

As kauri resin was exported during the year ending the 31st December, 1884, to the value of £342,151, it is important that its production should not be needlessly diminished; but it is of still higher importance that standing kauri should not be destroyed by the recklessness of gum-diggers. As a standing rule no unlicensed gum-digger should be allowed to carry on operations in a kauri forest: the interests at stake are too large to allow of a vast risk being incurred for the sake of a comparatively small benefit. Three years ago the Auckland Waste Lands Board called for tenders for the exclusive right to dig gum within certain well-defined areas, the purchasers being held responsible for all unnecessary injury to the standing timber. On the whole this plan was found to work beneficially; the leaseholders erected stores at convenient places and exercised a general supervision over the diggers employed by them, so that, while a certain amount of revenue was obtained by the Crown, injury to the forest was reduced to a minimum, and the convenience of the diggers was consulted to a considerable extent. On the other hand, it was urged that leasing gum land tended to create a monopoly and reduce the earnings of the diggers. It is scarcely possible for a non-resident to determine how far these allegations were supported; it is sufficient to state that the plan was gradually abandoned, and gum to the value of many thousands of pounds has been taken from Crown lands without any payment for royalty, while a large quantity of standing timber has been recklessly destroyed.

As it will be necessary to plant open areas in kauri forests as soon as arrangements can be made, it becomes a question as to how far permission to dig gum may be granted, and under what restrictions. In areas of some extent and sufficiently level to permit the use of the plough, digging might be carried on during such period as the ground may be lying fallow, but holes must be filled up and the surface soil levelled. Any clearing of fern or undergrowth must be made by cutting or grubbing up, and the use of fire for this purpose absolutely prohibited. The sole right to dig for gum or to employ diggers on special blocks might be leased to some responsible person, and every digger employed by him should carry a pass signed by the Forest Officer of the district. Any person found digging in a State forest without holding a pass should be dealt with in the manner prescribed in the State Forests Act. Under no circumstances whatever will it be possible to allow indiscriminate digging in kauri forests; the area must be sharply defined in every case, and the restrictions laid down must be rigidly enforced. On no account can digging be allowed after vacant spaces have been planted.

Licenses may be granted to persons desirous of extracting turpentine and resin from the leaves and waste branches of the kauri and other pines, under suitable conditions as to time and place. Every encouragement should be afforded to this and similar efforts to utilize waste forest products.

I am particularly desirous of drawing attention to the enormous waste of kauri resin which is continually going on. Whenever a kauri-tree is cut down the bark and chips become more or less covered with exuded resin in a few days' time. Even the leaves, while still green, exhibit numerous rounded particles, or minute "tears," of the so-called "kauri gum." Taking into account the vast amount of kauri timber converted annually, the value of the resin thus allowed to waste must be enormous.

I venture to suggest that it would prove highly remunerative to extract it by distillation. At present this raw material is valueless, but, if a cheap mode of extraction could be devised, it would add largely to the wealth of the Auckland District. I do not despair of seeing even the sawdust of the kauri become of value on account of the resin which it contains.

The leaves of the hemlock spruce-fir of North America are made to yield a volatile oil of great value by distillation, and the industry is yearly assuming larger proportions.

Although the recent resin of the kauri is considered of less value than that found in a fossil condition, it does not follow that its extraction from our waste tops, leaves, and chips would not prove remunerative. The recent resin always finds a market, and the difference in price is but small. Something would, at any rate, be gained by lessening the demand for dry resin, and so deferring the period of total exhaustion. It was, in 1878, exported to the value of £132,975, and in a few years will become less easy to procure than at present.

In Formosa camphor is extracted by a rough mode of distillation, from a description of which our bushmen may perhaps derive a useful hint in connection with our neglected forest products.

Water is boiled in a wooden trough or hollow trunk, protected from the direct action of the fire by a coating of clay; the upper portion of the trough is covered by a board having numerous small perforations. Chips of camphor-wood are placed on the board and covered with earthen pots, so that the steam passing through the apertures extracts the camphor and deposits it on the upper surface of the pots.

TAR.

Tar may be extracted from many of our native trees, especially from the pines, the kauri, totara, kahikatea, rimu, miro, matai, tanekaha, &c., also from the tooth-leaved and other beeches, which form such vast forests in many districts, and in all probability from the large kinds of rata and tea-tree. The waste tops and branches of trees felled for timber, crooked pieces, knots, roots, &c., can be utilized for this purpose, so that the manufacture of tar and allied products would not only afford a profitable outlet for labour, but would remove a great source of danger, and materially reduce the serious loss arising from forest fires.

In the forests of the White Sea and the Baltic tar is extracted from the Scotch fir (*Pinus sylvestris*) and the Baltic spruce fir (*Abies communis*), the wood and roots being cut into short billets and then subjected to a process of slow combustion. A funnel-shaped cavity of any convenient size is excavated in the side of a sloping bank; an iron pan is fitted tightly into the bottom of the hole, and communicates with the exterior by a pipe or tube which passes through the side of the bank, and allows the tar to be drawn off as fast as it is extracted. The billets are