

NOTES ON GLUTA IN MALAYA.

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These notes are the result of being favoured with the loan of the specimens of the genus *Gluta* preserved in the herbaria of the Botanic Gardens, Singapore, and of the Forest Department, S.S. and F.M.S., in order that I might examine them alongside the material preserved in the Herbarium of the Royal Botanic Gardens, Kew. There are seven species involved.

1. *Gluta renghas*, Linn. Mantissa, 2, 1771, p. 293, by inadvertence as *Gluta benghas*: Jack in a letter to Wallich dated 1821 (printed in Journ. Roy. As. Soc. Straits Branch, 73, 1916, p. 230): Blume, Bijdragen, 1826, p. 1159 and Mus. Bot. Lugd. Bat., 1, 1850, p. 182, t. 39: Engler in DC. Monograph. Phanerogam., 4, 1883, p. 225: King in Journ. As. Soc. Bengal, 65/2, 1896, p. 480, or Materials 2, p. 788: Koorders and Valetton, Bijdrage tot kennis Boomsoorten van Java, in Mededeel. 'sLands Plantentuin, 17, 1896, p. 94: Ridley, Flor. Mal. Penins., 1, 1922, p. 527: Heyne, Nutt. plant. Ned. Ind., ed. of 1927, p. 972.

Stagmaria verniciflua, Jack in suppressed proof of Mal. Miscell., ex Hooker, Comp. Bot. Mag., 1, 1835, p. 267.

A tree, chiefly coastal, because along the coasts it finds the conditions by the side of water which it likes, but sometimes found inland: not infrequent on riverbanks near the sea in Java from the residency of Samarang westwards, more sparingly inland up to 900 ft., in Sumatra on the west coast and sometimes inland in small pure stands: recorded by Rumpf as in Celebes, and from Celebes he imported it into Amboina: in the Malay Peninsula only upon the coasts of Pahang and Trengganu and apparently also in Kelantan: further it is in northern Madagascar.

There is a specimen with flowers in Linnaeus' herbarium, written up in his own handwriting.

The proved Malayan localities are:—

State of **Kelantan**. Kamposa, in fruit and therefore not absolutely distinguishable from the next, *Gimlette*! State of **Trengganu**. Kuala Trengganu, *Holttum* 17672! State of **Pahang**. Pekan, *Burkill and Haniff* 17137! *Smith* 6706! Katapang on the Pahang river, *Ridley* 1228!

In the year 1890 Ridley procured a supply of seed of it from Pahang and raised a stock of seedlings in the Botanic Gardens, Singapore (Ann. Rep. Bot. Gard. and

Gardens' Bulletin, S.S.

Forest Dep., S.S. for 1890, p. 4), which in that year and the next, he planted out in various parts of the island (Rep. for 1890, p. 11 and for 1891, p. 9). Probably some remain; one 35 years old and several seedlings derived from it were standing in the Economic Gardens in the year 1925. The seedlings exhibited narrower leaves than the old tree. The ground where it grew, which was formerly salt marsh, but no longer saline, seems to have offered such a situation as the tree prefers.

The timber of this species is a bright red-brown and suggests mahogany. It makes very handsome furniture.

The fruit is large and subglobose, with irregular crests and protuberances particularly towards the base. It is 5 cm. in diameter.

The irritant properties of the latex are less intense than in some allied trees; but considerable.

2. *Gluta velutina*, Blume, Mus. Bot. Lugd. Bat. 1, 1850, p. 183.

Gluta coarctata, Hook. fil., Flor. Brit. Ind., 2, 1876, p. 22; Engler in DC. Monograph. Phanerogam. 4, 1883, p. 227; King in Journ. As. Soc. Bengal, 65/2, 1896, p. 482, or Materials, 2, p. 768; Ridley, Flora Mal. Penins., 1, 1922, p. 527.

Syndesmis coarctata, Griffith, Posthum. papers, Notulae, 4, 1854, p. 409, and Icones, t. 567, fig. 1.

