XXIII. *A Commentary on the Hortus Malabaricus, Part I.*

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Read May 1, 1821.

Tenga, *p.* 1. *fig.* 1—4.

Cocos nucifera of Willdenow.

The resin mentioned by Syen in the notes, as produced by this palm in Ceylon, seems doubtful. I never heard of such; and suspect that what he saw was the produce of some other tree, perhaps of the *Sterculia Balanghas*, which in Malabar is called mountain coco-nut. The place of growth assigned to this tree by Willdenow is improper. It should have been, "Habitat ubique in maritimis inter tropicos præsertim arenosis."

Caunga, *p.* 9. *fig.* 5—8.

Areca Catechu of Willdenow.

The figure of Plukenet (*Phyt. t.* 309. *f.* 4.), quoted for this plant, and no doubt intended by him to represent it, seems to me to have been taken from some other, which had been sent to him by mistake. It evidently represents a young palm, as newly shot up from the ground, but seems rather a *Phœnix* or *Elate* than an *Areca*.

The name *Areca* has probably been taken from Garzia ab Horto, who, according to the commentator, says that the nut, not only in Malabar but in other places, is by people of rank

called

called *Areca*. Who these nobles were I cannot say; but I presume they were Portuguese, who obtained the name *Areca* by some misconception; for it is not used by any native of India that ever I heard. The specific name *Catechu* (in the Encyclopédie *Cathecu*) evidently arises from a mistake, originating I believe with Dale, who imagined that the *Terra Japonica*, or *Catechu* of European druggists (*Kath* of the natives), was the produce of this palm; an error once very common, but from which the *Hortus Malabaricus* is free.

The most remarkable quality of this nut, and that for which it is so much used in India, is its narcotic or intoxicating power, not noticed by the Brahmans of the Dutch Governor, who indeed often overlooked the real qualities of plants, and ascribed to them such as are at least very doubtful.

Carim—Pana, *p.* 11. *fig.* 9.

Borassus flabelliformis, fœm. Willd.

Am Pana, *p.* 13. *fig.* 10.

Borassus flabelliformis, mas. Ibid.

The uses for which this palm is so much employed in India, are totally omitted in this work, which on such subjects is very superficial and incorrect. The leaf mentioned by Syen in his note, evidently did not belong to this palm, but to the *Corypha* described in the *Hortus Malabaricus, vol.* iii. *p.* 1.

Schunda Pana, *p.* 15. *fig.* 11.

This is quoted in the *Encyclopédie Méthodique* and in Willdenow for the *Caryota urens*. As however the *Seguaster major* of Rumphius (*Herb. Amb.* i. 64. *t.* 14.) is also quoted by both authorities, and was indeed considered by Rumphius as the same with

with the *Schunda-Pana*; yet, as I have great doubts on this head, and think the two plants different, I do not know which Linnæus meant. I know the *Schunda Pana* well, and found it common in the eastern parts of the province of Bengal, as well as on the western mountains of the Indian peninsula; but I no where observed those large leaflets, that Rumphius represents as placed along the middle rib of the leaves. The distinction is perhaps of no great consequence, as the uses and qualities of both kinds seem to be nearly the same, and to be excellently described by Rumphius.

BALA, *p.* 17. *fig.* 12—14.

This is usually quoted as the *Musa paradisiaca*; and when Linnæus wrote the *Flora Zeylanica*, he knew no other species. No plant having had more care bestowed on its cultivation, a vast number of varieties have been reared, and are continued by being raised from offsets taken from the root. In one of these varieties, the *Schundila Canim Bala* of the *Hortus Malabaricus* (p. 20), the male spathes fall off as the fruit ripens, leaving the whole spadix, that remains, covered with fruit. The same happens in a great many other varieties, especially such as are most fitted for eating without the preparations of cookery, and was supposed by Linnæus to afford room for a specific distinction, on which he founded the *Musa sapientum*; and subsequent authors have increased the number by adding the *Musa maculata*, and *Musa rosacea*, mentioned by Willdenow. The author of the *Encyclopédie* (Suppl. i. 569.) judged wisely in rejecting these as species, and, in my opinion, should have followed the same course with the *Musa sapientum* of Linnæus, none of the varieties of which differ more from the varieties of *Musa paradisiaca* than a codling apple does from a pepin. Dr. Roxburgh was finally of the same opinion with me; for although he described a *Musa sapientum* and a *Musa paradisiaca*, yet he acknowledges (*Hort. Beng.*

Beng. 19, *note* 1), that they are mere varieties. In fact, he was so puzzled by circumstances, that he quotes the *Hortus Malabaricus* for neither plant: for the fruit-bearing tree in figure 12 has the male spathes deciduous, while in figure 13 they are represented as persistent. As these two species should be united, and as the names *sapientum* and *paradisiaca* are liable to some objections, the Latin name *Pala*, used by Pliny (*Hist. Nat. lib.* xii. *sect.* xii.), should be revived; for there can be no doubt that this is the *Arbor Pala;* and Pliny's example shows the urbanity (to use the Roman phrase) of adopting into botanical Latin the foreign names of plants; for the word *Pala* is no doubt the same with the *Bala* of Kærulu or Malabar. How much better are such names than the monstrous would-be Greek words ending in *pogon*, *carpos*, *lobus* and the like, with which we are now overwhelmed! Rheede was indeed very unfortunate in his choice of names, selecting in general the most barbarous appellations of the vulgar dialect in preference to the polished words of the Sanscrita. But in numerous instances Rumphius has shown how even the most uncouth words may be polished; and it is much to be regretted, that the taste of Linnæus was suited to approve most of Rheede's selection.

Amba Paia, *p.* 21. *fig.* 15, 1.

Carica Papaya, *mas* auctorum.

Papaia Maram, *p.* 23. *fig.* 15, 2.

Carica Papaia, *fœmina.*

Carica, being the Latin name for a kind of fig, seems to have been ill applied to this genus.

Every thing that I have seen induces me to believe, with Rumphius and Dr. Roxburgh, that this tree is an exotic in India. Few plants have less affinity to others than this; so that

it is very difficult to say to what natural order it should be referred. Jussieu considers it allied to the *Cucurbitaceæ* which have the germen above the calyx; but its erect woody stem, and want of tendrils, seem strong objections. I think that it rather comes nearer some of the *Euphorbiæ*, especially to the *Jatropha*, several species of which, like the *Papaya*, when wounded, pour forth a limpid juice of very peculiar qualities. The affinity with the *Euphorbiæ* is confirmed by the circumstance of Linnæus having mistaken the *Aleurites triloba* for a *Papaya*, which he called *Posoposa*. See *Willdenow Sp. Pl.* iv. 815.

ILY, *p.* 25. *fig.* 16.

Linnæus, like the older botanists from the time of Pliny at least, considered this plant as a species of *Arundo*. These older writers knew it as the vegetable which produced a stony substance used in medicine, and called *Tabashir* or *Mambu;* and *Mambu*, corrupted into *Bambu*, came to be the name by which the tree itself was known in Europe (Plukenet *Alm.* 53.), although it was never known by any name like this in an Indian language. On the discovery that this plant could not be an *Arundo*, it was formed into a new genus, which Retzius called *Bambos*, from the specific name previously given by Linnæus; but Jussieu, rejecting this ill-formed word, adopted *Nastus*, by which name the *Arundo indica* is said to have been known to the Greeks. Willdenow, very unwilling to adopt anything from Jussieu, and disliking the *Bambos* of Linnæus, not very tractable in the Latin declinations, made a new word, *Bambusa*; and M. Palisot de Beauvois (*Encycl. Meth. Sup.* v. 494.), on observing some slight differences in the flower, made two genera, *Bambusa* and *Nastus;* and probably some other person will make as many genera as there are species; for I have observed no two species in which there were not considerable differences in the flower.

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The circumstance of producing the substance called *Tabaxir* or *Tabashir*, cannot, I believe, be considered as affording a specific character; because I am persuaded that this substance, very minutely divided, pervades most parts of all the species that I have seen; and it is only under particular circumstances that it collects in the hollow joints of the plant, forming considerable masses, such as are employed as a drug. Many thousand plants may be cut without finding a morsel: and, so far as I could learn, it is chiefly found in woods or thickets consisting mostly of it alone, and growing on a dry stony soil, where the plant does not reach to a great size, and has a strong tendency to flower; for the cultivated *Bambu* very seldom does so. Most of the older writers taking the production of this drug as their specific character, their synonyma may be rejected, as common to several species.

Linnæus contented himself with making one species; and in the *Flora Zeylanica* quoted for this the *Ily* of the *Hortus Malabaricus*, adding no reference to other authors that could render us doubtful of what he meant. Since then, however, to the *Ily* of the *Hortus Malabaricus*, botanists in describing the *Bambusa arundinacea* have added the *Arundarbor vasaria* of Rumphius. As I consider the two plants quite distinct, I am at a loss to say which is the *Bambusa* or *Bambos arundinacea* (Willd. *Sp. Pl.* ii. 245. *Enc. Meth.* viii. 701). Dr. Roxburgh seems to have been aware that they could not be the same, and only quotes the *Ily* for his *Bambusa arundinacea* (*Hort. Beng.* 25.); but then he seems to have some way imagined that the *Ily* represented the *Bambu* most commonly planted about villages, and which is destitute of thorns, while in fact the *Ily* has thorns, and I have little doubt is the same with the *Bheru* or *Beheor Bangsa* of the Bengalese, which in the *Hortus Bengalensis* is quoted for Dr. Roxburgh's *Bambusa spinosa*. It is true that for this Dr. Roxburgh also

quotes the *Arundarbor spinosa* of Rumphius (*Herb. Amb.* iv. 14. *t.* 4); but in this I think he was mistaken, the plant of Rumphius being at times almost scandent, and even its smallest branches are armed with spines; while the *Bheru* is the most erect *Bambu* that I have seen, and the spines are chiefly confined to the principal stem. Rumphius himself (p. 11.) thought that the *Ily* of Rheede was his *Arundarbor fera* (p. 16.), in which I entirely agree with him; and I think that the *Bheru Bangsa*, which I have described, is the second variety of Rumphius with a lofty straight stem. The figure in Rumphius (iv. *t.* 4.), referred to by Burman as that of the *Arundo fera*, I cannot well reconcile with the description, and doubt of its even representing any *Bambusa*. Further, I am persuaded that the *Arundarbor vasaria* of Rumphius is the *Bambu* most commonly cultivated in Bengal, and is probably the plant which Dr. Roxburgh called the *Bambusa arundinacea*. I shall now content myself with mentioning the synonyma belonging to the *Ily*, with such circumstances as may serve to distinguish it as a species.

Bambusa spinosa. Hort. Beng. 25. B. trunco erecto spinoso, vaginis petiolaribus hispidis.

Arundarbor fera secunda. *Rumph. Herb. Amb.* iv. 14; sed non *fig.* 4. quæ vix speciem Bambusæ repræsentat.

Arundo arbor. *Linn. Fl. Zeyl.* 47.

Arundo Bambos. *Linn. Sp. Pl. in Burm. Fl. Ind.* 30.

Arundo indica arborea maxima, cortice spinoso, Tabaxir fundens. *Burm. Thes. Zeyl.* 35.

Bheru Bangsa Bengalensium.

Colitur ad pagos Indiæ rariùs; in sylvis præsertìm Indiæ australis frequentior.

Truncus elatus strictus, ad nodos spinis validis geminis vel ternis armatus. *Rami* brevissimi, pinnatiformes. *Vaginæ* hispidæ,

pidæ, ultra folium ore ciliato productæ. *Folia* suprà nunc nuda, tunc scabra et pilis raris aspersa ; subtùs nuda. *Panicula* terminalis laxa, ramis longis, pendulis, raris, articulatis, indivisis. *Spiculæ* ad articulos confertæ, lanceolatæ, imbricatæ floribus alternis, distichis. *Flores* in singulis spiculis inferiores neutri valvula interiore minuta ; superiores masculini bivalves, valvulis ovatis, equitantibus. Valvula exterior maxima, deorsum convexa ; interior tenuis, deorsum concava, marginibus ad angulum inflexis, angulis ciliatis. *Stamina* sex.

Femininam vel Hermaphroditam non vidi florentem.

MALACCA SCHAMBU, *p.* 27. *fig.* 17.

NATI SCHAMBU, *p.* 29. *fig.* 18.

Jambu is a Sangscrita word, the first letter being pronounced as in English : but, as this sound is not given in the Dutch language, Rheede writes the word *Schambu*. The Portuguese seem to have written it *Gambu* ; but in all the pronunciation is nearly alike.

Rheede begins his description by remarking that there are two kinds of *Schambu* ; the *Malacca*, called so from having come from that country ; and the *Nati Schambu*, of which he gives no explanation, but I conceive the meaning to be this. In the vulgar dialect of Malabar, *Nada* or *Nata* is analogous to *Desa* of the Sangscrita or Hindwi, and signifies a country or territory ; while *Nati* or *Desi* signifies any thing belonging to the country or indigenous. *Nati Schambu*, therefore, is the indigenous *Schambu*. I am convinced, however, that by some misunderstanding Rheede has reversed the names : and that the tree which he calls *Malacca Schambu* is indigenous in Malabar, as in all parts of India Proper ; while the *Nati Schambu* is a native of

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the Eastern Islands, and in Malabar is found only about European settlements. Much therefore of what is said by Syen, in the note concerning this species, must be considered as belonging to the *Nati Schambu*. This has given rise to many difficulties in quoting the older accounts of the two kinds; for, among the later botanists, there can be no doubt that the *Malacca Schambu* is the *Eugenia Jambos*, while the *Nati Schambu* is the *Eugenia malaccensis*; which shows that Linnæus knew the real country of at least the latter plant.

Of the synonyma quoted for the *Malacca Schambu* in the *Flora Zeylanica* by Linnæus, that of *Bauh. Pin.* 441. may be considered as belonging to the *Nati Schambu*. The same may be affirmed of the *Jambosa domestica* of Rumphius (*Herb. Amb.* i. 121. *t.* 37), first introduced by the elder Burman among the synonyma of the *Malacca Schambu*. This was corrected by his son in the *Flora Indica* (114.), while he introduced another error equally great, in supposing the *Jambosa silvestris alba* of Rumphius to be the same with the *Eugenia Jambos*. This error continues in Willdenow; and the authors of the *Enc. Meth.* (iii. 197.) do not venture to reject it altogether, but consider the two plants as varieties. This *Malacca Schambu* or *Eugenia Jambos*, indeed, is not at all mentioned by Rumphius, except in a paragraph (iv. 123.) where he says that a tree of it stood before the castle of Victoria in Amboyna, where it was called by the Portuguese name *Jambo d'agoa rosada*. From this I conclude that it was an exotic, and had been introduced by the Portuguese from India Proper, where it grows in abundance: although Rumphius, from the name given to it by Rheede, considers it as having come from Malacca. As properly synonymous with this species we may add the *Jambos fructu luteo, mespili forma odorata, Gambu dicta. Burm. Thes. Zeyl.* 125. This indeed is the only form in which I have seen the tree; and I suspect that those who describe it

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with a pyriform fruit confound it with the *Jambosa domestica* of Rumphius, both having the smell of roses.

With respect to the synonyma of the *Nati Schambu*, or *Eugeniam alaccensis*, we may observe that the *Jambos sylvestris fructu rotundo cerasi magnitudine* of Burman (*Thes. Zeyl.* 125) quoted by Linnæus in the *Flora Zeylanica* (187), and by the younger Burman (*Fl. Ind.* 114.), may be safely omitted, as has been done by Willdenow. It is probably the same with some of those described by Rumphius under the name of *Jambosa sylvestris.*

These difficulties in the synonyma seem to have prevented both the *Hortus Malabaricus* and *Herbarium Amboinense* from being quoted in the *Hortus Bengalensis* for either the *E. malaccensis* or *E. Jambos.*

CHAMPACAM, *p.* 31. *fig.* 19.

There is no doubt of this plant being the *Michelia Champaca* of authors: but there is strong reason to doubt the propriety of separating the *Michelias* from the *Magnolias.* The number of petals is not a sufficient character, as it is liable to considerable variation even in the same individual; nor can the fruit of the *Michelia* be called a berry, in the sense that word now obtains. There is a fleshy juicy aril round the seeds: but still the fruit consists of two valves; and in a *Michelia* which I have seen, and which it is very difficult to distinguish by a well defined character from the *Champaca*, the valves of the capsule are completely dry and hard, and finally, the habit or general appearance of the *Michelias* is not different from that of the *Magnolias.*

ELENGI, *p.* 33. *fig.* 20.

Mimusops Elengi of authors.

MANIAPUMERAM, *p.* 35. *fig.* 21.

Nyctanthes arbor tristis of authors: called *Scabrita* by some late innovators.

Mania is probably the proper native name, Pu signifying *flower*, and Maram *tree*. In Pegu I was shown this as the tree on which the inhabitants reared a silkworm, probably the same with the Tessar of Bengal, on which account the people there call it *Po-za bæn, Bombycis arbor*. In India Proper the tube of the corolla is used as a dye.

CONNA, *p.* 37. *fig.* 22.

Cassia fistula of authors.

Gærtner was perhaps excusable in thinking that the *Cassia* of Linnæus should be divided into two genera, *Cassia* and *Senna*, as Tournefort had done: but for what reason Persoon proposes to change the decent enough name *Cassia* into the uncouth *Cathartocarpus*, I cannot say. Bad as this name is, Willdenow has lately contrived a worse, and the *Cassia* is now become *Bactyrolobium*. I must further observe, that the Linnæan generic character, taken from the stamina, distinguishes these plants from all others with facility: while the limits between the *Cassias* and *Sennas*, drawn from the structure of the legume, are not easily to be defined even in species which differ remarkably in their general appearance. Thus the fruit of the *Cassia sophera* does not properly open into valves, and is divided by transverse membranes into many cells, somewhat like the *Cassia fistula*; but in other respects it resembles much the true *Senna*, while many species, in size and splendour of flowers, resemble the *Cassia fistula*, but produce a leafy legumen opening with two flat valves.

valves. The cathartic pulp is by no means universal among the species best defined as *Cassias*.

BALAM PULLI, *p.* 39. *fig.* 23.

Tamarindus indica auctorum.

The specific name is a vile pleonasm, as being contained in the generic appellation, which signifies the Date of India.

CODDAM PULLI, *p.* 41. *fig.* 24.

It is now generally admitted that Linnæus was wrong in considering this as the tree which produces the true *Gummi gutta* or Gamboge; and that he was also wrong in separating it as a genus from *Garcinia*. As he was in an error respecting the *Cambogia*, modern botanists, in uniting the two genera, have acted right in retaining the name *Garcinia*; and when Willdenow made the *Cambogia* a *Garcinia*, it would have been better if he had not retained *Cambogia* as the specific name, as it still leads to error; for I believe there is no further ground for supposing the drug called Camboge to be produced in Ceylon.

ATTY ALU, *p.* 43. *fig.* 25.

In the *Flora Indica* of Burman (226.) this name is read *Alty-alu*, which is retained in Willdenow, and even in the generally accurate *Hortus Kewensis*, probably owing to the authors having quoted on the authority of Burman without examining the *Hortus Malabaricus*.

