XII. *A Commentary on the Second Part of the Hortus Malabaricus. By Francis Hamilton, M.D. F.R.S. and L.S.*

Read April 1, 1823.

KAIDA, *p.* 1, *fig.* 2, 3, 4, 5.

IN the reference to the figures prefixed to the text, the 1st plate is also quoted for the *Kaida*; but on the plate itself it is marked *Kaida Taddi*; and, that this is no mistake, is clear from the figure. Plate 2. represents the lower part of a branch, Pl. 3. represents the upper part of a branch, or young shoot, Pl. 4. the male flower, and Pl. 5. the female flower and fruit.

The first four plants described in this volume form a genus of a singular appearance, which Rheede called *Kaida*, probably from some mistake, as Rumphius (*Herb. Amb.* iv. 141.) says that the name was unknown to such of the natives of Malabar as he consulted, who called these plants *Dare*. *Kaida* however may be derived from the Arabic Kadhi, a colony from Arabia, under the name of Moplay, having been very long settled in Malabar.

Before the time of Rheede this singular genus was confounded by botanists with the *Ananas*. Ray, however, seems to have been dissatisfied with this classification, but did not attempt to class it further than by calling it *Frutex indicus*. Plukenet at first (*Alm.* 277.) attempted another classification, calling a species, which he had received from Alexander Brown, *Palmæ*

affinis arbor conifera. He seems however soon afterwards to have become sensible, that this classing it with the Palms was erroneous; and, instead of imitating Rheede, returned (*Amalth.* 13.) to the old name of J. Bauhin, *Ananas sylvestris, folio aloes, fructu cupressino.*

Rumphius (*Herb. Amb.* iv. 13.) clearly perceived, that such rude attempts at classification were not tenable; and, while he rejected the *Kaida* as of doubtful origin, he adopted *Pandanus* from the Malay language, and described at least twelve species of this genus, besides adding to it some plants that must be referred to another quarter.

The elder Burman, notwithstanding he had before his eyes the works of Rheede and Rumphius, contrived (*Thes. Zeyl.* 20.) to confound this genus with the *Ananas*, and refers to the description of the *Bromelia* by Linnæus for an excellent account of its generic characters! This indeed may be considered as the most unfortunate classification ever adopted by this great botanist; for in the *Flora Zeylanica* (*p.* 131.) he implicitly followed the elder Burman, as the younger Burman again followed him (*Fl. Ind.* 79.). This genus of plants continued thus unnaturally connected, until Forskahl, meeting probably with the species which Plukenet had received through A. Brown from Arabia, gave its proper generic characters under the name *Keura.* Shortly afterwards Forster gave this genus the name *Athrodactylis;* and the younger Linnæus, convinced of his father's error, with great propriety restored the name *Pandanus* given by Rumphius, and now generally followed.

Although all botanists now clearly perceived that this was a distinct genus, yet Jussieu, when he published his *Genera Plantarum*, was at a loss in what natural order it should be placed; and, like Plukenet in his first conjecture, considered it as having an affinity to the *Palmæ.* M. du Petit-Thouars, who has added largely

largely to the species of this genus, considers it as having no considerable affinity to any other family of plants (*Enc. Meth. Sup.* i. 575.). Mr. Brown in his valuable work on the plants of New Holland (i. 340.) does not differ from M. du Petit-Thouars; for, although he has an order of *Pandaneæ*, this order consists of only two genera. He places this indeed next to the *Aroideæ*, and allows a certain similitude between these plants; but the genera of the *Aroideæ*, which have most resemblance to the *Pandanus*, that is those in the third section, Mr. Brown has not placed nearest to the *Pandaneæ*, to which in my opinion they bear a much closer affinity than they do to the *Aroideæ* of Jussieu. This third section of Mr. Brown constitutes the *Typhæ* of Jussieu, a natural order, which in my opinion should be preserved; and to this, I have no doubt, should be added the genus *Pandanus*, which bears an affinity to the *Sparganium* among the *Typhæ*, nearly as strong as the *Bambusa* does to the *Avena* among the *Gramineæ*. Natural orders, in my opinion, must be founded on general resemblances, taking into consideration the structure of the whole vegetable; and I regret, that the best botanists of late have given too much importance to minute differences in the structure of parts, which, however important in the propagation of the species, are so minute and inconsiderable as to deserve little attention, unless accompanied by a general resemblance. This is no doubt often the case; but then this general resemblance, of itself, is what should constitute the difference, whether accompanied by these minutiæ or not. Besides, in the present state of science, it seems rash to exclude certain plants from a natural order, because in some of these minutiæ they differ from some species that have been examined; while in by far the greater part of the order it has not been ascertained how far the minute structure extends. Let it not be imagined, from what I have now stated, that I undervalue the minute examina-

tion which my esteemed friend Mr. R. Brown has bestowed on the vegetable kingdom. It is only by extending such examination much further, that the real value of each distinctive character can be ascertained; but, until this has been accomplished, I doubt the propriety of introducing so many new natural orders as has been done of late. I could rather indeed wish to see several of Jussieu's orders united into one, than to have each torn into portions that deserve only to be called genera.

Having thus premised what appears to me necessary for explaining this genus called *Kaida* by Rheede, I must now proceed to examine his four species, all of which his commentator Commeline considered as having been previously unknown to botanists. Perhaps he was so far right, that the accounts previously given were so incomplete, that the notices contained in former writers could only be considered as belonging to the genus, and not sufficient to ascertain the species which had been seen.

The *Kaida* however of Rheede is justly entitled to be considered the prototype of the genus, and therefore, as usual among the Hindus, is not marked by a specific name. It is entitled to this pre-eminence by the great fragrance of its male flowers, which renders it always in request with the natives of India; and it is likely to have been shown by them to the curious from Europe, as one of their most interesting vegetables. On this account I should suspect that this is probably the *Ananas bravo* of Acosta, the *Arbor fructu Ananas ex caudice emergente, nucleis turgente* of C. Bauhin, and the *Ananas sylvestris, folio aloes, fructu cupressino* of J. Bauhin, and almost certainly the *Frutex indicus fructu aggregato conoideo Kaida dicta* of Ray; although, not being able to consult these authors at present, I do not know what objections there may be to this opinion.

Plukenet, having received from southern Arabia a species of this

this genus, which he called *Palmæ affinis arbor conifera Mascatensis, longissimo folio, tribus ordinibus spinarum munito*, at first (*Alm.* 277.) considered it as the same with the *Kaida*, and with the plant of Ray already mentioned; but on further consideration (*Mant.* 145.) he questions if his plant be not rather the *Kaida Taddi*, next to be described. As the fruits of the two plants cannot be mistaken, and are the only parts, except the male flowers, likely to be preserved in a dry specimen, we may I think infer that he was at first mistaken, and that his plant was not the *Kaida*: yet still afterwards (*Amalth.* 13.), when he acknowledged his error in classing it with the *Palmæ*, he adopts the name of J. Bauhin, already mentioned as probably belonging to the *Kaida*.

Rumphius, who described at least twelve species of this genus, in describing the *Pandanus verus*, says (*Herb. Amb.* iv. 241.), "In *Horto Malabarico* quatuor hujus plantæ exhibentur species, nulla autem omnino convenit cum *Pandano* nostro, excepta prima species, seu vera *Kaida*, quæ *Pandano* nostro vero accedit, Malabarensis vero folia multo sunt longiora." And again he says (*p.* 141.), "Acosta folia florem cingentia scribat nimis lutea, fructus eleganter rubros et melonum magnitudinem habentes, atque quod ex cunctis vulneratis ramis et trunco copiosus exstillet liquor, quæ omnia forte in Malabarensi et Indostano *Pandano* vera sunt, in Amboinensi autem et Moluccensi non obtinet, neutiquam tamen pro diversis habeantur plantis. *Pandanus* enim fere in omni variat insula." Finally, he further says, "In Amboina *Pandanus* verus non multum obcurrit; quique ibi reperitur debilem fundit odorem, neque flores tam bonæ notæ ac durabiles sunt quam in aliis locis." From these circumstances, as this is not a cultivated plant liable as such to many variations, I would draw a conclusion different from that of Rumphius, and conclude, that although under the name *Pandanus*

nus verus he may have meant to describe the highly odorous *Kaida*, which is no doubt found in many islands of the eastern archipelago, yet he described in fact an inferior species found in Amboina, and which may readily be distinguished from the *Kaida* by the size of the fruit, and by the structure of the drupa; for he says (*p.* 139.) "fructus magnitudinem habet mali aurantii, sed oblongior est.—In centro cujusvis pyramidis (drupæ) foraminulum tanquam porus conspicitur, ubi et brevis adparet apex." Now Rheede says, "Fructus oblongo-rotundi sunt et prægrandes—in singulis tuberculis (druparum apicibus) tribus aculeatis, lignosis papillis muniti:" and in fact in fig. 5. the fruit is represented as large as the pine-apple (7 inches long by $4\frac{1}{2}$ thick), with three large pores on the end of each drupa, each pore being placed in a projecting tubercle. We may therefore safely infer, that the plant of Amboina, actually described by Rumphius, is not the *Kaida*, although much of what he says concerning the *Pandanus verus* probably belongs to the highly odorous plant of other islands, which is probably not different from that of Malabar.

The elder Burman considered the plant of Amboina, described by Rumphius with a fruit like an orange, as being the same with the *Ananas sylvestris arborescens* of Acosta, with a fruit like a melon, and as being the *Kaida Taddi* of Rheede, not his *Kaida*. But the *Kaida Taddi*, as I shall have occasion to show, is rather the *Pandanus spurius* of Rumphius. The elder Burman was probably misled by Plukenet in giving his plant to the *Kaida Taddi:* very little dependence can however be placed on his authority, especially as he adds to the synonyma an American plant, the *Nana brava* of Marcgrave, probably a real *Bromelia*. It would be impossible, therefore, on the authority of the elder Burman, to say what the *Wætkakeiya* of the Ceylonese is.

Linnæus,

Linnæus, however, misled by Burman, described the *Wætkakeiya* of the Ceylonese as *Bromelia foliis margine dorsoque aculeatis, caule fulcrato spinoso* (*Fl. Zeyl.* 14.); but he gives the synonyma with more care, joining the plant of Acosta and those of J. Bauhin and Ray, that I have already mentioned, with the *Kaida* (misprinted *Kaidi*) of the *Hortus Malabaricus*. With respect to Plukenet, he was probably wrong, as that botanist considered the *Kaida Taddi* to be more like his plant; but, respecting Acosta, J. Bauhin and Ray, Linnæus was probably right in joining their plants with the *Kaida*. In the reference, however, to the plates, he has been misled by the text to consider fig. 1. as representing this plant; an error that has been generally since followed. Linnæus was also probably misled by Burman to quote among the synonyma the *Carduus brasilianus sylvestris* of C. Bauhin, probably the same with the *Nana brava* of Marcgrave.

The younger Burman, although he rejected this, did not improve the synonyma of the *Bromelia sylvestris*, as the plant was now called (*Fl. Ind.* 79.); for he added the *Pandanus verus* of Rumphius, which, as I have said, is neither the *Kaida* nor *Kaida Taddi*; and, in imitation of Plukenet and his father, he adopted the *Kaida Taddi* (misprinted *Kauda*) in preference to the *Kaida* chosen by Linnæus.

Since later botanists have obtained a more perfect knowledge of the fructification, and removed this plant from among the *Bromelias* to its proper place as a distinct genus, no great improvement has taken place in the synonyma. The compiler of the *Encyclopédie* was perhaps justified, on account of the imperfect nature of their accounts, in leaving out altogether the synonyma of older botanists: but the *Pandanus odoratissimus* with him is both the *Pandanus verus* and the *Kaida*; and it is also the *Keura odorifera* of Forskahl, which, coming from Arabia, is probably

probably the same with the plant of Plukenet, more likely to resemble the *Kaida Taddi* than the *Kaida*. The *Athrodactylis spinosa* of Forster is more probably the *Kaida*. Willdenow (*Sp. Pl.* iv. 645.) makes no considerable change on these synonyma, only he adds references to several valuable modern accounts of the plant, leaving us still however in the dark, whether he meant the *Pandanus verus* of Amboina, or the *Kaida* of Malabar. In the *Hortus Kewensis* (v. 351.) both are omitted as uncertain; and the only authority quoted is Dr. Roxburgh, who does not quote the *Kaida* (*Hort. Beng.* 71.), although I believe it was the plant he described; but I think that he was deterred from quoting it by the reference in the text to fig. 1.

Kaida Taddi, *p.* 3. *figs.* 1 *and* 6.

Much of what I had to say concerning this plant has been anticipated in treating of the last; and I have fully explained, how alternately with the *Kaida* it has been considered as the same with the *Ananas arborescens*, or *Bromelia sylvestris*, or *Pandanus odoratissimus*, as at different times it has been called. Plukenet, who compared specimens of the Arabian plant with the accounts of Rheede, seems to think that it most resembled the *Kaida Taddi;* and, if he saw the fruit, he could not be mistaken. We may therefore with some degree of confidence refer to the *Kaida Taddi* the *Palmæ affinis arbor conifera Mascatensis longissimo folio tribus ordinibus spinarum munito* (*Pluk. Alm.* 277; *Mant.* 145; *Amalth.* 13.); and this, again, from the country where it was found, is not unlikely to be the *Keura odorifera* of Forskahl, although both plants may grow in Arabia as well as in India.

At first sight, it would not seem clear whether or not Rumphius described the *Kaida Taddi*. The fruit delineated in the 75th plate of his 4th volume has indeed no resemblance; but then this

this figure has no resemblance to the description of the *Pandanus spurius*, which it is said to represent; for in this description we have as follows: "Maturus fructus vero in multa aperitur ac dehiscit segmenta, quorum quodvis ex variis constat pyramidibus (drupis), quæ non separantur nisi vi." This, in my opinion, clearly points out that the *Pandanus spurius* has a fruit resembling that of the *Kaida Taddi;* and therefore, although it is quoted both by Willdenow (*Sp. Pl.* iv. 645.) and by M. Lamarck (*Enc. Meth.* i. 372.) as a mere variety of the *Pandanus odoratissimus*, I can have no doubt that it is the *Pandanus fascicularis* of these authors (*Sp. Pl.* iv. 640.; *Enc. Meth.* i. 372.); unless it should appear that, besides the *Kaida Taddi*, another species is provided drupis fasciculatis. It is true that Rumphius, in plates 80 and 81, represents a plant with such a fruit; and in the explanation of these plates this is called *Folium Baggea maritimum*, described in page 151. In this description, however, there is no hint given of the drupæ separating into clusters as the fruit ripens; and I strongly suspect, that a transposition has taken place, and that plates 80 and 81 represent the *Pandanus spurius*, while plate 75 represents the *Folium Baggea maritimum*. It seems owing to this difference between the description and the appearance of the fruit in plate 81, that M. Lamarck quoted (*Enc. Meth.* ii. 372.) the *Folium Baggea maritimum* with doubt for the *Pandanus fascicularis*. If this conjectured transposition has actually taken place, every doubt of the *Pandanus spurius* being the same with the *Kaida Taddi* will be removed, and the plates in Rumphius will agree with the descriptions.

Perin Kaida Taddi, *p.* 5. *fig.* 7.

This is evidently a distinct species of *Pandanus*, not yet quoted by modern authors.

Kaida Tsierrea, *p.* 7. *fig.* 8.

This continued unquoted by modern authors, until Dr. Roxburgh received plants from his son in Chatigang; and it is mentioned in the *Hortus Bengalensis* (71.) under the name of *Pandanus furcatus*. Rumphius indeed (*Herb. Amb.* iv. 149.) supposed it to be his *Pandanus ceramicus montanus*; but I cannot see any resemblance between the figure in Rheede and the description in Rumphius, for he gives no figure; and I rather suspect that his plant is the *Millore* of the Nicobar islands (*As. Res.* iii. 161.), a magnificent plant, which I have seen in the garden of the late worthy Dr. James Anderson of Madras; and doubtless different from the *Pandanus odoratissimus*, with which Dr. Roxburgh seems inclined to class it.

Panel, *p.* 9. *fig.* 9.

Plukenet (*Mant.* 139.) only mentions this plant to say, that it has no affinity with the *Nimbo* of Acosta (now called *Melia Azadirachta*), as Commeline asserted: but Commeline says nothing of the kind. He indeed compares the *Narum Panel*, next to be mentioned, with the *Nimbo*; but he says that the *Panel* is quite different. I cannot find that the *Panel* has been since mentioned by any author. Notwithstanding its simple leaves, it has very much the general appearance of the *Limonia pentaphylla* of Willdenow (*Sp. Pl.* ii. 572.), and probably belongs to the same genus with that plant, which scarcely can be considered as being of the same family with the *Limonia acidissima* of Linnæus, the prototype of the genus. By the *Limonia acidissima* of Linnæus, I mean the *L. crenulata* of Dr. Roxburgh, who, misled by Kœnig, took the *anisifolia* of Rumphius for the *Limonia acidissima*, and therefore described the *Tsjeru Catu Naregam* as a new species: but when Linnæus (*Fl. Zeyl.* 175.) first

first constituted the species, since called *Limonia acidissima*, he meant the plant of the *Hortus Malabaricus*, nor did he then quote the work of Rumphius.

NARUM PANEL, *p.* 11. *fig.* 10.

Nothing well could be a more rude classification than the reckoning this of the same genus with the preceding plant, except that of Commeline in comparing it with the *Nimbo* of Acosta, now called *Melia Azadirachta*, as Plukenet justly observed (*Mant.* 139.).

The elder Burman (*Thes. Zeyl.* 231.), with a classification scarcely less objectionable than that of Commeline, called this plant *Uva zeylanica, sylvestris, Mali armeniacæ sapore, Uves de Mato Lusitanis;* and considered it as the same with the *Palukena* of Herman. Ray, not knowing any plant with which it could be compared, did not give it a proper name, but called it *Frutex baccifer fructu ad singulos flores multiplici.* Linnæus early perceived (*Fl. Zeyl.* 224.) that this could not be reduced to any genus then known; and therefore, giving its characters at full length (*l. c. App.* 11.), called it *Uvaria*, from the resemblance to a grape, which had been noticed by Burman. He retained exactly the synonyma that have been already mentioned.

In the *Flora Indica* (124.) of Burman we find an addition made to the synonyma, by annexing the *Funis musarius* of Rumphius (*Herb. Amb.* v. 78.), although that excellent botanist under this name includes two plants, which very likely do not belong to the same genus with each other. The *Funis musarius latifolius*, which is represented in plate 42, is no doubt an *Uvaria*, which I have examined; but I do not think that it is the same with the *Narum Panel*, which is now called *Uvaria zeylanica* (*Burm. Fl. Ind.* 124. *Willd. Sp. Pl.* ii. 1261. *Enc. Meth.* i. 596. *Hort. Kew.* iii. 333.) Whether Burman, Willdenow and

Lamarck really meant the *Narum Panel* or the *Funis musarius latifolius* by their *Uvaria zeylanica*. I cannot say; but in the *Hortus Kewensis* Rheede alone is quoted. Dr. Roxburgh, who does not seem to have seen the *Narum Panel*, described a species of *Uvaria*, which he had received from Sumatra, and called it *U. grandiflora*. In the *Hortus Bengalensis* (43.) he quotes no synonyma; but I compared his plant with one which I found in the N.E. parts of Bengal, and which I have no doubt is the *Funis musarius latifolius*, and it is quite different from the *Narum Panel*. This difference did not escape the notice of M. Dunal in his treatise on the *Anonaceæ* (*Enc. Meth. Supp.* v. 779.), where he quotes, by the proper name, the *Funis musarius latifolius* for his *Unona musaria*: but he errs in calling it an *Unona*, as it is undoubtedly of the same genus with the *Narum Panel*, the prototype of the genus *Uvaria*. The synonyma, given by Linnæus in the *Flora Zeylanica*, for the *Narum Panel*, so far as relates to the older writers, without addition or alteration, are therefore correct; and I shall now add a description, which I took in Malabar, where I found the plant flowering in December 1800.

Frutex scandens ramulis teretibus, glabris. *Folia* alterna, bifaria, ovato-oblonga, integerrima, utrinque acuta, utrinque nitida, venosa, plana. *Petiolus* teres, canaliculatus, brevissimus, stipulis nudus. *Pedunculus* prima facie terminalis videtur, sed prodeunte surculo revere oppositifolius, solitarius, petiolo triplo longior, uniflorus, teres, nudus. *Flores* nutantes, magni, virides. *Calyx* patentissimus, coriaceus, 3- vel 4-fidus laciniis subrotundis, concavis. *Petala* 6 seu 8 duplice serie posita, basi coalita, ovata, concava, acuminata, coriacea, subæqualia. *Antheræ* plurimæ, angulatæ, imbricatæ peripheriam receptaculi hemisphærici tegunt. *Germina* plura, antheris similia, centrum receptaculi occupant.

Baccæ

Baccæ plures receptaculo subrotundo pedicellis mediocribus insidunt oblongæ, utrinque obtusæ, 5- seu 6-loculares. *Loculi* monospermi, uno super alterum posito, septis transversis tenuissimis discreti. *Seminum* albumen rimis profundis transversis incisum.

Cara Nosi, *p.* 13, *fig.* 11.

Bem Nosi, *p.* 15, *fig.* 12.

The earliest botanists, who treated of Indian plants, such as Acosta and Garcias ab Horto, called these shrubs by the name *Negunda* or *Negundo*, the origin of which is rather doubtful. Rheede indeed says, that it is the name given by the Brahmans of Malabar; but in this I suspect some mistake, as in general they use either Sanscrit or Hindwi names, and these plants are called *Sindhuka* and *Nisinda*, in the sacred and vulgar dialects of Gangetic India. We might, I think, agree with Rumphius (*Herb. Amb.* iv. 48.) in considering *Negundo* as a vulgar name, that is one originating in mistake, and not derived from any known language, unless it be a corruption of the Malay word *Lagundi*, which is not improbable, L and N being interchangeable letters.

By these early writers the *Negundo* was divided into two kinds, male and female, not distinguished by the one producing only flowers, and the other fruit also, but from the one being considered most pregnant with medical virtues. The *Cara Nosi* was reckoned the male, and the *Bem Nosi* the female.

Caspar Bauhin endeavoured to distinguish these two kinds by their size, calling the female *Vitex trifolia major*.

Plukenet, in imitation of Breynius, endeavoured to distinguish these two kinds by the margins of their leaves, calling the female *Vitex trifolia minor Indica*, and the male *Vitex trifolia minor Indica serrata* (*Alm.* 390.); but this is founded on error, as Rumphius

phius justly remarks (*Herb. Amb.* iv. 48.) "Dicimus, maximam foliorum partem non serratam esse et semper ternatam; si vero hic fruticulus sæpius detruncetur, in surculis folia non tantum hinc inde sunt solitaria, sed etiam ad oras parum serrata, seu profunde dentata, ut una eademque habeatur planta cum illa, quæ in aliis Indiæ locis crescit, et a Portugallicis scriptoribus describitur folia gerere serrata."

Although Plukenet was thus unfortunate in selecting a specific distinction, he was perfectly right in following C. Bauhin, and placing the *Negundos* in the same genus with the *Vitex* or *Agnus castus*, notwithstanding an attempt made in the Medical Garden of Amsterdam to class it with some African plants related to the genus *Rhus* (*Mant.* 161.). What is of more importance, he gives us a figure of the *Negundo mas* (*Phyt. t.* 206. *f.* 5.), which strongly resembles the *Cara Nosi*.

The elder Burman, without materially altering the synonyma, changed the specific distinction, calling the *Cara Nosi Vitex trifolia*, *Indica*, *odora*, *hortensis*, *floribus cæruleis*, *racemosis*; and the *Bem Nosi Vitex trifolia*, *odorata*, *sylvestris*, *Indica*, (*Thes. Zeyl.* 229.); where the real distinction is, that the one plant is cultivated, and the other wild.

Notwithstanding the example of C. Bauhin, Plukenet, and Burman, Linnæus, when he published the *Flora Zeylanica* (*p.* 413, 414.), considered the genus of these plants as doubtful; but mentioned them among the *obscuræ* under the names given by Burman, with the synonyma of preceding authors taken from the same source: so that in this work the only distinction is that the one plant is wild and the other cultivated.

Rumphius (*Herb. Amb.* iv. 48, 50.), in imitation of other botanists, describes two species, the *Lagondium vulgare*, and *litoreum*; the first analogous to the *planta fœmina*, *minor*, *integerrima*, *et hortensis*; and the second analogous to the *planta mas*, *major*,

major, serrata et sylvestris of preceding authors. On comparing every thing that he says, respecting the above-mentioned distinctions, I cannot perceive that they afford any sufficient reason for considering the plants as distinct species: but he has a remark, which, were it accurate, might afford room for a real distinction, which will appear evident, if we compare what I have already quoted from Rumphius, concerning the leaves of the *Lagondium vulgare*, with what follows concerning those of the *L. litoreum*. "Folia plerumque quinque simul locata sunt, —quorum bina inferiora tempore decidunt, unde in ramis floriferis et frugiferis ternata tantum semper sunt, in surculis vero semper quina sunt." Now in the *Lagondium vulgare*, "folia semper sunt simplicia vel ternata."

Linnæus however, in his first edition of the *Species Plantarum*, followed by the younger Burman (*Fl. Ind.* 137, 138.), rejects altogether this distinction of Rumphius; and, although he adds the *Lagondium vulgare* as synonymous with the *Cara Nosi*, which he calls *Vitex trifolia*, and the *Lagondium litoreum* as synonymous with the *Bem Nosi*, which he calls *Vitex Negundo*, he attributes to both "folia ternata quinataque," and returns to the old distinction of "foliola integerrima and f. serrata," which I know to be totally futile, as leaves of both descriptions may usually be observed on the same individual plant. He adds however another distinguishing mark, namely that the *Vitex trifolia* has *panicula dichotoma*, and the *Vitex Negundo flores racemoso-paniculati*. I do not think, however, that either term is strictly applicable to the plant, which I have seen, although as corrected by Mr. R. Brown (*Nov. Hol.* i. 512.) "paniculæ rachis stricta, rami subdichotomi," the term is applicable to the *Vitex* common about the hedges of India. Burman adds, as a variety to the *Vitex trifolia*, the *Vitex trifolia floribus per ramos sparsis*

sparsis of his father (*Thes. Zeyl.* 229. *t.* 109.), which does not seem to me to be a *Vitex*.

