

Dammar and Wood Oil.

BY H. N. RIDLEY.

Dammar is the resin exuded from various trees when wounded. The trees producing it belong chiefly to the order *Dipterocarpeæ*, and to the genera *Shorea*, *Hopea* and *Anisoptera*, but the Malays also class as Dammar resins derived from certain species of *Canarium*, and *Triomma* (*Burseraceæ*) and *Calophyllum* (*Guttiferæ*).

The resins are exuded from wounds in the trunk or branches, or sometimes a tree is hollow in the centre, and the space is filled or partly filled with the dammar, which thus forms a cast of the hole. At times it is exuded beneath the bark when it sets in the form of a plate or lamina, or it may drip slowly from a broken or cracked bough, so as to form stalactitic pipe-like masses on the injured part, and sometimes a stalagmitic mass on the ground below. The exudation does not commence immediately the wound is inflicted, and is produced very slowly, at first like turpentine, but soon setting into a hard crystalline mass. Even quite young trees, such as *shoreas*, produce the dammar when the stem or twigs are broken or bored by insects. The masses of dammar are not only modified in form by their method of production but also in colour and transparency. Many of the native and trade names have reference rather to the form and colour of the resin mass than to the tree from which it is derived. Thus Cat's-eye Dammar (*Damar mata kucing*) is a transparent, pale, yellowish resin, usually in small pieces, and can be derived, I believe, from almost any of the *Hopeas*. *Damar daging*, a dark brown, often handsomely marbled resin, often occurs in large masses showing the form of the hollow of the tree in which it was exuded. A very beautiful dammar of which I obtained a specimen from Johore was a clear sea green. It was found buried in the ground as is often the case, and there was no clue as to what tree produced it. When oxidised the resin becomes opaque

and yellowish white, and rather soft and powdery. Most of the dammar found in the ground in the forests is much oxidised outside, but the action goes on very slowly, and ground dammar in good condition can often be found in spots where for many years there has been no forest or dammar trees. Thus one can often find pieces of dammar in the ground on Blakang Mati where dammar trees have long ceased to exist. The greater part of the dammar collected by the Malays is thus found by digging in the ground where *shoreas* or other dammar trees have decayed. No attempt is made to extract it from trees as is the case in wood oil. The resin is used locally for making torches, and also for varnish, but the export trade in Singapore has very much declined of late years. Cat's-eye dammar and copal from Celebes are almost the only dammars now exported from Singapore, there being no demand for the less transparent varieties. The copal which occurs in large beautifully transparent yellow masses is derived from *Shorea selanica* Bl., and is not to be confused with the African and American Copals, which are derived from species of *Hymenæa* and *Trachylobium* (*Leguminosæ*).

Varieties of Dammar.

The following is a list of the local names of dammars of the peninsula as far as I have been able to get them.

Damar Seraya Batu; *Damar Seraya*. A hard opaque mass of a dull orange colour, probably derived from *Shorea leprosula* Miq. *Kapong Labu* is also from this tree.

Kapong Jalor. A pipe-shaped mass, brown outside, inside yellow, centre dull olive brown.

Kapong Hantu. Dark brownish colour mixed irregularly with yellow. Both of these are derived from *Shorea macroptera* Dyer, the tree known as Kepong, as perhaps are *Kapong Sabut*, *Kapong S'lawang* and *Kapong Segan*.

Meranti Bunga. An amorphous mass nearly opaque of a whitish olive yellow mixed with greenish brown and weathering yellow.

Meranti Sarang punai; *Meranti Tembaga*, *Meranti Sama*, *Meranti Ketapa* are probably derived from *Shoreas*.

Meranti Batu, a dark brown weathering orange. This is very similar to the *Damar Daging* of the Malays, which occurs

in large masses in the ground, evidently originally exuded into the hollow of a tree and perhaps taking its brown colour from this method of production.