The *Atty-alu* is usually conjoined with the *Grossularia domestica* of Rumphius, and quoted for the *Ficus racemosa Willd. Sp. Pl.* iv. 1146. *Enc. Meth.* ii. 496. I think, however, that the two plants are different; and although the *Grossularia domestica* is quoted in the *Encyclopédie* with doubt, I suspect that it is the plant described in this work, especially as it quotes the

Grossularia sylvestris of Rumphius as a mere variety, and that without doubt. The author of the *Hortus Kewensis* has therefore done wisely in not quoting the *Grossularia domestica* for the *Atty-alu*, which I am persuaded is represented in the *Herbarium Amboinense* iii. *t.* 94. Although in the explanation of this plate it is said to represent the *Caprificus aspera latifolia*, this can by no means be reconciled with the description, which I think belongs to the *Ficus symphytifolia Encycl. Meth.* ii. 498; and I have no doubt that this plate (94.) represents the *Gohi glabra* of Rumphius, iii. 151. Further, I know that Dr. Roxburgh, when I returned from Ava, considered the *Atty-alu* as the same with his *Ficus glomerata*, although he does not quote it in the *Hortus Bengalensis*, deterred probably by Willdenow's authority.

The synonyma of this tree I therefore consider to be as follows:

Ficus glomerata, Hort. Beng. 66. Willd. Sp. Pl. iv. 1148. Encycl. Meth. Sup. ii. 656.

Ficus racemosa, *Hort. Kew.* v. 488.

Gohi glabra, *Herb. Amb.* iii. 151. *t.* 94. perperam ad Caprificum asperam latifoliam relata.

Udumbar *Sans.* Dumbar *Hind.* Jugya Dumar *Beng.* Sa-pann-gæh *Barm.*

Habitat ubique ad pagos Indiæ.

ITTY ALU, *p.* 45. *fig.* 26.

In the *Encyclopédie Méthodique* (ii. 493.) this is quoted for the *Ficus Benjamina* joined with the plant figured in Plukenet (*Phyt.* 243. *f.* 4.); and nothing in either work contradicts the opinion that both authors meant the same plant, although the figure of Plukenet, having no fruit, is rather doubtful. Willdenow, who had only seen a plant without flower, which he took to be the *Ficus Benjamina*, adds as synonymous the *Varinga parvifolia* of

Rumphius

Rumphius (*Herb. Amb.* iii. 139. *t.* 90.), which I consider as a different plant: for Rumphius says "*fructus sessiles.*" Now the fruit of the *Itty alu* is on a stalk. In order, indeed, to obviate this difficulty, Willdenow calls the fruit *receptaculum subsessile*: and the figure in Rumphius, probably all that Willdenow ever consulted, has indeed this appearance in some parts: but this must be attributed to the carelessness of the draughtsman, for Rumphius was too blind to be able to check such errors, which were frequent. It remains therefore doubtful whether we are to consider the *Itty alu* or the *Varinga parvifolia* as the *Ficus Benjamina* of Willdenow; only the term *receptaculum subsessile*, used in his specific character, is not at all applicable to the former: and as the same term is continued in the *Hortus Kewensis* (v. 487.), some doubt is thrown on the plant meant in this valuable work, although it quotes only the *Itty alu*. I have not seen any tree that I could consider as the *Itty alu*; nor in the *Hortus Bengalensis* is any mention made of the *Ficus Benjamina*. I have, however, seen what I consider as both kinds of the *Varinga parvifolia* of Rumphius.

AREALU, *p.* 47. *fig.* 27.

This is the *Ficus religiosa* of the *Hortus Kewensis* (v. 484.), although in this work Willdenow (*Sp. Pl.* iv. 1134.) is quoted; and his plant is liable to some doubt, as besides the *Arealu* he also quotes the *Arbor conciliorum* of Rumphius. Willdenow indeed says that the figure given by Rumphius is bad; and no doubt, as it represents a plant totally different form the *Arealu*, so it ought. From this circumstance, however, we may infer that Willdenow really meant the *Arealu* to be his *Ficus religiosa*, as it was that of Linnæus, the proper synonyma being given in the *Flora Zeylanica* (372.): for it must be observed, that while Willdenow added the *Arbor conciliorum*, he omitted the *Arbor*

zeylanica religiosa of Burman (*Thes. Zeyl.* 29), from whence the specific name was borrowed. In the *Encyclopédie Méthodique* (ii. 493.) the *Arbor conciliorum* is considered as a variety of *Arealu*; but I have no doubt of their being entirely different species. Although the *Arealu* was particularly sacred among the heretical sect of Buddha, and is the *Bo-dhi bæn* chiefly venerated among its adherents in Ava; yet the veneration for it was too deeply seated among the populace to be eradicated; and among the orthodox of the day, it and the next tree hold nearly an equal place.

PERALU, *p.* 49. *fig.* 23.

This tree was described by Commeline under the name of *Ficus bengalensis folio subrotundo, fructu orbiculato*, which in the first edition of the *Species Plantarum* was united with an American tree figured by Plukenet (*Phyt. t.* 178. *f.* 1.) to form the *Ficus bengalensis*. Plukenet considered his plant as the same with the *Toiakela* of Rheede (*Hort. Mal.* iii. *t.* 64.), to which indeed it has as great a resemblance as the *Peralu*; but it is not likely that an American *Ficus* should be the same with either. His plant, however, still continues united with the *Peralu* in Willdenow; and, although not mentioned in the *Hortus Kewensis*, is perhaps the plant meant in that work, as Sloane's MSS. are quoted, and these probably relate to a plant of Jamaica.

When the *Peralu* was added to the *Ficus bengalensis* I cannot exactly say; but probably it was by Linnæus when he published the second edition of the *Species Plantarum*. In the *Encyclopédie Méthodique* (ii. 494.) the American plant of Plukenet, with its synonyma, was so far separated from the *Peralu*, as to be considered a remarkable variety; but in treating of the *Peralu*, the compiler of this useful work has been led into a great mistake in supposing it to be the *Pipala* of the Hindus; for although equally sacred with the tree so called, it is the *Vata* of

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the Sanscrita, written *Vadoe* by Rheede, and in the vulgar dialects corrupted to *Bar*, *Bat*, *Barga*, &c.; while the *Pippala* of the Sanscrita is the *Ficus religiosa*. From the vast size to which the *Peralu* grows; from its great celebrity all over India; from its being found near almost every village as a sacred plant, I have no doubt of its being the *Ficus indica* of the Greeks and Romans, and it is the Banyan tree of modern travellers. The other trees quoted by European botanists for this celebrated plant being rare, confined to a few woods, and altogether unnoticed and unknown to the bulk of the natives, I applaud Dr. Roxburgh for rejecting the barbarous specific *bengalensis*, and for restoring to the *Peralu* the ancient appellation of *Ficus indica* (*Hort. Beng.* 65).

Folia basi sinu parvo cordata vel retusa, apice obtusa, subtùs sæpe subtomentosa, semper pilosa, subquinquenervia: nervi enim plerumque quinque supra basin coalescunt, et præter eos ad basin sunt duo minuti. *Fici* globosi, pubescentes, magnitudine nucis moschatæ, calyce vel involucro triphyllo arcte cincti.

BUPARITI, *p.* 51. *fig.* 29.

In the *Flora Zeylanica* (258.) Linnæus annexing numerous synonyma, and probably with tolerable accuracy, called this *Hibiscus foliis cordatis integerrimis*, which in the *Species Plantarum* became the *Hibiscus populneus*; and at the same time several changes were made in the synonyma, not for the better, as a doubt arises concerning the plant meant, by adding the *Novella litorea* (*Herb. Amb.* ii. 224. *t.* 74.), which I consider as a different species, from the form of the fruit, that opens in five valves, and from its growing only on the sea-shore. Both however continue united not only in Willdenow and the *Encyclopédie*, where the *Buparíti* continues a *Hibiscus*, but even in Gærtner (ii. 253), who

who removes this plant to a genus which he calls *Malvaviscus*. His description of the fruit is only applicable to that of the *Buparíti*, which must therefore be considered as his plant: and in the *Hortus Kewensis* (iv. 224.) the *Novella litorea* is properly omitted. See further under next head.

PARITI seu TALI PARITI, *p.* 53. *fig.* 30.

This stands nearly on the same footing with the *Buparíti*, want of care in quoting the synonyma having rendered doubtful the plant meant. Under the name *Ketmia zeylanica semper virens et florens, Tiliæ folio, flore luteo*, the elder Burman (*Thes. Zeyl.* 136) collected a number of synonyma, some of them such as the *Arbor solis* of Herman, belonging certainly to the *Buparíti*, while the American plant of Plumier in all probability belonged to another species. Linnæus in his *Flora Zeylanica* (259.) taking up the plant of Burman, with the American plant of Plumier, but rejecting all the other synonyma of the *Thesaurus Zeylanicus*, added them to the *Pariti*, and formed the species which he afterwards called *Hibiscus tiliaceus*. In the *Species Plantarum*, especially as it now stands in Willdenow's edition, the synonyma of the *Flora Zeylanica* have undergone many changes, and not all for the better. To the original American plant has been added another, yet both are acknowledged to want one of the chief specific characters. The *Novella* of Rumphius (*Herb. Amb.* ii. 218. *t.* 73.) is restored, although Rumphius himself considered his *Novella* as the *Buparíti* of Rheede, and his *Novella rubra* (*Herb. Amb.* ii. 223.) as the *Pariti*. With regard to the former he was certainly mistaken; but with regard to the latter he may be right. Burman, however, in his notes on the *Novella rubra*, considers it as a mere variety of *Novella*, which is probably the case; and the *Novella* has perhaps therefore been joined with propriety to the *Pariti*, with which however the description agrees better than

the

the figure, Rumphius from the defect of sight being unable not only to judge concerning the care of his draughtsman, but even to know whether or not the figure intended was actually joined to the description.

These differences have perhaps induced the author of the *Hortus Kewensis* to quote neither Rheede nor Rumphius for the *Hibiscus tiliaceus;* and in the *Hortus Bengalensis* the *Novella* alone is quoted for this plant, while the *Pariti* is considered as a distinct species, called *Hibiscus tortuosus* by Dr. Roxburgh. Notwithstanding this, I may venture to say that the *Pariti* is the plant usually taken for the *Hibiscus tiliaceus* by botanists; and is evidently the one described in the *Encyclopédie Méthodique* (iii. 351.), although the figure referred to in the *Supplement* (iii. 216.) has as little resemblance as the *Novella* to the *Pariti*.

On the whole, Plukenet's synonyma (*Alm.* 16.) to the two plants of the *Hortus Malabaricus* are the best and most certain, and seem sufficient to lead us to a more full and exact list of the names which the *Bupariti* and *Pariti* bore in the older authors; only to the list for the latter we must add his own plant, described in the *Amaltheum* (vi. *t.* 355. *f.* 5.), although he does not seem to have recognised that he had previously mentioned it: but the figure is perfectly characteristic.

The author of the *Encyclopédie Méthodique* considers the figure of Plukenet (*t.* 178. *f.* 3.) as representing the *Pariti*, while Plukenet considered it as the *Ficus indica* of Pliny, Strabo, and other ancients. That he was mistaken in this, there can be no doubt; but, notwithstanding the form of the stipulæ strongly supports the *Encyclopédie*, I scarcely think that Plukenet could be so far mistaken.

Cudu Pariti, *p.* 55. *fig.* 31.

After having inquired much into the subject, and seen the cultivation of cotton carried on in a great extent of India, I am

persuaded

persuaded that what in general are called species of *Gossypium* are mere varieties, differing vastly less than the varieties of cabbage (*Brassica oleracea*) reared in our gardens.

In the first place, the plant being annual, or growing to a small tree with a woody stem lasting for years, is a mere accidental circumstance, owing to the manner of treatment. In many places, the farmer considers it most for his advantage to sow the seed at a season when the seed, being brought rapidly forward, will produce plants which when two or three feet high will flower, and give a great return by producing numerous large well-filled capsules; immediately after which the exhausted plant is ploughed down for some crop of another kind, in order to restore the strength of the soil before another crop of cotton is taken: but the very same seed, if sown in a corner at another season, so as to come on less rapidly, will produce plants that last five or six years, that grow ten or twelve feet high, and that acquire a woody stem as thick as a man's leg. In some parts of the country an intermediate management is preferred. The seed is sown in distant rows, at a season when the plant will not flower until it reaches five or six feet high, and then becomes a strong shrub. The plant thus reared, with weeding and manure, lasts several years, and in each produces several crops; on which account, one manner of management is called *Baramasya Capas*, or twelve-month cotton. Some varieties of the plant are reckoned by the farmers more suitable than others for each variety of cultivation: but I am confident that every kind known in India might be reared in all the three ways, and thus become an annual, a shrub, or a tree.

In the next place, the number and form of the lobes in each leaf, the number of glands, and the various degrees of pubescence, on which botanists have attempted to found specific distinctions, in this genus are equally uncertain with the duration

of

of the roots, all being liable to great variation in plants produced from the same seed: the pubescence is however the best criterion of the three, and may serve at least to distinguish varieties.

The variety of appearance produced by cultivation on cotton did not altogether escape the notice of Rumphius, as may be seen (*Herb. Amb.* iv. 34.), where he describes the place of growth, and in the paragraph (36) beginning "*sacerdotes Egyptii.*" But when he described his *Gossypium latifolium* as a distinct species, which is merely the *Gossypium* reared into a tree by planting it in a corner, as I have mentioned, he seems to have neglected his former observations; yet he acknowledges that his *Gossypium latifolium* is the same with the *Kudu Pariti*, although no two varieties resemble each other less than the figures in the two authors. I am however convinced that he is here right; and so far as I saw in the province of Malabar, the only manner in which cotton was raised by the natives, was as the little trees reared in corners of gardens; it was not cultivated in fields for sale. Neither do I blame Linnæus for joining with these two arborescent varieties the *Gossypium herbaceum*, &c. of Plukenet (*Alm.* 172. *Phyt. t.* 188. *f.* 3.); although this, having been treated in the usual manner by sowing in a field, was a herb and not a tree.

If the *Gossypiums* are therefore to be divided into species, we must altogether neglect the divisions of modern botanists, derived chiefly from circumstances which I am persuaded are accidental, and return to the characters on which C. Bauhin and the botanists of other days chiefly relied; and I would propose three species, adding one to the two originally marked out by Linnæus, in reality, I am persuaded, on the characters of the older botanists, although Linnæus assumed others less satisfactory, the adopting their characters having been contrary to the rules which he thought necessary to propose.

Species 1.

Gossypium album, lanâ semineque albis.
Gossypium herbaceum. *Burm. Fl. Ind.* 150. (excluso synonymo *Rumphii.*)
Gossypium frutescens, annuum, folio trilobato Barbadense. *Pluk. Alm.* 172. *Phyt. t.* 188. *f.* 1. *et forte f.* 2. *et t.* 299. *f.* 1?
Colitur præsertìm in Egypto, Asiâ Minore, Syriâ, et Antillis.

Species 2.

Gossypium nigrum, lanâ albâ, semine nigricante.
Kudu Pariti. *Hort. Mal.* i. 55. *t.* 31.
Gossypium. *Herb. Amb.* iv. 33. *t.* 12.; et Gossypium latifolium. *Herb. Amb.* iv. 37. *t.* 13.
Gossypium herbaceum, &c. *Pluk. Alm.* 172. *Phyt. t.* 188. *f.* 3.
Gossypium arboreum. *Burm. Ind.* 150.
Colitur præsertìm in Indiâ vetere et aquosâ.

Species 3.

Gossypium croceum, lanâ croceâ.
Gossypium religiosum. *Hort. Beng.* 51. *Willd. Sp. Pl.* iii. 805.
Colitur in Indiâ Gangeticâ rariùs, in Chinâ plurimùm.

CHOVANNA MANDARU PRIMA, *p.* 57. *fig.* 32.

There can be no doubt that this is the *Bauhinia variegata* of authors, although the specific character given in Willdenow, and copied in the *Hortus Kewensis*, will little enable one to distinguish it, especially from the *candida*, the only difference between these plants being in the colour of the flower. I therefore consider them as mere accidental varieties. In the south of India the

the tree seldom is bare of leaves; but these being old when the tree flowers, they are then smooth. In the north, again, the leaves fall entirely before the flowers appear; and the new ones do not expand until the flowers have almost decayed, and then, being fresh, they are hairy below. On this account, I at first thought that the plant which I found in the north was different from that which I had formerly described in the south; but a more careful examination convinced me that there was no real difference. Both the white and red varieties are equally liable to this variation; and the same is the case in another difference that occurs in this species: some flowers, between the five fertile stamina, which each contains, have an equal number of minute barren filaments, alternating with those which are fertile: others want these appendages.

Mandaru seems to be the generic name for the *Bauhinias* in the languages of Kærulu, both sacred and vulgar, which in the greater number of plants do not agree. The names however used by the Brahmans of Malabar, according to Rheede, are generally the same, or nearly so, with those given in the Hindwi dialect, which are commonly mere corruptions from the Sanscrita, and are probably only those used by the Brahmans in common conversation, and not such as are used in their scientific works, which are almost all written in the last-mentioned dialect. The generic name for the *Bauhinias*, which I heard used in Carnata, was *Canchala*, evidently the same with *Canchana* the Hindwi, or *Canchun* the Bengalese name used in the north, and preserved in *Canschena Pou* of Rheede (*p.* 63.) as a specific name, *Pou* being the corruption for *Phula* (*Flos*, Flower), usual in Malabar. These circumstances being premised, I shall give a description of this species, comprehending both *B. variegata* and *B. alba*, such as appears to me entirely applicable to both.

Bauhinia variegata, calyce hinc ad fundum fisso, antheris fertilibus quinque.

Habitat in sepibus et ad pagos templaque Indiæ.

Arbuscula ramulis angulatis, pubescentibus. *Folia* alterna, subrotunda, sinu brevi utrinque bifida, nervis circiter undecim subtùs prominulis, et venis plurimis reticulata, suprà nuda, subtùs nunc ferè tomentosa, tunc nudiuscula, lobis utrinque obtusissimis. *Petiolus* brevis, pubescens, ad extremitatem utramque incrassatus, canaliculatus. *Stipulæ* deciduæ, duplicatæ; interior setacea. *Racemi* (vel capitula) brevissimi, 3—6-flori, ex axillis foliorum anni præteriti prodeuntes. *Pedicelli* conferti, squamulâ unâ vel alterâ minutâ ovatâ ad basin bracteati, paulò supra basin articulati, dein incrassati, angulati, subpubescentes. *Flores* magni, odorati, variegati petalo imo coloratiore. *Calyx* latere disrumpens, nervis quindecim striatus, apice quinquedentatus. *Petala* ad unum latus deflexa, unguiculata, lanceolato-ovata, acuta, intermedio latiore, ad basin conduplicato. *Filamenta* quinque (aliquando, sed non semper, alia quinque his alterna, minuta, sterilia), petalis opposita, adscendentia. *Antheræ* in filamentis longioribus quinque fertiles, versatiles, oblongæ. *Germen* pedicellatum, lanceolatum, pilosum. *Stylus* crassus, pilosus. *Stigma* obtusum. *Legumen* planum, marginatum, acuminatum, sæpiùs pentaspermum, inter semina angustatum, valvis inter semina conniventibus subquinqueloculare.

Varietas α, petalis quatuor roseis, purpureo-venosis, quinto purpureo fusco et flavo variegato.

Chovanna Mandaru prima. *Hort. Mal.* i. 57. *fig.* 32.

Bauhinia variegata. *Burm. Ind.* 94. *Willd. Sp. Pl.* ii. 510. *Encycl. Meth.* i. 389. *Hort. Kew.* iii. 23. *Hort. Beng.* 31.

Mandaru prima species. *Pluk. Alm.* 240.

Varietas

Varietas β petalis quatuor albidis, quinto intùs flavo et viridi variegato.

Bauhinia candida. *Willd. Sp. Pl.* ii. 510. *Hort. Kew.* iii. 23. *Hort. Beng.* 31.

CHOVANNA MANDARU SECUNDA, *p.* 59. *fig.* 33.

