

Temperatures—First, 200° to 212° Fahr.; second, 300° Fahr.; third, 400° to 410° Fahr.; fourth, 600° to 700° Fahr. These temperatures must be applied to the peat in turn. 700° Fahr. is generally sufficient to exhaust. The temperatures to be watched carefully are from 200° to 212° Fahr., and from 400° to 410° Fahr.

Treatment of Kauri-peat and Products.

By “kauri-peat” is meant swamp composed mainly of decayed and decaying kauri vegetable matter, leaves, bark, limbs, roots, &c., and decayed or sugary gum. There are thousands of acres of these swamps north of Auckland, and they are well known to contain large quantities of saleable kauri-gum and kauri timber lying buried. It is also a well-known fact to gum-diggers that the best of the kauri-gum lies beneath the kauri-trees buried in these swamps, and, as these swamps run from 4 ft. to 14 ft., more or less, in depth, it is impossible to get out either this valuable timber or the gum by the present system of digging.

In applying my process for treating this peat, and extracting certain valuable products, I would propose to take a swamp in a face, or run a wide drain through it, thereby draining the swamp if necessary, and uncovering the buried timber and gum.

The peat could be run up to the factory, and could be there treated, and returned to the swamp by tips, so as to leave a level surface. Diggers could be employed to load small trucks with the peat, and deliver it at the factory free of cost, and get out the timber for the gum which they would dig out. That is to say, it would pay diggers to deliver the peat to the factory and get out the timber for nothing; or, if labour was employed, the amount of gum and timber obtained would more than pay expenses of getting out and delivering at factory; or diggers would willingly pay extra royalty to dig on a drained swamp.

The products obtained from a kauri-swamp by my process would be kauri timber, kauri-gum, tar, oils, gas (illuminating or for power).

There is no machinery necessary in my process of extracting these products, tar, oils, and gas, unless it were thought advisable to use a gas-engine for power to haul logs or trucks from the swamp.

The gas made is a by-product, and would supply the necessary gas to the engine, or could be used underneath the furnace as auxiliary heating-power.

My plant consists of a cast-iron chamber, of suitable size, so constructed that it is continuous in working—that is to say, fresh soil is put in from time to time, and the exhausted soil is drawn out without interfering with the continuance of the process, and all particles of the soil are brought into contact with the right heat at the proper time. This cast-iron chamber is built into or sheathed round with bricks, and a small furnace added. It is connected by an iron pipe to a suitable expansion-chamber, where the gases which are driven off expand and separate from the tar; and from there to the second chamber, where most of the gases are condensed into oil, the remaining uncondensed gases going from there through a condensing-worm, and from thence into a small gasometer for supplying heat, power, or light.

Products.

Tar.—This is a splendid wood-preservative, and will prevent rusting or oxidization in iron or steel work. It dries well, and can be used in place of coal-tar.

Oils.—Some of these oils can be used with linseed-oil for painting purposes, especially for ships' hulls, piles, or wharf and bridge work. The main use I claim for the oils is for use on board men-of-war, torpedo-boats, or destroyers, as fuel. Such fuel is easily applied, can be used at a moment's notice either in the presence of coal fuel or alone. When used alone, no smoke or vapour of any kind is given off through the smokestack. If necessary, the whole of the fire-hole, fire-tubes, and spaces in the boilers can be filled with incandescent heat, and the whole of the oil can be gasified. The objection to oils already in use for this purpose is the thick black smoke which is given off, as by it a ship can be sighted at a long distance. This fuel oil could also be used on ordinary steamers or in stationary boilers. The oil is also suitable for linoleum-manufacture, japans, lacquers, &c.

The cost of producing this oil, tar, and gas by my continuous process would not exceed 2d. per gallon if 2 tons of raw material were treated in the twenty-four hours. The marketable kauri-gum and kauri timber which would be obtained is not, of course, considered in this cost of 2d. per gallon. Also, coal or fuel is allowed for at a cost of £1 7s. 6d. per ton. Fuel would not cost this, as the swamps are full of small timber which could be used. Also, the gas manufactured would be used as fuel. The necessary labour would consist of one man for, say, each eight-hour shift.

I may say in conclusion that these products are the results of experiments carried on by myself from time to time as conditions allowed, over a period of more than fourteen years; that I am a chemist, and have consulted some of the best known authorities in the world; also that it is absolutely necessary to use my process for the extraction, and my plant as here specified is the best kind to use.

My experiments have not been laboratory experiments, but practical ones, and I have treated several tons of peat from various swamps.

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GUMS COMPETING WITH THE TRUE KAURI.

I was surprised to find that many people, even on the gumfields, were not aware of the large number of gums which compete in the London and other markets with the true kauri product. The following is a rough list of the gums referred to:—