Damar Mata Kuching. Cat's-eye dammar appears as pale yellow or nearly white, quite transparent, glassy tears. It is the most valued of the local kinds. A number of trees are said to produce this Dammar, among them *Hopea globosa* Brandis, *Hopea intermedia*, King, and *H. micrantha* Hook. f. (Trans. Linn. Soc. XXIII. 160) also *Pachynocarpus Wallichii*.

Damar Rambei Daun. A transparent yellow Dammar, browner in the middle, occurs in a stalactitic form, and is produced by *Shorea acuminata* Dyer.

Damar Chingal is from *Shorea bracteolata*, Dyer.

Merawan Jangkar, *Merawan jalor*, *Merawan Kunyit* are doubtless produced by species of *Hopea*.

Damar Mersawa hitam, by *Anisoptera glabra*, Kurz.

Damar Mersawa putih probably by *A. costata*, Korth.

The seagreen dammar from Johor I have already described. Another unidentified kind I have met with, had been exuded from the stump of a large tree which had been felled in the Carimon islands. It formed an opaque bright yellow mass of the appearance of bee's wax. I was informed that the tree was a Keruing (*Dipterocarpus*), but I could not verify this.

Besides the *Dipterocarpus* resins, there are some kinds which belong to very different classes of trees, and are roughly classed as Dammars by the Malays. Among these there are several from the genera *Canarium*, *Santiria* and *Triomma*, (*Burseraceæ*). The most interesting is the Kedondong Kijai from *Triomma Malaccensis*, Griff. This resin seems to set with difficulty being more of the consistency of turpentine. It is dark grey or black turning yellowish grey or opaque white with a very pleasant aromatic scent. Other resins obtained from plants of the same order are *Damar Kedondong Krut* (*Santiria* sp.) and *Kedondong Mata hari* from *Trigonochlamys Griffithii* Hook. fil. Sayang from *Santiria laxa*, King. *Damar Kijai* a resin valued by the Malays, is said to be produced by *Canarium secundum* Benn.

Other resins sometimes classed as Dammars by the Malays are those exuded from wounds in various species of *Calophyllum*; *Bintangor bunga* and *Bintangor batu*, (*C. pulcherrimum*) which

produces a soft resin very sticky, of a bottle green colour when thin, and black when in mass.

Damar minyak is the name given to the turpentine of the large Conifer *Damara Orientalis*, which grows in the hill ranges of Penang, Perak, etc. This tree abounds in the turpentine, which is very liquid. I have seen it poured out in large quantities from cut roots of a big tree on the Thaiping hills. Cooke states that it was sold to varnish makers under the name of East India Dammar, and that it is much esteemed by natives for incense.

Kelulut Damar. This is a black or more rarely grey Dammar obtained from the nest of the little stingless bees known as *Trigona*. There are several species here which make dammar nests. The commonest appears to be *T. laeviceps*, a small black kind; there is also a light brown kind, and a very small black species which frequently nests under the planks in houses. In the case of *T. laeviceps*, the nest is built in a hollow tree at the entrance to which the bees build a trumpet shaped or flattened tube projecting for six inches or more from the tree. From one nest I obtained a very large cylindrical tube a foot long ending in a flat spoon shaped portion. These tubes are made of a sticky resin, too adhesive for any insect except a *Trigona* to walk over, so that enemies cannot invade the nest. The nest itself consists of an irregular mass of dammar, in which are placed the detached elliptic cells, in which is often a good deal of black honey. The mass of dammar in old nests is often very large and must represent a vast amount of work on the part of these little bees. Both the dammar and honey are sought by Malays, and used as medicine and the resin also for torches, etc. The tube at the entrance pounded up is rubbed over the body in cases of rheumatism. The presence of a *Kelulut*'s nest in a tree is not necessarily injurious to the tree. Very large nests may occur in trees for many years without causing any appreciable injury. On the other hand it is very probable that they prevent further decay by sealing up the injured wood in dammar, and by preventing termites from effecting a lodgment in the tree. One species of *Kelulut* makes its nest in that of one of the termites underground usually at the foot of a large tree. There appears to have been some question as to what tree the *Kelulut* obtained its dammar from, as it has long been noticed (Cook's Gums and Resins) that

it was very different from any known kind of resins. The fact is that it is a mixture of all kinds of resins, indeed any resinous substance that the bees can get is collected. They quickly find any wounded resinous tree and gather as much as they can. I have seen them at work at Shoreas (*S. parvifolia*) *Garcinias*, *Calophyllum*, *Triomma* and *Angsana* (*Pterocarpus indicus*).