The *Bauhinia purpurea* of authors.

So far as I have heard, it is most usually called by the same names with the *B. variegata*, from which indeed it differs but little; and it is equally entitled to the name *variegata*, as it has four purple petals, and the fifth finely variegated with white. Although the plant is well known, I shall note the differences between it and the description of the *B. variegata*.

Rami teretes. *Folia* apicem versus, lobis divergentibus, dilatata. *Petiolus* brevissimus. *Stipulæ* persistentes. *Pedicelli* apicem versus articulati. *Flores* parùm odorati. *Calyx* coriaceus, reflexus, quinque-carinatus, latere dehiscens, apice integer. *Petala* longiùs unguiculata, cuneata, venosa, undulata. *Filamenta* decem, quorum septem minima, setacea; tria, summum nempe, et ab hoc secundum, utrinque longitudine fere corollæ, petalis opposita, et hæc versus incurva. *Antheræ* sagittatæ. *Legumen* longissimum, planum, lineare, valvis inter semina plura conniventibus.

VELUTTA MANDARU, *p.* 61. *fig.* 34.

It is generally agreed to call this the *Bauhinia acuminata*, although the lobes of the leaves are sometimes rather blunt, and never acuminated; but they are not so much rounded as in the two last-mentioned plants. So far as I have heard, it is seldom distinguished from them by any appropriate name, being usually called *Canchun*.

Plukenet

Plukenet (*Alm.* 240.) says that he received a specimen from Jamaica. If actually of the same species, the plant had probably been brought from India; but nearly similar plants are often mistaken for each other, and these mistakes lead to an opinion of plants extending much further than in reality is the case. Burman (*Thes. Zeyl.* 45.) indeed quotes a plant of Sloane as synonymous with the *Velutta Mandaru*; but this was probably what Plukenet saw. These two authors, however, should be added to the synonyma in Willdenow; especially Burman, who gives a description. His synonyma respecting the *Thomæa arbor* must be received with caution; as this name is said to be derived from the flower having been stained red with this saint's blood: but there is no red about the flower of the *Velutta Mandaru*. The following are the most remarkable of its characters:

Folia sinu parvo cordata, apice biloba, lobis semiovatis sæpiùs acutiusculis. *Calyx* acutus, uno latere dehiscens, reflexus. *Petala* undique patentia, obtusa. *Filamenta* decem fertilia, basi coalita, alterna breviora, declinata. *Stamina* minimè diadelpha, ut voluit Linnæus.

CANSCHENA POU, *p.* 63. *fig.* 35.

Since the time of Linnæus, botanists agree in calling this plant the *Bauhinia tomentosa*, a most improper appellation; as, when the foliage is fully grown, it is nearly destitute of hairiness. The description in Burman (*Thes. Zeyl.* 44.) shows clearly that this is the plant which he meant, and is good; but here also we must receive with doubt, or rather altogether reject, the synonyma referring to the *Arbor sancti Thomæ, in cujus floribus apparent sanguineæ striæ ab effuso sanguine D. Thomæ enatæ*, which, I agree with Plukenet, should be entirely referred to the *Bauhinia variegata*. Plukenet (*Alm.* 240.) considers his *Mandaru*

quarta

quarta species as the *Canschena pou*, and different from the *Mandaru Madaraspatense &c.* quoted by Willdenow (*Sp. Pl.* ii. 511.) as synonymous with the *Bauhinia tomentosa*.

The author of the *Encyclopédie* (i. 390.) is quite wrong in stating that the leaves have no sinus at the base, asany one may be convinced by looking at the figure of the *Canschena pou*. Indeed, in the Botanical garden at Calcutta I saw a species from America remarkably allied to this, and which only differed, so far as I could observe, in having *folia basi rotundata nec cordata*, and in wanting the large purplish mark near the bottom of the petals. The description in the *Encyclopédie* is also faulty in representing the flowers as standing in the axillæ of the leaves.

Folia utrinque biloba, subrotunda lobis obtusis. *Stipulæ* subulatæ marcescentes. *Pedunculus* primò quasi terminalis, sed prodeunte ramulo reverà oppositifolius, biflorus. *Flores* nutantes, flavi. *Calyx* ovatus, acutus, latere uno dehiscens, basi intùs tuberculis quinque munitus. *Petala* tuberculis calycis alterna, sessilia, subrotunda, subæqualia, marginum altero interiore obliquè convoluta. *Filamenta* decem, alternis longioribus, basi unita. *Antheræ* omnes fertiles. *Legumen* pedicellatum, lineare, acuminatum, planum, valvis inter semina ovalia 10. s. 12. transversa conniventibus. *Flos* marcescens rubescit ut in Hibisco populneo, Gossypiis pluribus, et aliis Malvaceis flore flavo.

MAROTTI, *p.* 65. *fig.* 36. *Enc. Meth.* iii. 713.

I cannot discover that this tree has been introduced into any of the modern botanical systems; but I have had an opportunity of observing the *Marotti* in the province of Malabar, and another species of the same genus in the hills of Tripura and Camrupa, bounding the province of Bengal on the east. I have great

great difficulty in referring this genus to any of the natural orders of Jussieu; sometimes thinking that it had a kind of resemblance to the *Berberides*: at others, that it came nearer the third division of the *Tiliaceæ*: and at others, to the third division of the *Aurantiæ*; but I am dissatisfied with all these arrangements. In the opinion of the authors of the *Encyclopédie*, this plant and the *Pangi* of Rumphius (*Herb. Amb.* ii. 182.) have an affinity, and in the general structure and the qualities of their fruits they have a general resemblance; but, if I understand the description of Rumphius, the seed of the *Pangi* has no perispermum. The *Marotti* has perhaps a still greater affinity with the *Hydnocarpus*, belonging, like it, to the *Polygamia dioecia* of Linnæus; but in place of having hermaphrodite and female trees, it has hermaphrodite and male. On account of the resemblance of *Marotti* to *Marattia*, I shall prefer the Bengalese name for the genus, and describe first the species found on the hills of Tripura.

CHILMORIA*.

Herm. *Calyx* pentaphyllus. *Petala* quinque; *squamæ* totidem petalis oppositæ. *Stamina* 5—15. *Germen* superum. *Stigma* peltatum, sessile. *Bacca* lignosa, unilocularis, pulpo farcta. *Semina* nidulantia, plura.

Masculini in diversâ arbore flores. *Calyx*, *petala*, *et stamina* ut in hermaphrodito. *Germen* nullum.

Species 1.

Chilmoria dodecandra, staminibus 10—15 indefinitis.
Chilmori Bengalensium in Tripura.
Habitat in montibus Indiæ ultragangeticæ.
Specimina misi ad D. J. Banks anno 1798.

Arbor elata ramis cinereis, lævibus. *Folia* alterna, lato-lanceo-

* GYNOCARDIA. *Roxb. Corom.* iii. *p.* 95.

lata,

lata, vel ovato-oblonga, integerrima, acuta, utrinque nitida, subcostata, venosa, pollices 8 longa, duo lata. *Petiolus* teres, canaliculatus, ad apicem incrassatus, brevissimus. *Stipulæ*, si ullæ, caducæ. *Pedunculus* interfoliaceus, sparsus, patens, petiolo brevior, uniflorus, teres, nudus. *Flores* herbacei, parvi. *Calyx* 4- seu 5-phyllus, deciduus, foliolis subrotundis, concavis, longitudine petalorum. *Petala* 5 seu 6 tenuia, subrotunda, concava, ad marginem villosa; *squamæ* totidem petalis oppositæ, et his magnitudine æquales, crassiores. *Filamenta* longitudine petalorum, receptaculo inserta, erecta, subulata, villosa. *Antheræ* cordatæ. *Germen* ovatum, tomentoso-sericeum. *Stigma* quadripartitum laciniis horizontalibus, obtusis. *Bacca* pedicellata absque calycis vel styli rudimento, depresso-subrotunda, epidermide tecta granuloso, cortice crasso ligneo glabro tecta, pulpo carnoso farcta, unilocularis. *Semina* plura, absque ordine in pulpo nidulantia, ovalia, compressa, latere rectiore crassiore. *Integumentum* triplex: exterius membranaceum, pulpo adherens; medium durum, fragile, crassiusculum, ad latus crassius politum, in circumferentia derasum, album; interius membranaceum, tenue. *Albumen* album, forma seminis carnosum. *Embryo* rectus transversus. *Cotyledones* contiguæ, subrotundæ, planæ, crassiusculæ, rectæ. *Radicula* recta crassa ad medium lateris seminis crassioris tendens.

Masculinos flores non vidi.

Seminibus oleum expressum ad morbos cutaneos reprimendos a Bengalensibus adhibetur.

Species 2.

Chilmoria pentandra, staminibus quinque.

Marotti. *Hort. Mal.* i. 65. *t.* 36.

Marathi Malyalæ.
Surati in Haiva.
Habitat in sylvis Indiæ australis oceanum versus occidentalem.

Arbor præcedenti simillima. *Rami* angulati. *Folia* oblongo-ovata, acuminata, serrata, nuda, costata, crassa. *Petiolus* compressus, canaliculatus, subpubescens. *Stipulæ* caducæ, geminæ, laterales, e basi lata sensim angustatæ, erectæ, integerrimæ, tomentosæ. *Pedunculus* axillaris, solitarius, uniflorus, petiolo duplo longior, medium versus squamula una vel altera bracteatus.

Hermaphroditæ arboris calyx pentaphyllus foliolis inæqualibus, subrotundis. *Petala* quinque, hypogyna, tenerrima, ad margines pilosa, altero marginum interiore obliquo, sessilia, subrotunda: *squamæ* totidem, petalis multo minores. *Filamenta* quinque subulata, hypogyna, germine breviora, petalis alterna; *antheræ* parvæ, didymæ. *Germen* maximum, superum, ovatum. *Stigma* maximum, peltatum, sessile, quinquepartitum, laciniis bifidis, obtusis. *Bacca* lignosa, unilocularis, farcta, tomentosa, subrotunda, coronata acumine papilliformi, ad apicem obtuso, stellato. *Semina* angulato-ovata, acuminata, funiculis umbilicalibus e basi seminis crassiore enatis ad parietes fructus exteriores affixa. *Perispermum* oleosum. *Embryo* rectus. *Cotyledones* planæ. *Radicula* funiculum versus descendens.

Masculini floris descriptionem habui e Doctore Andrea Berry.

Huic pedunculus communis axillaris, solitarius, 5- seu 6-florus. *Calyx* et *corolla* ut in hermaphrodito. *Filamenta* quinque, convergentia, subulata, ad basin pilosa. *Antheræ* erectæ, obtusæ, emarginatæ. *Pistillum* nullum.

Oleum lucernis aptum, et psoram adversus usurpatum, e seminibus exprimitur.

OBS. Ægle et Feronia fructum habent nonnihil similem.

CANIRAM,

CANIRAM, *p.* 67. *fig.* 37.

The *Strychnos Nux Vomica* of Authors.

NILICAMARAM, *p.* 69. *fig.* 38.

The name should have been written *Nilica maram:* the latter word signifying tree, and the former word being in the possessive case. *Nili* is the proper name, and *Neli* is the name by which I found the tree called all over the south of India, while we have other species, of what the natives consider the same genus, in the *Kirga Neli* and *Neli Poli.* It is true that Zanoni uses the word *Nellika* as in the nominative case; but it should have been *Nelli kai*, that is, the fruit *Nelli*, *Kai* in the dialects of southern India signifying fruit. The name *Anvali*, used by the Brahmans of Malabar, according to Rheede's orthography, seems to be a corruption of the Sanscrita *Amalaki*, in the Hindwi corrupted into *Amlaki*, and in the Bengalese into *Amla.* From the Hindwi name is derived the *Emblica* of Europeans, which by Linnæus was made a species of *Phyllanthus.* As this genus has for some time stood, it may be defined:

Plantæ inter Euphorbias inter tropicas nascentes, foliis minoribus, structura florum et fructus haud bene cognita.

Croton is a genus differing merely in having larger leaves.

As European botanists have been acquiring more knowledge of the structure of individuals, they have been separating from both *Phyllanthus* and *Croton* various species to form new genera; but having been directed by no general views, and having not been aware how few of the species correspond to the generic characters of *Croton* and *Phyllanthus* given by Linnæus, these new genera have been formed with little judgement, and generally upon some one trifling variation in the fructification, which will be found to include a few species in no manner remarkably

like each other, and to exclude several plants that have a strong resemblance to those possessed of the mark on which the generic character is founded. Accordingly, scarcely any two botanists are agreed about the new genera separated from the *Phyllanthus* and *Croton*; and some, not without strong reasons, seem inclined not only to replace them where they stood, and even to join several genera that Linnæus himself had separated upon grounds perhaps no better than what have induced later botanists to encroach on his arrangement.

The name *Phyllanthus*, given to the *Nilicamaram* by Linnæus, was founded on the supposition that the leaves were merely pinnæ of a compound leaf, and the flowers, being in the axils of these pinnæ, of course were supported by the rachis of the leaf. In some of the species, this supposition of Linnæus is certainly confirmed by the appearance of stipulæ at the junction of the small branches that have leaves, with the larger that are bare: but many species want this mark; nor do I know of any common character drawn from the fructification, by which the two kinds could be distinguished. Many botanists talk of the species provided with such stipulæ as having pinnated leaves, and of the species wanting these stipulæ as having simple leaves: but they do so with little strictness; and, on the authority of Jussieu, I doubt much of these small branches which support the leaves being proper common petioles, as, when the leaves change, these little branches do not fall off, but produce new branches, each of which acquires supports like stipulæ.

Willdenow and the author of *Hortus Kewensis* have removed the *Phyllanthus* from the order of *Triandria*, where Linnæus placed it, to the *Monadelphia*, to which no doubt some species belong; but they do not confine themselves to such alone, the *Phyllanthus Emblica* belonging to the *Monoecia Syngenesia*. Further, as its fruit is what I would call a drupa, and not a capsule,

sule, I think that Gærtner has done right in describing it as a separate genus, under the name *Emblica*. In the Supplement to the *Encyclopédie* (Art. *Anvali*) it is erroneously stated to differ from the *Phyllanthus* in having two seeds in each cell of the fruit: such is the case in every *Phyllanthus* that I know, although we must allow, on the authority of Jussieu (*Gen. Pl.* 425.), that some species of *Phyllanthus* have only three seeds in each fruit.

The name Shrubby *Phyllanthus* given in the *Hortus Kewensis* (v. 335.) to this plant is peculiarly unfortunate, there being in the genus a great many shrubs, with this only tree; for in reality it is nearly in size like the Holly, growing, when undisturbed, twenty or thirty feet high; but when young assuming the appearance of a large bush, and in that state producing in abundance both flower and fruit. The latter having been accurately described by Gærtner, I shall only describe the flower, and mention some circumstances by which the plant may be distinguished from another species which I have seen, and which I shall describe at length, adding some account of a tree with a similar fruit, but of which I have never seen the flower.

Species 1.

Emblica officinalis. Gærtn. ii. 122. t. 108. f. 2.

Phyllanthus Emblica. *Willd. Sp. Pl.* iv. 587. *Encycl. Meth.* v. 301; *Supp.* i. 403. *Hort. Kew.* v. 335. *Linn. Fl. Zeyl.* 333.

Nilacamaram. *Hort. Mal.* i. 69. *t.* 38.

Mirobalanus Embilica. *Herb. Amb.* vii. 1. *t.* 1.

Acacia zeylanica floribus luteis, &c. *Burm. Thes. Zeyl.* v.; ubi omnia erroris plena.

Habitat ubique in India, siccioribus gaudens, sed humida non abnuens.

Arbor erecta ramulis foliosis fasciculatis: *rami* basin versus sparsi, apicem

apicem versus trifarii. *Folia* obtusa, avenia. *Pedunculi* axillares sæpiùs tres, in alis foliorum inferiorum masculinos flores, in alis superiorum fœmininos gerentes.

Masculus flos sexpartitus, coloratus, apetalus, inferus, laciniis subrotundis, concavis, conniventibus. *Filamentum* nullum. *Antheræ* tres, biloculares, coalitæ in corpus globosum, umbilicatum, calyce tectum.

Fœmininus flos apetalus, coloratus, hexaphyllus, marcescens, foliolis oblongis, recurvis. *Filamenta* nonnulla, absque antheris, lacera germen circumdant. *Germen* ovatum, magnum, superum. *Stylus* nullus. *Stigmata* tria, bifida, patentia, laciniis bifurcis, obtusis.

Species 2.

Emblica pisiformis, caule arbusculoso, scandente, floribus fœmininis medium ramuli occupantibus, foliis linearibus.

Shiray in Carnata.

Habitat in sylvis durioribus Indiæ australis Mediterraneæ.

Arbuscula scandens, *Emblicæ officinali* juniori simillima. *Rami* teretes, fusci, ad folia denticulato-nodosi. *Ramuli* foliosi absque stipulis sæpiùs gemini, bifarii, patentes, angulati, persistentes. *Folia* alterna, minuta, in singulis ramulis plurima, bifaria, approximata, pinnas folii compositi mentientia, subsessilia, linearia, ad basin obliquè emarginata, acuta, integerrima, glabra, venosa, nervo marginali cincta. *Stipulæ* propriæ, geminæ, laterales, marcescentes. *Pedunculi* masculini ex axillis foliorum ferè omnium terni, pendduli, folio dimidio breviores, filiformes, nudi. Fœminini duo vel tres prope ramuli medium solitarii, crassiores, breviores. *Flores* albi, fœmininis majoribus. *Fructus* magnitudine pisi.

δ. *Calycis* foliola sex oblonga, obtusa, patula, duplice serie posita.

sita. *Glandulæ* sex per paria approximatæ, subrotundæ in fundo calycis. *Filamentum* unicum, centrale, teres, erectum, longitudine calycis. *Antheræ* tres, biloculares, longitudinaliter dehiscentes, in corpus unicum coalitæ.

♀. *Calyx* inferus, marcescens, hexaphyllus. *Germen* trilobum, infrà margine integerrimo brevissimo mellifero cinctum. *Stylus* longitudine calycis, ad basin ferè trifidus, laciniis erectis. *Stigmata* magna, biloba, horizontalia. *Capsula* baccata, depresso-triloba, lobis sulcatis. *Cortex* tenuis. *Putamen* corneum, triloculare, loculis medio longitudinaliter dehiscentibus. *Semina* in singulis loculis bina, hemisphærica, *receptaculi* centrali affixa.

Species 3.

Emblica Palasis, foliis ovalibus.

Arbor indica, pyrifolia, fructu nucis moschatæ simili, tricapsularis. Cattakai Malabarorum. *Pluk. Mant.* 23. *pl.* 2. *t.* 336.

Palasi Magadhæ.

Wodagu Cheræ.

Habitat in montosis Angæ, Magadhæ, Cheræ.

Arbor magna, materie firma. *Ramuli* bifarii, teretes, nudi. *Folia* alterna, bifaria, ovalia, sed ad petiolum sæpiùs acutiuscula, apice nonnunquam retusa, integerrima, venis valde reticulata, sed vix costata, nuda, subtùs glauca. *Petiolus* brevissimus. *Stipulæ* in fructifera planta obsoletæ. Florentem non vidi. *Fructus* piscicidi, in ramulo brevi noduloso sæpiùs solitarii, aliquando gemini, magnitudine nucis moschatæ, absque calyce subumbilicati, drupaceo-capsulares, sulcis sex vel rariùs octo exarati. *Cortex* succulentus, sublactescens, maturitate deciduus. *Cocculus* osseus, sulcis sex vel octo polaribus exaratus, suturis tribus seu quatuor dehiscens,

hiscens, tri- vel quadri-locularis, parietibus et septis duris crassis. *Semina*, abortu forte, solitaria, meniscoidea, subrotunda, ex apice loculi interiore apicem versus suspensa. *Integumentum* duplex: exterius molle, glutinosum; interius politum. *Albumen* tenue. *Embryo* rectus, non spiralis. *Cotyledones* planæ, crassæ, laterum altero ad umbilicum verso. *Radicula* ad extremitatem seminis pendulam posita.

