

the incandescent fuel with the air supplied for combustion. This water vapour is decomposed, yielding hydrogen and oxygen. The latter combines with the carbon of the fuel, forming carbon monoxide. This chemical reaction absorbs a large amount of heat and lowers the sensible heat of the gas, but the heat absorbed in liberating the hydrogen is to a large extent restored and utilized when the gas enriched by hydrogen is burned in the gas engine or other apparatus. With peat containing from 25 to 30 and more per cent of moisture, the moisture content is sufficient to accomplish all that is required without the introduction of water in the producer from an outside source.

To demonstrate the value of peat for the production of power for industrial purposes, a modern German peat-gas power plant has been erected by the Department in Ottawa. Its capacity is 60 horse-power, and consists of a double fire zone Körting peat-gas producer, with the necessary gas cleaning apparatus, and a Körting four-cycle single-acting gas engine direct-connected to a Westinghouse 50 kw. direct current generator.

While no definite figure can at present be given of the consumption of peat per brake horse-power hour, since the investigation begun some time ago is not yet completed; our preliminary trials, however, bear out the results obtained in Swedish and German plants, where the amount of peat consumed per brake horse-power hour ranges from a little over two pounds to about three pounds, depending on the calorific value of the peat employed. Since the peat of the different bogs so far examined has a high calorific value, we expect that our figure for the consumption of peat per brake horse-power hour will be in the neighbourhood of two pounds.

The erection of gas producers designed for the recovery of by-products is not recommended except in localities where such by-products would command a ready and profitable market. In Canada it is far more economical to aim at the complete gasification of all the heat elements in the fuel.

Peat-gas producers for power purposes should, whenever possible, be erected on the bog, and the energy generated in the form of electricity transmitted to neighbouring towns and villages for power and lighting purposes as in the case of water-power. This is the policy adopted in European countries.

Whatever other valuable products may be obtained, such as moss litter, peat mull, alcohol, packing paper, millboards, ammonia, and nitrates, the great and important need for us in Canada is the production from the peat deposits of a constant reliable supply of fuel for domestic and industrial purposes.

When this has been attained and peat-fuel is put on the market in abundance, and sold at a reasonable price, we shall not alone have rendered ourselves to a great extent independent of outside sources for this necessity, thus enabling us to retain in our own country a large part of the capital now spent annually for the purchase of fuel from abroad, but a new era of industrial development will dawn upon our nation, and we shall here see repeated what has been accomplished in Europe—the establishment of large industrial concerns on the waste areas of our country underlaid by peat, and the wide stretches of these solitudes will become resonant with the welcome sounds of industrial activity.