuse could be made a marketable product.

If the same care were exercised in preparing the coal for market at the Brunner Mine, we should never have heard of so much slack coal being emptied into the Grey River. The travelling table or belt, which conveys the coal from the screens to the railway-wagons, is made of iron plates 1 ft. wide and $\frac{1}{2}$ in. in thickness, all hinged together. The pulleys or drums at each end of the belt are hexagonal. The belt is the same width as the screens, namely 5 ft., and, as it travels at a comparatively slow rate, there is plenty of time for a man or a boy to pick out any pieces of stone or shale from among the coal before it is conveyed the length of the chute which fills the railway-trucks.

This company has also first-class air-compressing engines, which came out from England some years ago for the Wallsend Company at Brunner. The engines, made by Walker Brothers, of Wigan, have double cylinders 26 in. in diameter, and 4 ft. stroke. The winding-engines have two cylinders, each 20 in. in diameter, with a piston-stroke of 4 ft. 6 in. The winding-drum is 12 ft. in diameter, and the rope used for winding is of Lang's patent plough steel, $3\frac{1}{2}$ in. in circumference. All the plant and machinery used are in good condition, and some of it is large enough for a mine where the output is double that at this one. The surface-works are lighted up at night with one of Thomson's dynamos made by the New Zealand Engineering Company, Dunedin. The dynamo is driven by a vertical steam-engine with 9 in. cylinder and 1 ft. stroke, the dynamo making 1,170 revolutions per minute when its current and force registers 45 amperes and 110 volts respectively. There is also another steam-engine for winding from the incline erected in a separate building. This engine has double cylinders 9 in. in diameter. The winding-drum is 12 ft. in diameter, but this is worked by geared wheels from the engines. The whole of the steam is supplied by three Cornish boilers made of steel, 6 ft. in diameter and 30 ft. long, having four Galloway tubes in each, and worked up to a pressure of 70 lb. per square inch.

Castle Hill Company.—This company's leasehold adjoins the Kaitangata Company's holding. The company has for the last three years been expending a large sum of money in trying to open out a mine. They sunk a shaft to a depth of about 430 ft., when a band of fine sand with water was met with, which made sinking very expensive. The shaft is either 10 ft. or 12 ft. in diameter, and lined with bricks all the way down; but there was no sign of any coal met with in sinking. After getting the shaft down this depth it was deemed more advantageous for the working of the mine and opening it out, to drive a dip heading from the face of the hill. This heading was completed a few days prior to my visit, and a seam of workable coal cut. The heading is carried down for a distance of 2,100 ft. on an inclination of 1 in $4\frac{1}{2}$; the vertical depth of the coal below the level of the top of the shaft when it was cut, would therefore be about 466 ft. The coal is hard and compact, and some of it comes out in large blocks, but what was taken out of the mine prior to my visit had not that bright appearance of the coal from the Kaitangata Company's mine; but there had not been sufficient work then done to judge of the coal, which appears to be discoloured by oxide of iron in the water.

The workings are kept dry by a three-throw pump, capable of lifting about 14,000 gallons of water per hour. Preparations were being made at the time of my visit for getting the hoppers constructed and railway-sidings laid down, which will require to be completed before any coal can be taken to the surface. There is a good winding-engine erected, having 20 in. cylinders and 5 ft. stroke, made by A. Barclay and Sons, of Kilmarnock; and there is a dynamo of similar make and size as that of the Kaitangata Company for lighting the surface-works. The whole of the work yet undertaken is being done in a systematic and substantial manner, and shows that provisions are made for a large output. When once this mine is opened up, and in a position to send a large quantity into the market, it will then become a question of supply and demand; two companies will then be competing with each other for the trade which is purely confined to a district which does not extend beyond a radius of 100 miles, as this coal does not stand an exposure to the atmosphere for any great length of time without breaking up; neither could a large quantity of it be stacked for a long time without spontaneous combustion taking place.

There is little doubt but what this company will have to contend with faults the same as the Kaitangata Company, and it appeared from the colour of the coal that was on the surface, that the heading was not a great distance from one; but, be that as it may, the shaft has been sunk in a position that a considerable depth would have to be sunk before it will cut the coal-beds, as they dip at a very high inclination going in that direction.

The total output of coal from the whole of the coal-mines in the Middle Island last year was 691,548 tons, and there were 1,888 men employed in connection with the mines.

MINING MACHINERY.

THE MUDIE ORE-CRUSHER AND GOLD-SAVER.

A sketch of this machine was shown in my annual report two years ago, but, since then, the patentees have made considerable improvements, and made it a very complete ore-crusher. It cannot be said that a sufficient number of them has yet been tested to estimate the wear-and-tear as compared with a stamp-battery; but a gentleman interested in this patent waited on me about