pit. The water seals the bottom of the generators, preventing the ingress of air, and yet does not interfere with the discharge of the ashes.

Crude air-dried peat in lumps forms the fuel. By the time it reaches the generators from one-third to one-half will have crumbled into fragments and dust, making a compact and suitable charge for uniform consumption in the furnace,

The air blast is generated by a small blower operated by gas engine, taking gas from the holder. It passes first through the pipes of the condenser, where in condensing the moisture out of the hot gases from the generators it is itself heated up previous to entering the furnaces by way of the chamber below the grate in the bottom. The pipes for injection of steam also enter here. However, on account of the high percentage of moisture contained in the peat fuel, an internal supply of steam for the mixture of water- and producer-gas is usually assured.

After making a good fire, say of wood, in the grate, the peat is charred into the furnaces by the port holes at the top until they are full, when the caps are again clamped down. By forcing the blast for a while and heating the peat into a glowing mass the process becomes properly started, after which the volume of air is aljusted to the production of the maximum capacity of the generators. From now on the operation is continuous except during the loading or re-charging periods, covering a quarter of an hour or so once or twice a day.

Although set up in pairs the generators, like the Nacozari machines, will most of the time work as one, producing the uniform mixed gas; but should a partial production of water-gas alone be desired, the air blast is shut off and steam injected into one generator, up through the glowing mass of peat, across into and down through the hot coals in the other machine and out thence to the condenser and scrubber. This continues for a few minutes, until the fire has cooled off, so that the air blast is again required to bring it up to the proper temperature, when the same course is again followed, except that this time the direction of the steam in the generator is reversed, entering the bottom of the second and leaving by the first.

Peat, like wood, particularly green wood, is naturally suited on account of its large percentage of moisture, to steady production of the mixed gas, rather than to the alternate generation of first water-gas and then producer-gas, as with dry fuels such as coal.

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QUALITY OF MERRIFIELD PEAT-GAS.

In these experimental runs of the Merrifield gas generator the calorific determinations and analyses of the gas were made by Dr. W. Hodgson Ellis, professor of applied chemistry at the School of Practical Science, Toronto. The gas produced on 28th October 1901 gave the following calorific values at the different stages of the operations:

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3.20	.,																												į.			149.
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4 15	,,						1		6						÷	*	÷	ż	ł,								,	÷	+	*		125.
									1	1	v	e	ra	ıg	e					*	•							•				133.7

The quantity of gas made and peat consumed was not ascertained.

The plant had been kept warm during the previous part of the day without generating much gas until this test began, and soon after gas of good quality began to appear a mishap caused a sudden termination of the test. This accounts for the gradual rise and subsequent abrupt fall in the quality of the gas.