A tree variously recorded as bushy, small and of moderate size; but in one very uncertain record as up to 100 ft. in height; apparently generally of lesser growth than *G. renghas*, and differing from it besides in the velutinous calyx and pedicels. It is found plentifully along the coasts of CochinChina and Cambodia, in Siam about Bangkok, down the Siamese peninsula at Tapli; on the east coast of Sumatra and the north coast of Borneo and in the Malay Peninsula at the following localities:—

State of **Kedah**. Under Kedah Peak near Yen, *Ridley* 15086! State of **Perak**. Without locality, *Scortechini*! State of **Selangor**. Kuala Selangor, *Foxworthy* 11711! Kelambu Forest Reserve, *Yeob* 3288! Settlement of **Malacca**. Malacca town, *Griffith* 480 (=1120)! State of **Pahang**. Rompin river, *Soh* 15412! State of **Johore**. On the Muar river, close to the water, *Curtis* 3620! On the Batu Pahat river, Simpai Abang, *Lake and Kelsall*! Bukit Kayara on the Sungai Pauh, *Ridley*! Sungai Sempang Kanan, *Ridley* 11098! Sungai Sekudai, flowerless in the Kew specimen, but assigned by King, who collected it, to this species, *King and Hullett*! Settlement of **Singapore**, sterile and therefore uncertain, *Cantley*!

3. *Gluta Wrayi*, King, in Journ. As. Soc. Bengal, 65/2, 1896, p. 482, or Materials, 2, p. 768: Ridley, Flora Mal. Penins. 1, 1922, p. 528, as regards Wray's specimen, i.e. excluding the description of the fruit, which belongs to no. 4 below.

Gluta virosa, Ridley in Journ. Roy. As. Soc. Straits Branch, 75, 1917, p. 27: Flora Mal. Penins. 1, 1922 p. 528, excluding from both references the Selangor specimen, which seems to be a *Melanochyla*, and from the second the Simpiti specimen, which is no. 4 below.

Mangifera sp., King in op. cit. p. 479, or Materials, 2, p. 765, a fruiting specimen.

A tall tree found in Penang and in the neighbourhood of Taiping and Kuala Kangsar and in the Dindings, the proved localities being:—

Settlement of Penang. Telok Bahang, a tree with ripe fruits in August, 1890, and in May, 1893, 25-30 ft. high, *Curtis* 3005! and without no.! Government Hill, with flowers in February, 1921, *Mohamed Haniff* 6999! Bukit Penara, large branching tree with flowers in March, *Curtis* 1527! State of Perak. Without locality, *Burn-Murdoch* 400! Larut plains by the Sungai Larut, in flower in July, 1888, Wray 2290! On Gunong Pondok, between 500 and 800 ft., a tree 50-70 ft. high with fruit in July, *Kunstler* 7744! Kati near Kuala Kangsar, a tree 30-40 ft. high in bud in January, *Mohamed Haniff* 14963! Dindings. Lumut, in flower in March, *Ridley* 7974!

Details have been given above of the condition in which the specimens were collected, because no one has yet obtained the flowers and the fruits from the very same tree, so that no one has proved that they are rightly brought together, though the exactness with which the leaves match, makes this all but certain.

The tree was collected first by Scortechini in 1885 in fruit, and King thought the specimen a *Mangifera*. When in 1888 Wray collected it in flower he described the flowering plant under the name adopted above, but failed to bring the fruiting specimen to its side. Ridley as will be explained under no. 4 below, obtained a different fruit in the Dindings, which in 1917 he ascribed to *G. Wrayi*, and having done that he logically attributed the true fruit to a new species.

The fruit of *G. Wrayi* is of the buff colour which the fruits of *G. renghas* and *G. velutina* have; but its shape is distinct; it has no tubercles or crests, and is elongated with a little flattening.

Burn-Murdoch ascribed the name *rēngas kērbau jalang* or *rengas* of the untamed buffalo to it, but explained (Trees and Timbers, Mal. Penins. 2, 1912, p. 7) that this name may be applied to any of the more virulent species of *rengas* which possess red-brown wood. Of the timber he stated that it is a beautiful wood of a deep red colour with concentric black bands, but hardly used on account of the acute inflammation which the resinous juice sets up if it falls upon the skin, as may happen in felling.

In the publication referred to, he mentions *rengas* in the Trolak reserve, in Southern Perak; but seems to refer to *Melanorrhœa* rather than to *Gluta*. Ridley's Selangor specimen is found to be a *Semecarpus*: and with these localities ruled out, we possess no indication that *G. Wrayi* extends southwards from Kuala Kangsar and Lumut.