ODALLAM, *p.* 71. *fig.* 39.

Rumphius, in describing his *Arbor lactaria* (*Herb. Amb.* ii. 243. *t.* 81.), fell into the mistake of quoting the *Odallam* as synonymous, in which he was followed by Burman (*Thes. Zeyl.* 251.), who for his *Manghas lactescens*, &c. quotes both with many synonyma belonging partly to one, partly to the other, and partly perhaps to neither; for neither his drawing nor description can be well reconciled with either, having sessile blunt leaves, while the fruit is much smaller than that of the *Odallam*, and of a very different shape from that of the *Arbor lactaria*. Although, therefore, Burman no doubt quotes many authorities referring partly to the *Arbor lactaria*, and partly to the *Odallam*, I doubt much of either being the plant figured and described by him: yet this plant of Burman is the true original of the *Cerbera Manghas* of Linnæus, who in the *Flora Zeylanica* (106.) quotes the *Odallam* with doubt, and does not notice the *Arbor lactaria*. By the time, however, that the younger Burman wrote (*Flor. Ind.* 66.), all the three plants were united, and continued to be so until Gærtner separated the *Odallam*, calling it *Cerbera Odallam*, with a barbarous indeclinable termination, and withal mis-spelt, as Rheede uses *Odallam*: but a typographical error in the *Flora Zeylanica* having produced *Odollam*, it continued to be used by almost all botanists, until corrected in the *Hortus Kewensis*, in which work it is quoted, without synonyma, for the *Cerbera Manghas*.

Manghas. I am on the whole persuaded that, as the *Cerbera Manghas* stands in Willdenow, it contains three species.

1. *Cerbera Manghas*, foliis obtusis, sessilibus.
   Manghas lactescens foliis Nerii crassis, venosis, Jasmini flore, fructu Persicæ simili, venenato. *Burm. Thes. Zeyl.* 151. *t.* 70. *f.* 1. omissis synonymorum pluribus.
   Cerbera foliorum nervis transversalibus. *Linn. Fl. Zeyl.* 106.
   Manghas sylvestris, lactescens, venenata, Jasmini flore et odore. *Pluk. Alm.* 241.
   Cerbera fruticosa. *Hort. Beng.* 19?
2. *Cerbera Odallam*, foliis acutis, petiolatis, drupis dispermibus. *Gærtn.* ii. 193. *t.* 124. *f.* 1. *Hort. Beng.* 19.
   Manghas orientalis angustifolia, ossiculo cordiformi, binos nucleos continente. *Pluk. Alm.* 241.
   Odallam. *Hort. Mal.* i. 71. *t.* 39.
   Cerbera Manghas. *Hort. Kew.* ii. 65.
3. *Cerbera lactaria*, foliis acutis, petiolatis, drupis monospermibus.
   Cerbera Manghas. *Gærtn.* ii. 192. *t.* 123. *et* 124. *f.* 1.
   Arbor lactaria. *Herb. Amb.* ii. 240. *t.* 81.

As the name *Manghas* has thus been taken up so variously, and has nothing to recommend it, we might perhaps drop it altogether, and adopt another, such as the *fruticosa* of Roxburgh, provided his plant is the same with that of Burman.

MAIL ANSCHI, *p.* 73. *fig.* 40.

The elder Burman (*Thes. Zeyl.* 142.), in mentioning the *Ligustrum indicum* seu *Alcanna* of Herman, without quoting the *Mail-anschi*, as he ought to have done, proposes as a query, if the *Poutaletsie* of Rheede (iv. 117.) be not the same. Linnæus

in the *Flora Zeylanica* (135.) adopted this opinion without doubt; and, although he mangled the name into *Poutaletsce*, he added all the synonyma by which the *Cyprus* of the ancients had been known to the older botanists, and formed his *Lawsonia ramis inermibus*. He however perceived that the *Mail anschi* was no doubt of the same genus with the *Cyprus* of the ancients, and possessed of the same qualities; but he considered it as of a distinct species, which he called *Lawsonia ramis spinosis*. He no doubt was perfectly right in so far as related to the *Mail anschi* and *Poutaletsie* being different species; for they are not even of the same natural order nor Linnæan class; and the latter, besides, has none of the qualities of the *Cyprus* Jussieu, therefore, in his *Genera Plantarum* (367, 222.), rejected this plant from the genus *Lawsonia*; yet still the compilers of the *Encyclopédie* (iii. 107.) considered it as only a different species, which they called *Lawsonia purpurea*. Since, however (*Supp.* iii. 39.), they have removed it from that genus, owing to the discovery of M. Desfontaines, that it had one petal and four stamina, which indeed might have long before been known from Jussieu, or even from Rheede. The compilers, however, justly considered the circumstance of the branches of the *Mail anschi* terminating sometimes in a spinous point, as not sufficient to distinguish it as a species from the *Cyprus* of the ancients growing in Egypt and Arabia, where these spines are said not to occur. The whole synonyma of the *Lawsonia spinosa* and *inermis*, except the *Poutaletsie*, were therefore united under the denomination of *Lawsonia alba*, only the plant with spines was considered as a variety. I am however persuaded that even this is going too far; for in the same hedge I have observed plants in all degrees, some having a great many branches ending in thorns, some only a few, and some none at all. Although, therefore, both Willdenow and the *Hortus Kewensis* continue the distinction, I am persuaded

that

that it is erroneous, unless the plant of Egypt has some other mark, besides the want of thorns, to distinguish it from the *Mail anschi*. Indeed, the genus *Lawsonia* properly consists of only one species, the *Acronychia* appearing to be a different genus; and as the names *spinosa* and *inermis* will thus be laid aside, we should have *Cyprus* or *Cypros* (Pliny uses both) for a specific appellation, the name by which the plant has been known to the learned in Europe since the time of Dioscorides.

CUMBULU, *p.* 75. *fig.* 41.

Linnæus (*Sp. Pl.*) and Burman (*Fl. Ind.* 131.) took this to be the *Bignonia Catalpa*, a plant which is not found spontaneous in India; but this has been abandoned. Gærtner (i. 269.) first pointed out that it was a real species of *Gmelina*, but gave it no name, nor did he describe it. Neither Willdenow, however, nor the *Encyclopédie Méthodique* mention it as a *Gmelina*, the latter (ii. 224.) comparing it with the *Clerodendrum*, the *Tittius* of Rumphius, and the *Cyrtandra* of Forster. It is a very common tree in India, the *Gumbhari* or *Gumhar* of the natives, and in the *Hortus Bengalensis* (46.) is called *Gmelina arborea*. The *Bignonia Catalpa* of Burman is no doubt the same plant.

Drupa magnitudine pruni minoris, oblique-subrotunda, laterum uno convexiore, basi tecta calyce parvo subpentagono, apice retusa, glabra, pulpa crassa ad putamen adhærente succulenta: succus flavo tingens. *Nux* dura, crassa, obovata, lævis, e basi antro magno obliquo ad apicem ferè pertusa, bilocularis. *Receptaculum* carnosum, antrum nucis implens. *Semina* solitaria.

Nux secundum Rheedium rugosa. In germine paulo aucto, sunt rudimenta seminum quatuor circa corpusculum centrale. *Seminum* duobus abortientibus corpusculum centrale fit antrum nucis cum receptaculo.

Canschi, *p.* 76. *fig.* 42.

Linnæus quoted this for his *Trevia nudiflora ;* and it continues in *Monoecia tetrandria* in Burman (*Fl. Ind.* 198.) without any synonyma, exept that of Commelin quoting the *Canschi* by the Latin name given by Syen. The description, however, which Linnæus gave of his *Trevia* (*flores hermaphroditi germine infero, stylo unico*) was so totally different from the *Canschi*, that I am persuaded he had some other plant in view, and quoted the *Canschi* by mistake. In the *Encyclopédie* (viii. 39.) the *Trevia* was described as in Linnæus. Soon after Willdenow, not recognising the plant from such a description, published it as a new genus, which he called *Rottlera ;* but, when he published the fourth volume of his *Species Plantarum*, he had discovered that his *Rottlera* and the *Canschi* were the same. He therefore called it *Trewia nudiflora*, at any rate changing a little the former orthography, and introducing a letter unknown in the Latin tongue. In thus changing his name *Rottlera* I think he was wrong, because in all probability Linnæus had quoted the *Canschi* by mistake, and described a *Trevia* not now known: and further, because the *Rottlera tinctoria* of Dr. Roxburgh does not, I am persuaded, differ from the *Canschi* so much that it ought to be considered as belonging to a different genus. It is true that Willdenow places the one in the order *Icosandria*, and the other in *Polyandria ;* but that is a paper difference only, and not distinguishable in nature. I have therefore no objection to the *Mallotus* of Loureiro being joined with the *Canschi*, although Willdenow should not have done so, because the *Mallotus* has not the *capsula tetracocca, tetrasperma, quadrilocularis*, which he ascribes to the *Canschi* as its diagnostic character ; but I know that this character is quite fallacious. I have however a strong objection to the *Tetragastris ossea* of Gærtner (ii. 130.) being made the same

species

species with the *Cánschi*, the fruit of which is not like that of the *Tetragastris* "*inferne in quatuor lobos pulvinatos, distantes, quasi totidem ventres, divisa.*" Whether or not the *Tetragastris* be a *Trewia* or *Rottlera*, cannot be decided until the flower is known.

The *Canschi* is a very common tree in India, and varies very much in its appearance, so that at times I have thought that several different species, nearly indeed resembling each other, might be traced; but on a careful examination, I am persuaded that the marks of distinction on which I relied are fallacious. In Bengal, the natives usually give names totally different to the male and female trees; and in many cases the foliage is so like that of the *Cumbalu* last noticed, that they are often confounded under the same common name, *Gumhar*. I have also heard the *Canschi* called *Pitali* in Matsya, *Berkal* and *Bankedli* in Camrupa, and *Banphul* in Magadha.

In the following description all the variations that I have noticed are mentioned.

Arbor excelsa ramis teretibus, nudis: *ramulis* novis tomentosis. *Folia* opposita, altero minore, nunc deltoideo-ovata, tunc subcordata (utraque forma in figura Rheedii conspicitur), integerrima, acuminata, quinquenervia, venosissima; juniora utrinque pilis stellatis pubescentia, adulta glabra; in India boreali ante florescentiam decidua. *Petiolus* brevis, depressiusculus, suprà sulco exaratus, primò tomentosus, dein glaber. *Stipulæ* geminæ, laterales, setaceæ, caducæ. *Glandula* plana utrinque prope apicem petioli in pagina folii superiore.

In masculina arbore *Racemi* sæpiùs ex axillis foliorum anni præteriti, rariùs in surculis novis infrafoliacei, solitarii, penduli, elongati. *Pedunculus* compressiusculus, tomentosus. *Pedicelli* terni longitudine florum, squama communi solitaria,

solitaria, decidua bracteati. *Flores* herbacei, tomentosi. *Calyx* reflexus, 2—4-phyllus foliolis ovatis, acutis, concavis. *Filamenta* plurima longitudine calycis receptaculo carnoso insidentia. *Antheræ* orbiculatæ, utrinque emarginatæ, ad margines dehiscentes.

In calyce numerus naturalis quaternus videtur, nunc uno tunc altero foliolo cum alio conjuncto.

In arbore fœmininâ pedunculus axillaris, solitarius, erectus, pulverulentus, petiolo longior, nunc uniflorus, tunc elongatus in racemum pauciflorum, folio brevior. *Flores* pulvere albido tomentosi, pedicello crasso brevi insidentes. *Bractea* squamiformis solitaria, decidua, ad basin floris. *Calyx* inferus, striatus, apice quadridentatus, deciduus, germini arctè adhærens, eoque brevior, nunc ad unum latus disrumpens, tunc in foliola 2, 3, vel 4, divisus. *Germen* subrotundum. *Stylus* brevissimus, teres. *Stigmata* 2—5, subulata, longa, intùs barbata.

Pomum subrotundum, pedunculum versus acutiusculum, obsoletè tetragonum, magnitudine juglandis. *Cortex* crassus, carnosus. *Loculamenta* totidem cum stylis, dissepimentis tenuibus discreta, monosperma. *Semina* arillo pulposo angulato loculum implente tecta, subrotunda, nigra, polita, sublentiformia, nuciculosa. *Testa* ossea, crassiuscula.

In germine etiam loculamenta sunt monosperma.

Palega-pajaneli, *p.* 77. *fig.* 43.

Quoted erroneously in the letter-press as figure 44.

This is the *Bignonia indica* of authors; and the synonyma, if we remove the *Pajaneli* of Rheede, seem to be accurately given in the *Encyclopédie Méthodique* (i. 423.), composing a species with two varieties differing in the size of the leaflets; and a little in their form; but both, it is to be presumed, having bipinnated

leaves.

leaves. It is not uncommon in every part of India, chiefly in hedges or near houses, where it is planted as an ornament, or rather singularity; for it is a lurid fœtid plant, of an uncouth appearance.

PAJANELI, *p.* 79. *fig.* 44.

Quoted erroneously in the letter-press as figure 45; an error which several botanists have copied, without I suspect having read the description, or looked at the number on the plate.

The *Pajaneli* does not seem to have been noticed by European botanists, until it was quoted in the *Encyclopédie* as a variety of the *Bignonia indica*, and conjoined with plants that very possibly are such; but this, having only simply pinnated leaves, is totally different, although of nearly the same size, and equally lurid and uncouth. The variety of the *Encyclopédie* Willdenow made a different species, which he called *Bignonia longifolia*, which however he defines *foliis bipinnatis;* and if he saw any such plant, it must be quite different from the *Pajaneli.* He does not however say that he ever saw the plant, and he has perhaps borrowed his account entirely from Rheede; and this he must have done without reading the description, taking it for granted that the leaves, like those of the *Palega Pajaneli*, were doubly pinnated, and drawing his character entirely from the figure.

Loureiro quotes the *Pajaneli* for the *Bignonia indica* α, which is therefore the same with the *Bignonia longifolia* of Willdenow. Perhaps, however, Loureiro really described a plant with doubly pinnated leaves, and therefore it may only be his quotation that is erroneous. Persoon, again, quotes *Hort. Mal.* i. *t.* 45., probably meaning this same plant for his *Spathodea indica*, which is therefore *Bignonia longifolia* of Willdenow, and not the *Bignonia indica*, as Persoon suspected.

As

As I found this plant in the province of Canara, and presented a drawing to Sir J. E. Smith, I shall annex a description.

Bignonia Paianelia, foliis impari-pinnatis, multijugis; foliolis integerrimis semicordatis, calyce ventricoso, bilabiato.

Pajaneli. *Hort. Mal.* i. 79. *t.* 44.

Bignonia longifolia. *Willd. Sp. Pl.* iii. 306?

Cuntra (planta claudicans) Taulavæ.

Habitat in sylvis Indiæ australis, oceanum versus occidentalem.

Arbor fœtida, facie *B. indicæ*, trunco brevi, nodoso, simplici. *Rami* pauci, stricti, subulati, ordine cicatricum ovalium duplici spiraliter notati. *Folia* apices versus ramorum approximata, opposita, cum impari pinnata. *Pinnæ* circiter duodecim parium, latere inferiore angustato, abbreviato, semicordatæ, integerrimæ, acuminatæ, glabræ, costatæ, venosissimæ, pedicellatæ. *Petiolus* communis pinnâ brevior, estipulaceus, suprà carinatus, subtùs rotundatus. *Thyrsus* terminalis, erectus, tres vel quatuor pedes longus, teres, compositus e pedunculis oppositis, brachiatis, compressis, farinosis, bis bifidis, subseptemfloris. *Bracteæ* squamiformes, caducæ, parvæ, ad divisiones pedunculi geminæ. *Flores* maximi, extùs lurido-purpurei, intùs albidi. *Calyx* pulvere ferrugineo aspersus, ante floris maturitatem pulpo glutinoso albido farctus. *Calyx* campanulatus, quinquangularis, bilabiatus: *labium* superius longius, obtusum, bilobum, inferius trilobum, obtusum. *Corolla*, tubo angustato, campanulata, calyce duplo longior, obliqua, lobis quinque crispis, ad marginem lanatis incisa. *Filamenta* quinque, quorum quatuor inferiora e basi tubi crassa, declinata, compressa, dydynama, antherifera: quintum minimum, filiforme, sterile. *Antherarum* per paria conniventium, corolla breviorum loculi

culi oblongi, basi tantum uniti. *Germen* receptaculo carnoso, convexo, maximo, cinctum, anceps. *Stylus* compressus, longitudine staminum. *Stigma* e lamellis duabus lanceolatis, acutis, conniventibus conflatum. Fructum non vidi.

PALA, *p.* 81. *fig.* 45.

By a mistake in the letter-press quoted as figure 46.

Linnæus and Burman (*Flor. Ind.* 69.) joined the *Lignum scholare* of Rumphius (*Herb. Amb.* ii. 246.) with the *Curutu Pala*, next described in this work, and with a plant of Breynius formed the *Tabernæmontana scholaris*, being right as to the genus respecting the *Curutu Pala*, but wrong as to the *Lignum scholare*, which is an *Echites*. There is reason, however, from the specific name to believe that the *Lignum scholare* was in reality the plant which they meant to describe. The error soon became evident, and, in place of the *Curutu Pala*, the *Pala* was joined with the *Lignum scholare* to form the *Echites scholaris* (*Encycl. Meth.* ii. 341.), the plant of Breynius being left out, although I have no doubt of its being the *Pala*. As, however, the leaves of the *Lignum scholare* are sharp-pointed and have prominent veins, and as those of the *Pala* differ in both respects, Willdenow (*Sp. Pl.* i. 1241.) seems with propriety to have rejected it as synonymous with the *Lignum scholare*, which is the only authority for the *Echites scholaris*, thus leaving the *Pala* unoccupied. I think that this is a common tree in Bengal, is there called *Chhatin*, and is what Dr. Roxburgh (*Hort. Beng.* 20.) called the *Echites scholaris*; but the circumstances above mentioned lead me to doubt the accuracy of this opinion, although there can be no doubt of the *Pala* and *Lignum scholare* being very nearly allied species. As I may have misunderstood Dr. Roxburgh's meaning, who in the *Hortus Bengalensis* quotes neither Rheede nor Rumphius, I shall describe the *Pala*.

Echites? Pala, foliis verticillatis, obtusis; folliculis filiformibus, longissimis; paniculis verticillatis.

Pala. *Hort. Mal.* i. 81. *t.* 45.

Nerium lactescens malabaricum maximum pentaphyllum polyanthemum, flore minimo racemoso odorato viridi-albicante, siliquis propendentibus longissimis *Breynii*. *Prodr.* ii. *p.* 86.

Habitat in pinguioribus Indiæ locis.

