

ing than to see the various observers of Nature in a Society like
 ours, mutually and harmoniously contributing, as we have all
 along done, to enrich the scientific mine. I would therefore con-
 clude by recommending those who have leisure and opportu-
 nity for the purpose, to observe for themselves the rectification

XVI. *Observations on Nauclea Gambir, the Plant producing the
 Drug called Gutta Gambeer, with Characters of two other Spe-
 cies. By William Hunter, Esq. Secretary to the Asiatic Society.
 Communicated by the President.*

Read June 16, 1807.

It has been a question, among naturalists and writers on the
 materia medica, whether the little cakes or lozenges called *Gutta
 Gambeer* be prepared from the *Mimosa Catechu*, or the produce
 of a different plant*. This question, if not already determined,
 I am enabled to resolve by actual observation, having seen the
 substance made from a species of *Nauclea*, of which I beg leave
 to offer the following description.

1. NAUCLEA GAMBIR.

Funis uncatu. Daun Gatta Gambir. *Rumph. Amb. t. 5.
 63. t. 34. f. 2.*

Climbing. Branches round. Leaves ovate, pointed,
 smooth. Stipules two, lateral, caducous. Peduncles
 axillary, solitary, simple, jointed.

Stem shrubby, twining to a great height, covered with a
 rough brown bark.

* Murray, Appar. Med. vol. ii. p. 549.

Branches

Branches crowded, round, smooth; branchlets opposite, widely spreading.

Leaves opposite, petiolated, ovate, pointed, waving, widely spreading, smooth, below marked with transverse parallel veins.

Stipules at the bases of the branchlets and petioles, two, lateral, parabolical, sessile, widely-spreading, smooth, caducous.

Peduncles axillary, solitary, round, straight, horizontal, much shorter than the leaves; jointed near the apex and bracteated: after the flowers have fallen, the lower joint persistent, recurved, forming a hooked spine.

Bractees four, ovate, acute, spreading, very small, caducous.

Flowers aggregate, globular; composed of very numerous florets, crowded on a globular, naked, very small receptacle.

Cal. Perianthium common, none.

Proper, one-leafed, oblong, incrusting the germen, persistent; mouth five-cleft, divisions lanceolate, erect.

Cor. as in the Genus.

Stam. Filaments five, very short. Anthers oblong.

Capsule stalked, oblong, incrusted and crowned with the calyx; tapering to a point below; two-celled, two-valved; the valves adhering at the apex, splitting at the sides.

Seeds very numerous, oblong, very small, compressed, furnished at both ends with a membranous pappus.

The flowers, when fully spread, I suppose last a very short time; for although I have frequently looked for them, I was never able to find them, whence I have been obliged to omit the description of the Pistil.

From the leaves of this shrub is prepared the substance called *Gutta Gambeer*, in two ways. The first is by boiling the leaves*. This process was performed under my inspection, by a Chinese, at *Prince of Wales's Island*. Seven catties (or $9\frac{1}{3}$ lbs.) of the leaves, plucked clean from the stalks, were boiled in a large pot for one hour and a half, adding more water as the first was wasted, till towards the end of the process, when it was inspissated to the consistence of a very thin sirup. When taken off the fire, and allowed to cool, it became solid. It was then cut into little squares, which were dried in the sun, turning them frequently. After one month, I weighed them, and found ten ounces and two drachms, troy weight.

The *Gambeer*, prepared according to this process, is of a brown colour; but from some parts of the *Malay* coast, and of *Sumatra*, it is brought in little round cakes almost perfectly white. According to Dr. CAMPBELL of *Bencoolen*, this is made by cutting small the leaves and young twigs, and infusing them in water for some hours, when a fæcula is deposited, which is inspissated by the heat of the sun, and moulded into round cakes.

The *Gambeer*, when first tasted, impresses on the palate a strong sensation of bitter and astringency. But it afterwards leaves a sweetish taste, which remains a long time. From these sensible qualities, it might reasonably be expected to prove useful in medicine. And accordingly, we are told that it has been found beneficial in angina and aphthæ, as well as in diarrhœa and dysentery. The drug was infused in water, to which it gave the colour of the infusion of bohea tea†. By

* See Marsden's *Sumatra*, p. 243,—where he quotes, for a particular account of the manufacture, the second volume of the *Transactions of the Batavian Society*.