M. Lamarck returns to the distinction of Rumphius, characterizing the *Cara Nosi* or *Lagondium vulgare* by its having *folia simplicia ternataque subintegerrima*, and the *Vitex paniculata* (*Enc. Meth.* ii. 612.) as having *folia quinata integerrima:* but then this plant, although it is the *Lagondium litoreum* of Rumphius, is not the *Bem Nosi* of Rheede, which M. Lamarck considers as a mere accidental variety of the *Cara Nosi*, and therefore excludes altogether the *Vitex Negundo*, as a species. I must say however, that the *Vitex* which grows so common, and half wild, in the hedges about gardens and villages, just like the *Sambucus nigra* in Europe, has leaves simple, ternate, and quinate, entire and serrated; and it must be observed, that Rheede says of the *Bem Nosi*, *folia in petiolis terna et passim quina*. I agree therefore with M. Lamarck in thinking the *Cara Nosi* and *Bem Nosi* mere accidental varieties of the same species, to which should be referred the *Lagondium vulgare* of Rumphius. As however M. Lamarck has seen specimens both in flower and fruit of another species, which he considered as the *Lagondium litoreum*, I have little doubt of Rumphius having been in an error, when he compared his plant to the *Bem Nosi*, and that this error misled Linnæus into the mistake of distinguishing as species the *Negundo mas et fœmina*.

Notwithstanding the observations of M. Lamarck, Willdenow, who never saw the plant, joins the *Vitex paniculata*, or *Lagondium litoreum*, with the *Bem Nosi* and all its concomitant synonyma, as given in the *Flora Zeylanica* (*p.* 414.), and thus retains the *V. Negundo:* yet in the annexed observation he admits that the *V. trifolia* has *folia subtus tomentosa*, and the *V. Negundo folia subtus nuda;* while the very name *Bem*, as Rheede observes, implies

plies *white*, and has been given to this variety, because its leaves have more of that colour (depending no doubt on more white tomentum) than those of the *Cara Nosi*. I am inclined however to believe, that Linnæus actually saw specimens of the *Lagondium litoreum*, and that this is the plant which he meant to describe as the *V. Negundo*, although he may have erred in joining it with the *Bem Nosi*. New specific characters however are wanted to distinguish these plants, those yet given being founded on circumstances liable to vary even in the same individual: but I am not prepared to enter on this subject, having only seen one of the species.

After all, I must however confess that the figure of the *Lagondium litoreum*, and that given by Plukenet (*Phyt. t.* 321. *f.* 2.) of the *Vitex orientalis angustis foliis, semper tripartito divisis* (*Alm.* 390.), which is quoted in the *Encyclopédie* as being the same with the *Lagondium litoreum*, has a stronger resemblance to the plant common about the villages of India, than the figure of the *Lagondium vulgare*, or the figure of the *Vitex trifolia minor* of Plukenet, or than either figure in the *Hortus Malabaricus*. Notwithstanding therefore all that I have said, I do not consider that I have removed all the difficulties on this subject. Specimens of the plant common every where in India have been presented to the East India Company's collection. It is undoubtedly the *V. Negundo* of Dr. Roxburgh (*Hort. Beng.* 46.); and it must be observed, that he received from Pegu a plant, which he considered as the *Vitex trifolia*, as agreeing with the figures of the *Lagondium vulgare* and *Cara Nosi*. So far as relates to the mere figures, this is agreeable to what I have last stated; but, if this should be adopted, we must transfer most of the synonyma mentioned by Linnæus in the *Flora Zeylanica* to the *Vitex Negundo*; and in this case, I must confess that I have never seen

the *Vitex trifolia*, under which name I have sent the plant common in India to the Company's collection.

Schetti, *p.* 17. *fig.* 13.

Commeline considered this plant as unknown to botanists, until described by Rheede: but it was soon adopted into the system by Breynius, Hermann, and Plukenet, who joined Hermann in calling it *Jasminum indicum lauri folio inodorum, umbellatum, floribus coccineis* (*Alm.* 196. *Phyt. t.* 59. *f.* 2.). The elder Burman (*Thes. Zeyl.* 125.) to these adds synonyma from Ray and the *Herbarium Amboinense*, then unpublished; but he adds a note, that deserves great attention: "Si vero meam plantam ab Hermanno ipso in Zeylona quondam collectam, et ad Breynium etiam ab ipso transmissam, examinem, et cum H. Malab. figura et descriptione conferam, in quibusdam differre videtur. Nostræ enim folia sunt multo longiora, angustiora, acutiora; frequentiora etiam multo ad surculos proveniunt, interpositis plurimis minoribus foliolis, quæ accuratissime omnia in tabula nostra (57.) insculpi curavi. Flores Schetti H. Malab. dicuntur incarnati, posteaque dilutiores, flavescentes, cum nostræ plantæ sunt intentissime holoserici, rubri." Now this difference between the *Schetti* and the plant of Burman, Hermann, and Breynius has not been sufficiently attended to by botanists, although I have little doubt that the plants of Rheede and Burman are specifically different. While thus we join the synonyma of Hermann and Breynius to the plant of Burman, we may leave those of Commeline and Plukenet to the plant of Rheede; only it must be remarked, that Burman quotes five different names from Hermann, three from the *Museum Zeylanicum*, one from his *Paradisi Batavi Prodromus*, and one from his *Herbarium*. Whether or not, under these different names, Hermann meant to denote

denote the same plant, I cannot say, not having it in my power to consult his works; but the plant contained in his *Herbarium* is no doubt the one which Burman described. But of this more afterwards.

It is further to be remarked, that Linnæus in his *Flora Zeylanica* (*p.* 54.) quotes the *Prodromus* of Hermann alone as describing the same plant with the *Schetti*, and omits the other names given by that author, considering them as not applicable; but he adds the *Ratabala* (Red Bala) as the Ceylonese name, which no doubt belongs to the plant of Burman, although it probably may be applicable to any *Ixora* with a red flower; for *Rata*, corrupted from *Rukta* of the Sanscrit, implies this colour. At any rate, Linnæus under the denomination of *Ixora foliis ovalibus semiamplexicaulibus* comprehended at least two plants, the *Schetti* of Rheede and the *Jasminum flore tetrapetalo* of Burman.

Burman the elder, when he published his *Thesaurus Zeylanicus*, had quoted for his *Jasminum flore tetrapetalo* the *Flamma sylvarum peregrina* of the *Herbarium Amboinense* (iv. 107, *t.* 47.); but when he came to publish this work, he perceived that this quotation could not be sustained, and therefore transferred his *Jasminum flore tetrapetalo* to the *Flamma sylvarum* of Rumphius (*Herb. Amb.* iv. 105. *t.* 46.), a quite different species from the *Flamma sylvarum peregrina*, and still more different from the *Schetti*.

The younger Burman (*Fl. Ind.* 34.), imitating the *Species Plantarum* of Linnæus, bestowed on the *Ixora* of the *Flora Zeylanica* the name *Ixora coccinea*, to which he annexed the synonyma of his father and Plukenet, together with the *Flamma sylvarum*, and the *Schetti*, thus including certainly two species. He indeed omitted all the synonyma of Hermann and Ray quoted by his father; but he added a new plant from Plukenet (*Mant.*

20. *t.* 364. *f.* 2.), the *Arbor Indica Lauri amplioribus foliis obtusis e regione binis, floribus Jasmini, summo ramulo umbellatim positis, ex Insula Johanna.* Now, although Plukenet compares this to the *Tsjovanni Amelpodi* (*Hort. Mal.* vi. *t.* 47.), a plant having five stamina, yet there can be no doubt of its being an *Ixora* very nearly allied to the *Flamma sylvarum peregrina*, but sufficiently distinct from the *Schetti*, the *Flamma sylvarum*, and the *Jasminum flore tetrapetalo;* so that botanists had now four species of *Ixora* with red flowers, all confounded under one name.

Willdenow left matters as they stood in Burman's *Flora Indica:* but M. Lamarck (*Enc. Meth.* iii. 343.), leaving out the plants of the elder Burman, Hermann, and Rumphius, joins to the *Schetti* the two synonyma of Ray, and the two of Plukenet. Not having the work of Ray, I cannot speak to that point; but M. Lamarck thus removed two plants confounded with the *Schetti*, and as the *Flamma sylvarum peregrina* is different from the *Jasminum flore tetrapetalo*, he in fact freed us from three interlopers. Still however he retained the *Arbor Indica ex Insula Johanna* of Plukenet, which I think certainly different from the *Jasminum indicum &c.* of that author; and this last has undoubtedly the best claim to be considered as the same with the *Schetti*, although, as I have said, there is great room to suppose that the plants of Burman and Rheede are different.

In the *Hortus Kewensis* (i. 244.) none of our Indian botanists are quoted for the *Ixora coccinea*, owing probably to the difficulty which occurred in reconciling the discordant synonyma; for it is not easy to say, even setting the *Species Plantarum* entirely aside, whether in the *Flora Zeylanica* Linnæus really meant the plant of Burman and Hermann, or the *Schetti*. The former is most probably the case, as it was the collection of Hermann which he described in the *Flora Zeylanica*.

Finally, in the *Flora Indica* (i. 385.) Dr. Roxburgh describes four

four species of Asiatic *Ixora* with red flowers. For the first, which he calls *I. coccinea*, he quotes first the *Schetti*, stating that the figure is pretty good, but that the description does not well agree; and secondly he quotes the *Jasminum flore tetrapetalo* of Burman, the figure of which is good. This is to say that Dr. Roxburgh's *I. coccinea* is that of Burman, but probably not the plant of Rheede. In this I entirely agree with my late friend. I have never seen this species except in the botanical garden at Calcutta; but the second species with a red flower, which Dr. Roxburgh called *I. Bandhuca* (*Fl. Ind.* i. 386.), is common every where almost that I have been in India, and seems to me to approach the nearest to the *Schetti*, although in the figure the divisions of the corolla are represented much too acute.

The other two species of *Ixora* with red flowers described in the *Flora Indica* are the *Flamma sylvarum*, and *Flamma sylvarum peregrina*, which Dr. Roxburgh called *Ixora fulgens* and *I. stricta;* but these names cannot be received, as the plants were previously named by the most respectable botanists. These four species however were all included among the synonyma quoted by Linnæus, or in authors referred to by him, for the *Ixora coccinea*, and it is by no means clear that the *Schetti* is any one of the four. If we thus admit five species, we shall have one for each of the five denominations, under which Hermann is supposed by Burman to have mentioned the *Ixora coccinea*, besides the African tree of Plukenet.

Bem Schetti, *p.* 19. *fig.* 14.

This plant is involved in almost as great difficulty as the preceding. Commeline in 1679 was unable to refer it to any preceding author; but in 1696 Plukenet called it *Jasminum indicum Lauri folio inodorum umbellatum floribus albicantibus* (*Alm.* 196. *Phyt. t.* 109. *f.* 2.), and found that it had been mentioned by

by Hermann, and through him by Breynius. I cannot however say, that I am satisfied with the plant of Plukenet being the same with that of Rheede; for the leaves are represented as "obovata obtusa" by Plukenet, and as "elliptica acuta" by Rheede; while in the former the stigma scarcely projects from the tube of the corolla, and in the latter is almost as long as the limbus.

Burman however in 1737 (*Thes. Zeyl.* 126.) called it *Jasminum flore tetrapetalo flavo;* and along with the *Bem Schetti* quoted Plukenet and his two synonyma, adding moreover the *Flamma sylvarum* of Rumphius, whose work was then in MS., and also a W. India plant from Sloane, which was certainly quite different. He had thus perhaps four plants included under the same name.

In 1747, Linnæus (*Fl. Zeyl.* 55.) under the name of *Ixora foliis ovato-lanceolatis* took up the *Bem Schetti* with the synonyma of Burman, only he rejected those of Rumphius and Sloane, thus freeing himself of two interlopers. Still however, whether the plant of Hermann, which Linnæus described, was the *Bem Schetti* or that of Plukenet, remains doubtful. I am inclined to think that the latter is the case, because he says *admodum affinis præcedenti* (i. e. *Jasmino flore tetrapetalo Burm. Thes. Zeyl.* 125. *t.* 57.) *et forte sola varietas.* Now the figure of Plukenet is not very unlike Burman's 57th plate, which has very little resemblance to that of the *Bem Schetti* in the *Hortus Malabaricus.*

In 1750, when Burman published the work of Rumphius, he had become sensible of his error in quoting the *Flamma sylvarum* for the *Bem Schetti*, and referred it to the *Schetti* with perhaps less accuracy, for the figures of the *Bem Schetti* and *Flamma sylvarum* are very much alike, much more so indeed than either the figure of the *Schetti*, or that of Burman's *Jasminum flore tetrapetalo;* but the bright red flowers of the *Flamma sylvarum* seem

seem to have been the circumstance that produced this change in the synonyma.

In 1768, the younger Burman, copying Linnæus, calls our plant *Ixora alba* (*Fl. Ind.* 34.), not a very proper name had the *Bem Schetti* been meant; for, although *Bem* implies white or pale, the flowers of the *Bem Schetti* are only "albicantes et subflavi, pede autem quo calyci insidunt (corollæ tubo) nonnihil quoque rubescente." At this time no change was made in the synonyma; nor did Willdenow make any material alteration, as he quoted both the *Bem Schetti* and Plukenet, although he omitted Burman and Hermann, and even the *Flora Zeylanica* of Linnæus, which he did probably because he considered Rheede as the best authority, and his figure has certainly very little resemblance to the *Ixora coccinea*, especially as represented by Burman (*Thes. Zeyl. t.* 57.).

In 1789, M. Lamarck (*Enc. Meth.* iii. 343.), justly dissatisfied with both name and synonyma, under the appellation of *Ixora lanceolata* described the *Bem Schetti*, to which he rejoined the *Flamma sylvarum*, which at any rate has the strongest affinity to the plant of Rheede; although a strong doubt is thrown on their identity by the colour of its flowers (qui minii rubentis sunt coloris interne, vetustique sunt sanguinei coloris, ita ut in quovis florum corymbo bini diversi conspiciantur colores, ipsorumque suavirubentis sunt coloris. *Herb. Amb.* iv. 105.). We scarcely therefore can consider the *Flamma sylvarum* as decidedly the same with the *Bem Schetti*, and it is totally different from the *Jasminum flore tetrapetalo* of the elder Burman (*Thes. Zeyl.* 125. *t.* 57.), with which M. Lamarck joins it, thinking that the *Schetti* was the *Ixora coccinea*, and perceiving that the plant of Burman was different. The *Ixora lanceolata* therefore contains probably three plants; and, as M. Lamarck besides quotes, although with doubt, the *Ixora alba* of Linnæus, if this great botanist meant really

really the *Jasminum indicum &c.* of Plukenet (*Alm.* 196. *Phyt. t.* 109. *f.* 2.), then M. Lamarck's *I. lanceolata* may contain four different species. As I have however said, he quotes Linnæus with doubt, and the plant of Plukenet he considers as at least a remarkable variety, if it be not altogether distinct. The only question therefore to determine is, whether M. Lamarck actually meant the *Bem Schetti* or the *Flamma sylvarum*, if these be really different, as there is reason to suppose, and this is not easily done: for, although M. Lamarck had specimens of his *Ixora lanceolata*, he evidently mixes in the description of the colours the two accounts of Rheede and Rumphius, the colours in his specimen having probably faded. My good friend Dr. Wallich indeed, in a note on the *Ixora fulgens* of Roxburgh's *Flora Indica* (i. 387.), thinks that M. Lamarck meant the *Flamma sylvarum*, and that therefore the *I. fulgens*, which is the *Ixora longifolia* of Sir J. E. Smith, is the same with the *Ixora lanceolata* of Lamarck, excluding all the synonyma except the *Flamma sylvarum*. This however seems to me very doubtful; and I think it probable, that M. Lamarck really saw the *Bem Schetti*, which he places first in his list of synonyma. As therefore the *Flamma sylvarum* should in propriety be called the *Ixora longifolia*, (Sir J. E. Smith having published before Dr. Roxburgh,) the *Bem Schetti* should be called *I. lanceolata;* for the *Ixora alba* of Linnæus is probably the plant of Plukenet (*Phyt. t.* 109. *f.* 2.). I know indeed that at one time this was Dr. Roxburgh's opinion, although in the *Flora Indica* he does not say so; but it was on this authority that he called the *Ta-mou-tang* of the Chinese the *Ixora alba* (*Fl. Ind.* i. 389.), which induces Dr. Wallich in the note to state, that it is widely different from the *Ixora alba* of Linnæus, meaning by this the *Bem Schetti*.

Notwithstanding what I have said respecting the difference of colour between the *Bem Schetti* and *Flamma sylvarum*, I have still some

some hesitation in rejecting altogether the opinion of M. Lamarck concerning the identity of these plants; for the opinion of so accurate a botanist concerning a plant he had seen, and compared with both accounts, deserves the utmost consideration. Should it be well founded, the names *I. fulgens* and *I. longifolia* ought to be abandoned; unless indeed it should appear that Sir J. E. Smith had seen a plant different from the *Bem Schetti*, whatever may be the case with the *Flamma sylvarum*, as no one's accuracy requires greater attention.

NEDUM SCHETTI, *p.* 21. *fig.* 15.

The two last plants called *Schetti* evidently belong to the same genus, since called *Ixora* by Linnæus: but this has no affinity to them, being evidently a *Memycelon*; and it resembles strongly the *Memycelon cordatum* of M. Lamarck (*Enc. Meth.* iv. 89.; *Ill. Gen. t.* 284. *f.* 2.), only the leaves are much longer, and the *pedunculus communis* shorter than is represented in the figure of the French botanist. I have not been able to discover that this plant has been quoted by any subsequent author.

SCHERUNAM COTTAM, *p.* 23. *fig.* 16.

Plukenet in his *Mantissa* (21.) compares this to his *Arbor indica mali aurantii foliis obtusioribus e Maderaspatan* (*Phyt. t.* 142. *f.* 2.), which in the *Almagestum* (43.) he had compared to the *Akara Patsjoti* (*Hort. Mal.* v. *p.* 15.), which is the *Tetracera malabarica*, and seems to have very little resemblance indeed to Plukenet's figure. This, however, may represent the *Scherunam Cottam*, although both the drawing and description are so imperfect, that nothing decisive on this point can be stated. Plukenet quotes as synonymous, from the Commentator on the *Hortus Malabaricus*, the *Corni sive Sorbi species* of Bontius.

Linnæus in the *Flora Zeylanica* (367.), joining the *Scherunam Cottam* with a plant of Ray, with one of Hermann mentioned also by Burman (*Thes. Zeyl.* 29.), and withthe plant of Bontius quoted by Plukenet, without however mentioning the latter,—calls it *Clutia foliis ovalibus petiolatis retusis, floribus racemosis sessilibus.* Now the plant of Rheede has four seeds in a subacid berry, which seems also to be the case with that of Ray (*fructu tetraspermo*); while the plant of Linnæus, if it be a *Clutia*, has a capsule with three cells. Linnæus indeed acknowledges that the figure in the *Hort. Mal.* represents his plant badly; so that even he was not satisfied with his quotation, probably on account of the description of the fruit by Rheede. To the *Scherunam Cottam* probably, therefore, we may leave the synonyma of Ray and Bontius; while Hermann, and also Burman, who does not quote the *Hort. Mal.*, probably described the *Clutia* of Linnæus.

The younger Burman (*Fl. Ind.* 217.) makes no change on the synonyma; but follows the *Species Plantarum* in calling the plant of the *Flora Zeylanica*, *Clutia retusa*, and quotes the *Hortus Malabaricus* without doubt.

M. Lamarck however (*Enc. Meth.* ii. 54.) received plants from M. Sonnerat, and had seen others in the collection of Commerson, which he considered as well represented by the figure of Rheede; and he quotes also the synonyma of Ray and Bontius; but doubts of his plant, which he calls *Clutia squamosa*, being the *Clutia retusa* of Linnæus. At any rate, this *Clutia* certainly is not the *Scherunam Cottam*, as it produces "capsules ovoïdes, globuleuses, lisses, a trois ou quatre loges monospermes;" while the fruit of the *Scherunam Cottam*, as Linnæus justly observed, is a berry: "Fructus qui surculis insident parvi et rotundi sunt ad instar pirorum lauri superficie glabri, primum virides ac nitentes, dein colore nigro dum maturi sunt et saporis subacidi, continentque quatuor grana seminis alba ac transparentia

parentia in propriis suis loculis." Whether or not the *C. squamosa* is the same with the *C. retusa* I cannot say; M. Lamarck himself doubts it.

When the *Flora Coromandeliana* of Dr. Roxburgh was published, it was judged proper, on account of the near resemblance in sound between *Clutia* and *Clusia*, to change the former into *Cluytia*, thus assimilating the word more to the name of the botanist after which the genus was called. This change was adopted by Willdenow, who, without noticing the *Clutia squamosa*, gives us the *Clutia retusa* with the synonyma as in the *Flora Zeylanica*, and quoting the *Hort. Mal.* as giving a bad figure of his plant.

After all, the figure of the *Scherunam Cottam* given by Rheede is so very like the *Briedelia spinosa* (*Willd. Sp. Pl.* iv. 979.), and scarcely, if at all, different from the *Cluytia stipularis* (*Willd. Sp. Pl.* iv. 883.), that I should have no doubt of considering them the same, were it not for the description of the fruit in the text, which cannot be reconciled with the idea of its being either a *Cluytia* or a *Briedelia*.

Schem Pariti, *p.* 25. *fig.* 17.

There can be no doubt of this being the *Hibiscus Rosa sinensis* of all botanists since the time of Linnæus. Why he gave it that name is not very evident; for the plant known by old botanists as the *Rosa sinensis* is what Linnæus calls *Hibiscus mutabilis*. Probably he was misled by a careless inspection of the note by Commeline, respecting the *Schem Pariti*, who says, "Procul dubio planta hæc est species *Rosæ sinensis* Ferrarii:" but this does not imply more than that it is a species of the same genus. In the *Flora Zeylanica* (260.) indeed Linnæus quoted as synonymous the *Althea arborea, Rosa sinensis, flore multiplici* of Hermann, and considered the application of the term *Rosa sinensis* to

the *Hibiscus mutabilis* as a vulgar error This quotation from Hermann is however probably erroneous, and owing to a mistake in the elder Burman (*Thes. Zeyl.* 133.), who joins the *Rosa sinensis* of Ferrarius and its synonyma with the *Schem Pariti* of Rheede, and the *Flos festalis* of Rumphius, and the *Wadda ghas* of the Ceylonese, which are the *Hibiscus Rosa sinensis* of Linnæus, by Hermann called *Malva indica, frutescens, flore pleno, roseo, rubro:* but this Linnæus did not quote; because, in order to obtain the name *Rosa sinensis*, he had quoted another plant of the same author.

Burman, in treating of the same plant, seems to have led Linnæus into another error, by quoting the *Ketmia sinensis fructu subrotundo, flore pleno* of Tournefort, as being the same with the *Schem Pariti*; while it no doubt belongs to the *Hibiscus mutabilis* of Linnæus, as M. Lamarck (*Enc. Meth.* iii. 353.) justly observes.

It is further to be remarked, that Linnæus quotes only the authors who treat of this plant in its unnatural state of bearing double flowers, which is the case with the *Schem Pariti:* but Rheede (*Hort Mal.* vi. 73. *t.* 43.) describes the single-flowered plant under the name of *Ain Pariti.* This was quoted by Burman, which renders the omission by Linnæus the more remarkable: nor did even Lamarck remedy this defect.

Willdenow (*Sp. Pl.* iii. 812.) has abandoned the error respecting Hermann, but retains that respecting Tournefort; and from the carelessness of his printer has introduced *Scheru Pariti* in place of *Schem Pariti.*

Belilla, *p.* 27. *fig.* 18.

The commentator was unable to compare this with any plant known to him; and Plukenet did not advance further. It is true, that in the *Mantissa* (49.) he was inclined to compare it with

with his *Cistus sempervirens Laurifolia, floribus eleganter bullatis Virginiana* (*Alm.* 106.; *Phyt. t.* 161. *f.* 3.); that is, with the *Kalmia angustifolia:* but he acknowledges that the plants are different; indeed they have no sort of affinity.

Rumphius, under the name *Folium Principissæ*, described (*Herb. Amb.* iv. 111.) what he considered to be the same with the *Belilla:* but under this name he evidently described two very distinct species (*latifolium* and *angustifolium*) of the same genus; nor does he mention which he considered as the same with the *Belilla.* We may however observe, that he says, "*Latifoliæ* speciei folia quodammodo cum illis *Brassicæ* conveniunt, suntque ampla et subrotunda, in obtusum apicem desinentia,—lanuginosa, septem, octo et novem pollices longa, sex septemve lata.—Unus autem ex quinque radiis (laciniis) calycis excrescit in folium album odoratum instar unguenti cujusdam aromatici—in usu apud mulieres ad corpora sua lavanda, cum ipsis gratum concilient odorem." Again, he says of the other species: "*Angustifoliæ* speciei folia sunt minora angustiora firmiora nec adeo lanuginosa, et folium ex calyce album fere inodorum." It is to this evidently that the figure (*t.* 51.) refers; for its leaves are small and sharp-pointed, having no sort of resemblance to those of a *Brassica.* Now Rheede says, "Folia oblongo-rotunda (ovata) cum cuspide angusto in vertice (acuminata), pilosa, ac lanuginosa—Folium albissimum, quod loco quinti calycis folii cuspidati fructus vertici insidet, odoris sylvestris." Now from what is above stated, the *Folium Principissæ angustifolium* has by far the greatest resemblance to the *Belilla*; but then the flowers of the latter "interius colorem habent rubicundo pulchrum, seu scarlatinum;" while those of the *Folium Principissæ* are "interne maxime lutei." It is true, that this is said expressly of the *F. P. latifolium* only; but it is said, "angustifolii flores latifolii sunt similes;" and a plant, which I think the *F. P. angustifolium*, has accordingly

cordingly yellow flowers; nor have I seen one which had scarlet flowers as described by Rheede.

Burman the elder, when he published the *Thesaurus Zeylanicus* (165.), united the *Belilla* with his *Mussænda Zeylanica, flore rubro, fructu oblongo polyspermo, folio ex florum thyrso prodeunte albo*: but although the flowers of this, like those of Rheede, are red, the white leaf of the corymbus does not proceed from an enlarged division of the calyx, but is one of the bracteæ. This, therefore, must be a different species from the *Belilla* of Rheede, as well as from both those of Rumphius, with which Burman unites it. It would also seem to be different from the plant of Ray, which Burman also quotes, and which is described as "*Mussænda*, arbor Indica, floribus in summis ramulis veluti in fasciculos dispositis, e quorum medio surgit folium latum, singulare, flavicans." Now the yellow colour distinguishes this plant of Ray from all the species of *Mussænda* yet mentioned; and that it was not an accidental tinge communicated to a dried specimen seen by Ray, as might have been supposed, we may infer from the account given of the *Mussænda* of Hermann (quoted also by Burman), who described from the living plant: "Folium, quod ex florum thyrso prodit, differt a cæteris, estque coloris luteo-virescentis." Burman indeed elsewhere (*p.* 166.) says of these bracteæ; "color in his albus, vel flavescens:" so that if they are liable to this variation, the plant of Ray and Hermann may be the same with that of Burman: but I suspect that he merely says this to reconcile Ray's account with his own; a manner of obviating difficulties not I believe uncommon with more accurate botanists than he was.

