1926.

NEW ZEALAND.

KAURI-GUM INDUSTRY

(REPORT ON THE) FOR THE YEAR ENDED 31ST MARCH, 1926.

Presented to both Houses of the General Assembly pursuant to Section 5 of the Kauri-gum Industry Amendment Act, 1914.

Department of Lands and Survey,
Wellington, 20th July, 1926.

SIR,—

I have the honour to submit herewith the annual report under the Kauri-gum Industry Amendment Act, 1914, for the year ended 31st March, 1926.

I have, &c.,
J. B. THOMPSON, Under-Secretary.

The Hon. A. D. McLeod, Minister of Lands.

REPORT OF THE KAURI-GUM SUPERINTENDENT.

EXPORT OF KAURI-GUM.

For the year ended 31st March, 1926, the export amounted to 5,495 tons, of the value of £414,420, an average price of £75 per ton. The tonnage, value, and average price per ton of the export for the past ten years are—

Year ended 31st March,	Tonnage Exported.	Value.	Average per Ton.
		£	£
1917	4,862	300,271	62
1918	4,636	304,852	66
1919	2,338	152,299	66
1920	4,726	310,614	66
1921	6,131	524,701	85
1922	3,968	391,304	98
1923	6,080	520,409	85
1924	6,923	640,712	92
1925	5,432	446,019	82
1926	5,495	414,420	75

Details of the yearly export, and the country to which exported, from 1915 to 1926 are given below :—

Particulars of Kauri-gum exported from New Zealand from 1915 to 31st March, 1926, inclusive.

Country to which exported.	1915.		1st January to 31st March, 1916.		1st April, 1916, to 31st March, 1917.		1st April, 1917 to 31st March, 1918.		1st April, 1918, to 31st March, 1919.		1st April, 1919, to 31st March, 1920.	
	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£
United States of America	3,312	222,856	974	60,010	3,158	218,214	2,316	164,516	1,371	81,914	2,037	157,251
United Kingdom	1,172	48,585	336	13,548	1,484	68,378	363	13,982	346	19,977	1,650	90,422
Germany ..	..	..	..	..	..	..	..	..	..	..	..	..
Canada ..	56	4,550	118	8,972	133	7,718	1,929	124,271	572	45,588	1,016	61,005
Australia ..	9	594	5	314	29	1,982	18	1,577	49	4,820	23	1,936
Belgium ..	..	..	..	..	..	..	..	..	..	..	..	..
France ..	5	430	..	..	..	..	..	..	..	..	..	..
Austria-Hungary	..	..	..	..	..	..	..	..	..	..	..	..
Russia ..	21	2,118	..	..	50	3,440	..	..	..	..	..	..
Netherlands ..	..	..	..	..	..	..	..	..	..	..	..	..
Sweden ..	..	..	..	..	..	..	..	..	..	..	..	..
Italy	..	..	..	..	..	..	..	..	..	..	..	..
Japan ..	..	..	..	..	..	..	10	506	..	..	..	..
Hong Kong ..	..	..	..	..	8	539	..	..	..	..	..	..
Totals ..	4,575	279,133	1,433	82,844	4,862	300,271	4,636	304,852	2,338	152,299	4,726	310,614

Particulars of Kauri-gum exported, &c.—continued.

Country to which exported.	1st April, 1920, to 31st March, 1921.		1st April, 1921, to 31st March, 1922.		1st April, 1922, to 31st March, 1923.		1st April, 1923, to 31st March, 1924.		1st April, 1924, to 31st March, 1925.		1st April, 1925, to 31st March, 1926.	
	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£
United States of America	3,224	345,992	2,487	266,922	3,742	367,946	4,197	449,117	2,624	250,379	2,682	211,623
United Kingdom	2,544	149,422	1,297	104,094	1,960	129,082	2,409	170,785	2,360	169,975	2,350	179,868
Germany ..	..	..	58	3,574	70	3,363	66	2,832	117	6,367	107	4,670
Canada ..	314	24,481	89	9,641	109	7,462	118	7,714	97	5,726	101	3,569
Australia ..	49	4,802	37	7,073	84	6,679	7	787	24	2,006	9	1,198
Belgium ..	..	..	..	..	..	..	..	..	..	..	33	1,168
France ..	..	..	..	..	..	..	55	5,855	79	5,121	135	9,136
Austria-Hungary	..	..	..	..	..	..	..	..	..	..	..	..
Russia ..	..	..	..	..	..	..	..	..	..	..	..	..
Netherlands ..	..	..	..	..	90	4,381	38	1,582	53	1,917	46	1,809
Sweden ..	..	..	..	..	20	1,000	..	..	20	820	..	..
Italy	..	..	..	..	1	170	26	1,647	55	3,546	..	2
Japan.. ..	..	4	..	..	4	326	7	393	3	162	22	1,027
Hong Kong ..	..	..	..	..	..	..	..	..	..	..	..	..
Denmark ..	..	..	..	..	..	..	..	..	..	..	10	350
Totals ..	**6,131**	**524,701**	**3,968**	**391,304**	**6,080**	**520,409**	**6,923**	**640,712**	**5,432**	**446,019**	**5,495**	**414,420**