Arbor inter grandiores: *ramuli* subumbellati, teretes, punctis elevatis aspersi, lactescentes. *Folia* ad internodia verticillata, quina, sena vel septena, oblongo-cuneata, obtusa, integerrima, glabra, suprà nitida, venis transversis non prominulis striata. *Petiolus* brevissimus, anceps, glaber. *Stipulæ* solitariæ, erectæ, obtusæ, brevissimæ, persistentes, intrafoliaceæ. *Paniculæ* terminales, nunc solitariæ, tunc duæ tres vel etiam quatuor, foliis breviores, patentes; *ramis* duplice serie verticillatis, teretibus, pilosis, horizontalibus, nunc bifidis vel trifidis, tunc sæpiùs simplicissimis. *Flores* capitati, sessiles, ex albido viridescentes, odore gravi melleo scatentes, magnitudine mediocres. *Bracteæ* vagæ, squamiformes, parvæ. *Calyx* pilosus, ultra medium quinquefidus, obtusus, inferus. *Corollæ* hypocrateriformis utrinque pilosæ tubus calyce multo longior, medio angustatus, annulo setoso coronatus. *Limbi* subadnati, æstivatione imbricati, tubo brevioris, quinquepartiti laciniæ obovatæ, laterum interiore gibbosiore tenuiore, obliquæ. *Filamenta* quinque brevissima ex apice tubi partis angustioris. *Antheræ* conniventes, ovatæ, adnatæ, acuminatæ, inclusæ. *Germen* unicum, ovatum, pilosissimum. *Stylus* teres, longitudine staminum. *Stigma* capitatum, cylindraceum, mucrone duplice coronatum. *Folliculi* duo foliis multoties longiores, penduli, filiformes. *Semina* comosa.

CURUTU PALA, *p.* 83. *fig.* 46.

Quoted by mistake in the letter-press as 47.

In giving an account of the last plant, I have mentioned the mistake of Burman in uniting this, which is a *Tabernæmontana*, with the *Lignum scholare*, an *Echites*. When this error was rectified, the *Curutu Pala* was called *Tabernæmontana alternifolia* (*Willd. Sp. Pl.* i. 1246.), nothing being known of it except from the *Hortus Malabaricus*, where indeed some of the leaves are represented in the figure as alternate, although others are placed opposite; a very great error, not uncommon in this work, as may be seen in the *Canschi*, *fig.* 42. and *Caniram*, *fig.* 37. of this volume.

Mr. Brown (*Prodr. Nov. Hol.* i. 468.) considers the *Curutu Pala* as very nearly allied to his *Tabernæmontana orientalis*, and, except the form of the bractes (*subulata*), I see nothing in his specific character to distinguish the plants. The *Curutu Pala*, however, is so nearly allied to the single variety of the *Tabernæmontana coronaria*, that I shall only endeavour to point out in what they differ; as I shall give a full account of the *T. coronaria* in treating of the *Nandi Ervatam* (*Hort. Mal.* ii. *t.* 54. and 55.), only premising that, except from the smell, it would be very difficult to say whether the full-flowered *T. coronaria* belonged to the *Nandi Ervatam minor* or to the *Curutu Pala*: and still I am in doubt concerning this circumstance, the natives of Camrupa considering the *Curutu Pala* as the wild *T. coronaria*, while those of Malabar seem to be of the contrary opinion.

Although very unwilling to change names, I consider the *alternifolia* so objectionable, that it cannot possibly be retained, and therefore I readily adopt the name given to this plant by Dr. Roxburgh. There is reason however to suspect that the *Nerium divaricatum* of Willdenow, with all its synonyma, should

rather be referred to this species than to the *Nerium coronarium*, as has been done in the *Hortus Kewensis*.

1. *Tabernæmontana crispa*. Hort. Beng. 20.
T. orientalis. *Brown Prodr. Nov. Hol.* i. 468?
T. alternifolia. *Willd. Sp. Pl.* i. 1246.
Nerium divaricatum. *Willd. Sp. Pl.* i. 1236?
Curutu Pala. *Hort. Mal.* i. 83. *t.* 46.
Apocynum indicum sylvestre inodorum siliquosum, seminibus papposis, floribus albis amplis. *Burm. Zeyl.* 25.
Cat (spontanea) Tagar Bengalensium in Camrupa.
Habitat in dumetis Camrupæ spontanea: colitur in horto botanico ad Calcuttam e China missa.

Folia quam in *T. coronaria* longiora, undulatiora, acuminatiora; flores pauciores: sed neque in caule, vel foliis, vel fulcris aliquem characterem inveni determinatum, unde differentiam specificam haurire possem. *Flores* e viridescente-albi fauce flavo, odore debili. *Calyx* obtusus. *Tubus corollæ* infra medium dilatatus. *Limbi* laciniarum margo exterior rotundata, vel quasi truncata, neque in processum acutum producta. *Antheræ* infra tubi medium positæ.

2. *Tabernæmontana coronaria, flore simplice*. Hort. Beng. 20.
Encycl. Meth. Sup. v. 275.
Nerium divaricatum. *Willd. Sp. Pl.* i. 1236?
Nerium foliis lanceolato-ovatis, ramis divaricatis. *Linn. Fl. Zeyl.* 109? excluso synonymo *Burmanni*.
Jasminum malabaricum aurantiæ foliis, flore pentapetaloide, niveo, fragrantissimo, Nandi Ervatam minor. *Hort. Mal.* ii. *t.* 55. *Pluk. Alm.* 196.
Banka Bengalensium in Camrupa.
Colitur in hortis Indiæ rariùs.

Flores

Flores e flavescente-albidi, valde odorati. *Calyx* acutus. *Corollæ* tubus ad basin et supra medium dilatatus. *Laciniarum* limbi margo exterior angulata. *Antheræ* supra tubi medium positæ.

3. *Tabernæmontana coronaria, flore pleno.* Hort. Beng. 20. *excluso synonymo* Hort. Mal. ii. t. 55.

Nerium coronarium. *Willd. Sp. Pl.* i. 1256. excluso synonymo supra dicto.

Jasminum indicum, odoratum, aurantiæ foliis, album, flore multiplice roseo, e Maderaspatana, forte Nandi Ervatam major. *Hort. Mal.* ii. *t.* 54. *Pluk. Alm.* 197. excluso synonymo *Hernand.*

Jasminum zeylanicum, folio oblongo, flore albo pleno, odoratissimo. *Burm. Thes. Zeyl.* 129. *t.* 59.

Flos Manilhanus. *Herb. Amb.* iv. *t.* 39.

Tagar Indorum.

Colitur ubique in hortis Indiæ.

Flores albi, odoratissimi, ita pleni et distorti, ut notæ specificæ, quibus præcedentes distinguuntur, obsoletæ fiunt.

Codaga Pala, *p.* 85. *fig.* 47.

By an error in the letter-press quoted as 48.

In the *Flora Zeylanica* (107.) Linnæus joined this with the *Nerium indicum*, &c. of Burman (*Thes. Zeyl.* 167. *t.* 77.), who however does not say that his plant is the same with the *Codaga Pala*; but only says that it was reckoned the same with a plant of Herman, which Burman considered as his *Nerium indicum*. In fact, the two plants are quite different, the *Codaga Pala* being an *Echites*, while the *Nerium indicum* of Burman I have no doubt is the plant which Dr. Roxburgh (*Hort. Beng.* 19.) called *Nerium tinctorium*.

The

The younger Burman (*Fl. Ind.* 68.), in imitation of Linnæus in the *Species Plantarum*, gave the name of *Nerium antidysentericum* to the plant of the *Flora Zeylanica*, changing the quotation of a plant from Ray for one from Plukenet (*Alm.* 35.), which is of a very doubtful nature, Plukenet merely proposing as a query, if his plant may not be the *Codaga Pala*. But it is impossible to say whether the younger Burman had in view the plant described by his father, or the *Codaga Pala*.

Willdenow (*Sp. Pl.* i. 1236.), leaving out the doubtful plant of Plukenet, continues the *Nerium antidysentericum* as he found it, with the synonyma of the elder Burman and Rheede.

In the *Encyclopédie* (iii. 455.) the synonyma are little improved by restoring that of Ray; but the circumstance mentioned, of the folliculi adhering together at the upper ends, would seem to imply, that the author meant the plant of Burman, although the medical qualities mentioned are borrowed from Rheede.

Finally, in the *Hortus Kewensis* (ii. 68.) we have the *Nerium antidysentericum* of Willdenow quoted for the *Wrightia antidysenterica* of Brown, which, from the generic character given by that excellent botanist (*Prod. Nov. Hol.* i. 467.), is certainly neither the *Nerium indicum* of Burman, nor the *Codaga Pala;* but I have no doubt is of the same genus with the *Nelem Pala* of the *Hortus Malabaricus* (ix. *t.* 3 and 4.); but to this I shall again return.

Dr. Roxburgh in his MSS., as they stood in 1796, described a plant almost every part of which was strongly but agreeably bitter, and which in almost every respect agreed so well with the *Codaga Pala*, that he then had no doubt of its being the same, and he called it *Echites antidysenterica*, as it belonged to this genus. On my return from Ava, I showed him specimens and a drawing of what I called the *Echites pubescens*, which seemed to have equal claims to be considered as the *Codaga Pala*, the figure of which in some parts looks as if hairy; and it is this

circumstance

circumstance almost alone that distinguishes my plant from that of Dr. Roxburgh. It must however be observed, that the latter is much more bitter, and therefore is more likely to possess powerful medical qualities. Those however ascribed to the *Codaga Pala* rest on slender foundation, the people employed by the worthy Dutch Governor to report the medical qualities of the plants he described, appearing to have been endowed with a very moderate share of judgement.

Reserving for another occasion what more I have to say concerning the *Wrightia antidysenterica*, I shall now give an account of the two plants quoted by Linnæus for the *Nerium antidysentericum*, hoping thus to render the account of the *Codaga Pala* more clear than it has hitherto been.

Since I returned from Ava (1796) I have had frequent opportunities of seeing the *Echites pubescens* in various parts of India, and I have also met with the smooth-leaved plant described by Dr. Roxburgh, who in the *Hortus Bengalensis* does not quote the *Codaga Pala* for his *Echites antidysenterica*. Whether or not he thought that the *Echites pubescens* had a better claim, I cannot say: for my own part, I continue doubtful. The leaves in Rheede's description are neither said to be smooth nor hairy; and the terms in which he speaks of the bitterness (*saporis amari, et minus pungentis*) do not imply any great intensity; while the *Echites pubescens* is bitter, somewhat with the flavour of Broom, although not nearly so strong in taste as the *E. antidysenterica*; and these are almost the only points in which the plants differ. Leaving the *Echites antidysenterica* to the account of Dr. Roxburgh, I shall describe the *Echites pubescens*, of which the specimens and drawings sent from Ava are probably in the collection of Sir Joseph Banks, and a copy of the drawing is in the Company's Library, while I have given to this collection specimens of both plants.

Echites

Echites pubescens. *Mss. Buchanani in Musæo Banksiano.*
Codaga Pala. *Hort. Mal.* i. 85.*t.* 49?
Habitat ubique in Indiæ montibus aridioribus.

Arbor statura Punicæ, erecta, ramis teretibus fuscis, ramulis compressis pubescentibus lactescentibus subsulcatis. *Folia* petiolata, minora tres, majora novem pollices longa, plerumque oblonga, aliquando ovata, nunc basi integra, sæpiùs obtusa, aliquando acuta, tunc sed rariùs cordata, apice acuminata, margine acuto cartilagineo integerrima, suprà pilis brevissimis erectis, subtùs pilis brevibus mollibus pubescentia, costata, venosa, rugosa. *Petiolus* brevissimus, lateri angustiori rami insertus, canaliculatus, pubescens, estipulaceus. *Pedunculi* axillares, dichotomi, multiflori, folio breviores, teretes, pubescentes. *Bracteæ* ad divisiones pedunculi subulatæ, breves, deciduæ. *Flores* fastigiati, albi, odoratissimi, magnitudine Jasmini. *Calyx* erectus, quinquepartitus, pubescens, laciniis linearibus acutis. *Corolla* hypocrateriformis. *Tubus* paulo supra basin incrassatus, pentagonus, dein subulatus, calyce longior, et extrà et intrà pilosus. *Faux* ferè clausus, nudus. *Limbus* quinquepartitus, laciniis lanceolatis, obliquis. *Filamenta* brevissima, basi tubi cylindrico inserta. *Antheræ* parvæ, subulatæ, in partem tubi tumidam inclusæ. *Germina* duo absque corpusculis lateralibus. *Stylus* clavatus, bisulcus, longitudine staminum. *Stigma* acutum. *Folliculi* duo glabri, teretes, sed ad semina subtorulosi, penduli, divaricati, uno pedali, altero sæpiùs breviore. *Semina* comosa.

Now to return to the *Nerium indicum, siliquis angustis erectis, longis, geminis* of Burman (*Thes. Zeyl.* 167. *t.* 77.), which has been confounded with the *Codaga Pala*. It may be readily distinguished by the singular manner in which the points of the folli-

culi

culi are united. I have already said, that from this circumstance I am certain that it is the plant which Dr. Roxburgh called the *Nerium tinctorium*, although he does not quote the figure of Burman, and although it differs as much from the generic character of *Nerium*, as given by Mr. Robert Brown, as the *Wrightia* does: for in place of having five scales on the mouth of the tube of the corolla, like the *Nerium*, or ten scales, like the *Wrightia*, it has numerous filaments, some undivided and others branched. Not having at hand the valuable treatise on *Asclepiadeæ* by this excellent botanist, I do not know what he calls this genus. It is however to these filaments that we must refer the following words in Burman's description: "*Flores staminibus multis in conum acutum collectis ornati.*" The anthers form the cone terminating the bunch of many filaments, which crown and ornament the flower in a very singular manner; and these are more conspicuous in the living plant than in the drawing, probably taken from a dried specimen.

In spring (1811) I found a tree named in the Hindwi dialect *Dud' Koraia*, which I took for the *Nerium tinctorium*, as it possessed this character in its flowers: but, towards the end of the same year, the people who had formerly accompanied me brought a branch with fruit, which they considered as the *Dud' Koraia;* and it seemed to me also to agree perfectly with the account of the leaves, &c. which I took on the former occasion. The fruit at once showed me that it was different from the *Nerium tinctorium;* but I may have been mistaken in supposing that the fruit and flower belonged to the same species: and the name *Dud' Koraia* is given also to other plants, and especially to the *Echites pubescens*, which I have just described. I shall however give a description of this *Nerium* like the *indicum* of Burman, in order to distinguish it clearly from that plant. *Dud'* prefixed to the name *Koraia* signifies milky.

Nerium Coræa, corona floris filamentosa, ramosa; folliculis apice disjunctis.
Habitat in montibus Magadhæ saxosis.

Frutex magna, vel *arbuscula* statura Punicæ, ramulis oppositis lactescentibus, compressiusculis, subtomentosis. *Folia* opposita, subovata, integerrima, costata, venis minutè reticulata, suprà pilis rectis subglutinosa, subtùs pilis albis substellatis tomentosa, inferiora obtusa, superiora acuminata. *Petiolus* brevissimus, estipulaceus. *Pedunculus* communis terminalis, brevissimus, trifidus, flore ad ramum tertium opposito: *rami* glutinoso-pilosi, teretes, dichotomi axillis floriferis. *Flores* albidi magnitudine florum aurantii, suaveolentes, pedicellati. *Bracteæ* lineares, patulæ, persistentes, ad singulas cymæ divisiones, numero ramos æquantes. *Calyx* pubescens, quinquepartitus, laciniis ovalibus, obtusis, margine undulatis, inæqualibus. *Tubus corollæ* teres, longitudine calycis. *Fauces* coronatæ filamentis pluribus setaceis, limbo dimidio brevioribus, nonnullis ad medium multifidis. *Limbus* tubo triplo longior, extrà pubescens, plano-patulus, laciniis oblongis, obtusis, obliquis, margine interiore tenuiore. *Filamenta* quinque brevissima ex apice tubi. *Antheræ* filamentis continuæ, subulatæ, conniventes, intùs pilosæ, loculis lateralibus. *Germen* biloculare. *Stylus* clavatus longitudine ferè antherarum. *Stigma* turbinatum, antheris conniventibus tectum, et his ferè adhærens. *Folliculi* teretes, glabri, sesquipedales, apice discreti, patentes. *Semina* comosa.
Pili in pagina foliorum inferiore in *Nerio tinctorio* simplices.

TINDA PARUA, *p.* 87. *fig.* 48.

By mistake quoted in the letter-press as 49.

This is the *Morus indica* of Linnæus, who, when he established the species in the *Flora Zeylanica* (337.), quoted this almost alone, the plant of Commelin being the same, and the quotation from Burman (*Thes. Zeyl.* 47.) throwing no light on the subject. Linnæus, however, was quite mistaken in supposing the figure in Rheede to represent the female tree; it is no doubt the male, with the flowers collected in little capitula, and the stamina expanding: but with great propriety Rheede adds a separate figure of the fruit. It seems to have been these male capitula, taken for the female flower, that induced Linnæus to consider this as a *Morus;* but the description of the fruit ought to have convinced him that the plant could not belong to that genus.

In the younger Burman (*Fl. Ind.* 198.) we find an addition made to the synonyma by introducing a real *Morus indica* described by Rumphius (*Herb. Amb.* vii. 9. *t.* 5.), but totally different from the *Tinda Parua*. The *Morus indica* continues in the same state in Willdenow (*Sp. Pl.* iv. 378.) and in the *Encyclopédie Méthodique* (iv. 378.), only the latter quotes Loureiro, who certainly meant the *Morus indica* of Rumphius, as he mentions silk-worms being fed on its leaves, and the fruit being eaten; to neither of which purposes was the *Tinda Parua* ever applied. There is even reason to suppose that Willdenow meant the *Morus* of Rumphius, and not the *Tinda Parua*, as he says that the plant, of which he had seen specimens, resembled the *Morus alba*. As however the *Morus indica* of Rumphius comprehends two species, both equally entitled to the specific appellation, and as the *Tinda Parua* is not a *Morus*, the name should be altogether abandoned.

Dr. Kœnig, under the name *Trophis aspera*, described one of

the most common Indian trees. Why he called it a *Trophis* I cannot say, except that its bark, like that of the *Trophis americana*, is used for cleaning the teeth; for its fructification differs much from that of the *Trophis americana* as described by Linnæus. Dr. Roxburgh from Kœnig himself knew the tree which was called *Trophis aspera*, and was satisfied that it was the *Tinda Parua*, as indeed must be evident to every person who compares the tree with Kœnig's account published by Retzius. Whether or not Kœnig was aware of the circumstance, I know not; but many botanists continue to describe the *Trophis aspera* as if it were a different plant from the *Morus indica;* nor does Willdenow seem to doubt of its being a *Trophis*, although this is by no means supported by his description taken from Kœnig, and which, so far as it goes, is correct. I do not know on what authority the fruit of the *Trophis aspera* is stated in the *Encyclopédie* (viii. 125.) to have two cells; but, were this correct, the compiler might naturally enough have thought that it should have been joined with the *Streblus* of Loureiro, which Vahl, perhaps the author of this mistake, has been pleased to call *Achymus*, a genus not even of the same natural order with the *Trophis*, nor with even the *Tinda Parua;* for this also is no doubt one of the *Urticæ*, as the following account will show.

Arbor rigida, cortice cinereo lævi, ramulis intertextis, hispidis, parciùs lactescentibus. *Folia* alterna, subbifaria, rigida, subsessilia, elliptica, basi obtusiora, emarginata, apice acuminata, hispida, costata, venis reticulata, serraturis obtusis incisa. *Stipulæ* geminæ, laterales, caducæ.

Masculina arbor. *Pedunculus* brevis, geminatus vel fasciculatus, axillaris, ebracteatus, terminatus involucro penta- vel hexa-phyllo, flores nonnullos (5—8) in capitulum subrotundum colligente. *Calyx* quadripartitus, reflexus. *Filamenta* quatuor,

quatuor, subulata, laciniis calycinis opposita, hisque longiora, antheris adultis, elasticè reflexa.