Burman seems indeed to have often quoted, as synonymous, plants which he only considered as belonging to the same genus with what he was describing: for although he quotes the *Belilla*, he is at pains to point out essential differences between it and his plant:

plant: "Notandum est quod in *Hort. Malab.* calyx brevis et quinquedentatus tantum exhibeatur, quum in nostra planta sit tenuis—in quinque radios longitudine floris productus, longus, hirsutus." He also supposes that Rheede represented the *Belilla* as smooth; but does not lay much stress on this circumstance, because, as he justly observes, the pubescence of plants is often omitted in the figures of the *Hort. Malabaricus*. That however does not seem to me to be the case in the figure of the *Belilla*, the leaves of which at least are represented as hispid. The other parts, indeed, which in Burman's figure (*t.* 76.) are represented hirsute, appear smooth in the *H. Malabaricus*, probably from the carelessness of the draughtsman, as Burman observes. Burman justly distinguishes his plant from the *Folium Principissæ* of Rumphius. This indeed he does upon bad grounds; because, judging merely from the figure (liable to the same error with the *Hort. Malab.*), he supposes the plant of Rumphius to be smooth; but in the description already quoted Rumphius expressly calls the leaves hairy (*pilosa*). When however Burman published the *Herbarium Amboinense*, he retracted this distinction, and adhered to all the synonyma except the *Belilla*, which he does not mention; nor does he notice any difference between the *F. Principissæ latifolium* and *angustifolium*.

Linnæus in the *Flora Zeylanica* (84.) describes the *Mussænda* of Hermann, which should therefore have yellow bracts; and accordingly he adds as synonymous the plant of Ray with bracts of this colour: but, like Burman, he also quotes Ray for his *Frutex indicus baccifer, fructu oblongo polyspermo*, which may be different from the *Mussænda arbor Indica*, and the same with the *Mussænda Zeylanica* of Burman, which is also quoted; as is even the *Belilla*, which Burman seems to have abandoned. It is impossible, therefore, from the synonyma alone to say which plant Linnæus meant.

When

When the younger Burman published the *Flora Indica* (53.) matters had not improved. He quotes for his *Mussænda frondosa* the *Flora Zeylanica*, his father's *Thesaurus*, the *Folium Principissæ* without distinguishihg the two species, and the *Belilla*. He indeed omits both plants of Ray; but he quotes the plant with yellow bracts described by D. Pryon in words nearly the same with those used by our great English botanist.

In Willdenow (*Sp. Pl.* i. 997.) the synonyma for the *Belilla* or *Mussænda frondosa* undergo no change for the better. He adds indeed a quotation from Vahl, and restores both the synonyma of Ray, omitting the name of D. Pryon: but from these changes nothing enables us to say which plant he meant. This passage, however, from the note annexed (Bractea altera cujusvis pedicelli enata in folium album) may enable us to infer, that his specimen belonged to the species described and figured by the elder Burman.

M. Lamarck, however in general accurate, having totally mistaken the character of the *Gardenia*, in supposing it to have a berry divided into two or four cells, naturally enough reduced the *Mussænda frondosa* to that genus, calling it *Gardenia appendiculata*, with the synonyma as in Willdenow, Vahl excepted (*Enc. Meth.* ii. 608.); but it would appear that his specimens belonged to the plant of Rheede, as the leaves were sharp-pointed and hairy, the flowers red, and the white leafy appendix proceeded from the calyx. He indeed adds, that the flowers have "une odeur aromatique fort agréable;" while Rheede says, "suntque odoris nullius." As his specimens were communicated by M. Sonnerat, probably in a dry state, we may perhaps be allowed to suppose that this sweet smell is taken from the account given by Rumphius of the *Folium Principissæ latifolium*, which is certainly a species totally different from that given by M. Lamarck (*Ill. Gen. t.* 157. *f.* 1.), and marked *b. c. d*, which

which I think is the *Belilla*, or from the plant more fully delineated, and marked *a*, which is probably the *Folium Principissæ angustifolium*, the flowers of which are represented as smaller than those of the *Belilla*. When the work of M. Lamarck last quoted was published, he had become sensible that the *Mussændas* should be separated from the *Gardenias*; and in the 4th volume of the *Encyclopédie* (395.) the *Gardenia appendiculata* is by M. Poiret called *Mussænda frondosa*; but he refers to the synonyma of M. Lamarck without change, so that his plant is probably the *Belilla*.

In a note respecting the *Mussænda pubescens* in the *Hortus Kewensis* (i. 373.) it is stated, "calyce brevissimo differt a *M. frondosa*, cui calycis foliola linearia, tubo corollæ parum breviora:" which shows that the author followed Willdenow, copying probably from the *Mantissa* of Linnæus, in considering the plant of the *Thesaurus Zeylanica* as the proper *Mussænda frondosa*.

In the *Hortus Bengalensis* (15.) the *Belilla* is quoted for the *M. frondosa*: but in this I suspect some mistake; for the plant which I found growing in the garden, and the only *Mussænda* there with leafy appendages to the calyx, was the *Folium Principissæ angustifolium*, having small yellow flowers. This I call *Mussænda Dovinia*; while the *Belilla* should be called *M. Belilla*, the plant of Burman *M. frondosa*, and the plant of Ray and Hermann *M. flavescens*.

Modira Canni, *p.* 29. *fig.* 19.

Commeline in his annexed note supposes this to be a species of the *Caniram* (*Hort. Mal.* i. 67. *t.* 37.), that is, of the genus now called *Strychnos*; and Plukenet thought that it might be the same with his *Solanum arborescens e Veracruce latifolium* (*Alm.* 350.), neither of which opinions is in the least tenable on account of the ten stamina and five styli. Hermann, Ray, and the elder Burman

Burman did not improve matters by calling it a *Cerasus* (*Thes. Zeyl.* 57.); for, although Burman does not quote the *Modera Canni*, they probably meant the same plant, as Linnæus supposed (*Fl. Zeyl.* 249.). It must be observed, however, that the specimens of Hermann, which Linnæus examined, had only three styli, whereas Rheede evidently describes five; and his figure represents the sexual parts as entirely hid by the corolla, while Linnæus represents the united filaments as being as long as that covering.

The younger Burman, adopting the Linnæan name *Hugonia Mystax*, adds from the Herbarium of Petiver, *Nux vomica maderaspatana minima, spinis corniculatis;* which shows that Petiver fell into the same mistake with Commeline. What is of more importance, Burman remarks a difference in the three specimens, which he had seen, that from Java differing from that of Ceylon, while both differed from the specimen of Petiver. He gives us, however, no means of judging which he considered as the *Modera Canni*.

It must be remarked, that Linnæus and the younger Burman quote Ray, as describing the plant under two names, and M. Lamarck (*Enc. Meth.* iii. 149.) does the same; yet no two of these authors agree concerning the names given by Ray to this plant. In the elder Burman, who quotes only one name of Ray, and in one of Ray's names quoted by M. Lamarck, he is made to compare the *Modera Canni* with the *Cerasus;* but in the younger Burman he distinguishes it by two distinct generic names, *Ægoceratos* and *Mystax*, both of which by Linnæus are thrown into the back ground, and the latter by M. Lamarck is entirely left out. It must further be remarked, that although M. Lamarck justly distinguishes the *Hugonia Mystax* of Linnæus, or *Modera Canni*, from the *H. Mystax* of Cavanilles, which the French botanist therefore calls *H. serrata;* yet in the

Supplement

Supplement to the *Encyclopédie* (iii. 62.) we are referred for a figure of the *H. Mystax* to the *Illustr. Gen.* of Lamarck (*t.* 572.), where the leaves are represented serrated; yet this figure cannot represent the *H. serrata* of Lamarck or *H. Mystax* of Cavanilles, as it is a real *Hugonia* with a drupa containing ten seeds (*Gærtn. de Sem.* i. 281.), while the fruit of the *H. serrata* is a berry with five cells, each consisting of two valves containing one seed; for I presume that it is from the description of this plant by Cavanilles that M. Lamarck took his character of the genus *Hugonia*.

Willdenow made no change on the synonyma, copying from the younger Burman the typographical error of *Modira* for *Modera;* and he quotes Ray in the same manner, which is probably therefore right. He adds in a note, "Possideo varietatem e Zeylona foliis obovatis majoribus, ramis flavescentibus inermibus." Now it so happens, that the only *Hugonia* which I have seen, would appear to be what Willdenow calls a variety of the *Hugonia Mystax* (*Sp. Pl.* iii. 694.); but I doubt very much of its being the same with the *Modera Canni.* I found it in the south of India, below the Ghat mountains, in 1801, and a drawing and specimen were given to Sir J. E. Smith in 1806. I call it

Hugonia obovata inermis erecta, foliis obovatis integerrimis glabris, petalis oblique retusis.

Habitat in sylvis Cheræ et Dravedæ asperis.

Arbuscula non sarmentosa. *Rami* inermes, teretes, rudimentis petiolorum exasperati. *Ramuli* pilosi. *Folia* sparsa, apices versus ramulorum conferta, oblongo-obovata, integerrima, obtusa, nitida, venosa, plana. *Petiolus* brevissimus, pilosus. *Stipulæ* geminæ, laterales, marcescentes, subulatæ, erectæ, integerrimæ, mediocres. *Pedunculus* axillaris, solitarius, patens,

patens, petiolo triplo longior, uniflorus, incrassatus, tomentosus. *Bracteæ* ad pedunculi partem imam geminæ, deciduæ, subpalmatæ, stipulas longitudine æquantes. *Flores* flavi, folio latiores, erecti. *Calycis* foliola quinque ovata, concava, acuta, quorum duo exteriora majora, tomentosa. *Petala* quinque calyce duplo longiora, obovata, oblique retusa, unguibus incrassatis mucronata. *Filamenta* decem alternis longioribus subulata, basi in urceolum hypogynum sessilem coalita. *Antheræ* orbiculatæ, compressæ. *Germen* superum, subrotundum. *Styli* quatuor vel quinque, subulati, staminibus paulo longiores. *Stigmata* reniformia. *Germen* paulo auctum loculos habet quatuor vel quinque.

From the last-mentioned circumstance we may probably conjecture, that this is not only a different species from the *Modera Canni;* but, like the *H. serrata*, can scarcely be considered as belonging to the same genus, the fruit is so different.

Carim Curini, *p.* 31. *fig.* 20.

In his *Phytographia* (*t.* 171. *f.* 4.) Plukenet gave the figure of a plant, which he calls *Curini forte, prima species, seu Carim Curini Hort. Malab.*, which implies that he doubted of his plant being the same with that of Rheede: and he seems to have suspected that it might rather be the *Manja Curini* (*Hort. Mal.* ix. *t.* 62.): but for this I see no reason; and the elder Burman (*Thes. Zeyl.*) joins Plukenet's plant, without doubt, to the *Carim Curini*, as do most subsequent authors. Burman's figure indeed (*t.* 4. *f.* 1.) is not so good as that of Plukenet: but he describes a plant with a white flower, while those of the *Carim Curini* are blue. This difference alone is however too slight to be reckoned a foundation for two species; yet Burman was justified in calling them varieties, in which however he is not followed by succeeding

succeeding authors; although the figures would seem to indicate still greater differences, especially in the lower bracteæ being deciduous in Burman's plant, and persistent in the *Carim Curini*. The synonyma of Hermann and Plukenet, mentioned in Burman, belong to the *Carim Curini*.

Linnæus in treating of this plant (*Fl. Zeyl.* 17.) omits the synonyma of Tournefort and Bobart, and adds one from Ray, without noticing the difference between the plants of Burman and Rheede. The younger Burman again, having adopted the name *Justicia Ecbolium* from the *Species Plantarum*, restores the name of Tournefort, omits that of Ray, and adds one from the Herbarium of Garcin. The plant which he had seen was that described by his father.

M. Lamarck (*Enc. Meth.* i. 626.) quotes again Ray, but omits Garcin, and adds a plant of Forskael, which this botanist considered different from that of Linnæus, as he called it *Justicia viridis*. Besides this M. Lamarck adds two varieties, of which he had received specimens, one from India and the other from Madagascar; and both seem to differ considerably from the *Carim Curini*.

Willdenow (*Sp. Pl.* i. 85.), omitting all the older authorities, except the elder Burman, Plukenet, and Rheede, quotes several descriptions from recent authors; but mentions nothing to enable us to judge, whether either he or they meant the plant of Burman or that of Rheede, if he really saw either; for the plant of Forskael, which he evidently describes, is distinguished "*galea corollæ bidentata*," while in the figures of Burman, as well as in those of Plukenet and Rheede, this member is represented as undivided. The differences, which I have mentioned as belonging to the synonyma conjoined with the *Carim Curini*, are of too little importance to require a subdivision into several species, unless accompanied by others more remarkable, which

may

may very possibly be the case: but the determination of this I must leave to other observers. Dr. Roxburgh (*Fl. Ind.* i. 115.), although he quotes the *Carim Curini* alone, describes the upper lip of the corolla like Forskael; but this is not the case in the *Hortus Kewensis* (i. 36.), nor in either of the specific characters of Vahl, for two are quoted by Willdenow.

Bem Curini, *p.* 33. *fig.* 21.

This plant has entirely the habit of the preceding, and of the *Justicia Adhatoda* of Linnæus, which is much more than can be said of most of the plants usually referred to the same Linnæan genus, and even of those which constitute the Malabar genus *Curini*. It seems to have been first described by Bontius; but of this Commeline was not aware. Ray, Hermann and Tournefort mention the plant of Bontius about that time; yet the elder Burman (*Thes. Zeyl.* 47.) does not seem to have known that the plant of Hermann and Bontius was the *Bem Curini*. This was first pointed out by Linnæus (*Fl. Zeyl.* 18.), who quotes all the preceding authorities, and in the *Species Plantarum* called it *Justicia Betonica*, a name adopted by the younger Burman (*Fl. Ind.* 8.). Here another authority, Garcin, is quoted; but neither in the *Encyclopédie* nor in Willdenow is this retained, and the latter omits the authorities of Tournefort, Ray, and Hermann, introducing in their stead Vahl and Fabricius. Dr. Roxburgh (*Fl. Ind.* i. 129.) quotes the *Hort. Mal.* alone, which is also the case in the *Hortus Kewensis* (i. 41.), the one probably meaning for the synonyma to refer to Willdenow, and the other to Vahl.

Dr. Roxburgh had in the botanical garden at Calcutta a plant, which he considered different from the *Bem Curini*, and which he called *Justicia ramosissima*. He received both plants from Madras, while I found a plant growing by the sides of rivulets among

among the hills near Mungger, from which I cannot distinguish either the *J. Betonica* or *J. ramosissima* of Dr. Roxburgh by any mark on which I can place reliance. Specimens of all the three have been deposited in the collection of the East India Company. Although I have no doubt of the plant, which I found, being the *Bem Curini*, its antheræ are so different from the character of them given by Willdenow and in the *Encyclopédie*, where the loculi are described as united, that our plant is either different from theirs, or they have placed it very erroneously among the *Monantheræ*. I must indeed remark, that the identity of our plant, with that of Linnæus in the *Flora Zeylanica*, is by no means clear; because he describes the bracteæ oppositæ, but with us they are quaternæ. If this distinction be sufficient to separate the species, then the plant of Linnæus being the undoubted *Justicia Betonica*, we may adopt for ours Dr. Roxburgh's name *J. ramosissima*, transferring to it the *Bem Curini*, of which I shall now give a description from the plant in its wild state, those of Dr. Roxburgh having been cultivated.

Frutex duos pedes alta, diffusa. *Radix* lignosa, digitum crassa. *Rami* subpubescentes, sulco gemino utrinque inter folia decurrente angulati, internodiis basi incrassatis. *Folia* lanceolato-ovata, subrepanda, dentata, costata, venosa, utrinque pubescentia, scabriuscula; superiora acuta, inferiora obtusiuscula. *Petiolus* brevissimus, anceps, acutangulus, subtus convexior, annulo integerrimo ramum cingens.

Spicæ nunc ramulo brevissimo diphyllo axillari insidentes, tunc rami majoris apicem terminantes, intermedia aliquando iterum trifariam divisa, folio longiores, erectæ, subsecundæ, quadrifariam imbricatæ bracteis ovatis, acutis, persistentibus, albis, nervis viridibus reticulatis; quarum dorsales simplices,

simplices, steriles, ventrales triphyllæ, unifloræ foliolis subæqualibus, flore paulo longioribus. *Flores* mediocres, albi, labio inferiore ad basin rubro punctato. *Calyx* ultra medium quinquefidum laciniis acutis, lanceolatis, carinatis, æqualibus. *Corolla* ringens, pubescens, nervosa: *labium* superius erectum, ovatum, apice bifidum; inferius revolutum, ultra medium trifidum laciniis oblongis, obtusis, quarum intermedia latior, basi rugis coloratis bifariis picta. *Filamenta* duo longitudine fere floris, apice membranaceo dilatata. *Antherarum* loculi discreti, inferiore basi corniculato. *Capsula* ungue compresso longitudine calycis pedicellata, ovata, compressa pubescens, bivalvis, bilocularis, ad latera angustiora dehiscens, valvis medio septiferis. *Semina* solitaria, echinata, retinaculo subtensa.

Caretti, *p.* 35. *fig.* 22.

Commeline in his *Commentary*, Plukenet (*Alm.* 4.), and the elder Burman (*Thes. Zeyl.* 4.), seem to have confounded with the *Caretti* the synonyma belonging to the plant called by Linnæus *Guilandina Bonduc*, although the last-mentioned author published after having had an opportunity of seeing the work of Rumphius, by whom the *Caretti* was called *Globuli majores* (*Herb. Amb.* v. 92.), while the *Bonduc* was called *Frutex globulorum* (*l. c.* 89.). Burman, however, even in his notes on Rumphius, published after the *Thesaurus Zeylanicus*, persists in referring the *Caretti* to the *Frutex globulorum*, adding the synonyma which belong to the *Bonduc*; while for both the *Frutex globulorum* and *Globuli majores* he quotes the same figure of Plukenet (*Phyt. t.* ii. *f.* 2.), which indeed is so imperfect, that it may be supposed to represent either, had not the synonyma which Plukenet quoted (*Alm.* 4.) pointed out that he meant the *Bonduc*. Burman, therefore, in all probability considered both plants

plants of Rumphius as belonging to the same species; and it must be confessed, that they have the utmost affinity.

Notwithstanding this affinity, Linnæus in the *Flora Zeylanica*, although he does not quote the *Herbarium Amboinense*, not only distinguished the plants, which Rumphius had called *Globuli majores* and the *Frutex globulorum*, as species, but he placed the former in the genus *Guilandina* (156.), and the latter in that called *Cæsalpinia* (157.); although it is by the fruit alone, that these genera can be distinguished, and Linnæus acknowledges that the fruit of this *Cæsalpinia* is that of a *Guilandina:* but concerning this genus his notions seem still later to have been very confused; as he included in it the *Moringa* of old botanists, which has no sort of affinity to either plant of Rumphius. Linnæus however separated the synonyma of the two plants, which had been confounded together by Commeline, Plukenet, and Burman, excluding several belonging to American plants, although as synonymous with the *Caretti* he still quoted an American plant described by Plumier.

In his first edition of the *Species Plantarum*, Linnæus corrected his error in placing the two plants of Rumphius in different genera, and reduced them both to *Guilandina*, in which he was imitated by the younger Burman (*Fl. Ind.* 99.). The *Caretti* thus became the *Guilandina Bonducella*. Burman, although he does not quote the plant of Plumier, restores that of Sloane, and adds besides to the synonyma mentioned in the *Flora Zeylanica* the names given by Rumphius and Breynius, which no doubt belong to the *Caretti*.

M. Lamarck (*Enc. Meth.* i. 434.) made little change on the synonyma of the *G. Bonducella*, restoring only the name of Plumier; to which Willdenow added quotations from Brown's *Jamaica*, from Vahl, and from Forskael. How the latter could

call this plant a *Glycyrrhiza*, seems very remarkable, and I suspect some error in his being quoted.

In the *Hortus Kewensis* (iii. 32.) the author returns to the opinion of the elder Burman, and considers the *Bonducella* as the same with the *Bonduc*, quoting for his plant, which he calls *G. Bonduc*, the *Globuli majores* of Rumphius, and omitting the *Caretti*, which I consider the same on account of the lower leaflets resembling stipulæ, which is not the case in the *G. Bonduc* of Linnæus, that is, the *Frutex globulorum*, a plant which, it would seem, the author of the *Hortus Kewensis* had not seen, and which is indeed rare in India proper, if it be found there at all.

Dr. Roxburgh received the *G. Bonduc* from Sumatra, and returned to the first opinion of Linnæus, calling it a *Cæsalpinia;* but then he transferred along with it the *Bonducella* or *Caretti*, and I must confess, that, upon a full examination of a good many species, I can observe no other distinction between the leguminous *Guilandinas* and the *Cæsalpinias* than a prickly and smooth legumen; and even this distinction is rendered less striking from the fruit of the *Cæsalpinia Mimosoides*, which is not indeed prickly, but is covered with hairy tubercles, so that it cannot be called smooth: but to this I shall have occasion to return, when I treat of the *Kal Todda Vadi*. If all the leguminous *Guilandinas* were with Dr. Roxburgh joined with the *Cæsalpinias*, the name *Guilandina* could with propriety be reserved for the species with capsules, and we might thus be rid of the modern Greek *Hyperanthera*, which, if it has any meaning, implies *nimis floridus*, a term by no means applicable to the genus. Even admitting the botanical *anthera* to be convertible into the Greek ανθηρος, *Hyperanthera* would imply *occupying the higher part of the anthera* as ὑπερωϊκος implies *occupying the higher part*

part of the house; but this meaning of *Hyperanthera* also applies to nothing remarkable in the genus.

Cupi, *p.* 37. *fig.* 23.

Commeline does not compare this to any plant known before; and the plants with which Plukenet compares it (*Alm.* 125. *Amalth.* 69.) seem to have no great resemblance, at any rate they are not the same. Linnæus therefore (*Flora Zeylanica* 80.) justly rejected them, when he referred this plant to the genus *Rondeletia*, which had been established by Plumier; although he admits that there are differences in the characters of the plants. He quotes Ray and Commeline as having described his *Rondeletia;* but it is likely, that they took their account from the *Hortus Malabaricus;* and, as they call it merely *Frutex indicus baccifer*, it is evident that they knew little of its affinities.

When Linnæus published the *Species Plantarum*, he called this plant *Rondeletia asiatica*, a name adopted by the younger Burman, who made no change on the synonyma. The fruit of the *Rondeletia* is a capsule; but that of the *Cupi* is a berry. "Fructus sunt maturi nigricantes saporis subdulcis et in eduliis." Willdenow (*Sp. Pl.* i. 1224.) was therefore perfectly justifiable in removing it from the genus *Rondeletia;* but in his arrangement he errs much further than Linnæus; for he places it among the *Contortæ* in place of the *Rubiaceæ;* and still further he joins it in the same genus with the *Tsjeru Kara*, which is a *Canthium*, and has only one seed in each cell of the fruit. Willdenow indeed makes this a distinguishing character of the genus *Webera;* but Rheede says, "In hisce fructibus sunt septem, octove plus minus semina, quæ in medio intersepimento, quod fructum in longum secat, in duos ordines sunt distincta." M. Poiret was therefore much in the right (*Enc. Meth.* vi. 256.) to leave the *Cupi* rather where it had been placed by Linnæus,

than to join it thus with the *Canthium*. If however Willdenow had rejected from his genus *Webera* the *Tsjeru Kara*, and the generic character which he had chosen, the *Cupi* would have afforded a well defined character for distinguishing a new genus of plants, as has been done by Gærtner (*De Sem.* iii. 71. *t.* 192. *f.* 5.), by whom the *Cupi* is called *Webera corymbosa*.

Cattu Schiragam, *p.* 39. *fig.* 24.

Commeline has not given us any opinion concerning this plant. Plukenet proposes with doubt, whether it is the same with his *Eupatoria Conyzoides, integro Jacobeæ folio, molli, et incano Indiæ orientalis* (*Alm.* 140. *Phyt. t.* 177. *f.* 1.); but the elder Burman (*Thes. Zeyl.* 123.) justly rejects this opinion. The plant of Plukenet, with Breynius, he calls *Jaceæ et Serratulæ adfinis, capitulis Bacharidis, foliis Tracheliæ, Zeylanica;* while the plant of Rheede he calls *Scabiosa conyzoides, foliis latis, dentatis, semine amaro, lumbricos enecante* (*Thes. Zeyl.* 210.); and he gives a good figure (*t.* 95.) for the express purpose of enabling the reader to compare it with the figure of Plukenet, so as at once to perceive the difference (*p.* 113.). Strange however to say, along with the synonyma properly belonging to this *Scabiosa*, he joins (*p.* 210.) not only the *Jaceæ et Serratulæ adfinis* of Breynius, but the very plant of Plukenet, which he has said was different. No reliance can therefore be placed on the synonyma, which he quoted for either plant, and the more especially as he quotes three other figures of Plukenet (*Phyt. t.* 87. *f.* 2. *t.* 154. *f.* 4. and *t.* 159. *f.* 4.), the last of which is the *Spilanthes Pseudo Ænella* of Willdenow.

Linnæus in the *Flora Zeylanica* (*p.* 418.), not being satisfied to what genus the *Scabiosa* of Burman should be referred, called it *Bacchariodes;* but he did not quote the *Cattu Schiragam*. Doubting the accuracy of Burman, but unwilling to offend him, he

proposes as a query, whether the *Jaceæ vel Serratulæ adfinis* of this author can be the same; and, neglecting most of the synonyma referred to by his friend, he only quotes the *Scabiosa indica, capitulis foliaceis, major, foliis Trachelii* of Hermann, whose plant indeed it was that he saw, together with the plant figured by Plukenet in the 154th plate of the *Phytographia*, acknowledging that the figure is bad, that is to say, not like his specimen. He adds to these synonyma the *Serratula indica major capitulo folioso* of Morison; but thinks, that the plant has a greater resemblance to the *Conyza major vulgaris C. B. P.* than to the *Serratula*. It must be observed, that he describes the "Semina pilis simplicibus longitudine calycis coronata."

