THE BRIQUETTING OF SASKATCHEWAN LIGNITE.

NVESTIGATIONS have been carried on by the Government of Saskatchewan with a view towards better methods of utilizing the lignite beds of the province by way of drying, carbonizing, and briquetting the deposits. This material is practically the only source of fuel between the great lakes and the coal fields of Alberta. The annual production ranges around 200,000 tons and has done so for a number of years, with, if anything, a slight decrease despite the large increase in population. Western and eastern coals, the latter even at \$14 a ton in some parts of the province, are the cause of this, in view of the fact that some of the physical characteristics of the lignite, in its raw state, are much against it. For instance, the following is an average of a number of samples:

Moisture	26.13
Volatile hydro-carbons	28.11
Fixed carbon	38.16
Ash	6.86
Sulphur	•74

When the lignite is mined and exposed to warm air and sunlight, the evaporation of this moisture causes the sumption in raw state, no emphasis is put upon the methods or apparatus.

The suggested treatment for the better utilization begins with crushing it to about 2 inches and drying it.

The double-cylinder rotary dryer is recommended for the purpose, the apparatus having a capacity of 20 tons per hour, including crushing, screening, elevating, etc. The cost of the process is but a few cents per ton. After drying, the fuel should be screened to three sizes, (I) dust to $\frac{1}{8}$ inch, (2) $\frac{1}{8}$ inch to $\frac{1}{2}$ inch, (3) $\frac{1}{2}$ inch to maximum size, 2 inches. Size I can be practically all marketed as a powdered fuel. Size 2 and part of size 3 can find a market for use on automatic stokers and fuel-gas producers. The balance should be carbonized and briquetted.

In this process there is no waste. The drying process, besides supplying the demand for powdered fuel and dried lignite for automatic stokers and fuel-gas producers, speeds up the carbonizing process to the extent of the water removed before the lignite reaches the carbonizing retorts. It has the advantage, too, of removing a substantial amount of disagreeable lignite dust, preventing it from reaching the carbonizing oven and choking the gas off-take pipes.

The report describes a very suitable dryer for lignite briquettes, from which favorable results were obtained



The Saskatchewan Lignite Carbonizing Plant at Estevan.

coal to disintegrate or slack very rapidly; it also fires very quickly from spontaneous combustion; hence it is not practicable to ship it long distances or to store it. Its light gases distil before the fixed carbon reaches the temperature of ignition and, in the ordinary furnaces, escape unconsumed. The lignite has no coking quality whatever, and when thrown onto the fire crumbles very quickly, giving rise to difficulties in firing and substantial loss through the grate bars.

The results of some exhaustive investigations into the physical characteristics of the lignite and into its value as a source of power, domestic and furnace fuel and byproducts of hydro-carbon and ammonia, are contained in the recent Government report of Mr. S. M. Darling. He describes apparatus in use in Germany and the United States for the burning of raw lignite, but as the large water content and rapid slacking characteristics of the Saskatchewan product are not conducive to direct conwith samples of Saskatchewan coal. These dried lignite briquettes are serviceable in hand-fired furnaces. Having a large volatile content, they burn fiercely, with a long flange, very much like wood. They are excellent as a locomotive fuel, and in the territory adjacent to the lignite fields will compete with eastern and western coals brought in by the railroads for their own use. They are not so serviceable in house-heating stoves and furnaces as the carbonized lignite briquettes, which burn more like anthracite. Of course, no by-products are obtained when the lignite is merely dried.

Mr. Darling does not recommend, in briquetting the Saskatchewan lignite, the German process of briquetting without the addition of any binding material, as he has found it impracticable to do so on a commercial scale. The process is described, however, and it is observed that the Saskatchewan raw material is a very much harder and more nearly true coal, so that the problem to be met,