Fœminina arbor. *Flores* axillares, minimi, sæpe sessiles, gemini, sæpiùs tamen subfasciculati, subpedicellati, bracteis suffulti duabus minutis, persistentibus, calyci arctè adhærentibus. *Calyx* quadripartitus, persistens, laciniis concavis, convolutis, germen arctè incumbentibus. *Germen* superum, oblongum. *Stylus* bipartitus, exsertus, laciniis flexuosis. *Stigmata* simplicia. *Bacca* nutans, lutea, subrotundo-lentiformis, bracteâ calyceque persistentibus maximè acutis involuta, succulenta, unilocularis. *Semen* solitarium, magnum, subglobosum. *Perispermum* viride, formâ seminis, hinc rimâ exaratum. *Embryo* intra rimam perispermi nidulans, incurvus, teres.

Ana Parua, *p.* 88.

In this part there is neither description nor drawing. In the general index we are referred to part vii. p. 83.; and in the index to the seventh part we are referred for the *Ana Parua* to the 44th table and 83d page; but the *Acatsia-Vatli* or *Cuscuta* is described there. Plukenet seems however to have received some further account of this plant than is contained here; for he says as follows: "*Ana-Para* (misprinted for *Ana-Parua*) *Hort. Mal. p.* 1. *f.* 88. *Poona Cai* (*Poonæ* fructus) Malabarorum. Insigne ad venerem incentativum. *Mant.* 13." And again he says, "*Poona Cai* Malabarorum magnum est ad venerem incentativum. *Mant.* 143." This is referred to the third line of page 247 of the *Almagestum*, which treats of the *Pai-Paroea* (*Hort. Mal.* v. *t.* 46.), to which accordingly the Brahmans gave the same name, *Bendarli*, that is given to the *Ana-Parua*; and Syen has the following note at the end: "Prima *Peroeæ* species in parte prima descripta est nomine *Tindæ Paruæ*." We may therefore, I think, fairly

fairly conclude that the *Ana-Parua* is the same with the *Pai Paroea*, *Parua* and *Paræa* being different orthographies for the same name, and *Pai* and *Cai* being the specific names given on the coast of Malabar, called properly Kærulu, while *Cai* is that used in the Tamul language of Coromandel, vulgarly called Malabars by Europeans.

CAVALAM, *p.* 89. *fig.* 49.

By mistake quoted in the letter-press as 50.

This plate and the accompanying letter-press are wanting in my copy. I shall only therefore say, that the figure represents the *Sterculia Balanghas*, *Encycl. Meth. Sup.* i. 614. sub *Bencaro*.

AMBALAM, *p.* 91. *fig.* 50.

The letter-press in my copy is wanting, but the figure remains, and I know the plant well. Plukenet (*Mant.* 156.) proposed with doubt the supposition that this might be the same with his *Prunus americanus*, &c. (*Alm.* 307.), which is the *Chrysobalanus Icaco*, and accordingly the *Ambalam* has been quoted as such. Rumphius (*Herb. Amb.* i. 162.) considered it the same with his *Condondum*; and Burman, in his explanation, added to the latter many of the synonyma which Plukenet had given to the *Ambalam*, and with more reason; for the stone of the *Condondum*, according to Rumphius, is "magnum fibrosum nucleum instar glebæ intricatæ, et confectæ ex plumulis filamentosis, quorum quædam eminent instar spinularum—in hujus autem centro seu cavitate parvus continetur nucleus prunellorum silvestrium formam referens." This account by no means resembles the fruit of the *Ambalam*, which contains a hard nut divided into five cells.

In the *Encyclopédie* (iii. 697.) the *Condondum* is considered as the *Mangifera pinnata*, which Willdenow (*Sp. Pl.* i. 1151.) says

is

is a species of *Spondias*. I therefore suppose that Willdenow took the *Ambalam* to be the *Mangifera pinnata*, for it is really a *Spondias*, which in the *Encyclopédie* (iv. 261.) is called *Spondias amara*, not I presume from any bitter quality, but from the name *Amra*, by which it is known in the Hindwi and Bengalese dialects, derived from the *Amarataca* of the Sanscrita.

Athough the figure is not quoted in the *Hortus Bengalensis*, I know perfectly that the *Ambalam* is the *Spondias mangifera* of that Catalogue (34.), and probably of Willdenow (ii. 751.), so called, I suppose, on the belief that it was the *Mangifera pinnata* of Linnæus. But this is extremely doubtful, the *Condondum* of Rumphius having a much better claim, from the structure of the fruit, to be considered a *Mangifera:* and in the account of the *Mangifera pinnata* in the *Encyclopédie*, derived from plants in the Isle of France, it is stated that the nut of its fruit is analogous to that of the common Mango; that is to say, is fibrous as in the *Condondum* and *Chrysobalanus*. Specimens of both the *Ambalam* and *Mangifera pinnata* from the Isle of France, the latter given to me by Dr. Wallich, are in the collection which I presented to the East India Company's Library. I have little doubt, therefore, that while we call the *Ambalam*, *Spondias amara*, quoting the *Spondias mangifera* of Roxburgh and Willdenow as synonyms, we may restore the *Mangifera pinnata* of the younger Linnæus to the system, quoting for it the *Condondum*. Its being polygamous is no proof of its not being a *Mangifera*, that being the case with the common Mango. That the *Mangifera indica* is not a *Spondias*, is clear from its having only one stylus.

CAT AMBALAM, *p.* 93.

Figure 50 is also quoted for this in the letter-press; but it belongs to the preceding plant.

The description of the *Cat Ambalam* is so imperfect, that I can judge nothing of what it may be; only the term *Cat* prefixed to the name implies that it grows wild.

AGATY, *p.* 95. *fig.* 51.

By mistake quoted in the letter-press as 53.

This very common and highly ornamental tree, by Syen, in his note, was considered, most justly, as of the same genus with the *Sesban* of Egypt, which, as he observes, is found also in Ceylon, and is indeed common all over India. The *Sesban* was then considered a *Galega*, a better classification than was afterwards adopted (*Burman Ind.* 169, 170.), when both *Agaty* and *Sesban* were united with *Aeschynomene*, the distinguishing character of which is to have jointed legumes. The former was then called *A. grandiflora*, and the latter *A. Sesban*. This classification being no longer tenable, Willdenow removed the two kindred plants to the genus *Coronilla* from its character (*lomentum articulatum vexillum vix alis longius*), equally ill suited to comprehend them; as the *Agaty* has *legumen bivalve*, *vexillum alis brevius*. On this account probably Dr. Roxburgh allowed these plants to remain in the genus *Aeschynomene* (*Hort. Beng.* 56.), the alteration of Willdenow having been not for the better. M. Poiret in the *Encyclopédie* (vii. 127.) restored matters to the opinion of Syen, making however *Sesban* a genus, and giving the *Agaty* as the *Sesban grandiflorus*. In the *Hortus Kewensis* (iv. 331.) the same idea is judiciously adopted; but the names are rendered more suitable to Latin declination, and thus we have the *Sesbana grandiflora*.

CADA

CADA PILAVA, *p.* 97. *fig.* 52.

Besides the *Pada vara* (*Hort. Mal.* vii. *t.* 27.), which seems to be the *Morinda umbellata* of Linnæus, and to which I shall have occasion to return in this Commentary, we have in India two distinct classes of *Morindas*, all of which that I have seen, one excepted, answer to the specific character given of the *Morinda citrifolia*, arborea, pedunculis solitariis: but the one which I excepted agrees so well in every respect but size with one of the classes, that it should be included; and the specific characters of Linnæus being thus unable to distinguish them from his *Morinda citrifolia*, I shall enter into some detail concerning the whole.

The first division of *Morindas* that I have seen in India, are thus to be distinguished: *pedunculis terminalibus geminis, vel lateralibus solitariis oppositifoliis.*

Species 1.

Morinda citrifolia, caule arbusculoso erecto, pedunculis nudis brevissimis, stipulis obtusis, baccis unitis.

Morinda citrifolia. *Burm. Ind.* 58. *Willd. Sp. Pl.* i. 992. *Encycl. Meth.* iv. 314.

Morinda caule arboreo, pedunculis solitariis. *Linn. Fl. Zeyl.* 82.

Cada Pilava. *Hort. Mal.* i. 97. *t.* 52.

Bancudus latifolia. *Herb. Amb.* iii. 158. *t.* 99.

Arbor conifera Macandou Javanensium Bontii. *Pluk. Amalth.* 27.

Colitur ubique ad pagos Indiæ ob fructum.

Arbuscula (vel *Frutex*) magna ramulis compressiusculis, ad petiolos incrassatis, glabris. *Folia* opposita, approximata, elliptica, integerrima, apice acuta, basi acuminata, nitida, venosa, plus quam sexpollices longa. *Petiolus* teres, folio utrinque decurrente alatus, brevissimus, glaber. *Stipulæ* interfoliaceæ,

ceæ, deciduæ, oblongæ, obtusæ, erectæ, integerrimæ, breves. *Capitulum* floriferum, foliorum altero deficiente, oppositifolium, magnitudine ovi columbini, obtusum, nudum. *Calyx:* margo integer. *Corolla* alba limbo quinquepartito, laciniarum duabus remotioribus. *Fructus* ovatus, glaber, obtusus, magnitudine ovi anserini, e baccis arctè adhærentibus, apice quinquangularibus, areolatis, flavescens, edulis.

Species 2.

Morinda bracteata, caule arboreo, pedunculo ad apicem foliato elongato, baccis unitis. *Hort. Beng.* 15.
Bancudus angustifolia. *Herb. Amb.* iii. 157. *t.* 98.
Habitat in insulis Andamanicis.

Arbor viginti vel triginta pedes alta, ramulis angulatis subtetragonis. *Folia* opposita, lanceolata, integerrima, acuminata, glabra, venosa, undulata. *Petiolus* brevissimus. *Stipulæ* interfoliaceæ. *Pedunculus* foliorum altero deficiente oppositifolius, teres, erectus, capitulo multo longior, foliolo uno vel altero ad apicem bracteatus. *Capitulum* floriferum subrotundum magnitudine nucis moschatæ. *Calyx:* margo integer. *Corolla* alba laciniis duabus erectioribus. *Bacca* trasperma.

While in the Andaman islands, Mr. Stockoe, one of the officers stationed there, showed me a piece of Gamboge which had been found in the island; and a Malay was procured, who undertook to show me the tree from whence it had been taken. This *Morinda* was what he showed, calling it *Bancudu*, evidently the name used by Rumphius for the *Morinda*. Indeed this differs only from his *Bancudus angustifolius* in having one or two bracts, or small leaves rather, at the top of the pedunculus, in place of having a bract between every flower. The Malay was probably deceiving

deceiving me. On my return from Ava specimens were sent home, and are probably in the Banksian Museum.

Species 3.

Morinda squarrosa, caule fruticoso erecto, pedunculo nudo, fructu baccis hinc inde prominentibus nodoso.

Daruya Huridra Bengalensium.

Habitat in dumetis Camprupæ.

Frutex magnus, vel *Arbuscula* spontanea. *Folia* glabra, undulata, in ramis elliptica, in ramulis lanceolata, sed apicem versus latiora. *Capitula* florifera ovata, obtusa, ebracteata, magnitudine nucis moschatæ. *Pedunculus* petiolo duplo longior, nudus. *Baccæ*, vel potius *Drupæ*, livido-albidæ, pulpo albo diaphano tectæ, non conferruminatæ ut in duabus præcedentibus, sed distinctæ, nonnullis etiam abortientibus sæpiùs remotæ, unde fructus squarrosus. *Nuculæ* in singulis baccis binæ, biloculares. *Semina* solitaria.

Species 4.

Morinda persicæfolia, caule suffruticoso diffuso, capitulis subsessilibus, stipulis acutis.

Habitat in campis et sylvis regni Peguensis et in Ava.

Suffrutex laxus, tetragonus, obtusangulus, glaber. *Ramuli* ad apicem caulis pauci, patentissimi. *Folia* opposita, elliptica, integerrima, sæpiùs acuta, aliquando acuminata, nuda. *Petiolus* brevissimus, folio decurrente marginatus. *Stipulæ* interfoliaceæ, subulatæ, petiolo longiores. *Capitulum* subsessile, laterale, foliorum unico deficiente oppositifolium, vel terminale, aliquando foliolo bracteatum, magnitudine pisi, floribus decem circiter compositum. *Calyx* quinquefidus. *Corolla* incurva, capitulo multo longior.

The second division of the *Morindas* which I have seen may be distinguished as follows: *pedunculis terminalibus geminis, vel lateralibus solitariis axillaribus.*

Species 5.

Morinda Mudia, foliis tomentosis oppositis.
Mudi Carnatice.
Habitat in sylvis Carnatæ.

Arbuscula ramis quadrangularibus, tomentosis, ad petiolos annulatis. *Folia* opposita, e cordata ad ellipticam formam variantia, integerrima, acuminata, costata, venosissima, utrinque tomentosa. *Petiolus* semiteres, brevissimus, submarginatus, tomentosus. *Stipulæ* interfoliaceæ, persistentes, erectæ, sæpiùs bifidæ, acutæ, integerrimæ, tomentosæ, petiolo breviores. *Pedunculus* axillaris, alternus, solitarius, erectus, petiolo brevior, ebracteatus, apice gerit capitulum baccis quinque seu sex, abortu forte monospermis onustum. Flores non vidi.

Species 6.

Morinda Chachuca, foliis subtùs pubescentibus, inferioribus ternis.
Cha chuka (*oculi seni*) Bengalensium in Matsia.
Habitat in Matsiæ et Magadhæ sylvis.
Cortex radicis tinctorius, an igitur sylvestris varietas *Morindæ* Ach vel Al dictæ, quæ in Malva præcipue colitur ob radices tinctorias, cui quoque pedunculi axillares? (*Hunter apud Acta Calcutt.* iv. 35).

Arbuscula ramis hexagonis; *ramulis* tetragonis, nudis. *Folia* elliptica, vel lanceolato-ovata, in ramis majoribus terna, in ramulis opposita, integerrima, acuta, suprà scabra, subtùs pubescentia, ad axillas costarum barbata, venosa. *Stipulæ* inter-

interfoliaceæ, semicirculares, sæpiùs bilobæ, mediocres, persistentes. *Petiolus* brevissimus. *Pedunculus* axillaris, solitarius, petiolo paulo longior, nudus. *Capitulum* sæpiùs sexflorum, unde nomen.

Species 7.

Morinda nodosa, foliis oppositis ternis quaternisve glabris, fructu nodoso.

Bankather Hindice.

Habitat in sylvis Magadhæ.

Arbuscula sequenti simillima. *Folia* in ramis terna vel quaterna, in ramulis opposita, glabra. *Flores* pubescentes. *Fructus* magnitudine ovi, germinibus variis abortientibus nodosus, et sæpissimè morsu insectorum omnino abortivus, rimosus. *Baccæ* drupaceæ cortice crasso viridi succoso, quadriloculares. *Testæ* quatuor, planiusculæ, rugosæ.

Species 8.

Morinda Coreia, foliis oppositis glabris.

Koreya Hindice in Mithila.

Habitat in sylvis Mithilæ.

Arbor mediocris ramulis compressis, quadrisulcis, obtusangulis, glabris. *Folia* opposita, approximata, elliptica, sed ultra medium latiora, utrinque acuta, undulata, integerrima, glabra, costata, venosa. *Petiolus* brevissimus, marginatus. *Stipulæ* interfoliaceæ marcescentes. *Pedunculus* nunc axillaris, solitarius, tunc sæpiùs terminalis, solitarius vel geminus, angulatus, glaber, petiolo multoties longior, nunc nudus, tunc prope apicem folio uno vel gemino comosus, unde capitulum quasi terminale, subsessile. *Capitulum* subrotundum, densè imbricatum floribus albis circiter decem vel duodecim. *Flores* magni, odorati, substantia corollæ crassa, coriacea.

coriacea. *Calyx*: margo superus integerrimus. *Corolla* infundibuliformis: *tubus* crassus longitudine limbi, extrà viridis, rudis; *limbus* quinquepartitus, extrà rudis, laciniis lanceolatis, acutis. *Filamenta* quinque brevissima. *Antheræ* lineares inclusæ. *Germen* turbinatum, angulatum, inferum. *Stylus* filiformis, tubo paulo longior. *Stigmata* duo, exserta, antheris duplo longiora, tetragona, elongata, parallela.

APPEL, *p.* 99. *fig.* 53.

European botanists have not yet placed the *Appel* in their systems. Plukenet (*Alm.* 38.) considered it as the same with the *Tetragonia indica* of Ray, which I have no opportunity of comparing. From the nature of the oil procured from the root, and other sensible qualities, there can be little doubt that, although not quoted, it is the same with the *Sambucus zeylanica odorata aromatica* of the elder Burman (*Thes. Zeyl.* 209.), excluding the plant of Sloane.

The younger Burman (*Fl. Ind.* 132. *t.* 41. *f.* 1.) joined his father's *Sambucus* with the *Cornutioides* of Linnæus (*Fl. Zeyl.* 416.), both being called *Mendi* by the natives of Ceylon. It is true that Linnæus describes the plant *foliis integerrimis*, while Rheede has *foliorum ora, in oris superioribus, minutis et raris apicibus, alia magis alia minus eminentia;* but his figure represents them as Linnæus described; and I know several nearly allied plants (*Premnas*), which on the same branch have occasionally some leaves entire, and others indented. I have little doubt therefore that the *Appel*, being the *Sambucus odorata* of the elder Burman, has been rightly joined with the *Cornutioides* of Linnæus by the younger Burman, and by him called *Cornutia corymbosa*, but afterwards by Linnæus was made the *Premna serratifolia*.

Whether or not there be in nature any plant possessed of the characters attributed by Linnæus to *Premna* and *Cornutia*, I know

know not: I have seen none such, although I have observed several that are described under both these names, and that all agree with the generic character of *Premna* given by Mr. R. Brown (*Prod. Flor. N. Hol.* i. 512.). None of these however could be considered as the *Sambucus zeylanica odorata aromatica;* yet one of them has been considered by excellent botanists (*Enc. Meth.* i. 216. *Hort. Beng.* 46.) as the *Premna serratifolia;* and I was long of the same opinion: but the sensible qualities of the *Appel*, as described by Rheede, are by no means reconcileable with this supposition, and therefore I think that the *Appel* must still be allowed to rest the *Cornutioides;* and although the compilers of the *Encyclopédie* (i. 216.) seem to consider it as the *Premna serratifolia* of that work, I hesitate to consider Adanson wrong in supposing the germen to be below the calyx; because in Rheede's figure several of the fruit appear to indicate their being crowned with the remains of the calyx. Should this be really the case, the figure of the younger Burman must represent a different plant from the *Appel* or *Sambucus* of his father, and may be the *Cornutia corymbosa* of the *Encyclopédie*, called a *Premna* by Willdenow, although neither author quotes him. The synonyma therefore, I think, may be

Cornutioides. *Linn. Fl. Zeyl.* 410.

Appel. *Hort. Mal.* i. 99. *t.* 53. *Pluk. Alm.* 38.

Sambucus zeylanica, odorata, aromatica. *Burm. Thes. Zeyl.* 209. excluso synonymo *Sloani.*

Cornutia corymbosa. *Burm. Ind.* 132. quod ad synonyma, sed non quod ad figuram, *t.* 41. *f.* 1.

AMERI, *p.* 101. *fig.* 54.

That Rheede here intended to describe the plant from which indigo is made, there can be no doubt, as he expressly says so: but from the small resemblance which the figure bears to the plant

plant used in India for the purpose, I suspect some mistake; and I cannot conceive how Willdenow should quote it (*Sp. Pl.* iii. 1237.) as his *Indigofera tinctoria* distinguished *foliis quadrijugis*.