This general resemblance to the *Conyza* induced Linnæus, on publishing the *Species Plantarum*, to call this plant *Conyza anthelmintica*, in which as usual he was followed by the younger Burman (*Fl. Ind.* 178.), although the generic character of *Conyza* is totally wanting in the *Bacchariodes*. Burman added to the synonyma the *Cattu Schiragam*, and a name given by Vaillant, who, like Linnæus, considered the plant as a *Conyza*. The synonyma of Morison, and the *Jaceæ vel Serratulæ adfinis*, were now left out.

Although M. Lamarck had learned from M. Desfontaines, that all the flowers were hermaphrodite, he still continued to call this plant the *Conyza anthelmintica*, and made no change on the synonyma (*Enc. Meth.* ii. 83.).

Willdenow without altering the synonyma (*Sp. Pl.* iii. 1634.), or restoring that of Morison, returned in a great measure to his opinion; and, uniting the *Cattu Schiragam* with several *Serratulas*, followed Schreber in calling the genus *Vernonia*, thus placing it in the natural order of *Cinarocephalæ* instead of *Corymbiferæ;* and I must confess, that with these *Serratulæ*, and some *Eupatoria*, it seems to form an intermediate link between the

the two orders, so that it is scarcely possible to say, where the one ends, and the other begins. It must however be observed, that these *Serratulæ*, which have a *receptaculum nudum*, and which compose the genus now called *Vernonia*, are by Jussieu (*Gen. Plant.* 195.) considered as more nearly allied to *Eupatorium* than to the *Cinarocephalæ*.

Willdenow on the authority of Swartz has chosen to give the genus *Vernonia* a character (pappus duplex, exterior paleaceus, interior capillaris) by no means applicable to the *Bacchariodes* of Linnæus; as I have already mentioned, that this great naturalist states "semina pilis simplicibus coronata." I must further remark, that at least another of the *Vernonias* is in a similar predicament; for it is included in the genus *Suprago* of Gærtner (S. glauca *Gærtn. de Sem.* ii. 402; Vernonia glauca *Willd. Sp. Pl.* iii. 1633.), the character of which is perfectly applicable to the *Cattu Schiragam*, and in which no mention is made of the exterior leafy pappus. We might indeed suspect, that Willdenow had erroneously referred the *Cattu Schiragam* to a wrong genus, the plants included in which have really an exterior leafy pappus; but this is rendered doubtful by a remark of M. Poiret (*Enc. Meth.* viii. 496.), who, speaking of this outer pappus of the *Vernonias*, says, "J'ignore si la prémière (l'aigrette extérieure) est peu sensible ou caduque, je ne l'ai point remarquée dans les espèces que j'ai examinées:" and it must be remarked, that M. Poiret had seen living plants of the three first species of *Vernonia* described by Willdenow, while the authority of the latter, respecting the only other species, is contradicted by that of Linnæus.

This error in Willdenow, although continued in the *Hortus Kewensis* (iv. 502.), probably induced Dr. Roxburgh (*Hort. Beng.* 60.) to reject the *Cattu Schiragam* as a *Vernonia*, and to return to the arrangement of Morison, calling it *Serratula anthelmintica*;

thelmintica; but I must follow Jussieu in thinking, that the *receptaculum nudum* of the *Cattu Schiragam* is a sufficient objection to this classification.

I shall conclude with a description of the *Cattu Schiragam*, and of several other Indian plants of the same genus, which, in imitation of M. Poiret, I shall call *Vernonia*; although the *Suprago* of Gærtner, as his generic character is unexceptionable, and was earliest published, seems to have a preferable claim. Both Poiret and Gærtner unite the *Liatris* of Schreber with the *Vernonia*, and I think with good cause; for there is reason to believe, that in several species, at least of *Liatris*, as well as in all the plants which I have described, the pappus is not really plumose, but only denticulated. I need not repeat the synonyma of the *Cattu Schiragam*, having already explained all that I have to say on the subject.

Vernonia anthelmintica radice annua, foliis ellipticis subsessilibus serratis, foliolis calycinis squarrosis obtusis.

Habitat in Indiæ ruderis.

Radix annua, fibrosa. *Caulis* erectus, basi lignosus, angulatus, villosus. *Rami* sparsi, teretes, recti. *Folia* alterna, subsessilia, elliptica, utrinque acuminata, serraturis acutis incisa, venosa, pilosa, subtus punctata, undulata. *Petiolus* brevissimus, villosus, ramuli rudimento appendiculatus. *Flores* erecti, purpurei; terminales subsessiles, solitarii: laterales insidunt pedunculo unifloro, solitario, tereti, erecto, villoso, ad medium foliato. *Calyx* communis ovatus, squarrosus, imbricatus squamis numerosis, quarum exteriores basi erectæ, ad apicem auctæ appendiculo foliaceo, spathulato, plano, patulo, obtuso: interiores erectæ, lineares, obtusæ, membranaceæ, breviores. *Flosculi* omnes hermaphroditi, æquales, longitudine calycis, infundibuliformes. *Tubus* filiformis

filiformis incurvus. *Limbus* quinquepartitus. *Filamenta* quinque brevissima. *Antheræ* coalitæ. *Germen* teres. *Stylus* filiformis, staminibus longior. *Stigma* bipartitum laciniis revolutis. *Calyx* fructiferus apice connivens. *Receptaculum* nudum, magnum, planum. *Semina* plura, incrassata, angulis pluribus ciliatis striata, ad marginem coronata pilis plurimis denticulatis deciduis; et in centro squamis nonnullis (corollæ rudimenta) persistentibus.

Specimens of the following plants have been deposited in the collection of the East India Company.

Vernonia revoluta caule herbaceo, ramis paucifloris, foliis margine revoluto integerrimis, squamis calycinis dorso carinatis.

Habitat in Camrupæ borealis et Cosalæ graminosis.

Radix crassa, descendens, perennis. *Caulis* spithameus, ad basin ramosus, angulatus, hirsutus. *Folia* alterna, sessilia, linearia, margine revoluto integerrima, acutiuscula, venosa, supra punctata, utrinque pubescentia. *Flores* ad singulorum ramorum apices duo vel tres, purpurei, pedunculis longis alternis squamulosis insidentes. *Calyx* cylindricus, undique imbricatus squamis erectis, dorso carinato planis, pubescentibus, acutis, linearibus. *Flosculi* plures, quinquefidi, calyce longiores, omnes hermaphroditi. *Semina* hirsuta. *Pappus* pilosus, denticulatus, basi in annulum coalitus, deciduus. *Receptaculum* nudum, alveolatum.

Vernonia arborea caule arboreo.

Mogor Bengalensium.

Habitat in sylvis Nepalæ inferioris et Camrupæ.

Arbor mediocris 40 vel 50 pedes alta, ligno utili; *ramis* teretibus, tomento brevissimo indutis. *Folia* alterna, oblongo-

ovata,

ovata, basi sæpe inæqualia, acuta, integerrima, punctata, tomento ad nervos brevissimo induta, subcostata, venis valde reticulata, sæpe spithamea. *Petiolus* brevissimus, teres, tomentosus, non stipulaceus. *Corymbi* e foliorum superiorum axillis et terminales, ramis divaricatis teretibus tomentosis fastigiati. *Flores* parvi, pallido purpurei. *Calyx* oblongus, arcte imbricatus squamis pluribus, ovatis, concavis, obtusis, inæqualibus. *Flosculi* sæpius sex, calyce multo longiores, laciniis acutis quinquefidi, omnes fertiles. *Stigmata* duo longius exserta. *Receptaculum* angustum, nudum. *Semina* basi acuminata; apice coronata pappo setaceo denticulato, simplice ordine ad marginem seminis inserto.

Vernonia aspera foliis ellipticis inæqualiter dentatis, supra et hispidis et scabris; panicula ovata.

Eupatorium asperum. *Hort. Beng.* 61.

Habitat in Anggæ montibus.

Huic affines Eupatoria conyzoides Maderaspatana, Virgæ-aureæ villosis foliis, flosculis pallescentibus. *Pluk. Amalth.* 80. *t.* 395. *f.* 7.; sed *t.* 396. *f.* 5. valde diversa.

Eupatorium integro Jacobeæ folio violaceum. *Pluk. Amalth. t.* 394. *f.* 6. quod dubio citatur (*Enc. Meth.* ii. 83.) pro Conyza chinensi; sed foliorum denticuli nimis remoti et profundi.

Caulis sex pedes altus, lignosus, farctus, teres, simplex, hispidus, rigidus: *rami* brevissimi, alterni, in paniculam terminalem densam congesti. *Folia* elliptica, alterna, subsessilia, acuta, inæqualiter dentata, rigida, hispida, costata, nervis subtus prominentibus reticulata, supra scabra, subtus porosa. *Petiolus* brevissimus, non stipulaceus. *Panicula* maxima, erecta, ovata, obtusa ramulis subgeminatis. *Flores* mediocres, purpurascentes, congesti. *Folia* floralia parva, lanceolata.

ceolata. *Calyx* cylindricus, pubescens, imbricatus foliolis linearibus, acutis, inæqualibus, erectis. *Flosculi* circiter octo, calyce duplo longiores, omnes hermaphroditi, quinquefidi laciniis linearibus. *Filamenta* quinque ex apice tubi, laciniis dimidio breviora. *Antheræ* coalitæ. *Stigmata* duo. *Receptaculum* nudum. *Semina* glabra. *Pappus* pilosus, rigidus, denticulatus, imbricatus, pilis exterioribus brevissimis.

OBS. Pappus ut in Suprago glauca Gærtneri (*De Sem.* ii. 402.) *t.* 166. *f.* 5.), quæ Vernonia glauca Willdenovii (*Sp. Pl.* iii. 1633.)

In India I have seen several other species of the same genus; but I shall have again occasion to return to them.

PERAGU, *p.* 41. *fig.* 25.

Commeline gives no commentary on this plant, which Plukenet compared, although with doubt, to his *Arbor baccifera Abutili foliis lanugine ferruginea villosis Punnangannare Malabar* (*Mant.* 19.); but of this we know nothing.

The elder Burman (*Thes. Zeyl.* 66. *t.* 29.) described a plant, which he called *Clerodendron folio lato et acuminato*, and considered as very nearly allied to the *Peragu*. By the Ceylonese this plant, according to Burman, is called *Pinna* (*fortunata*); while the *Peragu* is called *Pinnakola* (*infortunata*), "quæ à priore nil nisi folii rotundiore et magis cordata figura differt;" but I must also say, if we are to judge from the figures, that the two plants differ also much in the form of the corolla, and in that of the calyx when bearing fruit; so that I have scarcely any doubt of their being distinct species. Burman, therefore, considers the *Peragu* as the *Pinnakola* of Hermann; and he also considers it as the *Frutex baccifer, Malabaricus, floribus pentapetalis, binis, una bacca*

bacca nigra in calyce stelliformiter expanso of Ray. To this he joins a plant of Sloane, which in all probability is quite different; and also the *Periclymeni similis, Myrtifolia arbor Maderaspatana* of Plukenet (*Phyt. t.* 211. *f.* 4. *Alm.* 287.), which is no doubt of the same genus, but is a variety of the *Volkameria inermis* of Willdenow (*Sp. Pl.* iii. 383.).

Linnæus in the *Flora Zeylanica* (231.) separated this plant of Plukenet, and united (232.) the *Pinnakola sive infelix et infortunata* of Hermann and the *Peragu* of Rheede with its name in Ray, to the *Clerodendron folio lato et acuminato* of Burman, which, according to Burman, is the *Planta fortunata Pinna Zeylonensibus* of Hermann; so that Burman and Linnæus are here in direct opposition.

In the *Species Plantarum*, as copied by the younger Burman (*Fl. Ind.* 137.), Linnæus gives the *Peragu* the name of *Clerodendrum infortunatum*, omitting to quote Hermann, but quoting the elder Burman, as was done in the *Flora Zeylanica*. Here the difference between the elder Burman on the one side, and the younger Burman and Linnæus on the other, is in fact continued, and one side is thus clearly in error. If the *Pinna* of Hermann has lanceolate leaves, it cannot be the plant for which it is quoted by the elder Burman; if it has cordate leaves, it cannot be the *Clerodendrum fortunatum*. This, however, can only be determined by an inspection of the Herbal collected by Hermann: nor might this even be decisive, as Linnæus complains in the dedication of the *Flora Zeylanica*, that Hermann's collection, after having been in the hands of the elder Burman "per 50 annos fuerat suppressus, indignorum manibus versatus, et in barbarorum hominum scriniis sepultus," before he had access to describe it; and during this period several transpositions of names and specimens are likely to have taken place. That serious injury was done, the language of Linnæus implies. In

the mean time, it seems rather doubtful whether the terms *fortunatum* and *infortunatum* have been correctly applied by Linnæus. At any rate, as they originated in some silly superstition, they might be as well abandoned.

What is of more importance to my subject is, that the younger Burman seems to throw a doubt on the identity of the *Peragu* with the *Clerodendrum infortunatum* of Linnæus by observing, that the former has alternate leaves; and so it appears in the figure, with a view of which Burman as usual contented himself; for in the text it is said, "folia bina et bina proveniunt;" so that the appearance in the figure has arisen from a neglect of the draughtsman.

But, further, I have already said, that the *Clerodendrum folio lato et acuminato* of the elder Burman is different from the *Peragu*; and which of these Linnæus really meant by his *C. infortunatum* I cannot determine. The difference, however, became so obvious, that Willdenow (*Sp. Pl.* iii. 386.) makes them distinct varieties, which in uncultivated plants is nearly the same with distinct species, implying merely two plants, that have a very strong resemblance, although in some points they are not entirely similar.

Willdenow, however, respecting the *Peragu*, committed a great error in quoting as the same the *Petasites agrestis* of Rumphius (*Herb. Amb.* iv. 102. *t.* 49.), which has indented leaves. Willdenow thus under the term *C. infortunatum* comprehends three distinct plants, and the same is done by Gærtner (*De Sem.* i. 271.). Which of the three each author actually meant I cannot exactly say. It is indeed clear, that Gærtner did not mean the *Peragu*, because he represents the calyx of the fruit as not quite so long as the berry, to which it closely adheres; while in the *Peragu* it is much longer than the berry, and spreads out to a distance. He probably, therefore, meant the *Clerodendron* of the elder Burman.

M. Poiret

M. Poiret (*Enc. Meth.* v. 163.) perceived the error of Willdenow respecting the *Petasites agrestis* of Rumphius; but he was scarcely more fortunate in quoting the *Titius litorea* (*Rumph. Herb. Amb.* iii. 39. *t.* 20.) As, however, he afterwards perceived this error, and corrected it (*Enc. Meth. Sup.* iv. 352.), I need not dwell longer on this subject. M. Poiret like Willdenow considers the *Clerodendron* of the elder Burman as a distinct variety from *Peragu*, and to this I have no particular objection.

As the specific name *infortunatum* has perhaps been given to the *Planta fortunata* of the Ceylonese, I should have entirely concurred with the authors of the *Hortus Kewensis* (iv. 63.) and *Encyclopédie* (*Enc. Meth. Sup.* iv. 352.) in calling the *Peragu* the *Clerodendrum viscosum*, had the plant, which they evidently described under this name, been the *Peragu:* but the *C. viscosum* has serrated leaves, and is, I have no doubt, that which Dr. Roxburgh called the *Volkameria infortunata* (*Hort. Beng.* 46.), having been sent by him to Kew Garden. Dr. Roxburgh, however, or perhaps rather Dr. Carey, does not quote the *Peragu*, and in this he acted judiciously; for the leaves of the *C. viscosum* are not only serrated on the edges, but are very seldom, and that but slightly, cordate. We are not therefore yet warranted to reject altogether as species the *Planta fortunata* and *infortunata* of Hermann, and to refer them to the *C. viscosum*. It is true, that neither Dr. Roxburgh nor I have seen the plants; but I cannot think that his *Volkameria infortunata*, which I perfectly know, is either one or other; and to enable the reader to judge, I shall here give some account of the points in which it differs.

Clerodendron viscosum. Enc. Meth. Sup. iv. 252.; Hort. Kew. iv. 63. (excluso synonymo Rheedii.)
Volkameria infortunata. *Hort. Beng.* 46.

Bhengt

Bhengt Bengalensium.
Hnæn-i Barmanorum.
Habitat ubique in Indiæ lucis umbrosis.

Frutex 2—10 pedes altus. *Rami* pilis adpressis strigosi, compressiusculi, non sulcati. *Folia* ovata, vix unquam subcordata, utrinque hispida, nervis inferioribus parvis subalternis costata; inferiora inæqualiter dentata, superiora integerrima. *Panicula* terminalis brachiata, trichotoma, vel dichotoma axillis floriferis. *Calyx* floriferus viridis. *Flores* albi, rubro ad fauces inquinati. *Calyx* fructiferus maxime auctus, patens, sanguineus. *Bacca* globosa, tetrasperma.

Now, if what I have above stated be taken into consideration, I think it will appear that the *Bhengt* of Bengal is different from the *Peragu*, from the *Petasites agrestis*, and from the *Clerodendron* of Burman, all of which have been included in the *C. infortunatum*, and all of which I have endeavoured to show are different from one another.

Peragu folia habet profunde cordata, acuminata, integerrima, velutina, quinquenervia; calyces fructiferos patentes, bacca multo longiores.

Petasites agrestis folia habet dentata, cordata, 5—7-nervia; calycem bacca quadriloba minorem, erectum.

Clerodendron Burmanni folia habet integerrima, obtusiuscula; calycem fructiferum erectum, drupa subrotunda minorem.

Nalugu, *p.* 43. *fig.* 26.

Commeline ventures no commentary on this plant; nor can we place any confidence in the conjectures of Plukenet (*Mant.* 27. 40.), who compares it to two trees, one from the West Indies, and the other from the Cape of Good Hope, which probably have no affinity either to the *Nalugu* or to each other: for, so far as

as we can judge from the imperfect figure of the first (*Phyt. t.* 146. *f.* 1.), it has simple leaves; and the second, from the term *diphyllos*, is probably equally unlike.

Rumphius quotes the *Nalugu* for the *Frutex aquosus mas* (*Herb. Amb.* iv. 102. *t.* 44.), the stem of which is armed with prickles (trunci hinc inde spinulas quasdem gerentes, quæ in ordines locuntur), while that of the *Nalugu* is unarmed. This error, excusable in the blindness of the venerable Dutch Governor, has led to several gross errors, some subsequent writers having blindly followed his quotation.

M. Lamarck (*Enc. Meth.* i. 217.) quoted the *Nalugu* for the *Aquilicia sambucina* of Linnæus (*Mant.* 211.), which he considers as the same with the *Staphylea indica* of Burman (*Fl. Ind.* 75. *t.* 24. *f.* 2.), that is, the *Gingiran* of the Javanese; and he considers the *Frutex aquosus femina* of Rumphius (*Herb. Amb.* iv. 103. *t.* 44.), or *Gangiran Murra* of the Javanese, as a mere variety of the same species, rejecting the *Frutex aquosus mas*, which Rumphius had held to be the *Nalugu*, and which Linnæus quoted for the *Aquilicia sambucina:* but the *Aquilicia sambucina* of Linnæus, the *Staphylea indica* of Burman, and the *Frutex aquosus femina* of Rumphius have bipinnated leaves, while those of the *Nalugu* are simply pinnated. It is true, that M. Lamarck says, "ses feuilles sont une ou deux fois ailées:" but this description, I suspect, is derived from the figures of Rheede and Rumphius united, and not from nature; as he afterwards (ii. 611.) calls it *Gastonia Nalugu foliis pinnatis foliolis serratis*. How he learned that it has ten stamina, on which account he classed it with the *Gastonia*, I do not know; and I suspect, that this opinion may have merely arisen from an expression in the text, which, if fully considered, will not warrant such a conclusion. Rheede merely says, "ex medio florum eminet capitulum album (nectarium) quod in vertice decem denticulis brevibus

vibus emicat, stylum parvum cum globulo (germen), viridi diluto, ex quo prodit, in se recondens." Now the *decem denticuli* may not mean antheræ, as perhaps M. Lamarck concluded, but divisions of the *nectarium*, the antheræ being concealed within the nectarium, as is usual in the genus *Aquilicia*, in which Jussieu (*Gen. Plant.* 294.) includes the *Nalugu*. M. Lamarck afterwards heard (*Enc. Meth.* iii. 460.), that on a comparison of the plants in the collection of Linnæus the *Aquilicia sambucina* was found to be the same with the *Leea æquata*, which, having simply pinnated leaves, may be the *Nalugu*; but it cannot be either the *Staphylea indica* of Burman, or *Frutex aquosus fœmina* of Rumphius; for these plants are probably not the same. If, therefore, by mistake Linnæus described the same plant under two names, it remains to be ascertained whether he described the *Nalugu foliis pinnatis* or the *Staphylea indica foliis bipinnatis*; for the two plants are evidently distinct; and, on account of their unarmed stems, they are also quite different from the *Aralia chinensis*. As, however, M. Lamarck justly observes, this reported discovery in the Linnæan Herbarium was probably a mistake, as long since the author of the *Hortus Kewensis* (ii. 50.), well acquainted with the Linnæan Herbarium, describes the *Leea* (or *Aquilicia*) *sambucina* and *L. æquata* as both growing in the Royal Garden, although he quotes none of the authorities above mentioned (*Enc. Meth. Sup.* i. 410.).

Notwithstanding what Jussieu and Lamarck had said, Willdenow continues to place the *Nalugu* among the synonyma of the *Aralia chinensis caule petiolisque aculeatis*; but this, as I have said, is evidently a mistake.

On the whole, I think it most probable that the *Nalugu* is the *Leea æquata*; and *Leea* is now generally considered as the same genus with *Aquilicia*, some preferring one name and some the other (*Enc. Meth. Sup.* iii. 327.). I suspect, however, that Royen and

and Linnæus actually saw some plant, which had a fructification like what they described by the name of *Leea*; and, although Linnæus may have afterwards by mistake added some species of *Aquilicia* to the original *Leea*, that there exists such a genus as he described, which is allied to the *Sapotæ*, as Jussieu (*Gen. Plant.* 170.) supposes.

The *Nalugu* belongs no doubt to the *Aquilicia* of Jussieu, as he justly observes (*l. c.* 294.); but its place in the natural system is liable to doubt. Its chief resemblance to the *Meliæ*, where Jussieu places it, is in the *tubus staminifer* of the corolla; but in this there is a great difference between the *Aquilicia* and *Melia*, the former having the insertion of the filaments on the outside of the *tubus antheriferus*, while the antheræ are inserted within the tubus of the *Meliæ*. From the structure of the seed, well described by Gærtner, the *Aquilicia* appears also to have a considerable affinity to the *Hedera*; and the *Hedera* is more nearly, perhaps, allied to the *Araliæ* than to the *Caprifoliæ*; so that Linnæus was so far at least justified in uniting the *Nalugu* with the *Aralia*, to which it has also a strong resemblance in the leaves and petiolus, and in these it differs totally from the *Sapotæ* and *Meliæ*; although the flower has a considerable affinity to the former, as the *tubus antheriferus* may be considered as five appendices conjoined; and it is in this junction that the chief difference between the *Leea*, as described by Linnæus, and the *Aquilicia* consists. It must however be admitted, that in both *Hedera* and *Aralia*, and in all kindred plants, the germen is below the calyx, while in the *Aquilicia* it is above. On the whole, the *Aquilicia* is an anomalous genus, not strictly resembling any other yet known.

Among the hills near Mungger I found a plant, that in the form of its leaflets bears a striking resemblance to the *Nalugu*, which I consider to be the *Leea æquata*; but in place of being a

bush ten or twelve feet high, it is a herb not higher than a yard; its stem is smooth; and its inferior leaflets are sometimes again composed of three. In the collection presented by me to the East India Company, I have called it *Leea herbacea*; but I am not certain that the circumstances I have mentioned are sufficient to establish it as a distinct species from the *Nalugu*; it may perhaps be considered as merely a variety; and I should even consider it as entirely the same, were there any hint in the *Hort. Mal.* that the inferior pinnæ of the *Nalugu* are ever subdivided; for there is no mention of the *Nalugu* having a hairy stem, as is said to be the case in the *Leea æquata*. What Rheede says of the leaflets of the *Nalugu* is applicable also to the *L. herbacea*, and serves to distinguish both from the *Staphylea indica* of Burman or *Leea sambucina*. "Folia (foliola) in margine rotundis denticulis incisa, et crispa lateribus versus interiorem partem contractis.—Ex costa (media) costæ binæ et binæ—obliquo annulari ac parallelo ductu proxime ad marginem exeunt ac reflexa in se invicem incurrunt."

I shall now add a description of the *Leea herbacea*, which in the vulgar Hindwi dialect is called *Govarai*, and in the more polished language of physicians, *Amarphul*.

Caulis herbaceus, 2 vel 3 pedes altus, simplex, supra folia nodosus, glaber, obtusangulus. *Folia* ima ternata, superiora cum impari pinnata, pinnis imis aliquando ternatis. *Foliola* opposita, oblongo-ovata, acuminata, inæqualiter serrata, nervo ad marginem parallelo costata, venis minute reticulata, supra glabra, subtus pilosa, petiolata, remota. *Petiolus* basi membranaceo subvaginans, tetragonus, angulo superiore profunde sulcato. *Rachis* ad foliola nodosa. *Cyma* axillaris vel terminalis, indeterminate divisa, ramulis glabris, acutangulis. *Flores* parvi, virides. *Calyx* turbinatus ore quinque-

quinquelobo, obtuso, erecto. *Petala* quinque oblonga, acuta, apice subcucullata, unguibus tubo staminifero adnata. *Tubus staminiferus* turbinatus, petalis brevior, extra sulcis quinque exaratus, ore inter sulcos quinquefido lobis emarginatis. *Filamenta* quinque ex imis tubi sulcis enata, apicibus intra tubi os incurva, petalis opposita. *Antheræ* intra tubum retroflexæ, subcoalitæ, oblongæ. *Germen* superum subrotundum. *Stylus* teres. *Stigma* simplex.