Market Conditions.

Although a good tonnage of gum has been exported during the year the exporters can only regard the past year as an extremely unsatisfactory one. It has been, so far as the exporter is concerned, a buyers' market, and the buyers have been well aware of the fact and have made the best use of it. The present "slump" through which the trade is passing is considered to be the worst ever experienced. Until the latter end of the year the supply of most grades on the open market continually exceeded, or at least equalled, the demand from abroad, but towards the end of the year some grades were not in great supply, and the exporter at times had to exercise some diplomacy in covering requirements at short notice. With a firm demand during the winter months several gradings, especially good linoleum chips and chalk gradings, will be very difficult to obtain in dry condition and in good lots.

It would now appear as though the new lacquers have taken a permanent place in the motor-car trade, and possibly in other industries. A considerable quantity of fossil resins will therefore be permanently displaced as the result of the demand for varnishes falling off. How far this has affected kauri is difficult to determine. Although probably the state of the export trade is due to a combination of factors, the apparently increasing use of lacquers in the motor-car industry must have played a very prominent part.

So far as the digger is concerned the real difficulty is that in digging in the kauri swamps, from which practically the whole of the output is obtained, the diggers recover brown and chalk grades as well as chips at the same time and in varying proportions. So long as the chalk grades are unsaleable at gum prices and have to be crushed up and sold with chips at chip prices it is impossible for the average digger to earn a living-wage at present prices.

Production during the Year.

The kauri-gum received at Auckland from the gumfields for the past six years is shown, month by month, in the following table :—

Kauri-gum received in Auckland.

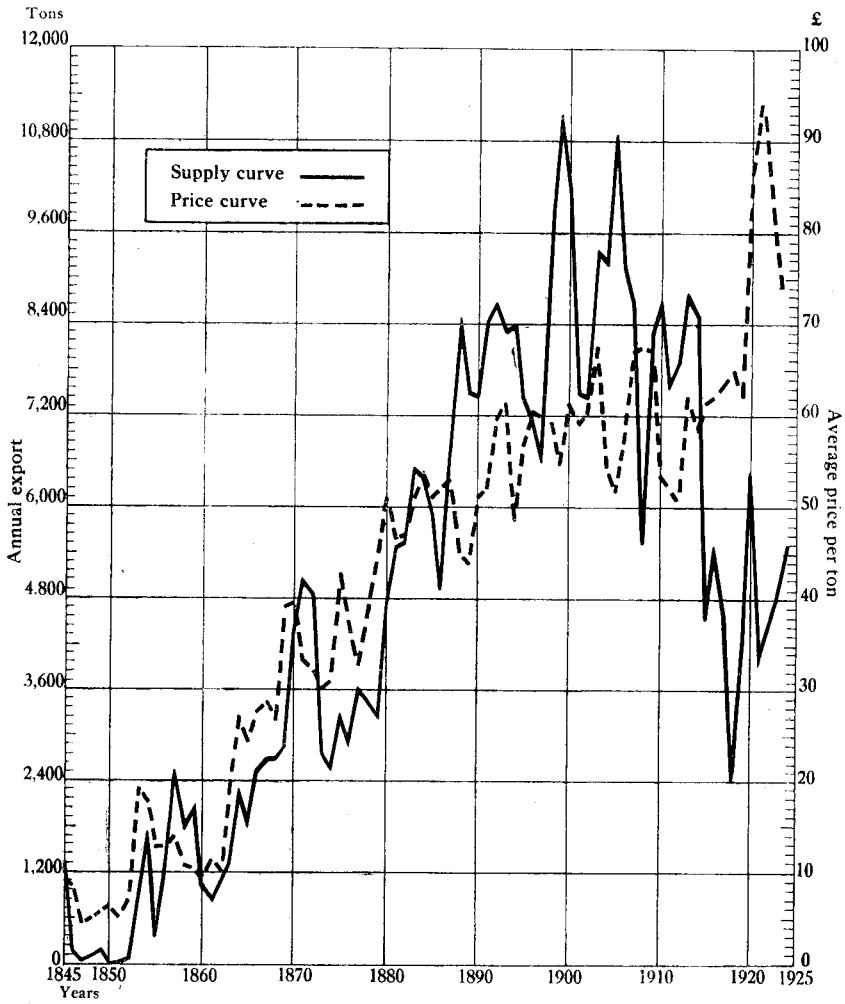
	1920–21.	1921–22.	1922–23.	1923–24.	1924–25.	1925–26.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
April	612	191	543	480	439	483
May	532	331	514	613	501	330
June	370	358	654	459	344	395
July	434	404	548	352	363	399
August	376	368	689	522	407	326
September	577	508	781	450	373	403
October	447	420	610	490	471	299
November	371	482	601	612	427	486
December	339	285	667	576	591	410
January	289	331	590	506	525	365
February	301	466	658	475	492	396
March	359	608	700	537	520	541
	5,007	4,752	7,546	6,072	5,453	4,833