Plukenet in the first place (*Alm.* 165.) refers the *Nil* or *Anil* of the Bauhins, no doubt the Indigo plant, to his *Genista tinctoria maderaspatana, &c.*, which he figures in the *Phytographia*, *t.* 31. *f.* 3. and which seems to be an *Aspalathus*, but which has not the smallest resemblance to Indigo. The *Ameri*, however, he referred to his *Colutea indica herbacea ex qua Indigo* (*Alm.* 112.), to which he also refers many synonyma indicative of its being the Indigo plant, although he excludes those of both the Bauhins, which belong to the real Indigo; for the plant of J. Bauhin, which he quotes as synonymous with the *Ameri*, is the *Colutea foliis Anil nominatum*, and not the *Anil seu Nil Indorum color*. Plukenet does not refer in the *Almagestum* to any figure for this plant; but in the *Phytographia* (*t.* 165. *f.* 5.) we have a *Colutea siliquosa maderaspatana ad nodos caulium siliquis bigemellis, forte Coluteæ foliis Anil nominatum* J. Bauhin, which he therefore conjectures to be the same with the *Colutea indica* above mentioned, and with the *Ameri*. This *Colutea* of Plukenet is certainly not the Indigo plant, although quoted as such in the *Encyclopédie* (iii. 245.), and without being certain, I rather think that it is a *Galega*.

Next in the *Almagestum* (54.) Plukenet starts the opinion of there being two species of the plants from which Indigo is made, one with straight legumes, and the other with crooked ones, referring for this last to his *Colutea indica, seu Indigo sylvestris polyceratos, siliquis recurvis, americanus* (*Alm.* 112.), thus indicating that the plant used in America is different from that used in India; on which idea the compiler of the *Encyclopédie* has founded speculations not at all exact; and the idea seems fully

adopted

adopted in the *Hortus Kewensis* (iv. 354.), where we have a West Indian and an East Indian Indigo.

Under the proper Latin name, *Indicum*, Rumphius (*Herb. Amb.* v. 220. *t.* 80.) has given us a true description, and not a bad figure, of the plant producing Indigo, such as is cultivated every where in India, and, as he shows, the produce originally of Gujerat; and he says that he knows only of one species. He had indeed heard of another, which grows wild (*silvestris*), but he had never seen it. There are indeed plenty of wild *Indigoferas*, and some of them not unlike the cultivated kind; but Indigo, at least on any considerable scale, was never I believe made from any of them.

The elder Burman (*Thes. Zeyl.* 69.) followed Rumphius in making only one species of the Indigo plant, and reduced to this all the synonyma referring to such a production, and of course included both the *Ameri* of Rheede and the *Indicum* of Rumphius, as well as the kind cultivated in America. I have however little doubt that the *Ameri* is some wild *Indigofera*, which was brought by mistake to Rheede, Indigo not being a production of Malabar.

Rumphius was not a favourite with Linnæus; and in the *Flora Zeylanica* (273.) is not quoted for the Indigo plant. But although Linnæus quotes the *Ameri*, he evidently meant the *Indicum* of Rumphius, from his specific character, *Indigofera leguminibus arcuatis incanis, racemis folio brevioribus*, by which the Indigo plant may at once be recognised. Linnæus here gives us only one Indigo plant; nor is any change for the worse made by the younger Burman (*Fl. Ind.* 170.), only he adds as a variety the plant of Plukenet (*Phyt. t.* 165. *f.* 5.), and from Linnæus gives the specific name *I. tinctoria*.

Although the terms *Nil* and *Anil* were used by the old writers as synonymous (the former being the name of the Indigo plant in the Bengalese and Hindwi dialects, while the latter seems to be

be the same, with the Arabic article prefixed); yet Linnæus, having received an *Indigofera* somewhat resembling the *tinctoria*, gave it the name of *Anil;* and, in endeavouring to establish specific characters between this and the *tinctoria*, Willdenow has produced such as contain little or no difference, the only real discrepancy being, that the one is said to have three pair of leaflets and the other four. This is such a difference as no one can rely upon to establish species, among plants with which the number of leaflets in the same individuals is so liable to vary. The one is also said to have leaves pubescent below, while the other has them smooth on both sides: but this depends entirely on the age of the leaf: and on the whole, on examining the Indigo plant carefully, I could not say whether it was the *I. Anil* or *I. tinctoria* of Willdenow; I only judge it to be the latter from the synonyma, which clearly indicate it to be that from which the drug is prepared, while no hint is given of the *Anil* being applied to this purpose.

In the *Encyclopédie* (iii. 244.) matters become worse and worse; the *Anil* is the true and best Indigo plant, and the *Indicum* of Rumphius, deriving its very name from India, and known as an Indian production from the most remote antiquity, is removed on Plukenet's authority to America. The distinction, too, into an Indigo plant with crooked legumes, and one with straight ones, which had been taken up by Plukenet, is repeated in the *Encyclopédie;* and the latter, in order to distinguish it from the proper American dye, is called *Indigofera indica*, an unseemly pleonasm. It is indeed admitted, that a small quantity of indifferent Indigo may be procured from this *I. indica;* and the compilers seem to think that until the time of Rumphius the true *Indicum* was not known; as the synonyma of the Bauhins and other older writers, referring to the Indigo plant, are given to the *I. indica*, which, along with the *Ameri* of Rheede, includes

the

the *Galega* of Plukenet, concerning which I have already given my opinion. The *I. indica* of the *Encyclopédie* seems to be a spontaneous production, "*elle croit naturellement à l'Isle de France, à Madagascar, au Malabar, et dans l'Inde, aux lieux incultes pierreux ou sabloneux.*" From this I am led to conclude, that the compiler of this most valuable work was perfectly right in quoting the *Ameri* for it, and in quoting the *Indicum* of Rumphius for his *I. Anil;* but then to this last he should have transferred the synonyma of the Bauhins, Parkinson, Morison, Ray, and the elder Burman; and I have said that the plant of Plukenet is probably a *Galega* nearly allied to the *tinctoria*.

The only proper synonymous plant for the *Indigofera indica* is therefore the *Ameri* of Rheede, a spontaneous plant, and by no means that cultivated in India. It may however be the *I. cærulea* of Dr. Roxburgh (*Hort. Beng.* 57.), called *Car Nili*, or wild Indigo, by the natives, and I believe capable of yielding an Indigo, although with difficulty. Dr. Roxburgh, however, does not quote the *Ameri* as synonymous, and had in the botanical garden at Calcutta a plant, which came there by accident, and which he considered as the *I. Anil* of Willdenow. This *I. Anil* of Dr. Roxburgh was never cultivated for Indigo, and was probably indigenous in the garden, but for some time escaped the notice of the superintendent; for in such an extensive garden (several hundred acres) some spontaneous productions remained undescribed during the whole of his life.

COLONIL, *p.* 103. *fig.* 55.

Plukenet considered this as the same with his *Colutea indica frutescens, foliis supernè glabris virentibus, subtùs sericeo nitorè argenteo splendentibus* (*Alm.* 112.), and as the *Nil* seu *Indigo spurium* of Ray. Now I think that I know the *Colonil* well, and it will not agree with the abovementioned character of Plukenet:

but I know another plant that is exceedingly like what I take to be the *Colonil,* and which agrees perfectly with Plukenet's character, and which I shall first describe.

Colutea indica, &c. Plukenetii.
Habitat in aridis saxosis Indiæ extra et intra Gangem.

Caulis fruticosus, pedes duos circiter altus, ramosus, erectus, ramis alternis, patentibus, angulatis, pilosis. *Folia* alterna, cum impari pinnata. *Foliola* utrinque 7—10 suprà glabra, subtùs pilis decumbentibus incana, nitida, pedicellata, oblonga, venis simplicibus striata; inferiora obtusa cum acumine, superiora emarginata cum acumine e nervo medio producto. *Petiolus* communis teres, canaliculatus, brevissimus, pilosus: partiales brevissimi, pilosi. *Stipulæ* geminæ, subulatæ, patentes, carinatæ. *Racemi* primo terminales, sed prodeunte ramulo oppositifolii, sessiles, folio breviores, erecti. *Rachis* angulatus, sulcatus. *Flores* rubri, parvi. *Pedicelli* flore breviores, recti, patentes, teretes, pilosi, ex eodem puncto bini vel terni. *Bractea* setacea, brevis, ad singulos florum fasciculos. *Calyx* pilosus, cylindraceus, quinquedentatus, denticulis subulatis, inferiore longiore. *Vexillum* subrotundum, emarginatum; lateribus revolutis adscendens. *Alæ* vexillo breviores, erectæ, obtusæ. *Carina* ovata, acuta, incumbens, alis dimidio brevior. *Stamina* diadelpha. *Antheræ* subrotundæ. *Germen* teres. *Stylus* subulatus. *Stigma* obtusum, pubescens. *Legumen* recurvatum, subarcuatum, planiusculum, acutum, torulosum, tomentosum, sed non hirtum. *Semina* plura reniformia.

The plant thus described I transmitted to Dr. Roxburgh, and we both considered it as the *Galega tinctoria*, under which name it stands in the *Hortus Bengalensis* (57.); but, according to the

Flora

Flora Zeylanica (302.), in that plant there are "*legumina stricta glabra, caulis glaber, pedunculi ex singulis alis nudi, apice spicati, glabri.*" I must therefore now acknowledge the plants to be different, and Plukenet's I shall call

Galega (seu *Tephrosia*) *sericea*, leguminibus pubescentibus arcuatis recurvis, foliolis 8—10-jugis subtùs sericeis cuneatis, racemis oppositifoliis sessilibus, stipulis subulatis.

The plant, which I suppose to be the *Colonil*, I found in the south of India very abundant, and I have since found it in the north. Dr. Roxburgh considered it as the *Galega purpurea*, in which opinion I long agreed with him. It differs from the one above described merely in being entirely smooth; but agrees very well with almost every thing said in the *Flora Zeylanica* (301.) and in Willdenow (*Sp. Pl.* iii. 1247.) concerning the *Galega purpurea*, only the legumina cannot be called *stricta adscendentia*, they are *recurvata subarcuata*. This is so small a difference, that I overlooked it until I compared the plant with the *Coronilla zeylanica herbacea flore purpurascente* of Burman (*Thes. Zeyl.* 77. *t.* 32.), which is the proper authority for the *Galega purpurea*; and I now am convinced that I was mistaken, the plant of Burman having racemes longer than the leaves and supported by long peduncles. I therefore now call this plant

Galega (seu *Tephrosia*) *Colonila*, leguminibus glabris arcuatis recurvis, foliolis 8—10-jugis subtùs nudis, racemis oppositifoliis sessilibus, stipulis subulatis.

Habitat in Indiæ aridioribus. Vidi in Carnata, Draveda, Magadha.

Galega tinctoria differt foliis subtùs sericeis.

The examination of the difficulties respecting the *Colonil* having led me to consider some of the other species of *Galega* or *Tephrosia*

phrosia which I saw in India, I may here give the result. In my journey to Mysore, I had an opportunity of observing the *Securidaca Maderaspatana, siliquis falcatis fulvis et villosis, plurimis circa ramulos stellatim positis*, of Plukenet (*Alm.* 339., *Phyt. t.* 59. *f.* 6.), which is the *Galega villosa* of Willdenow (*Sp. Pl.* iii. 1245.); and also the *Coronilla zeylanica, siliquis fuscis hirsutis pilosis, flore albo*, of Burman (*Thes. Zeyl.* 78. *t.* 33.), which Willdenow makes a variety of the former; and in this the *Encyclopédie* agrees with him (ii. 597). I must admit that the two plants have a strong affinity; but that any change of soil or culture produces such a difference of appearance as exists, remains to be proved. The latter plant I think is probably the *Galega incana* of Dr. Roxburgh (*Hort. Beng.* 57.), but of this I am not sure. In the collection which I gave to Sir J. E. Smith, from Mysore, it was called *Galega hirta*, under which name I shall here describe it.

Galega (seu *Tephrosia*) *hirta*, leguminibus falcatis pendulis hirtis, racemo oppositifolio foliato pedunculato, foliolis cuneatis emarginatis, caule erecto.

Habitat in ruderis Carnatæ Julio florens.

Radix ramosa, lignosa, perpendicularis. *Caulis* infrà lignosus, cubitum altus, erectus, teres, tomentosus, ramosissimus. *Rami* patentes, dichotomi, subtetragoni. *Folia* alterna, subsessilia, cum impari pinnata. *Foliola* opposita, 4—8-juga, cuneiformia, integerrima, emarginata, obliquè striata, suprà glabra, subtùs pilis longis incumbentibus pubescentia. *Stipulæ* geminæ, laterales, e petiolo distinctæ, persistentes, rigidæ, e basi latissima acuminatæ, patentes, integerrimæ, mediocres. *Racemi* erecti, folio longiores, oppositifolii, pedunculo communi villoso, angulis quatuor vel quinque acutis subulato. *Flores* nutantes ternati, intermedio

dio sæpe abortivo. *Bracteæ* minutæ, sessiles, ad singulos florum fasciculos ternatæ ; intermedia ovata acuta, lateralibus stipulæformibus : intermediæ locus ad fasciculos inferiores sæpe per folium occupatus. *Flores* cærulescentes carina alba. *Calyx* hirtus, ultra medium quinquefidus laciniis subulatis, subæqualibus, longitudine ferè corollæ. *Vexillum* magnum subrotundum, extrà hirtum. *Alæ* falcatæ, obtusæ, angustæ. *Carina* tenuissima. *Filamenta* simplex et novemfidum, laciniis alternis longioribus. *Antheræ* æquales. *Germen* lanatum. *Stylus* subulatus. *Stigma* pilis terminalibus barbatum. *Legumen* retrofalcatum, calyce multoties longius, planum, emarginatum, hirtum, valvis inter semina conniventibus. *Semina* circiter sex.

Galega (seu *Tephrosia*) *villosa* Octobre floret in Carnata, et differt caule procumbente ; foliolis ferè obcordatis, suprà pilosis, subtùs villosis ; floribus ad folia subsessilibus, congestis.

Very nearly allied to the last-mentioned plant is one which I found also in my journey to Mysore, and which in the collection made there is called

Galega (seu *Tephrosia*) *procumbens*, leguminibus strictis rectis pilosis, caule prostrato hirto, racemo oppositifolio foliato, stipulis setaceis, foliolis utrinque hirsutis.

Habitat in umbrosis Carnatæ Septembri florens.

Radix lignosa, caule crassior, descendens. *Caules* plures, infrà lignosi, procumbentes, filiformes, pilis longis hirsuti, subdichotomi, flexuosi. *Folia* alterna, impari pinnata. *Foliola* 4—5-juga, pedicellata, cuneiformia, opposita, integerrima, mucronata, obliquè striata, utrinque hirsuta, superioribus sensìm longioribus. *Petiolus* communis foliolo brevior, hirsutus. *Stipulæ* geminæ, laterales, e petiolo enatæ, persistentes,

tentes, setaceæ, patentes, hirsutæ, brevissimæ. *Racemus* oppositifolius, ante florescentiam brevissimus, sed posteà folio longior. *Flores* parvi, albidi, penduli, pedicellati, ex eodem puncto gemini. *Folium* florale caulino simile, ad imum par florum sæpe, sed non semper, adest; ad cætera florum paria bracteæ forma stipularum præditæ. *Calyx* pubescens, ultra medium quinquefidus laciniis setaceis longitudine corollæ. *Vexillum* subrotundum, exterius pubescens. *Alæ* longitudine carinæ. *Filamenta* simplex et novemfidum. *Antheræ* subrotundæ. *Stigma* subrotundum. *Legumen* erectiusculum, lineare, rectum, hirsutum, compressum, marginatum, obtusum cum cuspide reflexo, valvis inter semina discretis. *Semina* circiter novem compressiuscula, utrinque truncata, approximata.

The distinction between *Tephrosia*, *Reinaria*, or *Brisonia* and *Galega* seems to me ill defined, and of little use. This plant last described perhaps should be a *Galega*, and the others *Tephrosias?*

SHERIGAM COTTAM, *p.* 105. *fig.* 56.

The other species of *Cottam* mentioned in the text, and which Syen the annotator could not discover, may be found in the *Cottam* (*part* i. *t.* 22.), or in the *Tsieriam Cottam* (*part* v. *p.* 21. *t.* 11.), neither of which, however, has any affinity with this plant.

The elder Burman (*Thes. Zeyl.* 159. *t.* 74.) describes a plant, which the Dutch in Ceylon called *Kleine Cocos*, or small Coco (*Theobroma*), translated in the *Encyclopédie* '*petite Coque, comme si l'on disoit arbrisseau à petites coques!*' This name, *Kleine Cocos*, using rather freely the form *Aphæresis*, or perhaps *Synalœpha*, Burman made into botanical Greek, *Microcos*, a word at any rate sufficiently utterable, and of reasonable length. He

was

was less fortunate in comparing it with the *Catutekka* (*Katou Theka*) of the *Hortus Malabaricus* (iv. *t.* 28.), which seems to be one of the *Rubiaceæ:* but, what was of more importance, he gave a good figure and description, which Linnæus (*Fl. Zeyl.* 207.) perceived belonged to the same plant with the *Schageri Cottam;* and, adopting the generic name of Burman, called the plant *Microcos panicula terminatrice.*

In imitation of Linnæus in the *Species Plantarum*, the younger Burman (*Fl. Ind.* 127.) called this the *Microcos paniculata;* and another author was discovered to have described the plant, Plukenet having mentioned it by the name of *Arbor malabarica mucronatis firmioribus venosis foliis Cacaviferæ æmulis, floribus ad summum ramulorum comantibus* (*Alm.* 40., *Phyt.* 262. *f.* 3.), which shows that there is a real resemblance between this plant and the *Theobroma*, as it struck not only the Dutch of Ceylon, but the botanist Plukenet. Linnæus afterwards abolished the genus *Microcos*, and the *Scherigam Cottam* was called *Grewia Microcos*, under which denomination it still remains in the *Encyclopédie* (iii. 44.) and *Hortus Kewensis* (iii. 301). Gærtner, however, on examining its fruit with care, declares that it cannot be classed with the *Grewia* (*de Sem. &c.* i. 273.); and in fact it belongs to the order of *Tiliaceæ*, while the *Grewia* has no albumen in the seeds. Willdenow therefore restores the old name, *Microcos paniculata.*

Both in Ava and Bengal I have found a small tree or large shrub very nearly allied to the *Microcos*, but differing from the *Schageri Cottam* in the form of the leaves. Of this I shall now add a description.

Microcos Mala, foliis apicem versus latioribus, subtùs glabris.
Ma-la Barmanorum.
Habitat in dumetis Bengalæ orientalis, et in regno Peguensi vulgatissima est arbuscularum.

Arbuscula vel *Frutex* magna cortice cinereo, punctis elevatis aspero. *Ramuli* virides, pilosi. *Folia* alterna, bifaria, approximata, apicem versus latiora, apice acuminata, ad basin emarginata, serraturis minutis incisa, trinervia, venis minutissimè reticulata, glabra, suprà nitida. *Petiolus* teres, ad apicem incrassatus, brevissimus, pilosus. *Stipulæ* geminæ, laterales, erectæ, bipartitæ, sessiles, lanceolatæ, petiolo dimidio breviores. *Panicula* terminalis, ramosissima, patens, ramis divaricatis, teretibus. *Bracteæ* ad basin pedicellorum stipulæformes; ad apicem triphyllæ, obtusæ, deciduæ, trifloræ. *Flores* parvi, lutei, ad apices singulorum pedicellorum terni. *Calyx* pentaphyllus foliolis patentibus, deciduis, concavis, obtusis, oblongis, apices versus latioribus, coriaceis. *Petala* quinque calyce alternantia, hujusque foliolis multo breviora, cavitate melliferâ ad unguem insculpta, apice acuta. *Filamenta* plurima, inæqualia, subulata, hypogyna. *Germen* superum, sessile, subrotundum. *Stylus* subulatus. *Stigma* simplex.