The same structure of flower I have found in the *Leea macrophylla* of Dr. Roxburgh (*Hort. Beng.* 18.), and in the plant that I consider as the *Staphylea indica* of Burman, which I suppose is the *Leea Staphylea* of the *Hortus Bengalensis* (*l. c.*), and which Dr. Roxburgh considered as distinct from the *Leea sambucina*, meaning probably by this the *Frutex aquosa fœmina* of Rumphius, although he quotes neither Rumphius nor Burman for either plant, deterred probably by the great confusion in different authorities. It may however be observed, that the parts of the flower might be otherwise denominated, as thus: *Corolla* monopetala. *Tubus* crassus, brevis, ad os coarctatum auctus tubo staminifero turbinato extra sulcis quinque exarato, ore quinquedentato, denticulis laciniis corollæ alternis, emarginatis. *Limbus* patens, quinquepartitus. *Filamenta* quinque laciniis corollæ opposita, ex apice tubi ad basin sulcorum enata. I had an opportunity of comparing the fruit of the *Leea macrophylla* with the description of the *Aquilicia Otillis* in Gærtner (*De Sem.* i. 275.), and found them exactly similar in structure.

NIRURI, *p.* 45. *fig.* 27.

Commeline in comparing this to the *Vitis Idæa* is far from accurate; and his observation is uncommonly defective, as he commences with saying, that the plant had not been previously described; while he then says, that he cannot doubt of its being

one and the same with the *Frutex indicus bacciferus*, *Vitis Idææ secundæ Clusii foliis* of Breynius.

Plukenet in his *Phytographia* (*t.* 69. *f.* 3.) delineates a plant, which he calls *Vitis Idææ species Maderaspatana*, *Niruri forte Malabarensibus dicta*, *Hort. Mal.* 2., which would seem to imply a doubt of its being the same with the *Niruri:* but for this doubt I see no good reason, the two figures very strongly resembling each other. He also in this work quotes Breynius with doubt, although in the *Almagestum* (391.) this is not expressed, as he was then probably satisfied of the plants being the same.

The elder Burman (*Thes. Zeyl.* 198. *t.* 88.) describes a plant, very like the *Niruri*, under the name of *Rhamnus zeylanicus*, *folio subrotundo*, *glabro*, *caulibus hirsutis*, *spinis exiguis*, *ad ramorum et foliorum ortum exasperatus*, *flosculo spadiceo*, *bacca nigra*; but he quotes neither the *Niruri*, the plant of Breynius, nor that of Plukenet above mentioned. On the contrary, he quotes, although with uncertainty, the *Acaciæ forte cognatus e Maderaspatana frutex* of Plukenet (*Phyt. t.* 122. *f.* 4.), stating, however, that as it had neither fruit nor flower, he could not be certain. Burman adds as synonymous a plant of Sloane, probably from Jamaica. There is, however, notwithstanding the most striking resemblance, an essential difference between the *Rhamnus zeylanicus* and *Niruri:* the former has flowers divided into four, while those of the latter are divided into five, have probably five stamina, and certainly only two styli; but the *quinque flavi noduli ad orificium floris*, which I have interpreted antheræ, may be five glandular bodies in a female flower.

Soon after Linnæus, with his usual contempt for preceding authors, chose to give the name *Niruri* to a plant totally different from the *Niruri* of Rheede, and which Rheede had indeed described under the name *Kirganeli*.

The younger Burman called the *Rhamnus zeylanicus* of his father

father *Rhamnus Vitis Idæa*, and added to his synonyma the plant of Breynius, which Commeline and Plukenet conjectured to be the *Niruri*. He omitted with great propriety that of Sloane. The *Rhamnus Vitis Idæa* continued undisturbed, until Retzius, probably from the notes of Kœnig, described a plant, which he took to be the same with the *Rhamnus*, and called it *Phyllanthus Rhamnoides* (*Enc. Meth.* v. 298.). Although M. Poiret admits this identity, yet I have no doubt of both authors having been mistaken; for the stem of this *Phyllanthus* is only "un peu frutescente, glabre, et divisée en rameaux glabres. Dans les fleurs males, les calices sont tronqués. Le fruit est une capsule." But in the *Rhamnus zeylanicus* of Burman, "Rami subhirsuti; flosculus tetrapetalus; bacca nigra;" and in the *Niruri*, "frutex altitudine septem vel octo pedum, rami tenuiter pilosi; flores constantes quinque foliis rotundis; fructus forma plano rotundioli, intus cum maturi sunt succo aqueo cæruleo repleti. In hisce parva semina, quæ angusta sunt, continentur." The *Phyllanthus rhamnoides* therefore is neither the *Rhamnus Vitis Idæa* of the younger Burman, that is, the *Rhamnus zeylanicus* of his father, nor the *Niruri*, so nearly allied to it, which is the plant of Breynius, that has been also quoted for the *Phyllanthus Vitis Idæa*.

Willdenow, (*Sp. Pl.* iv. 580.) however, for the *Phyllanthus rhamnoides* quotes the plant described by Retzius; and in the *Encyclopédie Méthodique*, the *Rhamnus Vitis Idæa* of the younger Burman, the *Rhamnus zeylanicus* of the elder Burman, the *Acaciæ forte cognatus* of Plukenet, and the *Frutex indicus baccifer* of Breynius, which is the *Niruri*. Little dependence can however be placed on his accuracy; for, as M. Poiret justly observes (*Enc. Meth. Sup.* iv. 408.), he had previously quoted (*Sp. Pl.* i. 1102.) both the *Rhamnus zeylanicus* and the *Acaciæ forte cognatus* for the *Zizyphus* or *Rhamnus lineatus*, which the latter may be, although M. Poiret, on comparing specimens, thinks that the

the *Frutex sinensis* &c. of Plukenet (*Amalth.* 100. *t.* 408. *f.* 3.) has a better claim. With respect, however, to the *Rhamnus zeylanicus* of Burman, it cannot be the *Rhamnus lineatus* of M. Poiret, the flowers of which are divided into five, while those of Burman's plant are divided into four. The division in the former would agree with the description of the *Niruri*; and in the figure of this both the calyx and corolla in some of the flowers may be distinctly observed: but then the *Rhamnus lineatus* as described by M. Poiret has only one stylus, and the figures of the leaves in Plukenet's *Amaltheum* (*t.* 408. *f.* 3.) is by no means like the *Niruri*. It is true, that the *Rhamnus lineatus* is by Willdenow made a *Zizyphus*, and should therefore have two styli (although he places it in the order *Monogynia*), in which respect it agrees with the *Niruri*; but then there is nothing in the foliage of the *Niruri* like the *costæ oppositæ transversæ*, from whence the *Rhamnus lineatus* derives its name; nor are its leaves terminated by a small spine, but are large and blunt exactly like those of the *Rhamnus zeylanicus* of Burman, which, as M. Poiret observes, differ a good deal from those of his *Rhamnus lineatus*. On the whole I am inclined to think, that the *Niruri* is really a *Rhamnus*; for although it has two styli, yet its flowers seem to want the flat discus of the *Zizyphus*, and its fruit is evidently a berry containing several seeds, and not a drupa containing one nut. Several *Rhamni*, it must be observed, and in particular the *circumscissus*, the nearest plant to the *Niruri* that I know, have two styli.

Hummatu, *p.* 47. *fig.* 28.

Commeline justly observes, that this and the two following are all species of *Datura* or *Stramonium*; but he mentions no circumstance, by which we can refer the synonyma of Acosta and Clusius, which he quotes, to this species. That of C. Bauhin (*Solanum fœtidum pomo spinoso oblongo*) does not belong to this, which

which has *pomum subrotundum*, but to the *D. Stramonium* of Linnæus. This mistake in the older writers has occasioned the virtues of the *Hummatu* to be referred to the *D. Stramonium* (*Enc. Meth.* vii. 460.), which does not grow in Malabar: but it is not unlikely, that both plants may have nearly the same powers.

The name *Dotiro*, given to this plant by the Brahmans of Malabar, is evidently the same with the *Dutra* or *Dhutura* of the Gangetic provinces, corrupted from the *Dhustura* of the Sanscrita. This name has spread under the various corruptions of *Dutroa*, *Daturo*, *Datura*, *Datula*, and *Lutroa* to Europe, Turkey, Persia, and the great archipelago of Asia; and, having been unknown to the Greeks and Romans, would seem to show, that India is the proper native country of this plant; although other species, introduced in modern times from Egypt and America, have acquired the same name among botanists.

The *Hummatu* is by Plukenet called the *Stramonia seu Dutroa fructu spinoso rotundo, flore candido* (*Alm.* 358.), while its double variety is his *Stramonia indica flore amplo albo pleno*, a name taken from Breynius. He has added to its synonyma two belonging to American plants, which probably should rather have been referred to the *Datura Stramonium*: and at the same time he considers as different the *Stramonia s. Datura pomo spinoso rotundo longo flore* (*Alm.* 358.). I believe that the chief difference between the two plants is in the colour of the flower, which in the latter is purple. This, however, in a plant half cultivated, and therefore liable to considerable variation, is an insufficient distinction. Among the synonyma which Plukenet quotes for the *Hummatu*, is the *Stramonium minus s. Nux Metel flore albo* of Parkinson, who called it thus, because a kindred plant is the *Metel* of the Arabic language. This latter was called *Nux Metella* or *Metel* by the early botanists, who procured it from Egypt: but it is with justice probably considered

as

as different from the *Hummatu* by Plukenet, who calls it *Stramonia Ægyptiaca fœtida, semine pallido, pomo spinoso rotundo, flore violaceo simplice, duplice, tripliceve* (*Alm.* 358.). We have thus two Indian and an Egyptian *Stramonium* so nearly allied to each other, if they be really distinct, that they can with difficulty be distinguished; for nothing that Plukenet says is sufficient for this purpose, if we set aside the colour of the flower.

The elder Burman under the name *Stramonium zeylanicum* (*Thes. Zeyl.* 221.) seems to mean only the second variety of the Indian kind with a purple flower; although he mentions among the synonyma the three *Hummatus* of Rheede, and the three kinds of *Stramonia indica* described by Rumphius (*Herb. Amb.* v. 242.), which by many are considered as different from those of Rheede.

Linnæus (*Fl. Zeyl.* 86.) disapproved of the separation made by Plukenet on account of the colour of the flower, and along with the *Hummatu*, which has a white flower, joined the *Datura zeylanica violacea* of Hermann or *Stramonium zeylanicum* of Burman, calling his plant *Datura pomis nutantibus globosis.*

As, however, the above-mentioned character would have included also the *Nux Metella* of the Arabs, which he did not intend, Linnæus in the first edition of the *Species Plantarum*, copied by the younger Burman (*Fl. Ind.* 53.) from among the synonyma above mentioned, formed two species. The *Hummatu* with its synonyma, adding the *Dutra alba* of Rumphius (*Herb. Amb.* v. 242. *t.* 87. *f.* 1.), he perversely called *Datura Metel*, while the true Egyptian *Metel* of the Arabs, or *Nux Metella* of the early botanists, he called *D. fastuosa.* In itself this is a proper enough name, because the flower is often double or triple, and then becomes very showy; but if any species were to be called *Metel*, that certainly should have the name, which is so called in the country where it grows spontaneously. But further,

further, both the varieties of the Indian plant are often found in a double or triple form, and are therefore equally entitled to the appellation *fastuosa*.

What Willdenow says concerning the *Datura Metel*, after having the advantage of the second edition of the *Species Plantarum*, and of several accounts by excellent botanists, is liable to great objections, so far as relates to the *Hummatu*. He distinguishes it as *pericarpiis spinosis*, *foliis cordatis subintegris*, and adds, *calyx non angulatus sed teres:* but the figure of the *Hummatu* has not cordate leaves, and the angles on its leaves are fully more prominent and sharper than those of the *Dutra rubra* (*Herb. Amb.* v. 243. *t.* 87. *f.* 2.), which Willdenow quotes for the *D. fastuosa:* and further, the calyx of the *Hummatu* is most evidently angular. The description entirely agrees with the figure. "Folia in oris in cuspides seu angulos sinuata. Calyx quinque costis, quæ in foliorum (laciniarum) cuspides incurrunt, in longitudine striatus." It must be further observed, that there is no indication whatever, either in the figure or description, of the *Hummatu* being pubescent; but I must confess, that no great stress can be laid on this point, because on the subject of pubescence Rheede is often negligent. The only other circumstance, by which Linnæus endeavours to distinguish the *Datura fastuosa* from the *Metel*, is, that the former has *pericarpia tuberculata* and the latter *pericarpia spinosa:* but, if the *Dutra rubra* of Rumphius be the *D. fastuosa*, as Linnæus admits, its pericarpium is fully as much entitled to the appellation *spinosum*, as that of the *Dutra alba*; and he is equally silent respecting the pubescence of his plant.

M. Poiret (*Enc. Meth.* vii. 461, 462.) gives the synonyma of the Egyptian and Indian species at greater length than Willdenow, and I have great deference for his opinion and confidence in his accuracy; yet I can discover nothing in his account to

remove the difficulties above stated. The same is the case, with what is said in the *Hortus Kewensis* (i. 387.), where the *Hummatu* is the only authority quoted for the *D. Metel*, with Willdenow's inapplicable specific character. As however Linnæus, Willdenow, Poiret, and the author of the *Hortus Kewensis* had the living plants before them, we cannot doubt of there being two distinct species: but then the *Hummatu* is not the *D. Metel calyce terete;* nor the *Dutra rubra* the *D. fastuosa pericarpio tuberculato vel lævi.* On the whole, I am persuaded that the *D. alba nigra et rubra* of Rumphius are mere varieties of the same species, and not different from the *Hummatu*; for although in one of his figures the calyx is concealed by a leaf, so that its angles cannot be seen, yet both have spines on the capsules. I must leave to those who have an opportunity of seeing the Egyptian plant, to determine the difference between it and the *Hummatu* in a manner more satisfactory than has been yet done.

Dr. Roxburgh (*Hort. Beng.* 16.) had both a *Datura fastuosa* and a *D. Metel;* and at one time at least, I know, considered them as mere varieties; but it is possible that he may have afterwards found another species, the *Dhutura* of the natives, and called it *Metel*; while what the natives call *Kala* (black) *Dhutura*, the *Dutra nigra* of Rumphius, he received as the *D. fastuosa* with both single and double flowers. In the western provinces of Gangetic India I have indeed found a plant called simply *Dhutura* or *Dutra*, abundantly different from the *Kala Dhutura*, the *Hummatu*, and all the varieties of the *Stramonia indica* of Rumphius; and this may be the plant which Dr. Roxburgh latterly called *D. Metel*, although it more resembles the Linnæan character of the *D. Stramonium* than that of the *Metel*, and has much smaller flowers than the latter. Specimens of this will be found in the collection which I have presented to the East India Company.

NILA

Nila Hummatu, *p.* 49. *fig.* 29.

Mudela Nila Hummatu, *p.* 51. *fig.* 30.

These evidently belong to the same species of plant, and differ merely in the first having a simple, and the latter a triple flower, to which variation the *Hummatu* of India and Egyptian *Nux Metella* are also liable, as appears from my commentary on the last plant.

Commeline does not make any observation on these plants; but Plukenet entirely coincides with the opinion above stated of the *Nila Hummatu* and *Mudela* N. H. being one species, which he calls *Stramonia indica fructu oblongo glabro* (*Mant.* 176.). He also proposes as a query, if this be not the same with the *Leum Alrachaha* (i. e.) *Nux Mechil Serapionis* of J. Bauhin: but the *Nux Mechil* of Serapion is probably the same with what our early writers called *Nux Metella*; and this plant should therefore be the *D. fastuosa*. It must indeed be observed, that in several points this agrees with the character which Linnæus and other more recent botanists give of the *D. fastuosa*; for its calyx is represented without angles, and its fruit without spines. In the figures indeed it appears quite smooth; but in the description it is mentioned "fructus alii glabri, alii gemmulis hinc inde rigidis et valde nitentibus obsiti," which agrees with the *pericarpium tuberculatum* of Linnæus. So far is well; but then in the *Nila Hummatu* we have *pericarpium ovatum erectum*, *folia subintegra*, while in the *D. fastuosa* we should have *pericarpium globosum nutans*, *folia angulata*. Neither is the *Nila Hummatu*, nor its double variety, quoted at all by the younger Burman, by Willdenow, by Poiret, by Aiton, nor Roxburgh. We are thus left in uncertainty: but on the whole I am inclined to think, that in reality the *Hummatu* of Rheede and the three kinds of the *Stramonia indica* of Rumphius are mere varieties of each other,

and are the *D. Metel* of Linnæus; while the *Nila Hummatu* and *Mudela Nila Hummatu* are his *D. fastuosa*, the *Nux Metella* of ancient botanists not described by Rumphius; although I must confess that it may be a species not noticed by Linnæus. If my supposition is well founded, a careful revision of the synonyma, and more accurate specific characters will be necessary; and at the same time more appropriate specific names should be given; for I think there cannot be a doubt that Linnæus had in view the double flowers, when he gave the name *fastuosa:* but this circumstance is common to both species; and it is surely absurd to give the Arabic name *Metel* to a species different from that known to the Arabs.

ERICU, *p.* 53. *fig.* 31.

BEL ERICU, *p.* 56. no *fig.*

Commeline had seen what he took to be these plants growing in the gardens of Holland, and this seemingly in the open air; for he says, "procurrunt instar lolii, nisi coerceantur," which they would scarcely do in the pots of a stove or greenhouse. One other observation which he makes, renders the identity of his plants with those of Malabar more doubtful. He says, "minime accensendæ sunt fruticibus, sed herbis, quia caules et folia earum quotannis intereunt:" but the *Ericu* and *Bel Ericu* are strong shrubs; and, so far as I have observed, carry leaves, flower and fruit throughout almost the whole year (hic frutex in anno ter flores perfert). From the roots of Commeline's plant being able to resist the winters of Holland, it is not likely to be a plant of Malabar; but it may possibly be the *Beid el Ossar* of Veslingius, a plant of Syria, which may be an herbaceous plant, as Commeline asserts. But then Commeline in his synonyma introduces a plant from Egypt, and one from North America, the latter of which at least there is not any probability of being

being the same with the *Ericu*. At any rate the *Ericu* and *Bel Ericu*, with which I am perfectly acquainted, are mere varieties, differing only in the colour of the flower, as Rheede justly observes; and the white colour, in general at least, seems to be the effect of cultivation, as I have seen such only in gardens, where it is reared as being supposed to have greater virtues; and it is on this account probably that the Brahmans of Malabar prefix *Davi* (divine) to its name.

Plukenet considered the Egyptian, Syrian and Indian plants different (*Alm.* 35.); calling the first *Apocynum erectum majus latifolium ægyptiacum flore luteo spicatum* (*Alm.* 34.); the second *Apocynum latifolium syriacum, incanum, erectum floribus umbellatis minoribus, obsolete purpurascentibus, siliquis folliculatis rugosis*; and the third *Apocynum erectum majus latifolium indicum, flore concavo amplo, carneo suave purpurascente*. So far is well; but in his synonyma there is great confusion. For the Indian species he quotes the *Ericu*, which is proper; but joins with it the *Apocynum latifolium Ægyptium incanum erectum floribus magnis pallide purpureis* of the *Par. Bat. Prod.*, which may perhaps be the Syrian kind or *Beid el Ossar* of Veslingius, but cannot be the Egyptian kind, called *Beid el Ossar* by Alpinus, which has yellow flowers. For the Syrian kind, again, he rightly quotes the *Beid el Ossar* of Veslingius with purplish flowers above mentioned; but then he adds the *Bel Ericu*, which certainly is a mere variety of the *Ericu* with white flowers. He also follows Commeline in adding to this an American plant, as I have said, probably different from both. Further, for his Indian kind he quotes a figure in the *Phytographia* (*t.* 175. *f.* 3.), which certainly does not represent the *Ericu*; although in the explanation of the plate he says that it is meant to do so; but then he adds, that it also represents the *Beid el Ossar* of Egypt, the *Apocynum syriacum* of J. Bauhin, and the *Lapathum ægyptiacum lactescens siliqua Asclepiades*

piades of his brother Caspar, all of which synonyma belong to the Egyptian species, of which this figure may be a good representation, although he has by mistake quoted it for the Indian kind.

The elder Burman makes matters no better. The *Ericu* he calls *Apocynum indicum, maximum, floribus amplis, Ianthinis, obsoletis* (*Thes. Zeyl.* 24.), joining with it the *Beid el Ossar* of Egypt, and nearly all the synonyma given, right or wrong, by Plukenet to his Egyptian, Syrian and Indian kinds; only excluding the *Bel Ericu*, which he calls *Apocynum indicum, sylvestre, inodorum, siliquosum, seminibus papposis, floribus albis amplis* (*Thes. Zeyl.* 25.). By mistake he seems to have called this the *Idda* of the Ceylonese; for that he really meant the *Bel Ericu* there is no doubt from his quotation of Commeline: but Linnæus considered the *Idda* as his *Nerium foliis lanceolato-ovatis, ramis divaricatis* (*Fl. Zeyl.* 109.), which has become the *N. divaricatum* of Willdenow (*Sp. Pl.* i. 1236.). On this account Burman's plant is now quoted as a *Nerium*; although if Linnæus had observed that the *Idda* was the *Apocynum zeylanicum indicum frutescens, Nerii flore candidissimo* of Hermann's *Paradisus*, and not the *Apocynum erectum incanum latifolium, Malabaricum, floribus omnino albis* of the same work, which is quoted by Burman, he would have discovered the latter author's error respecting the *Idda*, and would not have removed Burman's plant from the *Bel Ericu* to join it with a *Nerium*, or more probably a *Tabernæmontana*, which I suspect the *Idda* is. See my commentary on the *Curuta Pala* (*Hort. Mal.* i. 83.)*.

In the *Flora Zeylanica* (112.), excellent in general on synonyma, Linnæus made little improvement respecting the *Ericu*, joining it with the *Beid el Ossar* of Egypt, the *Ericu americana* of Seba, and the figure erroneously referred to it by Plukenet in the *Phytographia*, as already mentioned; and thus probaby

* *Trans. Linn. Soc.* xiii. p. 519.

united

united three species in one, although he seems then to have learned that the Syrian kind is distinct. He adds, however, greatly to the confusion respecting these plants by describing the plant as herbaceous, and the leaves smooth. It is therefore probable, that then he had not seen the *Ericu*, but described from the plant common in the gardens of Holland; or at least from some plant, which cannot well be any one of the three, that he quotes as synonymous: but to this I shall again return.

Rumphius, under the name *Madorius* (*Herb. Amb.* vii. 24. *t.* 14, *f.* 1.), has given an excellent account of the *Ericu* and *Bel Ericu*, in which he justly considers the kind with the white flower as not differing from that of which the flower is purple. His figure, as usual, is not so good as his description; but, from what he says of the nectarium, there can be no doubt of his meaning this species. "In floris centro mira conspicitur compositio, pedem exhibens salinarii argentei, componitur nempe ex quinque circinnis et superne gerit pentagonum caseolum." Now the five circinni clearly describe the lower parts of the nectaria spirally revolute, which distinguish this species. The elder Burman in his commentary produced nothing new. Nor did his son (*Fl. Ind.* 71.) improve the synonyma, but adopts the specific name *A. gigantea*, given by Linnæus in the *Species Plantarum*, and leaves us completely in the dark which of the plants included in the synonyma he meant to describe. He does not quote the *Madorius*.

M. Lamarck (*Enc. Meth.* i. 280.) separates the Egyptian from the Indian kind, so as to make them varieties of the same species, calling the former *Asclepias gigantea* α, and the latter *A. gigantea* β; but he points out no difference between the two kinds, except that the flowers of the former are yellow inclining to red, and in the latter of a red inclining to violet, which does not well agree with the flower of the *Ericu*. From his description it would

would appear, that the plant he meant grew as high as a man, and was covered every where with a white wool, except on the upper side of the leaves: so that he probably described a kind different from that "caule herbaceo foliis glabris," which Linnæus described in the *Flora Zeylanica*. From his synonyma it would appear, that Tournefort, in himself an host, considered the Egyptian, Syrian and Malabar kinds as different species. Along with the first Lamarck only quotes as synonyma the *Beid el Ossar* of P. Alpinus, *Miller's Dictionary*, and an account by Jacquin. Along with the Malabar plant of Tournefort, he quotes the *Ericu* of Rheede, Plukenet and Seba. The latter is an American plant; and he admits that Plukenet's figure represents badly the plant he meant to describe, and no wonder; for, as I have said, it was only quoted by mistake for the *Ericu*, and probably represents the *Beid el Ossar* of Egypt. Even therefore in the *A. gigantea* β of Lamarck we have three plants united. Following Linnæus in his second edition of the *Species Plantarum*, and subsequent works, M. Lamarck (281.) describes the Syrian plant as a different species (*A. syriaca*); and to this probably belong (although not quoted by Lamarck) all the synonyma quoted by Plukenet for the Syrian kind, except the American plant of Parkinson, which is perhaps the *A. purpurascens* (*Enc. Meth.* i. 281.), or at least the *Apocynum erectum noveboracense foliis minus incanis, flore ex obsoleto dilute purpurascente* of Hermann, which was possibly the herbaceous smooth-leaved plant described by Linnæus, and which no doubt would thrive in the open air of Holland.

Willdenow (*Sp. Pl.* i. 1263.) totally separates the *A. gigantea* α of Lamarck, that is, the plant of Jacquin quoted by the French botanist, from the *Asclepias gigantea*, calling it *A. procera*. For this he quotes, but with doubt, the plant figured by Plukenet as above mentioned; and also, with a similar doubt, the *Beid el Ossar*

Ossar of P. Alpinus, which would seem to imply, that he rightly considered these as the same, but doubted of this Egyptian plant being his *A. procera*, which is a native of Persia. For the *A. gigantea* the only figure quoted by Willdenow (*Sp. Pl.* i. 1264.) is the *Ericu*, and that of Seba, said to represent the American plant. Although he does not quote the *Madorius*, he advances, on the authority of Rumphius (vii. 25.), that this plant kills cattle unaccustomed to its use. The only authority for this is Knox, in his account of Ceylon, who attributes such powers to a plant, which he calls *Capita gauha* (*Capita herba*), and which Rumphius, on very inadequate grounds, considers as the *Madorius*. Where M. Lamarck procured his account of the virtues of this plant I cannot say: "Son suc laiteux est acre et caustique; elle cause le mort aux animaux qui en mangent." The latter part is evidently taken from Knox: on what weak foundations the former part rests we may judge from Rumphius, "lac amaricans, adstringens ac tandem in ore nauseosum dulcescens, sine ulla tamen ardore vel acredine." The plant, however, is much used in medicine by the natives of India, and from its sensible qualities may be possessed of considerable powers. In Bengal the milk mixed with salt is applied to rheumatic swellings, and the leaves heated with butter are applied to the same complaint.