The gum reaching Auckland during the year comprised the smallest tonnage since 1921–22. The actual production during the past year must certainly be considerably smaller. Some of the gum received in Auckland was dug in previous years, whereas a large proportion of the 1921–22 production was held on the gumfields for better prices. The gumfields are gradually being deserted, the men now remaining being mostly elderly men and those with large families who are unable to get away. No doubt a rise in prices would cause a good number to resume digging, but at present the number of diggers recovering gum is certainly smaller than at any time during the past decade.

Gum Purchases during the Year.

In previous reports it has been stated that the kauri-gum trade has been one of "ups and downs," and that Government participation in the industry has been by way of coming to the rescue of the gum-digger during periods of depression. In other more settled parts assistance during times of stress is provided by the commencement or pushing-on of road and railway formation and other works which call for unskilled labour. On the gumfields no such works were being carried on, and the better course seemed to be to help the digger out by purchasing a proportion of his gum when it was unsaleable in the ordinary markets. During the past year grants to the extent of £10,000 were made by the Government for the purchase of gum from diggers who were in distress. In several districts where committees of diggers existed purchases were made only on the recommendation of the committees, the diggers themselves being in a better position than any one else to know the genuine cases of hardship. In other districts small lots of gum were taken, and in many cases, instead of paying the whole of the purchase-money at one time, remittances of part of the total were made from time to time to provide for immediate requirements. Preference was given to married men with families and elderly men who are past navvying-work.

The following graph shows better than mere words can the irregular and extreme fluctuations in the prices and export of kauri from 1845 to 1925, and clearly indicates the difficult position in which those participating in the industry periodically find themselves.



Linoleum Chips and Dust.

During the year the selling of linoleum gradings on a gum-content basis has been carried on to a good degree, and such sales appear to have given satisfaction both in New Zealand and abroad. One very pleasing feature is that there appears to be a tendency on the part of some manufacturers to buy on the soluble-resin content irrespective of size, taking chips, seeds, and dust gradings together so long as the shipment tests out the required percentage of resin. So far as grades around 65 per cent. are concerned, this is a great help to the exporters in New Zealand, and enables them to quote freely for larger quantities and to quote cheaper. Purchases of linoleum gradings are "piled" as received, and the pile is blended to the required gum content with a minimum of handling and expense, and the whole of the pile is sold as it stands, instead of the exporter having to pass the stock over a sizing-machine, and sell perhaps only the chips and be held up with the seeds and dust.

Shipments of chip gradings with guaranteed resin contents running as high as 80 per cent. and over have been freely made, and in good quantities. During the year very large quantities of "chalk" grades which were not saleable were crushed up and used as a "sweetner" for medium-grade chips.

In much the same way some exporters worked off the better grades of chips made when "bold" gums are being graded. Although a few producers are quite willing to enter into contracts for chip gradings of 80 per cent. and over, it is unlikely that during the coming year these gradings will be obtainable in such large quantities or so cheaply as has been the case in the past year. Practically all the accumulations of "chalk" grades in Auckland have already been crushed up and worked off, and the supply of high-class chips is very limited. With anything like a firm demand the producer will find it much more profitable to cater for the exporter wanting a 65-per-cent. blend rather than aim at producing grades as high as 80 per cent.