4. To the next species it would be hazardous to give a name. It was collected in the Dindings (*Ridley* without number!) with fruit. In the year 1896 flowering specimens of a *Gluta* were collected at Lumut in the Dindings (*Ridley* 7974!): and there has been a confusion of the two. The latter is *G. Wrayi*, but the fruit of the former was described (*Journ. Roy. As. Soc. Straits Branch*, 49, 1907, p. 16) for that of *G. Wrayi*: and as a consequence of assigning the wrong fruit to *G. Wrayi*, the right fruit was described as that of a new species, *G. virosa* (*Journ. Roy. As. Soc. Straits Branch*, 75, 1917, p. 27). The fruit-wall and the leaves of the older specimen are preserved in the Botanic Gardens, Singapore, and the fruit was well described as oblong, red-brown, of a laterite colour, 4-5 inches long and 3 thick: the seed was sown in the Botanic Gardens and for eleven years at least grew there to a small tree, the subsequent fate of which is unknown. The leaves obtained from Simpiti are like those of *G. elegans*, from which species of course the fruit sharply distinguishes the tree. The label calls it a big tree.

It may not be a *Gluta*, though it probably is.

5. *Gluta elegans*, Kurz ex Hook, fil., *Flora Brit. Ind.* 2, 1876, p. 22: and *For. Flor. Burma*, 1, 1877, p. 310: Engler in *DC. Monograph. Phanerogam.*, 4, 1883, p. 225: King in *Journ. As. Soc. Bengal*, 65/2, 1896, p. 481, or *Materials*, 2, p. 767: *Ridley*, *Flora Mal. Penins.* 1, 1922, p. 527.

Syndesmis elegans, Wallich in *Roxb. Flora Ind.*, ed. Carey, 2, 1824, p. 315.

This is a tree of about 30 ft. in height, very common in the hills, of Penang, where when in new leaf its violet colour is striking; but this quickly passes away. It produces flowers apparently at all times of the year; for they

have been collected in every month except April, July and November; but mostly however in February. The fruits germinate immediately they fall. They are black in colour, from 3.5 by 3 by 1.75 cm. to 5.5 by 4.25 by 3 cm.

Being so common it was one of the earlier plants collected in Penang, George Porter having sent it to Wallich in 1823. It was on Porter's specimens that he described it as *Syndesmis elegans*, being unable to indicate its true affinity as he had no fruit. From Penang it extends northwards to Tenasserim; but the Tenasserim plant differs a little, approaching *G. tavoyana*, and constitutes Hooker's var. *Helperi*. It is in Trengganu also.

The following specimens have been seen:—

Tenasserim, without locality, *Helper* 1117! 1118! **Siam**. Circle or Pattani, Bachaw, *Kerr* 7214! State of **Kedah**. Bukit Dundong reserve, without flowers and therefore not absolutely certain, *Rahim* 12429! Settlement of **Penang**, without locality, *Maingay* 481! *Curtis* 1062! Batu Feringhi, *Ridley* 11948! West of Telok Bahang, *Burkill* 3387! Government Hill, *Porter* 1003! 9046! 9049! *King*! *King's collector* 1366! 4913! *Curtis' collector* 3278! *Curtis* 1552! *Ridley* 7096! 9228! *Mohamed Haniff*! Moniot's Road, *Burkill* 4588! Bukit Sua-Boi, *Curtis' collector*! Mount Olivia, *Mohamed Haniff*! State of **Trengganu**. Kuala Trengganu at Kampong Ladang, *Holttum* 7678!

The record of "Malacca" for it is an error.

If the back of the leaf of this species be examined, it will be observed that the larger lateral nerves arise from the midrib at an angle of 70-90° and are distinctly elevate. *Curtis*, through a native collector, obtained a specimen in which they arise at about 55° and are not distinctly elevate. This specimen bears the number 3278 and may be called var. *Curtisii*. It leads to *G. lanceolata*, which will be discussed next.

The Trengganu plant is between the type and var. *Curtisii*.

Kurz states that the wood is good for furniture and when steeped in ferruginous mud goes as black as ebony: he adds that it is used for building purposes, and with various mordants will dye colours between orange and black.