WOOD OIL.

The trees of the genus *Dipterocarpus* do not, like the allied Shoreas, produce dammar but they produce instead, wood oil, or Gurjun oil, as it is commonly called, the Minyak Keruing of the Malays. The *Dipterocarpi* are trees of gigantic size, with large pink or white sweet scented flowers and globose or four or five angled or winged fruits with a pair of long oblong wings as much as nine inches long in *D. grandiflorus* Blanco. The oil is obtained by cutting deep holes into the stem of the tree with an axe or chisel about six inches square, the top of the hole sloping inwards, and the floor excavated to hold the oil. A fire is then made in the hole so as to char the sides and top, after which the oil is exuded in considerable quantities, and collected in kerosine tins. When the oil ceases to flow, it is usual to burn the wound again, when it recommences.

This operation does not necessarily injure the tree to any extent unless it is done to excess, but natives often cut so many holes in a tree that it dies and many trees have been thus killed. As the oil-trees are usually very isolated in the forests and never occur in any great number together a very large extent of forest is required to supply a comparatively small amount of oil, and the supply is now so scanty that the natives seldom go to seek it, and the oil has nearly disappeared out of commerce.

The oil is used for varnish either alone or mixed with other substances, or for caulking boats and such purposes but it is also used to a small extent in medicine under the name of Gurjun balsam, as a substitute for a Copaiba, and it is also stated to be valuable used externally and internally in leprosy. When allowed to stand the oil separates into a clear or dark liquid known as *Chaier* by the Malays and thick semi-solid resin, *Beku*.

The chief trees producing oil here, are, *Dipterocarpus grandiflorus*, Blanco. *Minyak Keruing Dadeh*; *Minyak Gombang Kechil*.

The oil soon sets into a stiff light brown resin, leaving very little of the liquid (*Chaier*). It is used for varnish either when fresh before it has time to set or mixed with other more liquid oils.

D. Kerrii, King. *Minyak Keruing Chaier*. The oil is rather thin and watery of a yellow colour, and the resin is yellowish white.

D. Hasselti Bl. *Minyak Keruing Sudi*. The oil is of a deep brown colour, red by transmitted light with a rather stiff brown resin deposit. One of the best oil trees; it is not rare to find fruits of this in which the pericarp contains nothing but a clear transparent oil.

D. crinitus, Dyer. *Minyak Keruing Bulu*. This oil is considered a good kind and used for mixing with the thicker oils. The tree is commonly known as Gombang.

Minyak Pekat, *Minyak Merah* and *Minyak Babi* are as yet unidentified.

D. incanus Roxb. and *D. alatus* Roxb. occur in Siam and supply the greater part of the Siamese Wood Oils of commerce. They will probably be found in the north of the peninsula as they are found quite in the south of Siam. Siamese wood oil (probably from *D. alatus*) is very dark in colour nearly black by reflected light but yellow by transmitted light; the resin whitish. The greater part of the Wood Oils of Commerce are now exported from Rangoon, and are derived from the forests of Burmah. The trees producing them are all species of *Dipterocarpus* but all or nearly all distinct from those of the Malay Peninsula. A full account of them is to be found in Watt's Dictionary of the Economic Plants of India.



Ridley, H. N. 1900. "Dammar and Wood Oil." *Journal of the Straits Branch of the Royal Asiatic Society* 34, 89–94.

View This Item Online: <https://www.biodiversitylibrary.org/item/130372>

Permalink: <https://www.biodiversitylibrary.org/partpdf/184922>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: Not in copyright. The BHL knows of no copyright restrictions on this item.

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.