Willdenow in describing the *A. syriaca* (*Sp. Pl.* i. 1265.) quotes some of the synonyma, which Plukenet and Commeline had erroneously conjoined with the *Bel Ericu*, and especially the *Beid el Ossar* of Veslingius, which Willdenow properly states to be different from the *Beid el Ossar* of P. Alpinus: but he conjoins with it an American plant, and would at first sight seem to consider America as its only proper country. "Habitat in Virginia, circa Astracan." We cannot however suppose, that he thought Astracan a place in Virginia; and must allow that, by a

typographical error, the word *et* has been omitted, which led to such an appearance. It is, however, the Virginian plant of Parkinson alone that is now considered as the *Asclepias syriaca* (*Hort. Kew.* ii. 80); but the plant of Veslingius, although afterwards confounded with an American, was no doubt a native of Syria, and probably of the same genus with the *Ericu*. On the whole, Willdenow brings us back nearly to the opinion of Tournefort, giving us an Egyptian, an Indian, and a Syrian species; and we have also an American kind, all of which by one or other have been confounded with the *Ericu* or *Madorius*. It is true that he quotes with doubt the Egyptian kind for his *A. procera*, which is a native of Persia; but still he admits the Egyptian plant to be different from both the Indian and Syrian.

Linnæus early stated, that the flower of his *A. gigantea* differed considerably from that of the other species of this genus; and Mr. R. Brown in his valuable treatise on the *Asclepiadæ* separated it from them, and called the new genus *Calotropis*; for with other recent botanists he seems to have altogether overlooked the *Madorius* of Rumphius, whose name, as previously given, should no doubt be retained. In the *Hortus Kewensis* the *Asclepias gigantea* of Willdenow and the *Ericu* are the only authorities quoted for the *Calotropis gigantea*. What the former is I cannot say, as with the *Ericu* it conjoins the American plant of Seba, and the *Asclepias foliis amplexicaulibus oblongo-ovalibus basi pilosis* of Linnæus (*Fl. Zeyl.* 112.), which is certainly not the *Ericu*, as I have already said. Of the *Ericu* I shall now give a description, in order that those who have an opportunity of examining the *Beid el Ossars* of Egypt and Syria, at present excluded from the botanical system, may have the means of pointing out how far they differ.

Calotropis

Calotropis gigantea. Hort. Kew. ii. 78.
C. nectariis basi spiraliter revolutis, apice trifidis.
Asclepias gigantea. *Hort. Beng.* 20. *Willd. Sp. Pl.* i. 1264?
Burm. Fl. Ind. 71?
Asclepias gigantea β. *Enc. Meth.* i. 280?
Apocynum indicum maximum, floribus maximis, lanthinis, obsoletis. *Burm. Thes. Zeyl.* 24. (exclusis variis synonymis).
Madorius. *Herb. Amb.* vii. 24. *t.* 14. *f.* 1.
Apocynum erectum majus latifolium Indicum, flore concavo amplo, carneo suave purpurascente. *Pluk. Alm.* 35. (excluso icone *Phyt. t.* 175. *f.* 3. et synonymorum nonnullis.)
Ericu. *Hort. Mal.* ii. 53. *t.* 31.
Akondo Bengalensium.
Ma-io Barmannorum.
Habitat ubique in Indiæ arenosis vulgatissima planta.

Radix ramosa, alba, late per arenam diffusa, sed repentem non vidi. *Caulis* 5 seu 6 pedes altus, e basi statim ramosus, perennis. *Rami* medulla multa lignosi, compressi, uti tota planta lactescentes, tomento albo farinaceo induti. *Folia* rigida, opposita, internodiis longiora, subsessilia, basi retuso subcordata, ultra medium latiora acuta, integerrima, crassa, plana, costis alternis venosa, juniora tomento albo induta, cujus pars in adultis evanescit, præsertim e pagina superiore. *Petiolus* brevissimus, tomentosus, apice supra folii basin substrigoso. *Pedunculus* communis interfoliaceus, solitarius, rigidus, alternus, compressiusculus, albido tomentosus, multiflorus. *Pedicelli* subumbellati, teretes, flore longiores, colorati, tomentosi. *Bracteæ* vix ullæ. *Flores* magni, in planta hortensi albi, sed in spontanea purpurascentes, ante maturitatem subcordati, obtusi, quinquangulares, lateribus apicem versus gibbis. *Calyx* minimus, basi corollæ

adhærens, quinquepartitus, laciniis ovatis concavis acutis. *Corolla* basi plano quinquefida laciniis ovatis acutis planis patulis; marcescentibus reflexis, margine revolutis. *Filamenta* in tubum cylindricum quinquesulcum connata. *Antheræ* quinque foliaceæ biloculares, ad latera stigmatis adhærentes. *Pollinis* grana geminata ex stigmatis angulis. *Corona staminea* simplex composita ex corpusculis quinque compressis, dorso filamentorum ad sulcos longitudinaliter adnatis, apice incurvo tridentato in antheras incumbentibus, basi obtuso spiraliter revoluto genitalia ambientibus. *Germina* duo. *Styli* subulati. *Stigma* maximum, truncatum, margine pentagono acutangulo cinctum. *Folliculi* duo inflati, glabri, mucrone recurvato semiovati, rugosi, in dorsum sulco longitudinali exarati, ad sulcum marginibus ad receptaculum centrale inflexis dehiscentes. *Parietes* intus fibroso inflatæ.

In the central districts of Gangetic India I have found a species differing from the preceding in only a few particulars mentioned below, and which may be the *Calotropis procera* of Persia, if that be different from the *Beid el Ossar* of Egypt with a yellow flower, which is certainly not the same with this Indian plant.

Calotropis procera? nectariis apice bifidis, basi acuto adscendentibus.

Calotropis procera. *Hort. Kew.* ii. 78? *Enc. Meth. Sup.* v. 591? ubi errore Caloptris dicitur.

Asclepias procera. *Willd. Sp. Pl.* 1263?

Asclepias gigantea α. *Enc. Meth.* i. 280? (exclusa planta flore flavo Egyptiaca.)

Habitat in Mithilæ Magadhæ et Cosalæ arenosis.

Tota planta a *C. gigantea* nihil diversa flore excepto minore.

Flores

Flores ante maturitatem orbiculati, depressi, extra albido-subrubicundi, intus purpurei, odorati; at herba graveolens. *Corollæ* basis convexus, laciniæ erectæ. *Coronæ* corpuscula basi acuto recurvo adscendentia, apice bifido patula. *Folliculi* mucrone recto acuminati.

I have seen still another *Calotropis*, which, on account of its simple herb-like stem and smooth leaves, may possibly be that described by Linnæus in the *Flora Zeylanica*, although the form of its leaves is different. I shall here however give an account of it.

Calotropis Acia nectariis apice trilobo incumbentibus, basi subulato patentibus.

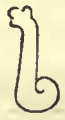
Asclepias foliis oblongo-ovalibus amplexicaulibus. *Linn. Fl. Zeyl.* 112? (exclusis synonymis nisi forte Hermanni omnibus.)

Aki Hindice.

Habitat in Mithilæ borealis sylvis.

Caulis lignosus, 2 vel 3 pedes altus, simplex, compressus, ut tota planta lactescens, apice indutus tomento albido evanido. *Folia* opposita, rigida, internodiis longiora, petiolata, basi obtusiuscula sed semper omnino integra, acuta, elliptica, integerrima, plana, crassa, costis alternis raris subvenosa, tomento albo maturitate omnino evanescente induta. *Petiolus* brevissimus, sed multo quam in *C. gigantea* longior, apice supra folii basin substrigoso. *Pedunculus* communis interfoliaceus, solitarius, rigidus, alternus, compressus, albido tomentosus, multiflorus, subbifidus. *Pedicelli* subumbellati, teretes, uniflori, flore longiores, tomentosi. *Bracteæ* plano-subulatæ, parvæ, ad pedicellorum basin. *Flores* magni, extra albidi, intus purpurei, ante maturitatem ovati acuti foveis quinque magnis insculpti. *Calyx* corolla dimidio

midio brevior, erectus, quinquepartitus laciniis lineari-lanceolatis, acutis. *Corolla* basi plana, ultra medium quinquefida laciniis patulis ovatis, medio utrinque sinu magno inflexo insculptis. *Filamenta* crassa coalita in tubum germina involvens cylindricum. *Antheræ* quinque membranaceæ, biloculares, lateribus stigmatis incumbentes. *Grana* pollinis geminata ad angulos stigmatis annexa. *Corona* e corpusculis quinque crassis, compressis, dorso filamentorum adnatis, stigmate brevioribus, basi acuto patente recurvis, apice trilobo incumbentibus. *Germina* duo supera. *Styli* duo breves, subulati. *Stigma* unicum, capitatum, stellato-pentagonum, acutangulum, medio supra convexum. *Folliculi* duo, uno tamen plerumque abortiente, ovales, hinc gibbosiores, pulverulento-tomentosi. *Parietes* crassissimæ, carnosæ. *Receptaculum* fungosum, lineare, planum, hinc parietibus adnatum, undique seminibus papposis imbricatum.



Corpusculum *C. giganteæ.*

Corpusculum *C. procereæ.*

Corpusculum *C. Aciæ.*

Avanacoe seu Cit Avanacu, *p.* 57. *fig.* 32.
Pandi Avanacu, *p.* 60. no *fig.*

These two are mere varieties, such as usually occur in plants that are much cultivated: and Commeline in his observation is perfectly justifiable in saying, "inter se admodum magnitudine differt ratione soli et loci in quo crescit. In quibusdam locis fit arbor, in aliis vero non excrescit ultra quatuor quinqueve pedum altitudinem." When sown thick on a poor soil, I have seen it ripen its fruit within the year from being sown, and not rising above three feet: it was ploughed down immediately on producing its first crop; but, when planted on a good soil, with plenty

plenty of room for air, it runs up to be a small tree, is later of flowering, and produces fruit annually for many years. In short, what I have said concerning the variety of the Cotton plant in my commentary on the first part of the *Hortus Malabaricus**, is almost entirely applicable to the *Avanacoes*, which, as Commeline observes, are both varieties of the *Ricinus vulgaris* of C. Bauhin.

Plukenet, however, was not satisfied with this, but considered the *Cit* (*alba*) *Avanacu* as different from the common kind, and as being the *Ricinus Americanus major caule virescente* (*Alm.* 319.), while the *Pandi Avanacu* he calls *Ricinus africanus maximus caule geniculato rutilante* (*l. c.*). With respect to the last he may be right, in so far that the *Pandi Avanacu* may be the same with the plant he means; but he has not attended to what Rheede says respecting the *Cit Avanacu*, "cujus duæ species sunt, una cortice viridi communi, altera rubro." If, therefore, the colour of the stem is to make a difference, both the species of *Cit Avanacu* cannot belong to the American plant, which Plukenet quotes. Although I call this an American plant, I have no doubt that India is the original country of the *Ricinus*, and that it has been carried to America as a plant highly useful: for I must here observe, that very few if any plants were originally common to the East and West Indies. Plukenet indeed (*Alm.* 111.) entertained a contrary opinion, "Experientia enim nos docuit, quamplurimas Indiæ orientalis plantas etiam in America reperiri;" and this opinion has been followed by none more than by Linnæus: but I am confident, that the spontaneous vegetable productions of the two countries are totally different; and daily experience is now showing, that the plants of Sloane and Rheede, which were at one time considered as the same, differ in some remarkable circumstance.

The elder Burman (*Thes. Zeyl.* 206.) joins properly the *Ava-*

* *Trans. Linn. Soc.* xiii. p. 492.

nacoe

nacoe and *Pandi Avanacu* into one species, including both the American and African varieties.

Rumphius admirably describes the *Cit Avanacu* under the name of *Ricinus albus* (*Herb. Amb.* iv. 90.), noticing a double variety *domesticus et sylvestris*, of which the former has a tinge of red, while the latter is entirely pale. He also describes the *Pandi Avanacu* under the name of *Ricinus ruber* (*l. c.* 97. *t.* 41.), and considers them as distinct.

Linnæus, when he published the *Flora Zeylanica*, seemed to be of the same opinion; for he mentions only one species of *Ricinus* (339.), and quotes for it the *Cit Avanacu* alone. He justly considers it as the *Ricinus vulgaris* of C. Bauhin, which Plukenet and the elder Burman had rejected.

The younger Burman (*Fl. Ind.*306.), following Linnæus, calls this species of the *Flora Zeylanica*, *Ricinus communis*, thus needlessly changing the name given by C. Bauhin; for Linnæus, it must be confessed, amidst many great qualities, was an insatiable innovator. Burman justly considers the *Ricinus albus* and *ruber* of Rumphius as the same; but quotes only the *Cit Avanacu*, although there cannot be a doubt that the *Ricinus ruber* and *Pandi Avanacu* are precisely the same. Finally, he quotes none of the authors who call the plant either African or American.

M. Poiret (*Enc. Meth.* vi. 201.) gives at great length the synonyma of the *Ricinus communis*, and I believe with great judgement, including in this species the *Ricinus albus* and *ruber* of Rumphius as well as the *Avanacu* of Rheede, by which he no doubt meant the *Cit Avanacu*. He considers the *Ricinus ruber* and the African plant as belonging to the same variety, and does not quote the *Pandi Avanacu*, probably because Rheede gives no figure.

Willdenow soon after (*Sp. Pl.* iv. 564.) endeavours to divide the species of M. Poiret into four distinct species, adding a fifth

from

from Jacquin, which I presume is also a mere variety. As, however, Willdenow saw all the five plants living, I beg to be understood as speaking with all due deference to the opinion of a very excellent botanist. All that I can say is, that I have seen four kinds of the *Ricinus* very commonly cultivated in India, and I think that there is nothing said by Willdenow to enable one to distinguish his plants from those I have seen. It is very possible, however, that this botanist may really have seen four different species, although from not having had an opportunity of seeing the *R. communis* in all its stages and varieties, he may not have selected the characteristic distinctions with sufficient accuracy. This I the more readily believe, because in the *Hortus Kewensis* (v. 331.) four of Willdenow's plants are mentioned as distinct species, without quoting either Rheede or Rumphius. Yet M. Poiret, in the Supplement to the *Encyclopédie*, seems to adhere to his former opinion, and does not think any alteration necessary; and Dr. Roxburgh considered that he had seen only one species in India (*Hort. Beng.* 69.).

I shall now mention the four varieties commonly cultivated in Bengal, and must observe, that two of them are evidently included by Rheede under the *Cit Avanacu*, "cujus duæ species sunt, una cortice viridi-communi, altera rubro." Both these are almost always cultivated for the seed, and are therefore sown close, so as to stint their growth, and thus bring them early to flower; and, when they have ripened their seed, they are destroyed by the plough, a new sowing being more productive than if they were allowed to grow for several years: for, as Rheede observes, they will grow to be shrubs seven or eight feet high. Both are indiscriminately called by the natives *Arinda*, and often grow in the same field.

1. R. caule subherbaceo fistuloso viridi pulverulento, stigmatibus bifidis.
   Ricinus communis. *Willd. Sp. Pl.* iv. 564?
   Ricinus albus sylvestris. *Rumph. Amb.* iv. 90.
   Cit Avanacu cortice viridi. *Hort. Mal.* ii. 57.
2. R. caule subherbaceo rubro pulverulento, stigmatibus bipartitis, foliis lividis.
   Ricinus lividus. *Willd. Sp. Pl.* iv. 565?
   Ricinus albus domesticus. *Herb. Amb.* iv. 90.
   Cit Avanacu cortice rubro. *Hort. Mal.* ii. 57.

The other two varieties by the natives are called *Pat* (leaf) *Arinda*, because they are chiefly cultivated for their leaves, on which a large kind of silk-worm* is reared for spinning a coarse silk called *Arindi*. On these accounts they are usually planted in hedges round the huts of those who rear the worms; and being allowed to stand for years, acquire a considerable size.

3. R. caule lignoso solido viridi.
   Ricinus viridis. *Willd. Sp. Pl.* iv. 564? (exclusis synonymis).
4. R. caule lignoso solido rubro lævi, petiolis medio et apice glandulosis, stigmatibus bipartitis, foliis lividis.
   Ricinus africanus. *Willd. Sp. Pl.* iv. 564?
   Ricinus ruber. *Herb. Amb.* iv. 97. *t.* 41.
   Pandi Avanacu. *Hort. Mal.* ii. 60. "a *Cit Avanacu* in eo tantum differt, quod altius assurgat, quodque stipitibus et ramis est valde rubris seu miniatis et nitentibus."

It can scarcely, I think, be supposed, that the trifling difference between *stigma bifidum* and *s. bipartitum*, in a plant much and long cultivated, can be considered as sufficient to establish a distinction of species.

* Phalæna (Attacus) Cynthia, *Drury* ii. *t.* 6. *f.* 2. *Cramer* iv. 39. *f.* A. *Trans. Linn. Soc.* vii. *p.* 42. *t.* 3.

The

The fifth species of Willdenow, *R. inermis*, which also M. Poiret considers as a mere variety of the *R. communis*, shows on what slight grounds even the genus *Ricinus* rests, as several species of *Croton* differ in nothing else from the *Ricinus* but in having a smooth capsule. We perhaps may therefore return to the classification of Pliny (*l.* 15. *c.* 6.), who considers *Croton* as another name for the *Ricinus*; and we ought thus to include in one genus with the *Ricinus* all the plants that have a similar flower, without attention to the mere external covering of the capsule. By this we should include not only several species of *Croton*, but also some of the *Jatrophæ*, which have exactly the habit of the *Ricinus:* but these genera, as they now stand, can be distinguished by no character common to all the species.

Cadel Avanacu, *p.* 61. *fig.* 33.

This plant is one of the Linnæan species of *Croton*, a genus concerning which I have given my opinion when treating of the *Nilicamaram* in the Commentary on the first part of the *Hortus Malabaricus**. It is not, however, one of these which could be associated with the *Ricinus* or *Croton* of the ancients, as mentioned above: yet the affinity is sufficiently strong to justify the natives of Malabar in including it in their genus *Avanacu*. It must, however, be observed, that the generic character of the genus *Avanacu* given by Rheede (64.) is remarkably deficient, what he says being only applicable to the two first species. *Japalu*, the name by which the Brahmans of Malabar call this plant, is merely another orthography for the *Jipala* of the Sanscrita, the name of a tree that will be afterwards described.

According to Commeline the seeds of this plant, which are a valuable though drastic purgative, were originally known by the name of *Pinei nuclei Molucani*; but, when he published this

* *Trans. Linn. Soc.* xiii. *p.* 503.

work, they were known in the shops by the name of *Cataputia minor*; although they were sold by itinerants under the name *Grana Dilla* or *Grana Tilli*, which latter name by the time of Plukenet had in a great measure prevailed, as the *Cadel Avanacu* was by him called *Ricinus orientalis cujus fructus sunt Pinei nuclei Molucani a nobis putati et Grana Tilli officinarum* (*Alm.* 320.; *Mant.* 162.).

The elder Burman quotes the *Cadel Avanacu* for his *Ricinoides Indica, folio lucido, fructu glabro*, and (*Thes. Zeyl.* 200.) gives us the synonyma of preceding authors at great length, and with more care than he usually bestowed on the subject. The seeds then were called *Grana Tiglia*; and it had been discovered that the older botanists had described the seeds by one name, taking them for the production of a Pine, while the plant producing the seed, without this circumstance having been known, was described by the name of *Lignum Moluccense* or *Pavana*. The figure which Burman gives (*t.* 90.) represents the leaves as having three nerves meeting at their base; but in the figure of Rheede there are five nerves. We have no account of the flower from the latter; but Burman says, "flores masculini calycem nullum habent, petala octo, stamina sedecim." He also says, "Frutex hic caules gerit simplices, qui nascuntur sine ramis lateralibus, apice flores in spicam longam collectos gerentes—ad radicem spicæ duo rami egrediuntur ejusdem structuræ cum caule, et sic continuatur secundum ætates." This implies, that the plant which he described had in Linnæan language *caulem fruticosum dichotomum, e ramorum divaricatione fructiferum*, which is by no means applicable to the figure of Rheede. These circumstances will perhaps render it doubtful whether the plant, which Burman described and figured, was actually the same with the *Cadel Avanacu*, although Rheede agrees with Burman in calling his plant a shrub (*frutex*), not very reconcileable with the

the idea of its producing the *Lignum moluccense*, which implies the plant being a tree.

The *Granum Moluccum* accordingly of Rumphius (*Herb. Amb.* iv. 98. *t.* 42.), to which no doubt the greater part of the synonyma quoted by Burman belong, and which Rumphius considered as the *Cadel Avanacu*, is a small tree (*arbuscula trunco brachium vel pedem crasso, in paucos divisa ramos*), to which the term *frutex* would not be very applicable; and, speaking of Rheede's account of the *Cadel Avanacu*, Rumphius says, "in toto isto capite nil memoratur de acri atque urente ipsorum qualitate, quæ in cunctis hujus arbusculæ partibus detegitur." Further, in his figure Rumphius represents the capsules *ovatæ*, while in the figure of Rheede they are *turbinatæ*. These circumstances are perhaps insufficient to convince any one of a specific difference between the plants of the two botanists; although I think that they give room for a suspicion that calls for further examination. One circumstance may serve to throw light on the subject. Rumphius speaking of the capsule says, "intus sunt tres cameræ, in quavis continetur ossiculum cameram non replens." Whether or not this last circumstance be the case in the *Cadel Avanacu* I am not sure, but Rheede gives no hint of it.

Linnæus in the *Flora Zeylanica* (343.) joins the shrubs of Burman and Rheede, with their synonyma, to his *Croton foliis ovatis glabris acuminatis serratis, caule arboreo*, which, in one respect at least, would seem to have most resemblance to the *Ricinoides* of Burman, as he says, "racemus ex divaricatione caulis." Whether, however, Burman was wrong in calling the *Gajapala* of the Ceylonese a shrub, or whether Linnæus described the same plant with Burman, I have no means of ascertaining. The former does not quote Rumphius, who agrees with him respecting the size of the plant.

Burman the younger (*Fl. Ind.* 304.) adopts from Linnæus the specific name *Croton Tiglium*, defines his plant as in the *Flora Zeylanica*,

Zeylanica, and quotes as synonymous the *Ricinoides* of his father, the *Granum Moluccum*, and the *Cadel Avanacu*.

M. Lamarck (*Enc. Meth.* ii. 208.) continues the same synonyma and specific character, and seems to have described from specimens in the herbarium of Jussieu; for he mentions several circumstances not previously noticed by the authors I have enumerated. He calls it a tree of a middling size. He gives five divisions to the calyx, five petals, and about sixteen stamina. He mentions that the young leaves are dotted with hairs disposed in form of a star; and he takes no notice of the cells of the capsule being much larger than the seeds. He mentions its being a cultivated plant, of which I find no traces in former authors. The figure of the fruit which he gives (*Ill. Gen. t.* 790. *f.* 2.) represents it shaped like that of the *Cadel Avanacu*, and having the seeds as large as the cavities.

Willdenow (*Sp. Pl.* iv. 543.) continues the synonyma, but adds a new specific character, omitting the *caulis arboreus* and adding *racemus terminalis*. If he had attended to what Burman stated, he might have seen that this last was not to be depended on; for, although the raceme in the plant of Burman appears at first terminal, yet two young shoots, proceeding from its base, soon leave it "in divaricatione caulis," as Linnæus has it. His specimens, however, were probably in a young state, and had "racemos facie terminales," as he described. He says nothing to extricate us from the doubts respecting the identity of the plants described by Rheede, Burman and Rumphius.

In the *Hortus Kewensis* (v. 327.) Rheede alone is quoted; yet the plant was sent to the garden by Dr. Roxburgh, whose *Croton Tiglium* is a large tree (*Hort. Beng.* 69.) called *Jamalgota* in the language of the vicinity. The specimen of this, which I have given to the collection of the East India Company, has no fruit; but it has 15 stamina, a circumstance that deserves particular attention.

Gærtner

Gærtner for his *Croton Tiglium* (*De Sem.* ii. 119.) continues to quote Rheede, Rumphius and the elder Burman. He mentions nothing of the remarkable smallness of the seeds compared with the containing-cells noticed by Rumphius; but in the figure the seeds seem to fill the cells entirely; and he describes the capsule as quite smooth (*glabra*) without mentioning its shape, which in the figure, however, is much liker the *Cadel Avanacu* than the *Granum Moluccum*.

In India I have found two trees certainly distinct, yet both agreeing so well with the later accounts of the *Croton Tiglium*, that I am uncertain to which I should refer the name; and I have to regret that, not aware of all the difficulties attending the subject, I paid less attention in describing one of them than was necessary: but I have given specimens of both to the collection of the East India Company; and there is little doubt that the one I have most fully described is the *Croton Tiglium* of Dr. Roxburgh, and therefore of the *Hortus Kewensis*; but, as it is a middle-sized tree, there is some doubt of its being either the *Cadel Avanacu* or the *Ricinoides* of Burman. Rheede says nothing of the flower of his plant, and therefore there is more room for admitting the identity of it than of the *Ricinoides*, the numbers in the male flowers of which are quaternary, while in my plant they are quinary: but I shall now describe it, and leave others to judge. It must however be premised, that, although the seeds of the *Cadel Avanacu* of Malabar, of the *Ricinoides* of Ceylon, and of the *Grana Tilli* of Molucca, have all a drastic purgative quality, this is no proof their being one species, those of the *Ricinus communis* and *Jatropha Curcas* having similar powers.

However much I may be displeased with the genus *Croton*, I know too few of the species to venture on a new arrangement, and new names. The specific characters which I give are merely intended to distinguish the two plants from each other.

Croton

Croton Jamalgota staminibus quindecim, semine loculum implente.

Croton Tiglium. *Enc. Meth.* ii. 208? *Hort. Beng.* 69. *Hort. Kew.* v. 327.

Jamalgota Hindice.

Konibish Bengalensium.

Habitat ubique in Bengala.

Arbor mediocris ramulis teretibus, glabris, ad apicem sulcatis. *Folia* alterna, petiolata, oblongo-ovata, denticulis apice glandulosis serrata, acuminata, nitida, punctis raris piloso-stellatis maturitate evanescentibus aspersa, quinquenervia. *Petiolus* subpentagonus, canaliculatus, apice recurvus, brevis, pilorum stellulis aspersus *Stipulæ* binæ laterales, subulatæ, minimæ, erectæ. *Glandulæ*, præter eas apicibus denticulorum folii insidentes, duæ, ad marginem folii paulo supra petioli apicem adnatæ. *Racemi* floriferi terminales, erecti, simplices. *Flores* parvi, virides, subternati, pubescentes: superiores masculini, inferiores feminini.

