AUSTRALIAN AND TASMANIAN SANDARACH.

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Communicated by A. Morton, F.L.S.

It was a specimen of resin from the Oyster Bay Pine of Tasmania, sent to the Exhibition of 1851, which first drew the attention of experts to the possibilities of Australian Sandarach. For "the fine pale resin of the Oyster Bay Pine (*Callitris australis*), from the eastern coast of Van Diemen's Land," and other gums and resins, Mr. J. Milligan was awarded honourable mention (Jury Reports, 1851 Exhibition, p. 182).

This is one of the most valuable of Australian* vegetable products, a market is ready for it, and it seems strange that it should have been so long neglected. There are no statistics available in regard to the importation of Sandarach into these colonies, but to bring it here at all is a veritable "carrying coals to Newcastle."

Ordinary Sandarach exudes naturally, but the practice in Northern Africa is to stimulate the flow, making incisions in the stem, particularly near the base. In various parts of Australia and Tasmania there are vast numbers of *Callitris* trees, their resin, often abundant, can readily be collected, and the author is sure that, even with the cheap labour of Northern Africa to contend against, it can be profitably gathered during a portion of the year, by parties of men, or the families of settlers. The approximate price of Sandarach, in London, is 60-115s. per cwt., and there is no difference between it and the colonial article. As to the cultivation of the trees, Baron von Mueller (*Select extra-tropical plants*, Victorian Edition) states, "Probably it would be more profitable to devote sandy desert land, which could not be brought under irrigation, to the culture of the Sandarach cypresses, than to pastoral purposes, but boring beetles must be kept off." It is also to be borne in mind that *Callitris* timber is valuable.

The Sandarach, or Gum Juniper of commerce, is the product of a *Callitris* (*quadrivalvis*), and the latest classification of Australian Sandarach trees (that of Baron von Mueller), places them under *Callitris* likewise. The following summary of the uses of Sandarach, is taken from Morel (*Pharm. Journ.*

* This word is here used in its widest sense, and, of course, includes Tasmania.

[3]. viii. 1,024.) "According to Gubler, the Arabs used it as a remedy against diarrhœa, and to lull pain in hæmorrhoids. The Chinese employed it (*C. sinensis*) as a stimulant in the treatment of ulcers (as promoting the growth of flesh), as a deodoriser, and to preserve clothes from the attacks of insects. In Europe it is used very little in medicine. It is most frequently employed as an ingredient in varnish, to increase its hardness and glossiness. It is used also as a fumigant, and in powder ("pounce") to dust over paper from which the surface has been scraped, to prevent the ink running. Rarely, it enters into the composition of plasters." In Southern New South Wales (Snowy River), *Callitris* resin is often mixed with fat by the settlers, to make candles.

All our native Sandarachs possess a pleasant aromatic odour, similar in character to that emitted by Sandarach.

When the trees are wounded the resin exudes in an almost colourless, transparent condition. It has obviously high refractive power, and is much like ordinary pine resin in taste, smell, and outward appearance, when the latter is freshly exuding. This transparent appearance is preserved for a considerable time, the resin meantime darkening a little with age. Old samples possess a mealy appearance, but this is merely superficial. The origin of this appearance has been explained as follows in regard to Sandarach, and doubtless the simple explanation holds good here :—

"The surface of the tears appears to be covered, more or less, with powder, but this character is not to be attributed, as alleged by Herlant, (*Etude sur les produits résineux de la famille des conifères*, p. 38), to the friction of the fragments one against another, but, as has been ascertained by a microscopical examination by Dr. Julius Wiesner (Die chemisch-technisch verwendte Gummiarten, Harze and Balsame, 1869, p. 129), to the unequal contraction of the resin while drying, resulting in a mass of fissures that form, as in the case of several kinds of copal, facets that gradually separate from the mass, and constitute the "powder" of many authors." (Morel, *op. cit.*) Evidence against Herlant's supposition is also found in the fact that resins of the Sandarach class are mealy *while on the trees*, after they have been exuded some little time, showing that the appearance is brought about by exposure to the weather.

The *Callitris* resins soften slightly, but do not melt in boiling water, and a sample of commercial Sandarach behaves similarly. In the mouth they feel gritty to the teeth, and in no way different to Sandarach. When freshly exuded they are very irritating to a cut.

Following are descriptions of actual specimens of resins of different species. For the results of analyses of Sandarach for comparison, see *Gmelin*, xvii., 429.

CALLITRIS CUPRESSIFORMIS. *Vent.*

Muell., Cens. p. 109. Syn. *C. australis* (ined.). *Frenela rhomboidea* Endl. Var. *Tasmanica*, Benth. *F. Ventenatii* Mirb., B. Fl., vi., 238, and others.

"The Oyster Bay Pine of Tasmania." Found in all the colonies except Western Australia (normal species).

This is the pine already referred to, and a brief account of the resin has been copied into many of the text-books. I have collected resin of this species from Port Jackson, clear and transparent as water. It turns pale amber coloured in 12 months if placed in a bottle, but its brilliancy shows no sign of diminution in that time. The Sydney trees readily exude their resin on slightly wounding, and the same remarks apply to the Tasmanian.

CALLITRIS CALCARATA. *R. Br.*

Syn. *Frenela Endlicheri* Parlat., B. Fl., vi., 238.