6. *Gluta lanceolata*, *Ridley* in Journ. Roy. As. Soc. Straits Branch, 49, 1907, p. 17, and Flora Mal. Penins. 1, 1922, p. 527.

This species is founded upon a single gathering made from a big tree at Balik Pulau in the Settlement of **Penang** in June, 1898 (*Ridley* 9465!). The tree was in flower at this time and also carried very young fruit. These fruits were too young for their mature shape to be foretold, and

the characters drawn from them, in the second of the descriptions quoted above, have no value. The leaves are very like the leaves of *G. elegans* var. *Curtisii*, but a little narrower: on their narrowness, on their being tufted, on a slight measure of minute hairiness on the calyx and on the record that the tree is a big one, rests its claim for specific rank.

7. *Gluta cambodiana*, Pierre, Flore forest. Cochinch., 1896, plate 368: Lecompte, Flor. gen. Indoch., 2, 1908, p. 20.

This species, which was founded by Pierre upon a single gathering in the Laos country, seems to be represented in a gathering from the interior of Kelantan (Henson 19657! from the Sungai Ketch near Gua Ninik) but for certainly more material from both places is desirable, and especially material with fruit. The leaves and the flowers are identical; also in the type and in the Kelantan specimens the former are tufted on the ends of the stems and the latter towards the tops of the panicles. Pierre called his tree a small one: Henson's tree is recorded as 70-80 ft. high.

Furthermore, additional material is required of *G. tavoyana* Hook. fil., which is as yet only inadequately diagnosed from *G. cambodiana* and *G. Wrayi*.

It is somewhat to be deplored that Linnaeus attached the name "rengas" to a species which is only one of a dozen and more trees entitled in Malay to this name: for every *Gluta* and every *Melanorrhoea* is a rengas, equally with some species of *Buchanania*, of *Swintonia* and of *Semecarpus*. Their common character is the possession of a pale yellow resinous sap (black when dry) which causes dermatitis and pustular eruptions if it touches the skin. Those who live where the tree grows know its power to injure only too well, and Cerruti (My friends the savages, 1908, p. 209) states that his Sakai had a habit of destroying the trees when recognised: The Malay word rengas becomes hangus in Semang, rangas in Sakai and in south-eastern Borneo, and reungas in Sundanese and ingas in Javanese. Ranjus, named by Logan (Journ. 1, 1847, p. 296) as a fruit eaten by the Sabimba of the coasts north of Singapore is probably the same. *G. rengas* and *G. velutina* are rengas ayër, because they grow by the side of water. Burn-Murdoch has stated that rengas kèrbau jalang, i.e. rengas of the untamed buffalo, is a name given to the more virulent species. Its use however seems to be restricted to parts of Perak. There are other names with adjectival qualifications, but none of very precise application. The fact is that these trees are not in sufficiently general use in any way for names to be needed. The beautiful rich-red timber sometimes comes to market in single logs; but

we are without complete knowledge regarding its sources: *Melanorrhoea Wallichii* is perhaps the most common. Cubitt seems to suggest that resort to it is increasing (Rep. For. Adminis. F.M.S. for 1923, p. 15). Several authorities in the past have written of rengas in Malaya. Low in 1836 (Soil and Agri. Penang, p. 200) and Newbold in 1839 (Brit. Settlem. in Malacca, pp. 52 and 121) mentioned the timber as available; but it would be rash to assume what species they denoted. McNair in 1883 (Appendix to Cantley's Forest Rep., S.S., p. E-4) ascribed rengas to *G. velutina*; but there are reasons for thinking that this identification was a guess. That the timber of *G. rengas* is a beautiful wood is beyond contesting; but there is very little of it in the Peninsula.

The seeds of *G. rengas* and *G. velutina* can be eaten after roasting but are not much used anywhere. The former is in Madagascar: but at present there is no reason for thinking that it was taken there as a food plant. It would not be taken in any other way than in provision for a voyage. Its vernacular name in Madagascar is torotoro (Boivin had it as tourtour)—a name not recognisably malayan, and it seems that the fruit is without crests and ridges for which reason it is Engler's var. *turtur*. Writers assume that man took it to Madagascar, but have yet to explain how, if that is right, it differs varietally from anything known in Malaya.