† Murray l. c. *Seba*, item. *Buisson* apud *Degner*, de *Dysent.* p. 297.

the Malays it is mixed with lime, and applied externally to cuts, burns, boils, &c.

But the most frequent use of it is to chew, along with the leaves of Betel, in the same manner as the *Kut* (or Catechu) in other parts of India.

For this purpose the finest and whitest kind is selected. The red, being strong tasted and rank, is exported to *China* and *Batavia*, where it is used for the purposes of tanning and dyeing. For the first of these uses we might suppose, from its sensible qualities, that it is well calculated; and some rough experiments which I have made on it with animal gluten, compared with those of Dr. ROXBURGH on *Kut*, evince it to be richer in *Tannin* than that substance.

The chief places of manufacture are *Malacca*, *Siak* and *Rhio*; and the process of boiling is most generally practised; insomuch that the generality of manufacturers there are ignorant of there being any other. The colour and other qualities, they allege, depend on the vessel and the skill or attention of the operator. Thus an old manufacturer, with Chinese iron pots, will produce a whitish drug; whereas with a Malay iron pot its colour will be browner. The first cuttings also yield a whiter drug than the subsequent ones.

For the cultivation of this plant a rich red soil is preferred. It gives the most luxuriant crop when the rains are frequent, but does not thrive in grounds that are apt to be flooded. On this account the side of a hill is esteemed better than any other situation.

The plants are propagated from seed. In three months after sowing, they appear above the ground; after this they grow fast, and may be moved to the field when nine inches high. They are there planted at the distance of eight or nine feet, so that
one

one *orlong* (of eighty yards square) contains about seven hundred plants. At the end of one year from the time when they are planted in the field, a small crop of the leaves is obtained. A larger is got in eighteen months; and the third at the end of two years, when the bushes have attained their full growth. They continue in their prime, and admit of being cut twice a year, during a period of twenty or thirty years, provided care be taken to keep the ground clean and the roots free from weeds. Their tops must be cut so as to prevent them from growing to a greater height than five or six feet.

From good ground and a garden well kept, ten peculs (of $133\frac{1}{3}$ lbs. each) of dry Gamber are usually obtained on every *orlong* twice a year, or twenty peculs per annum. As it is cut every six months, and should then be boiled off, the leaves ought to be of the same age; but, from a want of means, it often happens that the year is nearly expired before the cutting is done, which should have been made at the end of six months. In this case the young leaves yield a whiter drug than the old. As to the quantity afforded by each, in proportion to the weight of leaves, I have received contradictory information, so that I conclude little attention has been paid to this circumstance.

The price of the drug, at Prince of Wales's Island, varies from four to eight Spanish dollars per pecul. The finest and whitest kind is that formed into little round cakes or lozenges. It is sold by tale, at three dollars and a half for the *Laxa* (or 10,000), and one *Laxa* weighs about 40 catties. This gives $8\frac{1}{2}$ dollars for a *Pecul*.

The price of Sago at Prince of Wales's Island is generally about three dollars per pecul. Hence the manufacturer is often tempted to adulterate his Gamber with this article, which mixes intimately, but may be detected by solution in water.

The

Directions for placing the Plates of the Ninth Volume.

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3. Cancer subterraneus, &c.							
4. Cancer Locusta, &c.							
5. Cancer rubricatus, &c.							114
6. Bulla Hydatis, &c.							
7. Doris longicornis, &c.							
8. Amphitrite Infundibulum							
9. Ursus indicus							
10. Variolaria multipuncta & V. globulifera							137
11. Lecidea aromatica & L. atro-flava							140
12. Parmelia velata & P. carneo-lutea							143
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14. Lycium rigidum							153
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22. Nauclea Gambir							218
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24. } Notoclea	}						
25. }							
26. Edwardsia chrysophylla, Splachnum squarrosum, &c.	}						
27. Neckera sphærocarpa, &c.							322
28. Bryum heterophyllum, &c.							

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