Found from Northern Victoria to Central Queensland. "Murray Pine," "Black Pine," Red Pine," "Scrub Pine," "Cypress Pine."

Sample 1. "Murray Pine," Quiedong, 3rd March, 1887. Has a pale, bleached appearance, much lighter than ordinary Sandarach. Externally it has a very mealy appearance. Water has no effect on it. In rectified spirit it almost wholly dissolves, leaving a little whitish, resinoid substance. Petroleum spirit dissolves 5 per cent. of a perfectly colourless and transparent resin.

Sample 2. I have received a quantity of flesh-coloured resin from the Snowy River, N.S.W., belonging to this species. It is so different in appearance from the normal resin, that no market can at present be found for it, and as this is the first time such resin, in quantity, has come under my notice, it is well worth describing. It is of the consistence and general appearance of Manila elemi, differing from that substance in being of a flesh-colour, and having a pure turpentine odour, instead of a turpentine-fennel one.

There is no doubt that it would form a valuable ingredient in plasters, and an enterprising pharmacist would doubtless find it worth his while to follow the matter up.

It is a remarkable circumstance that the trees yielding this resin had also, at other portions of the stem, more or less of the normal Sandarach.

Sample 3. "Red Pine." Lachlan River, N.S.W. Feb. 1885. This has comparatively freshly exuded, and has the colour and appearance of the best selected Sandarach.

Rectified spirit nearly wholly dissolves it, forming a beautifully clear, slightly yellowish liquid; 1·3 per cent. of

residue remains. Petroleum spirit extracts 22·1 per cent. of an apparently perfectly colourless and transparent resin.

CALLITRIS COLUMELLARIS. *F. v. M.*

Syn. *Frenela robusta* A. Cunn., var. *microcarpa* Benth. B. Fl. vi. 237.

Sample 4. "Cypress Pine," etc. Found in New South Wales and Queensland. Received from the Botanic Gardens, Sydney, Dec. 1887.

This is in much larger masses than the others, and some of it has been exuded for a considerable time. It is next lightest in colour to No. 1.

It almost wholly dissolves in rectified spirit, forming a pale yellow solution. The insoluble residue amounts to 4·6 per cent. Petroleum spirit, when digested on the residue, removes no less than 35·8 per cent. of a transparent colourless resin. This is a remarkable percentage, and it would be worth while to enquire whether Australian Sandarach becomes increasingly soluble in that menstruum by age. An ordinary sample of commercial Sandarach yielded 8·9 per cent. to petroleum spirit.

CALLITRIS VERRUCOSA. *R. Br.*

Syn. *Callitris Preissii* Miq. *Frenela robusta* A. Cunn. and others. B. Fl. vi. 236.

The following note by Dr. Julius Morel (Pharm. Journ. [3] viii. 1,025), in regard to a South Australian specimen, is interesting! "With Sandarach resin may be connected another resinous substance, which was exhibited in the Paris Exhibition of 1867 from South Australia, under the name of "pine gum." It is the resin of *Callitris Reissii* Miq. (a misprint for *Preissii*). This product resembles Sandarach, and might become an important article of commerce. . . . This resinous substance occurs in the form of slightly yellowish tears, thicker and longer than those of ordinary Sandarach. In consequence of unequal contraction, it presents, like Sandarach, numerous facets, and consequently the surface appears to be covered with a white powder. By examining this resin under the microscope, Wiesner ascertained that the finer fissures were derived from the larger ones. In its transparency and hardness the resin corresponds to Sandarach. Its odour is very agreeable and balsamic, and its taste is bitter and aromatic."

"Mountain Cypress Pine," "Desert Pine." "A Sandarach in larger tears than ordinary Sandarach is yielded by this species. It yields it in considerable abundance, eight or ten ounces being frequently found at the foot of a single tree,

but although this exudes naturally, the supply is stimulated by incisions." *Victorian Cat.* Col. and Ind. Exhib., 1886.)

"It is a transparent, colourless, or pale yellow body, fragrant and friable, fusing at a moderate temperature, and burning with a large, smoky flame, very soluble in alcohol and the essential oils, and almost totally so in ether; turpentine at the ordinary temperature does not act upon it, nor do the drying oils, but it may be made to combine with these solvents by previous fusion." (*Report on Indigenous Veget. Subst. Victorian Exh.*, 1861).

Sample 5. Obtained from the Botanical Gardens, Sydney, 29th December, 1887; no particulars available.

Of a dark amber colour, and externally possessing the dulled appearance found with lumps of amber. It is the darkest resin examined by me.

It almost wholly dissolves in rectified spirit, yielding a bright yellow liquid, leaving 2·5 per cent. of insoluble residue. Petroleum spirit removes 22·8 per cent. of a clear resin when the original substance is digested in it.

Discussion.

Mr. Stephens remarked how unfortunate it was that people in the colony were so little alive to their own interest. The Oyster Bay Pine was useful for a variety of purposes, being suitable for light hurdles, gates, and other uses for which the common hardwood timber was ill adapted, while the advantage gained from shelter to stock was far superior to any that could result from its wholesale destruction. This beautiful and useful tree had, however, been destroyed, so far as it could be destroyed, by ring-barking over thousands of acres on the East Coast.

The President stated that he had had his attention directed to the state of things mentioned by Mr. Stephens.