

The adoption of this method of cleaning the gum will in the first place be the means of effecting a very large saving in freights from the gumfields to Auckland. Assuming that the low-grade gums in the state they are sent in from the gumfields contain 33 per cent. of dirt and foreign matter, which is a low estimate, then it means that for every three sacks of the gum sent into Auckland one sack of it consists of dirt and other rubbish which never should have left the gumfields. Now, at normal times it costs about 3s. a sack from the gumfields to the store. These sacks of gum average about twelve to the ton, so that the freight per ton from the gumfields to the store, Auckland, is 36s., and of this 12s. is paid for transporting dirt and rubbish. In like manner there would be a great saving in freights in the matter of export to Europe and America. How great the saving would be can be realized when it is pointed out that under ordinary conditions there are upwards of 3,000 tons of chips and dust exported every year. That it is bad business to export a commodity containing from 25 to 75 per cent. of dirt and rubbish is a truism which need not be argued.

With the new process in operation these low-grade gums will be prepared and cleaned ready for export at the northern ports where they are produced, and shipped to Auckland for direct transhipment to the foreign-going ships. By this means the saving in handling and other costs will be considerable.

KAURI-PEAT OIL.

An area of 3,000 acres at Kaimaumau, north of Mangonui, was set apart under section 3 of the Kauri-gum Industry Amendment Act, 1915, and has been taken up by the New Zealand Peat Oils Company (Limited). A good deal of preliminary work has been done by the company under rather disadvantageous conditions. The management are sanguine of eventually establishing a successful industry.

In response to my request the secretary of the company has supplied a summary of progress made during the past year:—

Since 1917 the development of the kauri-peat oil-extraction industry has been progressing slowly but surely—slowly because of the amount of investigation required, surely because such investigation has been in the hands of experts. It may be said at once that many super-optimistic anticipations, advertised by irresponsible amateurs in practical work, are not warranted by facts. At the same time reliable tests go to show that kauri peat has a real, a unique value. It is much richer in oil-producing quality than European peat, which has now been found a payable proposition when treated for gas, alcohol, ammonia, &c. Kauri peat contains only a small percentage of ammonia, but this is probably more than made up by other products.

A satisfactory trial of the fuel oil produced by the New Zealand Peat Oils, Limited, was made by the Northern Steamship Company in the a.s. "Paroto" at the beginning of the year. This was the more satisfactory because the oil was very crude for want of proper appliances at Kaimaumau. The following was reported by the Chief Engineer: "The run was from Auckland to Whakatane, a distance of about 170 miles. The trial was with two 60 h.p. Beardmore engines, which gave very little trouble. Actual oil received, 180 gallons; hours run to date, 20 (neutral 3 hours); speed, 8.5 miles per hour; consumption, 4.3 gallons per hour; oil remaining, 77 gallons. On removing the cylinder-covers very little residue was found, the cylinders appearing to be much clearer than on Australian oil. The vessel was propelled beyond her average speed."

An up-to-date plant which is now being erected will shortly treat our peat on a commercial scale, and if the results are, as may be anticipated, about on a par with those obtained in the laboratory an important industry should eventuate.

Professor F. P. Worley, M.A., D.Sc., Lond., of Auckland University College, consulting chemist to the company, gives the following return from kauri peat, per ton: Oil or tar, 32 gallons; aqueous, 64 gallons; gas, 5,000 cub. ft.; ammonia, 7 lb. 6 oz.; acetic acid, 10 lb. 12 oz.; charcoal, 7 cwt. Ammonia is reckoned as sulphate of ammonia.

But the industry can only be a success if carried out on a large scale and under careful expert supervision. Under the circumstances the future may be looked to with considerable confidence, for there are apparently sound grounds for believing that the peat lands of the north will become a valuable asset, apart from the marketable gum that is still to be won on fields hitherto considered to have been well dug.

Samples of the Kaimaumau peat taken out in the presence of Professor Worley, of Auckland University College, and of myself, in November last, were sent to Dr. Maclaurin for analysis. The samples were carefully taken from a hole 12 ft. deep sunk through the peat. After being roughly dried the samples were divided by Mr. F. J. Hagger, of Kaimaumau, into two similar lots, one lot being sent to Professor Worley in Auckland and the other to the Dominion Laboratory, Wellington. The following results were obtained by Dr. Maclaurin:—

	Sample No. 1.	Sample No. 2.	Sample No. 3.	Sample No. 4.	Sample No. 5.*
Total crude oil, in gallons per ton	29.8	17.3	20.2	40.9	29.0
Gas (cubic feet per ton)	11.9	13.2	11.2	10.5	4,300
Ammonia sulphate, in pounds per ton	..	..	..	..	14.1
Charcoal (hundredweight per ton)	..	..	..	..	7.2
Acetic acid (pounds per ton)	..	..	..	..	8.0

In the course of his report Dr. Maclaurin says,—

"In the present investigation it has not been found possible to make an exhaustive examination of the oils, but further work on them will be carried out as opportunities arise.

"Owing to the very high prices of sulphuric acid and caustic soda in New Zealand the manufacture of refined burning and lubricating oils is out of the question, but it would be quite feasible to redistill the crude oil into fractions suitable for motor-spirit and fuel-oil. The results show that in the composite sample (No. 5) the fraction up to 200° C. is 8.8 per cent. of the crude oil. This fraction would no doubt prove suitable for use as motor-spirit without requiring much, if any, refining. It could be increased to 10 or 12 per cent. by raising the temperature of distillation a few degrees higher. With 11 per cent. of light oil and 9 per cent. of coke the loss would be 80 per cent. of fuel-oil.

* A composite sample of the different layers of peat.