PEAT AND COAL AS GAS-PRODUCING FUELS.

A DEPARTMENT of Mines report, prepared by B. F. Haanel, B.Sc., on the value of peat, lignite and coal gas as fuels for the production of gas and power in the by-product recovery producer shows that under favorable conditions peat can be utilized for the production of a power and domestic fuel gas in such producers. The maximum moisture content in order to effect the most efficient utilization of the peat must be not more than 40 per cent.—preferably 30 per cent.—and the cost per ton containing 30 per cent. moisture should not exceed $1.50. When the nitrogen content falls below 1½ per cent. on the absolutely dry fuel, its utilization in a by-product recovery producer should not be attempted, since there are certain factors in the winning and utilization of peat which are more or less uncertain. Ample margin must, therefore, be provided to cover losses which are liable to occur, either through an insufficiency of supply of fuel or an excessive moisture content due to an extremely wet season. Certain peat bogs are cited where the production of a power and fuel gas might prove profitable. In these cases the nitrogen content is above the average and the process under the conditions cited could be carried on for the recovery of ammonium sulphate alone. The problem of manufacturing and storing the requisite quantities of fuel for a year's operation are fully discussed, and it is shown how, in the case of a European plant, these difficulties have been overcome. The steam power plant on the Wiesmoor in Germany, designed for the exclusive use of peat fuel, is described in detail. This plant has proven a greater success than was anticipated by its designers and promoters, and with peat costing one and a quarter dollars per ton, at the plant, power can be produced at a lower figure than from coal costing about three dollars and a half per ton. In the case of the Mond by-product recovery power gas plant at Osnabrück the operation was not an entire success, owing in part to the selection of an unsuitable bog for the manufacture of peat. Time was not available for thoroughly draining before beginning manufacturing operations, and the average nitrogen content was too low—in the vicinity of 1 per cent. Contracts were made to deliver power at a definite date before the erection of the plant was begun, it was consequently impossible to devote the required time to the preparation of the bog. The result was high cost of fuel with an excessive moisture content and reported failure to live up to the contract. On the other hand, marked success was achieved in the case of the Mond gas plant situated near Orentano, Italy.

It is shown in the report that under favorable conditions power can be produced on certain of the Canadian peat bogs at a cost equal to or below that possible with a hydro-electric plant.

The feasibility of utilizing coal and lignite for the production of a power or fuel gas in the by-product recovery producer is discussed in some detail. The Mond gas plant in South Staffordshire, England, which manufactures and distributes a power and fuel gas over a large industrial district, is fully described. At this plant it has been demonstrated that a gas suitable for industrial purpose can be sold at a cost per 1,000 cubic feet far below that of a quantity of town gas of equal heating value. The field for serving towns and cities with such gas for domestic purposes is a very large one, but its distribution among householders is at present prohibited by an existing parliamentary act. In those portions of Canada where a domestic fuel gas is in demand and where a suitable domestic fuel cannot be obtained at reasonable prices, the distribution of producer gas, manufactured according to the process described, should prove of great economic advantage to the entire country as well as the individual community directly benefited. In this connection it is pointed out how the lignites of the western provinces might be efficiently utilized, especially those lignite deposits situated with respect to Edmonton and other smaller communities.

For the representative coals of Canada, the average nitrogen contents of general samples are cited to show which coals are particularly suited for the by-product recovery process.

When the establishment of a by-product recovery producer gas plant is considered either for the production of a power or fuel gas, or for the recovery of the ammonium sulphate alone, the exact estimates of costs of plant delivered on site and the cost of erection and operation must be obtained in every case from the manufacturers; and since sulphuric acid is an important factor in the recovery process, the cheapest means for obtaining it must be fully considered. On the Atlantic coast or a short distance inboard the cost of sulphuric acid manufactured at the plant has been placed at $8 per ton. This cost, it must be understood, is merely an estimate, although it will not vary much in either direction.

In conclusion, the writer states that by-product recovery producer gas plants can be profitably operated for the production of a power or fuel gas—and in certain cases for the manufacture of ammonium sulphate alone—at certain of the Canadian peat bogs, and in the western provinces at certain of the lignite deposits. When a disposition can be made of the gas generated, this process can be profitably applied to the Canadian bituminous coals; but since coking plants are already established at the principal coal mines where coking coal is found and the gas generated by this means is very probably sufficient to answer all requirements for some time to come, it would be better from a financial standpoint to establish by-product recovery plants in connection with the coke ovens. This, in fact, is being done both in Nova Scotia and Sault Ste. Marie, Ont.

IRON ORE SHIPMENTS

The iron ore shipments from mines in Canada during 1914 are reported as 244,854 short tons valued at $542,041. These shipments included 199,292 tons of hematite and roasted siderite and 45,562 tons of magnetite and concentrates. The total shipments of ore in 1913 were 307,634 tons, including 92,386 tons of hematite and roasted siderite, 209,886 tons of magnetite and concentrates and 5,362 tons of titaniferous ore.

Exports of iron ore from Canada during 1914 were recorded by the customs department as 135,451 tons valued at $360,974.

According to mine operators' reports, however, 184,444 tons were shipped to Canadian smelters, and 60,410 tons were exported to the United States. The imports into the United States from Canada are also reported by the Washington trade statistics as 58,816 tons, valued at $153,415.

Imports of iron ore in 1914 were, according to customs records, 1,147,108 tons, valued at $2,387,358.

Shipments of iron ore from the Wabana mines, Newfoundland, in 1914, by the two Canadian companies operating there were 639,430 short tons, of which 422,920 tons were shipped to Sydney, Cape Breton, and 216,510 tons to the United States and Europe. In 1913 the shipments were 1,605,920 short tons, of which 1,048,432 tons were shipped to Sydney, and 557,488 tons to the United States and Europe.

The total production of pig iron in Canadian blast furnaces in 1914 was 783,164 tons of 2,000 pounds, valued at approximately $10,002,856, as compared with 1,128,967 tons, valued at $16,540,012 in 1913.