Masc.: *Calyx* quinquefidus. *Petala* quinque lanceolata, lanata. *Filamenta* quindecim distincta, receptaculo lanato inserta. *Antheræ* biloculares.

Fœm.: *Calyx* quinquefidus persistens. *Germen* superum, ovatum, maximum. *Styli* tres longi, ultra medium bifidi, filiformes, decidui. *Stigmata* simplicia. *Capsula* erecta, magnitudine nucis Moschatæ oblonga, scabra, trigona, sex-sulca, triloculares. *Semina* loculos implentia, solitaria, apici receptaculi insidentia, integumento osseo nigra. *Arillus* albus.

The description by M. Lamarck of his *Croton Tiglium* differs in nothing, except in his saying "les fruits sont glabres, marqués de trois sillons—coques brunes ou rousseatres:" but these differences of themselves are too trifling to give room for a separation;

tion; and especially as I was describing from fresh, and M. Lamarck from dried specimens.

The other species I found first in the kingdom of Ava, and since in the north-east parts of Bengal. In Ava I took it for the *C. Tiglium*, and under that name sent specimens to the Court of Directors, by whom they were given to Sir J. Banks: but specimens from Bengal have since been presented to the Collection of the East India Company.

Croton Pavana staminibus decem, seminibus loculo multo minoribus.

Granum Moluccum. *Herb. Amb.* iv. 98. *t.* 42?

Habitat ad Avæ et Camrupæ pagos.

Arbor ramulis nitentibus, viridibus, nudis. *Folia* alterna, petiolata, ovata, glabra, acuminata, subtrinervia, serrata. *Glandula* utrinque marginalis ad petioli apicem. *Stipulæ* laterales, setaceæ. *Racemi* floriferi terminales, fructiferi, ramulo utrinque prodeunte, e rami bifurcationibus. *Flores* pedicellati, parvi, superioribus masculinis, inferioribus femininis.

Masc.: *Calyx* planiusculus. *Petala* quinque. *Stamina* decem, distincta.

Fœm.: *Calyx* quinquefidus. *Styli* tres bifidi. *Capsula* pendula, trigona, turbinata, depresso-punctata, hispida, loculis semine multo majoribus inflata.

Although I have little doubt that this is the plant of Rumphius, which is no doubt the real *Tiglium*, yet as this name has been affixed to the other species by two excellent botanists, I do not wish to occasion further confusion, and prefer the other name, by which the plant was known to older botanists. The principal difference which I observe between this and the plant of Rumphius is, that the latter, to judge from the plate, has

capsula ovata. It is true, that the Burmas assured me that they often eat the leaves as a vegetable; while Rumphius says "in tota planta, ac potissimum in ejus foliis vehemens detegitur fervor, ipsum superans Piper." Little reliance is however to be placed on the assertions of the Burmas who accompanied me, they being mostly boatmen, and persons who would be diverted by deceiving a stranger in such particulars, as I know by sad experience, having been almost choked in attempting to eat an *Arum*, which they pretended to be remarkably good. We cannot either rely much on the figure of Rumphius, as his blindness prevented him from detecting errors in his draughtsmen. What he says in the description respecting the fruit is entirely applicable to my plant.

Codi Avanacu or Cadi Avanacu, *p.* 63. *t.* 34.

In 1814 this plant had been lately sent by Mr. Ker to the Botanical Garden at Calcutta from China; so that Dr. Roxburgh may not have seen it there; nor is it included in the Catalogue of Plants growing there, published by Dr. Carey. But there I found it thriving, and have given specimens to the Collection of the East India Company. The name *Cadi* on the figure is no doubt a typographical error, as is clear from the Arabic characters; yet it is now generally quoted.

Commeline admits that this plant has been erroneously classed with the *Ricinus*; but mentions its affinity with the *Lathyris* of C. Bauhin, one of the genera united by Linnæus with *Euphorbia*. Plukenet, however, admits of a resemblance to both, and calls it *Ricinus malabaricus fruticescens, Lathyridis facie, fructu in foliorum alis echinato* (*Alm.* 321.). The affinity to the *Euphorbia* is so strong, as to have induced Hermann to call it *Tithymalus tenellus Indicus foliis Linariæ raris*, the *Tithymalus* being another of the genera united by Linnæus with *Euphorbia*.

The

The elder Burman, however, considered it more allied to the *Chamælea*, now called *Cneorum*, and called it *Chamælea foliis linearibus, flosculis spicatis, echinato fructu* (*Thes. Zeyl.* 59. *t.* 25.); but his figure is not so good as that in the *Hortus Malabaricus*, the stem being represented too slender, and the leaves too thickly set:—the principal defect in the figure of the *Hort. Mal.*, as Burman justly remarks, being in the edges of the leaves, which are represented as too deeply indented. Burman, although his figure does not represent it, describes the edges well, "in ambitu levissimis et tenuissimis dentibus seu crenulis serrata;" so that, notwithstanding the differences between his figure and that of Rheede, I have little doubt that they meant the same plant: although I must confess, that the term *foliis Linariæ raris* of Hermann is little applicable to the figure of Burman. He adds as synonymous an American plant of Plumier, probably quite different.

Linnæus in the *Flora Zeylanica* (335.) joins it in the same genus with the *Pee Cupameni* (*Hort. Mal.* x. 163. *t.* 82.), a plant as different as well possible, both belonging to the same natural order, and calls it *Tragia foliis lanceolatis obtusis integerrimis*. Besides the *Codi Avanacu* and *Chamælea* of Burman, Linnæus quotes as synonymous two plants of Hermann, which Burman did not consider as belonging even to the same genus: the *Pitta Gædi ghus* he considers as an *Esula* (*Thes. Zeyl.* 95.), and the *Dya Nelli* he considers as a *Tithymalus* (*l. c.* 225.). I suspect here some mistake, and that the three plants of Hermann are distinct: but without examining his herbarium nothing certain can be known on this subject; nor, if it be found that Hermann actually meant three different plants, can it be ascertained which Linnæus meant, without inspecting his collection. One expression, besides the *folia integerrima*, leads me to doubt of his having really seen the *Codi Avanacu*; for he says, "supra divi-

suras caulis oritur spica cum unico flosculo femineo." Now, in the *Codi Avanacu* the spica is not situated as thus described, but is axillary, as Ray indeed expressly notices; for he called the plant *Lathyris frutescens fructu in foliorum alis echinato.*

The younger Burman, having had the advantage of the *Species Plantarum*, calls this plant *Tragia Chamælea*, and omits altogether the *Esula* of his father; but continues as synonymous with the *Codi Avanacu* his *Chamælea* and *Tithymalus*, already quoted, although the latter is an aquatic plant, while the *Codi Avanacu* grows in sandy and rocky places. Which he meant I cannot say.

If, therefore, the *Chamælea* of Burman was the plant which Linnæus described, the *Tithymalus* of Burman seems to have been wisely omitted by Willdenow (*Sp. Pl.* iv. 326.), who gives a new specific character, in which the *folia integerrima* are omitted. In quoting Rheede he follows the error of the plate, and in quoting Burman he perverts the cyphers, having table 52 in place of 25.

M. Poirot (*Enc. Meth.* vii. 726.) continues the synonyma as left by the younger Burman, and gives a specific character including the *folia integerrima*. He had not seen specimens, and seems to have drawn his account almost entirely from the elder Burman.

In the *Hortus Kewensis* (v. 256) the *Cadi* (*Codi*) *Avanacu* alone is quoted, and the plant seems to have been sent by Dr. Roxburgh; but whether he had sent seed procured from the coast of Coromandel, where he had seen and described the plant (*Tragia Camolia*, *Hort. Beng.* 103.), or whether he had sent part of the seed procured from China, I cannot say: but the plant which I found growing at Calcutta from the last-mentioned seed, is no doubt the *Codi Avanacu.*

ANA

ANA CHUNDA, *p.* 65. *fig.* 35.

The name *Chunda* of the text, in the figures is written *Schunda*, and in this form is usually quoted by authors. By the natives of Malabar it is confined to plants "quæ omnes frutices sunt spinosi;" but in Carnata, where the word is pronounced *Sunda*, and in Draveda, where it sounds *Shunday*, the prototype taken for the genus is unarmed. The specific term *Ana* given to this species implies Elephant, an idea that has probably some good foundation, as it has extended to Ava, the natives of which call this plant *Zhæn Ka-ram* (*Elephantis Solanum*). The *Vaingani* of the Malabar Brahmans is no doubt derived from the same source with the *Baigun* of Gangetic India, and the specific name *Sada* implies white.

Commeline is perfectly right in considering the *Chundas* as *Solanums*; but he was certainly mistaken in considering this as the same plant with the *Juripeba fœmina* of Piso, a plant of Brazil, which is very likely to be the *S. stramonifolium* of Willdenow (*Sp. Pl.* i. 1044.), a West Indian plant, confounded, no doubt on account of great similitude, with the *Ana Chunda* by M. Lamarck (*Enc. Meth.* iv. 300.), and thence supposed to be a native of India.

Plukenet erred probably as much as Commeline in supposing this to be the *Solanum spinosum maxime tomentosum* of Sicily (*Alm.* 351.), while the *Juripeba fœmina* he transferred to another plant from Madras, which he supposed to be the plant on which I shall next comment.

The elder Burman unites the *Ana Chunda* with many synonyma, several of which certainly do not belong to it; and among others the *Juripeba fœmina* already mentioned, along with American plants described by Sloane and Plumier, which may indeed be the same with the plant of Piso. The plant to which

which Burman unites the *Ana Chunda* and the *Juripeba fœmina*, is the *Solanum zeylanicum, spinosum, folio amplo incano ad pediculum strictiore* of Plukenet (*Alm.* 350.; *Phyt. t.* 226. *f.* 6.), which is the *Solanum cuneifolium* of M. Poiret (*Enc. Meth. Sup.* iii. 765.); but it seems to be a quite different plant from the *Ana Chunda*. To it, however, probably may belong the other synonyma quoted by Burman, except the *Trongum agreste* of Rumphius (*Herb. Amb.* v. 240.), under which name are included three species, all however quite different from the *Ana Chunda*.

The younger Burman (*Fl. Ind.* 56.) quoted the *Ana Chunda* for the *S. ferox baccis calyce obtectis*; but Willdenow (*Sp. Pl.* i. 1059.) has justly rejected this quotation. In fact, no European botanist, except perhaps Morison, since the time of Rheede, seems to have seen this plant, until Dr. Roxburgh described it under the name of *S. hirsutum*, which I found he had done previous to my return from Ava in 1795. At this time I transmitted by this name specimens that were given to Sir Joseph Banks. But the name was not published in any printed work until 1814 (*Hort. Beng.* 17.), previous to which the plant had been named *S. lasiocarpum* (*Enc. Meth. Sup.* iii. 774.), rather a hard name, but which has the advantage of prior publication. M. Poiret quotes a plant from Morison as being the same with his *S. lasiocarpum*, and no doubt his specific character clearly designates the *Ana Chunda*; but whether Morison had seen the plant, or merely described from Rheede, I cannot say. Under the name *S. lasiocarpum* I have deposited specimens in the Collection of the East India Company.

CHERU CHUNDA, *p.* 67. *fig.* 36., where the name is written SCHERU SCHUNDA.

This name is no doubt the same with the *Schira Schuna*, quoted by Willdenow (*Sp. Pl.* i. 1049.) from *Miller's Dictionary* (probably

bably some German translation); but the plant for which this is quoted is totally different from that of Rheede.

Commeline considers the *Cheru Chunda* as the same with the *Jurepeba mas* of Piso, a Brazilian plant, which Willdenow I believe calls *Solanum paniculatum*; but he only quotes the *Jurepeba*, without stating whether he meant the *mas* or *fœmina*. Commeline's conjecture, however, concerning both *Jurepebas* seems equally ill-founded.

Contrary to Commeline, but equally wrong, Plukenet transferred the plant, which he took to be the *Scheru Schunda*, from the *Jurepeba mas* to the *Jurepeba fœmina*, as formerly mentioned. He quotes indeed the *Scheru Schunda* with doubt (*Alm.* 351.), and I think that the figure which he gives of his plant (*Phyt. t.* 316. *f.* 4.) represents the *S. Jacquini*, although Willdenow quoted it erroneously for his *S. sodomæum* (*Sp. Pl.* i. 1043.), as M. Poiret justly observes (*Enc. Meth. Sup.* iii. 742.).

The elder Burman considered the *Cheru Chunda* as the same with his *S. frutescens, villosum, foliis undulatis, mollibus, subtus incanis, spinis flavescentibus armatum* (*Thes. Zeyl.* 220. *t.* 102.), in which he seems right; but very little dependence can be placed on his synonyma, some of which probably belong to the *S. Jacquini*. He says that its Ceylonese name is *Tubuthu*, of which Linnæus takes no notice.

The younger Burman united the *Cheru Chunda* and his father's *Solanum* last mentioned with an American plant of Dillenius, which Linnæus at first (*Fl. Zeyl.* 94.) took to be the same with the *Malabathu* of the Ceylonese, mentioned by the elder Burman (*Thes. Zeyl.* 218.) as quite different from the *Tubuthu* or *Cheru Chunda*, and called by him *Solanum indicum, spinosum, frutescens, maximum, villosum totum fructibus croceis.* Linnæus indeed admits, that the plant of Dillenius differs a little from the *Malabathu* of Burman; and it is equally different from the

Cheru

Cheru Chunda, which Linnæus did not at first quote; although in the *Species Plantarum*, as copied by the younger Burman, he afterwards considered it as the same with the plant of Dillenius, and removed the *Malabathu* to the *S. mammosum*, also an American plant (*Fl. Ind.* 56.). The *Cheru Chunda* and *Solanum frutescens* (*Burm. Thes. Zeyl.* 220.) of India now therefore became united with the American plant of Dillenius, common in the conservatories of Europe, and was called *S. indicum*, until Willdenow and Lamarck omitted the *Cheru Chunda*, which, although one of the most common and generally diffused plants in India, seems for a long time to have been altogether neglected. I should, however, have no doubt in calling it *Solanum indicum*, had not Linnæus, when he first defined the species, since called *S. indicum* (*Fl. Zeyl.* 94.), meant the *Malabathu*, and not the *Tubuthu* of the Ceylonese, which last is the *Cheru Chunda*. But allowing that Linnæus afterwards considered the *Tubuthu* (*Burm. Thes. Zeyl. t.* 102.) to be his *S. indicum*, as is admitted by Lamarck and Willdenow, although he may have erroneously quoted for the same an American plant of Dillenius, and although this is common in the gardens of Europe, are we to consider the American plant as the true *S. indicum*, and to give other names to the Indian plants of Burman, one or other of which Linnæus no doubt meant to describe? This indeed is what has been done by M. Dunal (*Enc. Meth. Sup.* iii. 743.), who properly separates the American and Indian plants, and gives their synonyma correctly; but he calls the American *S. indicum*, and the Indian *S. violaceum*, an unfortunate name, as the flowers are often white, and as already occupied by another plant (*Brown Nov. Holl.* i. 445.). In the former name he is supported by the *Hortus Kewensis* (i. 402.), which for the *S. indicum* quotes the plant of Dillenius alone, continuing however to state, that this grows in both Indies: but who ever saw in India this plant of Dillenius?

There

There is a plant, however, that approaches very near to the *Cheru Chunda*, and which it will be necessary to distinguish. I found it first in my journey to Mysore, where it is called *Gula*, and in 1806 I gave specimens, a drawing, and a description of it to Sir J. E. Smith. I believe it is the same that Dr. Roxburgh called *S. diffusum* (*Hort. Beng.* 17.); but, as I am by no means certain, I shall continue the name *Gula*, and describe the plant, in order to prevent its being confounded with the *Cheru Chunda*, which from their great similitude is likely to happen. The smoothness of the berry itself is an objection to its being considered as the *S. ferox*, unless we suppose that the hairiness of the calyx, which conceals the berry, was confounded by Linnæus with hairs on the berry itself.

Solanum Gula caule lignoso aculeato, foliis ovatis sinuatis pilosis utrinque aculeatis, calyce aculeato longitudine baccæ globosæ, floribus polygamis.

Solanum diffusum. *Hort. Beng.* 17?

Solanum ferox. *Burm. Fl. Ind.* 56. (excluso synonymo Rheedii.) *Willd. Sp. Pl.* i. 1039?

Gula Carnatice.

Habitat in Carnatæ ruderis.

Radix annua? *Caulis* lignosus, cubitum vel pedes duos altus, teres, ramosus, patulus, pilosus, lateri solari purpureus, aculeatus. *Folia* alterna, ad imam obliqua, ovata, sinuata, obtusa, pilosa, costata, venosa, utrinque aculeata, nervo centrali supra purpurascente. *Petiolus* teres, brevis, estipulaceus, aculeatus. *Aculei* validi, compressi, pilosi, in caule petiolo et pedunculo paulo recurvi, in calyce et foliis recti, in foliorum pagina inferiore virides, in aliis locis purpurei. *Pedunculi* intrafoliacei, aculeati, tomentosi, gemini; unus brevis florem unicum gerit hermaphroditum;

alter elongatus flores habet duos vel tres masculinos. *Calyx* quinquefidus laciniis ovatis, revolutis, petalo multum brevioribus. *Corolla* rotata, quinquepartita laciniis angustis subtrinerviis, extra pilosis, inter quas interpositæ sunt membranæ totidem, ore recto lacero, lacinias in corollam pentagonam conjungentes. *Stylus* masculinis brevissimus. *Baccæ* pendulæ, magnitudine grossulariæ globosæ, calyce omnino fere tectæ.

In Cheru Chunda flores fructiferi in eodem pedunculo plures. *Baccæ* minores, calyce multo majores.

CHUNDA, *p.* 69. *fig.* 37. written *Schunda* on the plate.

This, which the natives of Malabar consider as the prototype of the genus, and which therefore as usual in India has no specific name, is quite different from the species which the neighbouring people of Carnata view in the same light, and which has no prickles.

Plukenet (*Alm.* 350.) considered the *Schunda* as the same with the *Solanum spinosum fructu rotundo* of C. Bauhin, which is quoted for the *S. insanum* by Willdenow (*Sp. Pl.* i. 1038.); but this author quotes also for his *S. insanum* the *S. pomiferum magno fructu ex albo et atro-purpureo nitente, foliis et calyce spinosis* of Plukenet (*Alm.* 300. *Phyt. t.* 226. *f.* 3.), that Plukenet considered as the *S. pomiferum fructu nigro spinosum* of C. Bauhin. Which is right, I cannot take upon myself to say; but no great attention can be paid to the synonyma given by Willdenow; as for this very plant, which he defines "caule et calyce aculeatis," he quotes the *Trongum hortense* (*Herb. Amb.* v. 238. *t.* 85.), which has no prickles at all. It is true, that Plukenet considers as the same an African plant called *Tongu* by the people of Angola, *Macumba* by those of Congo, and *Belingela* by the Portuguese; but these latter in India gave this name to all

all the varieties of the *S. esculentum*: among these, however, we cannot include the *Chunda*, the fruit of which is not worth dressing.

The elder Burman continued to join the *Chunda* with the *S. spinosum fructu rotundo*, and applied them to the *Elabathu* of the Ceylonese, which with Hermann he called *S. Indicum spinosum, flore Borraginis, fructu croceo rotundo Persicæ magnitudine, Pomum de Hiericho dictum* (*Thes. Zeyl.* 219.). Linnæus having procured no specimen of this, left it among the class *Barbaræ* (*Fl. Zeyl.* 488.), and there it remained, until quoted by M. Lamarck for his *S. undatum* (*Enc. Meth.* iv. 301.). I have found this plant in the Gangetic provinces. Except in the size of the fruit it has the utmost affinity to the *S. Gula*, so that I shall only note the points in which it differs from the description which I have given of that plant.

Solanum undatum. *Enc. Meth.* iv. 301.
Solanum indicum spinosum, flore Borraginis, fructu croceo, rotundo Persicæ magnitudine, Pomum de Hiericho dictum. *Thes. Zeyl.* 219. *Lin. Fl. Zeyl.* 488.
Solanum spinosum fructu rotundo. *Pluk. Alm.* 350?
Chunda s. Schunda. *Hort. Mal.* ii. 69. t. 37.
Habitat in Magadhæ ruderis et hortis.

Pili in caule et foliorum pagina inferiore stellati, incani. *Folia* minus sinuata, superioribus acutis. *Bacca* magnitudine fere Juglandis, calyce multo major. *Pedunculus* fructiferus maxime incrassatus.

Near the villages of Gangetic India I have found a *Solanum* still more nearly related to the *Chunda* than the *Cheru Chunda* is, and called *Kanta Baigun* by the Bengalese. It seems to me to be the *S. zeylanicum* (*Enc. Meth.* iv. 295. *Sup.* iii. 742.), and at

first sight, being a large bushy shrub, is easily distinguished; but, on a closer examination, the structure of all the parts is so nearly alike, that I am not sure of their being different species. Specimens of both have been deposited in the Collection of the East India Company.

Cattu Gasturi, *p.* 71. *fig.* 38.

Commeline considers this as the same with a plant brought first to Europe from Egypt, where it is called *Ab el Mosch;* and in this he is probably right; but more doubt might have been entertained concerning the *Herba Moschata* of the West Indies, unless it had appeared that the plant was not a native of that country, but had been introduced from Africa (*Herb. Amb.* iv. 39.).

Plukenet, (*Alm.* 14.) however, without hesitation joins both the Egyptian and American plant to the *Cattu Gasturi*, under the name of *Alcæa Ægyptiaca villosa*, borrowed from C. Bauhin, adding to the list given by Commeline some more recent authorities.

Rumphius (*Herb. Amb.* iv. 38. *t.* 15.) as usual gives an excellent account of this plant under the name of *Granum moschatum*, and accounts for its appearance in America as above stated.

Bauhin's generic name *Alcea* had been changed by Tournefort into *Ketmia;* and the elder Burman, following his example, calls it *Ketmia Ægyptiaca, semine moschato* (*Thes. Zeyl.* 134.), mentioning that Ammannus considered the Egyptian kind as different from the Indian. If this supposition is well founded, no other person than Rheede and Rumphius has described the plant in question, all the synonyma quoted by Commeline, Plukenet, Rumphius, and Burman, belonging to the plant of Africa, or at least

least to the same transplanted to America. Burman, however, gives no notice of the circumstances that induced Ammannus to form this opinion.

Linnæus, changing the name *Ketmia* to *Hibiscus*, called this *H. foliis peltato-cordatis septemangularibus serratis hispidis* (*Fl. Zeyl.* 261), adding without comment synonyma of the Indian, Egyptian and American plants; but he does not mention Ammannus; nor was any change worth notice made in the *Species Plantarum*, nor by the younger Burman (*Fl. Ind.* 153.), except by introducing the specific name *Abelmoschus*, well derived from the Arabic.

M. Lamarck (*Enc. Meth.* iii. 359.) gives the synonyma a little fuller than even Linnæus in the *Flora Zeylanica;* but does not include that of Ammannus; and, although he quotes authors describing it as an African, Asiatic and American plant; yet, when treating of its native country, he omits the first altogether. Although he quotes the *Alcea Ægyptiaca villosa* of C. Bauhin, yet he does not refer to Plukenet's works under that head, where a reference to the *Cattu Gasturi* is made; but quotes him as describing the plant by two other names: 1. *Alcea moschata villosissima foliis in lacinias profundiores incisis* (*Alm.* 15. *Phyt. t.* 127. *f.* 1.) from Barbadoes. If this be a good representation of the West India plant introduced from Africa, I do not wonder at Ammannus having separated the Indian kind from it, as, however strongly the plants may resemble each other in qualities, they appear to me quite distinct species. 2. *Alcea Maderaspatana hastatis foliis glabris, pericarpio tantum villosa* (*Alm.* 15. *Phyt. t.* 127. *f.* 2.), which has still less resemblance than the West India plant to the *Cattu Gasturi*, and is quoted by Willdenow for the *Hibiscus hastatus* (*Sp. Pl.* iii. 808.).

Willdenow (*l. c.* 826.) and the *Hortus Kewensis* (iv. 220.) without at all quoting Plukenet, continue to call the *Abelmoschus* a native

a native of both Indies, omitting altogether Africa; so that the observation of Ammannus still remains to be cleared up; but I have no opportunity. Specimens of the *Cattu Gasturi* have been lodged in the Collection of the East India Company.

SCHORIGENAM, *p.* 73. *fig.* 39.

Although both Rheede and his annotator Commeline consider all the *Schorigenams* as *Urticæ;* yet this, the very prototype of the genus, belongs evidently to the order of *Euphorbiæ;* and it is therefore totally different as to genus from the plant of C. Bauhin, with which Commeline compares it.

Plukenet (*Alm.* 393.) was more fortunate in comparing it with a plant, which he calls *Urticæfolia Jamaicensis tricoccos*, and which probably belongs to the same genus.

The *Schorigenam* came afterwards to be described by several authors, all of which probably are carefully enough collected by the elder Burman under the title of *Ricinocarpos* (*Thes. Zeyl.* 202.), which includes, I think, three species: 1. the narrow-leaved *Kohabilia* of the Ceylonese, figured (*t.* 92.) under the name *Ricinocarpos zeylanica hirsuta, foliis lanceolatis serratis:* 2. the broad-leaved *Wælkahabilia* of the Ceylonese, which is the *Schorigenam;* and 3. the *Urtica racemosa urens fruticosa angustifolia, fructu tricocco*, which is probably the plant of Plukenet.

Linnæus (*Fl. Zeyl.* 340.) considered the *Kahabilia* and *Wælkahabilia* as the same plant, and as the same with the *Schorigenam* (*Schorigeram*, an error since pretty generally copied); but leaves out the American plant, and calls ours *Acalypha involucris fœmineis pentaphyllis pinnatifidis.* He says "facies hujus plantæ maxime variat;" and certainly no two plants of the same genus usually differ more than the *Kahabilia* and *Wælkahabilia*, as represented by Burman and Rheede. Linnæus probably considered them as of the same species, because the structure

ture of their involucrum was similar, and totally different from that of the other plants which he placed in the same genus. But this argument should have fallen to the ground, when he found that he had placed them wrong, and called them *Tragia involucrata* (*Burm. Fl. Ind.* 294.), quoting both the narrow and broad leaved kinds for the same species. The most essential difference between the two plants, and which might perhaps not be observable in dried specimens, is, that the *Schorigenam* seems to be an erect plant; for Rheede, speaking of the *Valli Schorigenam* (79.), says, "a prima (i. e. a *Schorigenam*) non differt nisi quod hic sit *Convolvulus:*" and again, "*Schorigenam* est frutex altitudine trium pedum." Now the scandent nature of Burman's narrow-leaved plant is apparent even in his drawing: and Willdenow (*Sp. Pl.* iv. 324.), having seen the plant alive, adds to the specific character "caule scandente." Although, therefore, he continues to quote the *Schorigenam* as well as Burman's plant, it seems clear that he meant the latter only, and should have quoted the *Valli Schorigenam* as synonymous, while the *Schorigenam* of Malabar or *Wælkahabilia* of Ceylon is a very distinct species.