Legislation.

During the last session of Parliament the Kauri-gum Control Act, 1925, was passed, placing the control of the industry in the hands of a Board of five members, two of whom are to be elected by the producers, one to be nominated by the exporters, and two to represent the Government. Under this legislation the Board is empowered, when requested by the Minister, to realize to the best advantage by way of sale in New Zealand or elsewhere all kauri-gum the property of the Crown acquired in the exercise of the powers conferred by the Kauri-gum Industry Amendment Act, 1914. The proceeds from such realization, less the expenses incurred with respect thereto, are to be paid into the Public Account to be credited to the Kauri-gum Industry Account.

Kauri-peat Oil.

For many years the possibility of successfully distilling oils and other valuable products on a commercial scale from kauri peat has engaged much attention. From time to time a good deal of research work has been done by private individuals and companies, but the information made available to the general public as to the results of such investigations left much to be desired, and a doubt has always existed as to whether there is a reasonable chance of making a commercial success of the distillation of oils from the kauri peat.

On several occasions inquiries were made by the Director of the Imperial Institute on the subject, and it was suggested to him that samples of peat should be sent to London for treatment and report. This was agreed to, the Director promising that the work would be put in hand at the earliest opportunity.

In 1923 five samples were sent to the Institute, comprised as follows:—

(1.) Sample BP, a brownish-black, fairly compact peat, containing no visible gum.

(2.) Sample KP, a friable brown peat, containing a fair quantity of woody material. A considerable amount of kauri-gum was visible.

Both these specimens were obtained from the Kaimaumau district, where New Zealand Peat Oils (Limited) has an area leased from the Crown.

(3.) Sample Redhill P, a brownish-black, fairly compact peat, containing very little visible gum.

This sample was obtained from the Northern Wairoa, where Parenga Kauri Oils (Limited) carried on operations for some years.

(4.) Sample of swamp timber from the Northern Wairoa district.

(5.) One gallon of kauri oil, said to have been distilled by New Zealand Peat Oils (Limited) at Kaimaumau.

During the past year a report was received giving detailed information as to the work carried out and the results obtained. The report itself is a rather bulky document, comprising twenty-six foolscap sheets, but the summary and conclusions given below should suffice so far as the general reader is concerned. A copy of the report can be seen at this office by any interested person.

"*Summary and Conclusions.*

"The results obtained in this investigation show that the peats and swamp timber, when distilled in a current of steam in an externally heated horizontal retort, give their maximum yield of crude oil at 650° centigrade, any large variation above or below this temperature causing a marked decrease in the yield of oil. The sample KP gave a much higher yield of oil than either of the other New Zealand peats or the swamp timber.

"The oils obtained at the Imperial Institute were much more viscous than the sample of kauri-peat oil produced by New Zealand Peat Oils (Limited), but this may be due to differences in the conditions of distillation in the two cases. No information is available, however, regarding the conditions under which the sample of New Zealand kauri-peat oil was obtained.

"The yield of oil obtained from KP was much higher than that recorded from numerous peats which have been distilled in Germany and elsewhere. The kauri-peat oil differs from the crude oil in that it contains a much larger percentage of aromatic hydrocarbons.

"The results recorded in this report indicate that the greater part of the oil is derived from the kauri-gum associated with the peat. The question of the variation in the yield of oil according to the degree of thoroughness with which the gum has been removed is therefore of importance. It would thus be essential, in connection with the commercial distillation of peat containing kauri-gum, to determine, by large-scale distillation, technical refining trials, and gum separations, the relative values of the oils and gum.

"The yields of oil from BP and Redhill peats are comparable with those recorded for peats from other sources, and exceed the amount of 4 per cent. suggested as the minimum yield for profitable working.

"The yield of oil from the swamp timber is low, and the distillation of the material is unlikely to be remunerative.

"The results of the examination of the crude kauri-oil received from New Zealand indicate that it would be suitable for use as a fuel oil. The oil contains as its principal constituents 34 per cent. of aromatic hydrocarbons, 24 per cent. of unsaturated hydrocarbons, 14 per cent. of saturated paraffins, and 9 per cent. of phenolic substances. On account of the unsaturated nature of a large proportion of the oil, its fractionation and refining for the production of marketable motor-spirit, kerosene, and other products would prove very wasteful, and would, moreover, necessitate the installation of expensive refining plant. In fact, it appears probable that the losses on refining would exceed those involved in the refining of crude shale-oil. The unrefined motor-spirit produced from the crude kauri peat had a calorific value about 10 per cent. below that recorded for motor-spirit of good quality. It appears therefore that the most economical method of utilizing kauri-peat oil would be to sell it locally as a fuel for heavy-oil engines, provided that it can be produced at such a price as to be able to compete with imported petroleum fuel oil.