Drupa globosa, nuce, abortu forte loculorum 1 vel 2, di- vel trisperma.

Obs. *Microcos paniculata* folia habet basin versus latiora, subtùs tomentosa, et secundum Burmannum bracteas (calycem communem) heptaphyllas.

Carua, *p.* 107. *fig.* 57.

Rheede evidently took this for the Cinnamon in its uncultivated state; and Burman was of the same opinion: for although he does not quote the *Carua* as synonymous with his *Cinnamomum foliis latis, ovatis, frugiferum* (*Thes. Zeyl.* 62.), he says, "*Cinnamomi* descriptio in *Horto Malabarico* accurata et egregia exhibetur;—ita ut licet hæc nostræ *Horti Malabarici* figuræ non respondeat, ipsum tamen et legitimum sit *Cinnamomum*;—notatum

tum autem illud volo, quod hæc nostra a Malabarica illa tantum loco natali differat:" and that he meant no other plant than the *Carua* is clear from his saying, " vide porro notas ad *Horti Malabarici partem* i. *p.* 110," that is, the notes of Syen at the end of the account of the *Carua*. To this opinion however there are strong objections, as any one may readily see who compares the figure in the *Hortus Malabaricus* with that in the *Thesaurus Zeylanicus* (*tab.* 27.). Burman's next figure (28.) has a much stronger resemblance to that of the *Carua;* but then, from the description, it is evidently a *Laurus*, which I know the *Carua* to be. I therefore adopt the opinion of Plukenet, who notices three plants that I well know, and concerning which it will be necessary to enter into some detail.

Plukenet's first plant is the *Cassia cinnamomea* (*Alm.* 88.), the *Cinnamomum* of the Bauhins, &c.

His second plant is the *Cassia cinnamomea sylvestris pigrior Malavarica, Carua Hort. Mal.* (*Alm.* 88.), the *Arbor canellifera Malabarica, cortice ignobiliore, cujus folium Malabathrum officinarum Breynii.*

His third plant is the *Cassia cinnamomea, strictiore folio, ignobilior, cujus folium est Malabathrum seu Tamalapatrum angustifolium; in officinis frequens occurrit.*

I need not here enter into any discussion concerning the proper Cinnamon tree, of which Burman (63.) enumerates nine varieties, besides the royal (*Rasse Coronde*) kind; and these, in a botanical sense, are all probably mere varieties: but in the botanical garden at Calcutta there is a narrow-leaved *Laurus Cinnamomum*, which was introduced long before the English took Ceylon, while the true royal kind (*Rasse Coronde*) was sent by General Macdowal when he governed the island. Now, in my opinion, this narrow-leaved Cinnamon is the *Carua* of the *Hortus Malabaricus*, not described by Burman, while what Dr. Roxburgh called

the *Laurus Cassia* is the third species of Plukenet, or *Malabathrum angustifolium*. We have thus two species of *Malabathrum*, in my opinion a corruption, by rejecting the first syllable of *Tamalapatrum*, that is, the *Tamala* leaf: and I shall have occasion to show, that in the north of India we have some more varieties, the name of the tree there being *Tej*, *Taj*, or *Twac*, which gives us *Tejpatra*, &c. for the leaves: for in the south the name of every thing great or good changes the final *a* of the north into *um*.

But to return to the *Carua*: Dr. Roxburgh (*Hort. Beng.* 30.) thought that his narrow-leaved Cinnamon was the *Cinnamomum perpetuo florens, folio tenuiore, acuto* of Burman (*Thes. Zeyl.* 63. *t.* 28); but, according to Burman, this is not the *Carua*, but the *Katou Karua* of the *Hortus Malabaricus* (v. *t.* 53.); and from the description of both authors, it is evident that this plant is not a *Laurus*, having a monopetalous corolla and five stamens.

Linnæus in the *Flora Zeylanica* (145.) gave the synonyma of the *Laurus Cinnamomum* very correct: but in treating of the *Laurus Cassia*, that is, the *Cassia malabarica*, which I have no doubt is the *Carua*, he seems to me to have fallen into two errors; first, in quoting as synonymous Burman's *tab.* 28., which is not the *Carua*, but the *Katou Karua*; and secondly, in quoting the *Cassia cinnamomea myrrhæ odore, folio trinervi subtùs cæsio*, a fourth species of Plukenet (*Alm.* 89.), of which I know nothing but that it is quoted by Burman for the plant represented in his *tab.* 28., while Plukenet, as I have already mentioned, quotes the *Carua* for his second species.

The *Carua* is a tree very common in the province of Malabar, and its bark is exported from thence in considerable quantity, now indeed chiefly to the Muhammedan countries, Christians receiving a better drug from China. This latter is no doubt the produce of a different tree (probably the *Laurus Cubeba* of Loureiro), the buds or young fruit of which are an article of commerce;

merce: and this also is the case with the buds of the *Cassia malabarica*, which in Malabar are called *Cubeba*. The accounts of a *Cubeba*, produced by a species of *Piper*, seem to have rendered Loureiro's report suspected by the compiler of the *Encyclopédie* (*Supp.* iii. 318.), but without reason. *Cabab*, in the native language of India, signifies a kind of roast, like that of the heroes in Homer:

Μιστυλλον τ' αρα τ' αλλα, και αμφ' οβελοισιν επειραν.

Now any spice suited for garnishing such roasts, by sticking it between the rows of minute bits (μιστυλλον) of meat, transfixed in a row by the wooden skewer (οβελος) on which they are roasted, is called a *Cabab* or *Cubeba*; and the sharp pedicels of both the *Cassias*, as well as of the *Piper*, serve for this purpose.

The younger Burman (*Fl. Ind.* 91.), following Linnæus, called the *Cassia malabarica* the *Laurus Cassia*, with the same synonyma as in the *Flora Zeylanica*; but he introduced a new species, the *Laurus Malabatrum*, composed of the *Katou Karua* (*Hort. Mal.* v. *t.* 53.), which is undoubtedly the same with his father's plant (*Thes. Zeyl. t.* 28.), which he quotes for the *Laurus Cassia*. He joins to the *Katou Karua*, the *Sindoc* of Rumphius (*Herb. Amb.* ii. 69.), which may indeed be the same plant, there being no figure, and a description so imperfect that it may be referred to almost any of the species, which nearly resemble the Cinnamon. Willdenow abandons this *Malabathrum*, there not being the slightest indication in either Rheede or Rumphius of its leaves possessing the qualities of the drug; and he makes the *Katou Carua* with five stamens, and a flower divided into five, a mere variety of the *Laurus Cinnamomum*.

In that valuable collection the *Encyclopédie Méthodique* (iii. 433.) we have the synonyma of the *Laurus Cinnamomum* properly enough given. To these, given by Linnæus to the *Laurus Cassia*,

Cassia, we have added the second species of Plukenet already mentioned, but without excluding his fourth species, probably the same with the *Katou Carua;* and Burman's *Thes. Zeyl. t.* 28. is quoted with doubt, and supposed, notwithstanding his description, to be a male plant of the *Laurus Cinnamomum*. It is however pretty clear that the compiler did not examine the description, his attention having been entirely occupied by the figure. After describing the plant, in many respects well, and pointing out some differences between it and the Cinnamon, the compiler endeavours to show that the *Cortex caryophylloides* of Rumphius (*Herb. Amb.* ii. 65. *t.* 14.), called *Laurus Culilaban* by Linnæus, is in reality the same with the *L. Cassia*. His reasons and arguments, resting on the mistaken notion of Linnæus respecting the leaves of the Cinnamon and Cassia being alternate, while those of the *Culit lawan* are opposite, only show how little was very lately known in Europe concerning these trees and others nearly allied to them. Dr. Roxburgh (*Hort. Beng.* 30.) divided the genus *Laurus* into those having opposite leaves, and those with leaves placed alternately; and among the former are justly placed the *Cinnamon*, *Cassia* and *Culit lawan*, with five other species; and Dr. Roxburgh observed from nature. Opposite leaves is the proper and regular disposition in these three plants, although in the same individuals examples may be often observed of the leaves being subalternate. Rumphius considered his *Cortex caryophylloides* as being different from the *Cassia lignea*, the usual name in commerce for the bark of the *Laurus Cassia;* but I would build little on that supposition, because the *Cassia lignea* to which he alludes is that of the Philippine islands, probably the same with that of China: but Dr. Roxburgh had obtained from the Moluccas a species, which he considered as different from both the narrow-leaved *Cinnamon* and *Cassia*, and for which he quotes the *Cortex caryophylloides* of

Rumphius

Rumphius (*Hort. Beng.* 30.); yet still I have doubts on this head, the name of Dr. Roxburgh's plant in its native country not being *Culit lawan*.

After this long discussion, I shall give what I consider the proper synonyma of the *Carua*.

Cassia cinnamomea, sylvestris pigrior Malavarica. *Pluk. Alm.* 88.
Cortex caryophylloides. *Herb. Amb.* ii. 65. *t.* 14?
Laurus foliis lanceolatis trinerviis, nervis supra basin unitis. *Linn. Fl. Zeyl.* 146. exclusis synonymis *Burmanni, Plukenetii* et *Hermanni*.
Laurus Cassia foliis triplinerviis lanceolatis. *Linn. Sp. Pl. Burm. Fl. Ind.* 91. *Willd. Sp. Pl.* ii. 477. *Hort. Kew.* ii. 427. exclusis synonymis supradictis.
Laurus Cassia foliis lanceolatis utrinque acutis triplinerviis, paniculis laxis sublateralibus. *Encycl. Meth.* iii. 444. exclusis synonymis *Pluk. p.* 89. et *Burmanni*.
Laurus Cinnamomum angustifolium. *Hort. Beng.* 30.

I shall now proceed to describe the tree which Dr. Roxburgh called the *Laurus Cassia*, and which I think the third species of Plukenet, as I have mentioned in the former part of this account. I call this *Tamala*, from the native name given in Plukenet, while the *Laurus Cassia* or *Carua* was in Malabar called to me *Lavanga*, from its having a smell of Cloves; and this excites a suspicion, notwithstanding what I have said, that the *Carua* is in fact the *Cortex caryophylloides* of Rumphius.

Laurus Tamala, foliis triplinerviis lanceolatis utrinque acutis, paniculis terminalibus, ramulis teretibus.
Laurus Cassia. *Hort. Beng.* 30.

Cassia

Cassia cinnamomea strictiore folio ignobilior, cujus folium est Malabathrum vel Tamalapatrum angustifolium, in officinis frequens. *Pluk. Alm.* 89.

Taj Bengalensium.

Colitur in hortis Camrupæ.

Arbor magnitudine mediocris, ramis teretibus, glabris. *Folia* nunc opposita, tunc in eadem arbore alterna, e tribus ad quinque pollices longa, unicum circiter lata, oblonga sed medium infra latiora, utrinque acuminata, margine cartilagineo integerrima, crassa, suprà nitida, subtùs glabra et glauca, triplinervia, venis minutè reticulata. *Petiolus* brevissimus, canaliculatus, glaber, estipulaceus. *Panicula* terminalis, sessilis, folio longior, brachiata, trichotoma, divaricata, rachi quadrangulari, ramis compressis glabris. *Flores* parvi, in capitulis subcongesti: expansos non vidi. *Bacca* calyce obsoletè sexlobo cincta, ovalis, utrinque obtusa, magnitudine pisi majoris. *Semen* unicum ovatum. *Cotyledones* crassæ, hinc planæ. *Radicula* adscendens. *Cortex* ramorum parum aromaticus. *Folia* valdè aromatica, odore Cinnamomi forti. *Siccata* ubique in Bengala pro Malabathro vel Tejpatra venalia.

The *Tamala* is readily distinguished from the *Carua* or *Cassia* by the smallness of its berry, that of the *Carua* resembling a small acorn. The *Culit lawan* of Dr. Roxburgh is distinguished by having the flowers collected by threes.

Besides both this *Tamala* and the *Culit lawan* of Dr. Roxburgh, I have met with some other species that approach very near to the *Carua*.

1. At Nathpur, on the Cosi river, I obtained specimens of another tree called *Taj* by the natives, but its leaves and bark were destitute of the aromatic smell and taste by which the *Ta-*

mala

mala and *Carua* are distinguished. The specimen was only in leaf, but agreed in every respect with the description of the *Tamala*, except that the leaves were acuminated, and the small branches quadrangular, with two of the sides narrower than the others. This I shall call

Laurus Tazia, foliis triplinerviis lanceolatis acuminatis, ramulis quadrangularibus.
Taj montanorum.
Habitat in montibus Emodi inferioribus ad Cosam fluvium.

2. At the same place I procured similar specimens of a tree, which has a strong resemblance in qualities to the *Carua*, and which forms a third kind of *Malabathrum*, its leaves being commonly sold as the *Tajpatra* in the markets of Mithila, although their smell and taste are inferior to those of the kind cultivated in Camrupa: both however become more aromatic when dried than they are in the recent plant. The bark of the larger branches and stem contains a considerable degree of aromatic smell and taste, on which account it is used as a spice; but it is thick and rough, very unlike Cinnamon, or the *Cassia lignea* of China, and, like that of the *Carua* and *Cortex caryophylloides*, is very mucilaginous. I shall retain the name given to the tree by the mountain Hindus, who brought it to me.

Laurus soncaurium, foliis oblongis utrinque acutis subtriplinerviis, venis nonnullis minoribus subtùs prominulis.
Laurus japonica. *Herb. Amb.* vii. *p.* 63?
Soncouri montanorum.
Habitat in montibus Emodi superioribus apud Cosam fluvium.

Arbor ramis suboppositis, teretibus, glabris; *ramulis* compressis, subquadrangularibus; *cortice* nonnihil aromatico. *Folia* nunquam opposita, sed per paria sæpe approximata, oblonga,

longa, utrinque acuta, nunc apicem, tunc basin versus latiora, et sublanceolata, margine cartilagineo integerrima, rigida, utrinque glabra, subtùs glauca, nervis lateralibus non omnino oppositis triplinervia, nervis nonnullis vagis subtùs prominulis et venis minutis transversis reticulata. *Petiolus* brevissimus, semiteres, estipulaceus.

3. In the gardens at Rangpur I found growing a tree, said to have been introduced from the mountains of Bhotan, and which, owing probably to the heat of the climate at Rangpur, did not produce flowers. Its name was not known. I shall therefore call it after the Sanscrita appellation of the country of which it is a native.

Laurus sailyana, foliis utrinque acutis, lanceolato-ovatis, subquintuplinerviis.

Habitat in montibus Emodi superioribus prope Tistam fluvium.

Arbor mediocris ramis suboppositis, teretibus, glabris; *ramulis* compressis, subquadrangularibus. *Folia* sæpiùs suboppositа, oblonga, sed basin versus sæpiùs latiora, utrinque acuta, integerrima, utrinque glabra, subtùs glauca. *Nervus* utrinque ad basin folii minutus, decurrens; intermedius paulo supra basin semper trifidus ramis lateralibus bifidis, vel sæpe bipartitis, unde folium, posthabitis nervis lateralibus minutis, quasi quintuplinervium, venis transversis obsoletè reticulatum.

Vis aromatica tota in radicis cortice posita. Hic autem cortex lævis, colore lateritius, odoratissimus, sapore grato aromaticus. *Cortex* ramorum et folia insipida, inodora.

4. In the woods of Camrupa, on the banks of the Tista, I found a tree, which I at first took to be the *Katou Carua* of the

Hortus

Hortus Malabaricus from the great size and form of its leaves; and therefore I supposed it to be the *Laurus Malabratum* or *Malabathrum* of the *Encyclopédie* (iii. 445.): but the plant I found is a *Laurus*, which the *Katou Carua* is not; and the leaves and bark, both of its root and branches, were devoid of aromatic smell or taste. I suspect however that it is the same with the *Laurus malabathrica* of Dr. Roxburgh, who would never have classed a plant in the genus *Laurus*, which had five stamens and a quinquefid petal; and he quotes the figure alone of the *Katou Carua*, having probably never looked at the description. The tree was in the garden when he took charge, so that he did not know from whence it came. I adopt the native name, as its leaves are never used for the *Malabathrum*.

Laurus Bejolghota, foliis triplinerviis basi acutis, paniculis terminalibus, pedicellis subtrifloris, cortice foliisque insipidis.
Laurus Malabathrica. *Hort. Beng.* 30?
Bejolghota Bengalensium.
Habitat in sylvis Camrupæ ad Tistam fluvium.

Arbor magna ramulis tetragonis, obtusangulis, glabris, oppositis. *Folia* plerumque opposita, pedem ferè longa, tres polices lata, elliptica vel oblonga, sed supra medium plerumque latiora, nervo marginali integerrima, basi acuta, utrinque glabra, suprà nitida, subtùs glauca, crassa, triplinervia, venis vagis minutè reticulata; omnium, quæ vidi, apices insectis erosi. *Petiolus* brevissimus glaber, depressus, subanceps, estipulaceus. *Paniculæ* facie terminales, plures patentes, subtrichotomæ, rachi tetragono, ramulis compressis. *Flores* parvi, subterni. *Paniculæ* fructiferæ, fortè prodeunte novo ex gemma terminali ramulo, infrafoliaceæ, ut in similibus plerumque fit, nam fructum non vidi.

5. From the Morang hills specimens of the branches in leaf, and of the bark of the root of a tree, were brought to me at Nathpur. The former so much resembled those of the *Bejolghota* before described, that I should have had no doubt of the two trees being the same, had it not been for the bark of the root, which strongly resembled that from Bhotan. It is remarkable, that the top (apex) of every leaf in this as well as in the *Bejolghota* was eaten off by insects. I call this by the native name

Laurus Bazania, foliis triplinerviis utrinque acutis inodoris, cortice radicis aromatico.

Bajania montanorum.

Habitat in montibus Emodi superioribus prope Cosam fluvium.

Cortex radicis fuscus fortiùs et gratè odoratus, sapore cinnamomeo prædítus. *Cortex* ramorum et folia inodora insipida, unde a *Katou Carua* certè diversa. Neque flores neque fructus vidi.

XXIV. *Observations on the Chrysanthemum Indicum of Linnæus.*

By Joseph Sabine, Esq. F.R.S. and L.S. &c.

Read December 18, 1821.

HAVING been lately engaged in an examination* of the plants cultivated in the English gardens under the name of Chinese Chrysanthemums, and which have generally been considered by English botanists as varieties of the *Chrysanthemum Indicum* of Linnæus, I have been led to adopt the opinion, that the plants which he intended to designate by that name, are different from those to which the appellation has of late been applied in this country. And as these plants were sufficiently described by different writers, at the time when Linnæus formed the character of his species, and referred it to the plants of various authors which he quoted, I consider that his omission of reference to the others must be taken as evidence that he did not deem it expedient to unite the whole.

When the first of the Chinese Chrysanthemums now in our gardens was introduced into France in 1789, M. Ramatuelle†, who published an account of it, called it *Anthemis grandiflora*. Willdenow‡ subsequently, in 1801, placed it under the same genus; but he gave it another specific name, calling it *Anthemis*

* See *Horticultural Transactions*, vol. iv. p. 326. "Account and Description of the Varieties of Chinese Chrysanthemums, &c."

† *Journal d'Histoire Naturelle*, vol. ii. p. 233.

‡ Willdenow in *Nov. Act. Soc. Nat. Scient. Berol.* vol. iii. p. 431.

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