"The residue (peat coke) remaining after the distillation of the oil from the kauri peat was spongy and hence unsuitable for metallurgical use unless briquetted. The coke from KP contained about 36 per cent. of ash, which would be a serious obstacle to its industrial use. It could, however, be used as a fuel for producer-gas plant. The coke from Redhill P was of a similar character to that from KP, whilst the coke yielded by BP contained much less ash and had a good calorific value. The last-mentioned coke would be a useful fuel if briquetted, or it could be completely gasified in producer-gas plant.

"The recovery of sulphate of ammonia is unlikely to prove remunerative if the peat is distilled at 650° centigrade in a current of steam in order to obtain a maximum yield of oil. Under these conditions the whole of the ammonia is not evolved, and owing to the condensation of the steam the liquor obtained is very dilute."

H. J. Lowe,
Kauri-gum Superintendent.

KAURI-GUM INDUSTRY ACCOUNT.

Receipts and Payments Account for the Year ended 31st March, 1926.

Receipts.	£	s.	d.	*Payments.*	£	s.	d.
Cash in Public Account, 1st April, 1925	2,434	13	10	Wages to workmen and gum-buyers	1,870	16	10
Advance from Consolidated Fund	10,000	0	0	Plant, machinery, stores, &c.	251	3	9
Sales of gum	5,521	15	6	Purchases of gum	9,877	14	11
Miscellaneous receipts	72	15	2	Freight, cartage, &c.	1,396	15	10
				General expenses	1,190	14	9
				Cash in Public Account, 31st March, 1926	3,441	18	5
	£18,029	4	6		£18,029	4	6

Trading Account.

	£	s.	d.		£	s.	d.
To Gum on hand, 1st April, 1925	54,633	12	11	By Gum on hand, 31st March, 1926	59,430	2	10
Purchases of gum	9,687	0	3	Sales of gum	6,574	8	6
Wages	1,890	9	3	Gross loss carried down	905	4	9
Freights inward	698	13	8				
	£66,909	16	1		£66,909	16	1

Profit and Loss Account.

	£	s.	d.		£	s.	d.
Gross loss from Trading Account	905	4	9	Balance carried down	6,213	5	8
Freights outward	443	9	5				
General expenses	95	3	1				
Cables, &c.	24	9	8				
Sacks, cases, &c.	297	8	4				
Fire insurance	212	5	0				
Printing and stationery	36	19	0				
Depreciation	53	10	0				
Travelling-expenses	13	8	2				
Rent	318	14	0				
Salaries	574	6	4				
Debenture interest	3,238	7	11				
	£6,213	5	8		£6,213	5	8
	£	s.	d.		£	s.	d.
Balance from previous years	11,035	12	3	Balance at 31st March, 1926	17,248	17	11
Balance carried down	6,213	5	8				
	£17,248	17	11		£17,248	17	11

Balance-sheet as at 31st March, 1926.

Liabilities.	£	s.	d.
Loan Account—			
Debentures issued	75,000	0	0
Crown Lands Account . ..	500	0	0
Consolidated Fund	10,000	0	0
Sundry creditors for supplies	529	13	9
Sundry creditors for gum purchases ..	90	0	6
Interest on debentures	4,584	5	9
Sinking Fund Reserve Account ..	617	13	10
	£91,321	13	10

Assets.	£	s.	d.
Land at face-works and elsewhere, with buildings, fences, and improvements ..	5,065	15	0
Vacuum-tank, fittings and plant, and royalties, short workings	2,900	6	10
Plant and store fittings	170	15	1
Tools, Auckland and depots	32	8	4
Live and dead stock	38	11	9
Furniture and office fittings	84	1	11
Sacks, gum-cases, &c.	304	5	8
Charges paid in advance	87	3	5
Gum on hand	59,430	2	10
Gum on consignment	782	17	2
Sundry debtors—miscellaneous ..	64	2	8
Sinking Fund Reserve	617	13	10
Profit and Loss Account	17,248	17	11
Funds in transit	1,052	13	0
Cash in Public Account at 31st March, 1926	3,441	18	5
	£91,321	13	10

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