Although M. Poiret places the *Tragia involucrata* among the species that have a climbing stem, yet he still continues (*Enc. Meth.* vii. 723.) to join with it the *Schorigenam;* but he alters the specific character of Willdenow, who has the *folia ovata* like the *Schorigenam*, in place of *sublanceolata* like the *Kahabilia*. The fact however is, that in the twining plant the leaves vary much in shape from ovate to nearly lanceolate, as Linnæus justly observed, which probably induced him to join the *Schorigenam* with the plant of Burman, having overlooked the erect stem of the former. Owing to this variable form in the leaves of the twining plant, the question is not, whether it is the same with the erect *Schorigenam;* but whether it be different from the

the *Tragia hispida* (*Willd. Sp. Pl.* iv. 323.); for the lower leaves of this latter are as much serrated as those of the *T. involucrata*, although the upper ones are not so, and such alone may have been on the specimens which Willdenow saw. The real difference between the *T. hispida* and *T. involucrata* is, that the leaves of the former are *cordata* and of the latter *ovata*. The former, it must be observed, is that which in the Botanical Garden near Calcutta, after the death of Dr. Roxburgh, I found, called *Tragia involucrata*.

In the *Hortus Kewensis* (v. 255.) neither Burman nor Linnæus is quoted, so that we can only judge of what plant is meant by the term *caule scandente* used in the specific character.

I have never seen the *Schorigenam;* but on comparing the *T. involucrata*, that is, Burman's plant, and the *T. hispida*, with the figure and description of Rheede, I have no doubt that, although different from the *Schorigenam* as a species, it belongs to the same genus; which is more than can be said for several of the *Tragias*, for instance the *Chamælea*.

BATTI SCHORIGENAM, *p.* 75. *fig.* 40.

Commeline considers this as a species of *Urtica* called *Pino*, and described as a Brasilian plant by Piso; but their identity is very doubtful, although so far as to their being both *Urticæ* seems entitled to some regard.

Plukenet thought that this *Schorigenam* might possibly be the same with his *Urticæ genus Indianum minime pungens* (*Alm.* 394.), or with his *Lupulo vulgari similis, Indiæ orientalis, floribus in spicam ex origine foliorum prodeuntem* (*Alm.* 229. *Phyt. t.* 201. *f.* 5.). The former cannot be the *Batti Schorigenam cujus folia adurentia;* but Plukenet's figure of the *Lupulo vulgari similis* &c. has so strong a resemblance to the figure of Rheede, that I should think them probably intended to represent the same plant, did not Plukenet's

Plukenet's specific character seem clearly to imply a twining plant, while the *Batti Schorigenam* is evidently erect, "frutex ex genere *Urticarum* altitudine trium pedum."

The elder Burman (*Thes. Zeyl.* 231. *t.* 110. *f.* 1.) without any discrimination quotes the *Batti Schorigenam*, both plants of Plukenet, and the *Pino* of Brazil, for his *Urtica pilulifera*, *foliis majoribus longissimis pediculis*, *minoribus brevibus pediculis donatis*. I have little doubt that so far as relates to the *Batti Schorigenam* he is right, his figure being good, and his description of the stem (*caulis bipedalis*) showing it to be an erect plant, and not a climber. With respect, however, to several of the other synonyma that he quotes, I am doubtful; his admission of the Brasilian *Pino* and of the plants of Plukenet rendering his accuracy suspicious. The Ceylonese name according to Burman is *Katschambali*; and if he is right in this, and quotes accurately the *Urtica racemosa*, *pilulifera tricoccos* of Hermann, then it is not an *Urtica*, but a *Tragia* or *Acalypha*.

Linnæus (*Fl. Zeyl.* 159.) leads us into greater difficulties, uniting the *Batti Schorigenam* not only with the *Lupulo vulgari similis* of Plukenet, and the *Pino* of Brazil; but with no less than three plants of the elder Burman, which I can see no reason for thinking the same with each other. In the first place he quotes the *Urtica fatua spicata*, *foliis floribusque petiolis longissimis donatis* (*Thes. Zeyl.* 232. *t.* 110. *f.* 2.), adding that the figure is good, that is to say, resembles the plant which he meant to describe: but this cannot be the *Batti Schorigenam*, the leaves of which sting, while those of the *Urtica fatua*, as the very name implies, are inert. It is however very probable, on this very account, that the *Urtica* (*Lin. Fl. Zeyl.* 159.) is the *Urticæ genus Indianum minime pungens* above mentioned, as being so like the *Batti Schorigenam* as to have been taken for it by Plukenet. But further, the leaves of the *Urtica fatua* &c. are cordate,

while those of the *Batti Schorigenam* are ovate and shaped like a wedge towards the footstalk. Neither does Linnæus quote for his plant the *Katschambali*, but the *Watuhahambilya*.

Now the *Watuhahambilya* is the second plant of Burman, quoted by Linnæus for the *Batti Schorigenam*, that I shall mention. By Hermann it is called *Urtica zeylanica*, *hortensis*, *urens*, *foliis cannabinis* (*Thes. Zeyl.* 233.). It is impossible that so good a botanist as Hermann would compare to the leaves of the *Cannabis*, either those of the *Batti Schorigenam* or of the *Urtica fatua* &c. of Burman; and I have little doubt that Hermann meant the plant now called *Tragia cannabina*; and this the more especially, that Hermann, besides this garden plant, describes another *Watuhahambilya*, which he calls *Cannabina indica*, *sylvestris*, *Urticæ foliis urentibus*. Now these two plants I take to be what Willdenow (*Sp. Pl.* iv. 326.) calls two varieties of the *Tragia cannabina*, represented by Plukenet (*Phyt. t.* 220. *f.* 2; and *t.* 120. *f.* 6.). These indeed have little or no resemblance to the *Croton hastatum* β of Burman (*Fl. Ind.* 305. *t.* 63. *f.* 1.), although this also is quoted for the *Tragia cannabina*; but Burman by mistake added the figure to the plant of Plukenet, which Linnæus no doubt meant (*foliis trilobo-hastatis lanceolatis dentatis*). Linnæus however was probably misled by Burman's figure into the mistake of supposing the stem erect; for a plant which I have no doubt is that of Plukenet, is certainly a climber. The *Croton hastatum* β is however the plant now called *Tragia cannabina* in the *Hortus Kewensis* (v. 256.), although I have no doubt that M. Lamarck is right in considering it as not a *Tragia*, but as a *Croton* very nearly allied to the *C. tinctorium*. Perhaps he rather erred in considering it as a mere variety of this European plant; and both Roxburgh and Koenig were probably right in thinking it a distinct species, which they called *C. asperum*; although Dr. Roxburgh afterwards

wards took it to be the *C. plicatum* (*Hort. Beng.* 69.), as I indeed did, until I found a different plant perfectly agreeing with the accounts of Willdenow, and with Burman's figure (*t.* 62. *f.* 1.), which represents the *C. tinctorium* γ of M. Lamarck. The erroneous quotation of this second plant of the elder Burman in Linnæus, may have arisen from Burman having erroneously transferred the Ceylonese name *Watuhahambilya* from his *Urtica fatua* &c. to his *Urtica zeylanica* &c.: and Linnæus, finding his *Urtica interrupta* in the collection of Hermann under the name *Watuhahambilya*, would quote for the *U. interrupta* Burman's *U. zeylanica* &c., while he was sensible that the figure of the *U. fatua* &c. represented his plant. This, however, is a mere conjecture.

We have thus freed the *Batti Schorigenam* from two of Burman's plants with which Linnæus confounded it. The third (*Thes. Zeyl. t.* 110. *f.* 1.), I have already said, I consider as the plant of Rheede; but as different from the *Urtica* of the *Flora Zeylanica*. It is true, that Burman in describing his *Urtica pilulifera* &c., which I consider as the *Batti Schorigenam*, calls the leaves *cordata*; but in looking at the figure, it is evident that he employed this term in a sense different from that adopted by Linnæus.

In the *Species Plantarum*, the *Urtica* of the *Flora Zeylanica* is called *U. interrupta*, which is adopted by the younger Burman (*Fl. Ind.* 297.). When he published the species, the synonyma had undergone some change. The *Urtica fatua* &c. of the elder Burman (by error written *U. sativa*) is joined with the *Lupulo vulgari similis* &c. of Plukenet, although it should probably have rather been joined with his *Urticæ genus Indianum* &c.; and these are the only plants quoted for the first variety of this species. It is true, that both fig. 1. and 2. in table 110 of Burman are quoted; but this also is a mere typographical error,

as fig. 1. is quoted for the next variety, in which the *Urtica pilulifera* &c. of Burman is rightly joined with the *Batti Schorigenam*, and with no other plant. So far is well, and the chief points remaining to be determined are, whether the inert *U. interrupta* α is to be considered as a mere variety of the stinging *U. interrupta* β, and whether one or both be really *Urticæ*. I have already mentioned a doubt on this last head, as one of the authors quoted by the elder Burman for his *Urtica pilulifera* &c. calls it *tricoccos*, which implies its not being an *Urtica* as defined by Linnæus.

M. Lamarck (*Enc. Meth.* iv. 643.) continues the *U. interrupta* much as it was in Burman's *Flora Indica*; but quotes all the four synonyma, without dividing them into two varieties or sets; only he quotes the *U. fatua* &c. with doubt. It is clear, however, that the specimens which he had, belonged to the *Batti Schorigenam*, as it had "feuilles point cordiformes—parsemées de poils piquans," and it is impossible to conceive that he would mistake one of the *Euphorbiæ* or *Tricoccæ* for an *Urtica*. That point may therefore be considered as settled; and the *Planta tricocca* of Hermann quoted by Burman, may be safely referred to some other place.

Willdenow (*Sp. Pl.* iv. 342.) calls the *U. interrupta* of Linnæus by the name of *Boehmeria interrupta*, leaving it still, however, in the natural order of *Urticæ*; but he throws the synonyma again into some of the confusion from which they had been freed in the *Flora Indica* of Burman. The *Batti Schorigenam* he indeed leaves with the *Urtica pilulifera* &c. of the elder Burman: but then he places these stinging hairy erect plants in his first variety of the *Boehmeria interrupta foliis glabris*, and along with them he includes the *Urtica* of the *Flora Zeylanica*, the leaves of which do not sting, and the *Lupulo vulgari similis* &c. of Plukenet, which is most probably a climber: but further, for his

his second variety of the *Bochmeria interrupta*, retaining the error (*sativa* for *fatua*) of the younger Burman, he quotes the *Urtica fatua* &c. of the elder Burman, although this is the very authority which Linnæus in the *Flora Zeylanica* recommended as giving a good representation of his *Urtica*, and which, as I have said, is probably the *Urticæ genus Indianum* &c. of Plukenet. Along with the first variety he introduces an *Urtica montana*, which I cannot trace in authors. It is true that he quotes Rumphius (*Amb.* vi. *p.* 48. *t.* 20. *f.* 1.); but the plant there described is the *Urtica Decumana*, which has no sort of affinity to the *Batti Schorigenam*; and the only other *Urtica* mentioned in the Index to the work of Rumphius is the *U. mortua* (*Herb. Amb.* vi. 49. *t* 20. *f.* 2.), which is equally different from the *Batti Schorigenam*, being probably the *Wellia Cupameni* (*Hort. Mal.* x. *t.* 63.), of which I shall again have occasion to speak.

On the whole, the only authorities which I can consider as certainly the same with the *Batti Schorigenam*, are the *Urtica pilulifera* &c. of the elder Burman, excluding many of the synonyma; the *Urtica interrupta* β of the younger Burman; and the *Urtica interrupta* of Lamarck; excluding altogether from his synonyma the first plant of Burman, and marking that of Plukenet with doubt.

Ana Schorigenam, *p.* 77. *fig.* 41.

The specific names *Ana* and *Hasty*, prefixed to the generic terms *Schorigenam* and *Gasurculi* of the natives, imply elephant.

Plukenet calls this *Urtica urens racemifera major* (*Alm.* 393.); but throws no light whatever on the history of the plant, which can be only known from the account of Rheede. M. Lamarck, however, (*Enc. Meth.* iv. 645.) quotes this name of Plukenet (without noticing Rheede) as being the same with the *Urtica heterophylla* of Vahl, and the *U. palmata* of Forskahl; but he had not

not seen the plant, which he says grows in Egypt, no doubt on the authority of Forskahl at least. The specific character given by Forskahl (*foliis palmatis, spicis fœmineis pinnato-ramosis*) by no means agrees with the *Ana Schorigenam*; nor does Rheede's account of this agree with the description annexed by M. Lamarck, who does not however state whether this was taken from Forskahl or Vahl.

Although, therefore, Willdenow expressly joins the *Ana Schorigenam* with the plant of Plukenet, Forskahl and Vahl, and says that it is a native of India and Arabia, I have some hesitation in considering Forskahl's plant as the same: but as I see no objection to Vahl's character, the *Ana Schorigenam* may be his *Urtica heterophylla*, although the *U. palmata* may have been erroneously quoted (*Willd. Sp. Pl.* iv. 362.). If, however, M. Lamarck took his description of the *U. heterophylla* from Vahl, I think that he did right in not quoting the *Ana Schorigenam*. I found this plant in Malabar, and sent the seed to Dr. Roxburgh, who reared it in the botanical garden near Calcutta, where it is called *U. heterophylla* (*Hort. Beng.* 67.). I regret that on the spot I took no description; but I gave a specimen to Sir J. E. Smith, which may serve to show whether or not it has been rightly conjoined with the plants of Vahl and Forskahl. At any rate, it is to be hoped that Dr. Roxburgh's account will be soon published.

Valli Schorigenam, *p.* 79. no *fig.*

In the commentary on the *Schorigenam*, I have endeavoured to show that the *Valli Schorigenam*, and not the *Schorigenam*, should have been quoted for the *Tragia involucrata*.

Schadida Calli, *p.* 81. *fig.* 42.

Calli is a genus similar to the *Euphorbium* of European botanists. Commeline considers the *Schadida Calli* as exactly the same

same plant with that which in the interior of Africa produces the gum called *Euphorbium*, and judges from fragments of the plant, flowers and seed-vessels mixed with the gum from Barbary, and compared with the *Schadida Calli*. If the fragments of the plant were large, such as a whole joint, there would be little room for error; but such fragments are not likely to have been mixed with a drug; and I doubt much, if any one from the flowers or capsule alone, of any species of *Euphorbium*, could positively say that it belonged to no other species, where there are so many nearly alike.

Plukenet (*Alm.* 370.) mentions Commeline's opinion, without either supporting or opposing it, and calls it *Tithymalus aizoides triangularis nodosus et spinosus lacte turgens acre*; but he considers it as a mere variety of a plant from the Canaries, with four or five sides to its stem, of which he gives a figure (*Phyt. t.* 320. *f.* 2.): but this identity is now abandoned, and the figure belongs to the *Euphorbia canariensis* (*Willd. Sp. Pl.* ii. 882.).

Commeline's opinion, however, seems to have been adopted by no less botanists than Tournefort and Ray, as appears from the elder Burman (*Thes. Zeyl.* 96.), who calls the plant *Euphorbium trigonum*, *spinosum*, *rotundifolium*, and gives the synonyma of preceding authors. He considers as a distinct species the *Sandra Calli* of the Ceylonese, for which he quotes the *Tithymalus* from Canary, described by Plukenet.

Linnæus also adopts the opinion of the *Schadida Calli* being the plant which produces the gum *Euphorbium*; and he considers the *Sandra Calli* as a mere variety, rejecting, however, the plant from Canary described by Plukenet; nor does he state (*Fl. Zeyl.* 199.) whether the gum is produced by the *Schadida* or *Sandra*.

On account of its being supposed to be the plant which produces the gum called by the ancients *Euphorbium*, this plant was now

now called *Euphorbia antiquorum*; nor did the younger Burman (*Fl. Ind.* 110.) nor Willdenow (*Sp. Pl.* ii. 881.) make any change in the synonyma. This supposition, however, rests solely, I believe, on the authority of Commeline, copied from one botanist to another, and taken up by him, I think, on inadequate proof: and it must be observed, that C. Bauhin, a better authority, considered the *Euphorbium* to be quite a different species, now called *Euphorbia officinarum*, which is a native of Africa. Even the most accurate botanists speak too loosely on such subjects: for instance, M. Lamarck, speaking of the juice of the *Schadida Calli* (*Enc. Meth.* ii. 413.), "Ce suc epaissi et desseché constitue la gomme-resine connue dans les boutiques sous le nom d'Euphorbe." I ask, who ever saw this done? He afterwards indeed justly remarks, that the juice of the *E. officinarum* is more commonly employed; and in describing the latter plant he says (*l. c.* 415.), "Il découle de sa tige, soit naturellement, soit par incision, un suc laiteux, qui s'épaissit à l'air, se condense, et se dessèche en petits morceaux friables d'une jaune pale, et qu'on apporte en Europe, où il est connu sous le nom d'Euphorbe." I ask again, who ever saw such a gum on the *Euphorbium antiquorum?* I have without success inquired for a gum produced by this tree, in various parts where it grew in abundance.

Ela Calli, *p.* 83. *fig.* 43.

Commeline only states, that this is a species of *Euphorbium* not previously described: but what shows the loose manner in which he wrote, he says "nullum est dubium, quin idem gummi cum priore producat;" although he admits that the gum of the former was unknown in the country where it grows: "videtur autem Malabaribus modus colligendi gummi esse incognitus."

Plukenet considered the *Ela Calli* as his *Tithymalus zeylanicus spinosus arborescens* (*Alm.* 369.), which had been described by Breynius

Breynius under the name of *Euphorbio et Tithymalo media affinis aizoides Indica arborescens spinosa Nerii folio:* but when he published the *Phytographia* (*t.* 230. *f.* 4.), he quoted the *Ela Calli* with doubt; for which perhaps there was reason, as we shall afterwards see. He also quoted, although with doubt, the *Tithymalus africanus arborescens spinosus et foliosus lactescens et Euphorbium fundens*, which is quite different from the *Ela Calli*, being the true *Euphorbium*, with which, however, the *Ela Calli* has been confounded by very able botanists.

The elder Burman (*Thes. Zeyl.* 95.) quotes the *Ela Calli* for his *Euphorbio-Tithymalus spinosus, caule rotundo, et anguloso, foliis Nerii latioribus, et angustioribus.* Here he includes two very distinct species, which he allows had been distinguished by Commeline, and by a writer in the *Mémoires de l'Académie des Sciences*; but "quas tantum varietates habeo, si vero quis distinctas velet species, per me licet." As these species are totally different, it is to be regretted that he did not refer the synonyma to each of his varieties separately, as, in the manner they now stand, they are useless; and it remains uncertain especially, to which we should refer the species mentioned by Plukenet and Breynius, as above stated. Burman, however, here acted with propriety, in so far as he put his reader on his guard.

Linnæus, without giving any direct notice as Burman had done, included both the angular- and round-stemmed plants in one species (*Fl. Zeyl.* 200.), leaving it utterly impossible to judge which he meant; only perhaps it may be inferred, from the term "angulis oblique tuberculatis" used in the specific character, that he meant the kind with the angular stem, which is not the *Ela Calli*, although this is quoted. By this time the plant described by Linnæus had become common in the gardens of Europe, and is probably that now common there.

In the *Species Plantarum* followed by the younger Burman

(*Fl. Ind.* 111.) the plant of the *Flora Zeylanica* with all the synonyma is called *Euphorbia neriifolia*; but a new quotation, the *Ligularia* of Rumphius (*Herb. Amb.* iv. 88. *t.* 40.), is introduced; and, being evidently the kind with an angular stem, is probably the one meant by Burman, as he continues the term "angulis oblique tuberculatis" in the specific character, and as the plant was common: yet what Rumphius says should have deterred Burman from quoting the *Ela Calli*; for mentioning the affinity of the *Ligularia* with the *Ela Calli*, Rumphius says, "hac in re autem parum differunt, quod Amboinensis truncus sit pentagonus et contortus instar fili."

M. Lamarck (*Enc. Meth.* ii. 415.), although he quotes both the *Ela Calli* and the *Ligularia*, evidently shows that he meant the latter, as he mentions that its branches have five angles; and this is the kind common still in the gardens of Europe. He had probably observed that there was a difference in appearance between the plants of Rheede and Rumphius, as he says, "Elle perd ses angles, et ses épines dans celles de ces parties qui ont vieilli:" but the extreme leafy branches of the *Ela Calli* are cylindrical, as appears from the figure.

Willdenow (*Sp. Pl.* ii. 885.) quotes both *Ligularia* and *Ela Calli*; but, although he hints at no difference, he continues probably to mean the former. The *Hortus Kewensis* (ii. 157.), in quoting neither one nor the other, leaves us still perhaps more in the dark concerning his meaning.

Although it would thus appear that the *Ligularia* has long been known in Europe, and was in fact the plant generally meant for the *Euphorbia neriifolia* since the time of Linnæus, yet it is by no means a common plant in the southern parts of India proper. Dr. Roxburgh, I know, had never noticed it twenty years ago; nor did I see it until I went to the north-east parts of Bengal in 1807. Previous to these times, Dr. Roxburgh and I had

had always considered the *Ela Calli* as the *E. neriifolia*; for it forms one of the most common hedges in India, and on that account the natives call it simply *Sij*, while they give specific names to the less common kinds. Thus the *Ligularia* is called *Pangch Sij* or Five-sided *Euphorbia* or *Mansa Sij*, because it is dedicated to Mansa, the deity presiding over serpents; and thus the *E. antiquorum* is called *Nara Sij*. Dr. Roxburgh, I believe, continued all his days to call (*Hort. Beng.* 36.) the *Ela Calli* by the name *E. neriifolia*, while he gave the name *E. Ligularia* to the plant so called by Rumphius, considering it a new species; although, as I have said before, it is pretty certainly the *E. neriifolia* of Linnæus and his successors. In order to avoid ambiguity, as the term *Neriifolia* has been employed for a species so ill-defined, it perhaps should be altogether abandoned; especially as it is not happily chosen for either species; and then, leaving the excellent name *Ligularia* with the species to which it has been given by Rumphius, and borrowing from the Brahmans of Malabar, we may take *Nivulia* for the *Ela Calli*; and thus we shall have the two species properly discriminated.

1. *Euphorbia Ligularia* (seminuda, aculeis stipularibus geminatis, angulis ramorum quinis spiralibus, foliis oblongis). *Hort. Beng.* 36.

   Euphorbia Neriifolia. *Hort. Kew.* ii. 157. *Willd. Sp. Pl.* ii. 885. *Enc. Meth.* ii. 415; et *Burm. Fl. Ind.* 111. exclus. var. syn.

   Ligularia. *Herb. Amb.* iv. 88. *t.* 40.

   Tithymalus aizoides, arborescens, spinosus, caule angulari Neriifolio *Commelini apud Burm. Thes. Zeyl.* 96.

   Euphorbium angulosum, foliis Nerii latioribus *Boerhaavii apud Burm. l. c.*

   Pangch Sij vel Mansa Sij Bengalensium.

   Habitat in sylvis et ad templa Bengalæ orientalis.

2. *Euphorbia Nivulia* ramis teretibus seminudis, spinis stipularibus geminatis spiralibus, foliis lingulatis mucronatis acute carinatis.

Euphorbia Nereifolia. *Hort. Beng.* 36.

Tithymalus arbor, Indica, spinosa, foliis latis, linguæ caninæ facie *Hermanni apud Burm. Thes. Zeyl.* 95.

Tithymalus aizoides, arborescens, spinosus, caudice rotundo Nerii folio *Commelini apud Burm. l. c.* 96.

Tithymalus zeylanicus spinosus arborescens. *Pluk. Alm.* 369?

Ela Calli. *Hort. Mal.* ii. 83. *t.* 43.

Sij Bengalensium.

Habitat ubique in Indiæ sepibus.

I should have been inclined to have considered this as the *Sudu Sudu Tikos* of Rumphius (*Herb. Amb.* iv. 88.), used much in the hedges of Bali; for, as the plant is very prickly, he is evidently wrong in taking it for the *Tiru Calli*; but, speaking of its branches, he says, "non erectos sed procumbentes et flagellosos," which is by no means applicable to the *Ela Calli*; and we must therefore consider this as a third species, nearly allied to the two former.

TIRU-CALLI, *p.* 85. *fig.* 44.

According to the notions prevalent at the time among botanists, Commeline would not admit this to be an *Euphorbium*; but further observations have justified the arrangement of the natives of Malabar. From the term *Portigalli Nivuli* given by the Brahmans, they probably considered it as an exotic introduced by Europeans; and, although it has spread wonderfully over the whole Indian peninsula, scarcely any plant being there more common, it is still rare in Gangetic India; and, when Rumphius wrote, seems to have been recently introduced into the

the Indian archipelago, and only reached Amboina in 1693 (*Herb. Amb.* vii. 62.).

Under the name *Tithymalus arborescens caule aphyllo* Plukenet (*Alm.* 368; *Phyt. t.* 319. *f.* 6.) not only gives a good representation of the *Tiru Calli*; but among the synonyma of preceding authors gives us some, which point out Africa as its proper native country: for he asserts, that it is the *Planta lactaria*, *Xabra*, and *Camorronum* of Rhasis and Rauwolf, the *Felfel Tavil* s. *Piper longum Ægyptium* of Veslingius, and the *Tithymalus aphyllus Planta Mauritanica* of Imperatus.

The elder Burman (*Thes. Zeyl.* 223.) adds nothing to our knowledge of the plant described by Plukenet (which he calls *Tithymalus ramosissimus*, *frutescens*, *pene aphyllos*), except some synonyma of authors subsequent to Plukenet: but he rejects every name that hinted its being a native of Africa. All these he joins with his *Tithymalus orientalis*, *articulatus*, *Juncus aphyllos* of Hermann, which he considers as a distinct species, called *Muwakirya* by the Ceylonese, although the text has *Munakirya*; but, as appears from the index, this is an error.

Linnæus joined the two species of Burman into one (*Fl. Zeyl.* 196.), omitting altogether the names referring to Africa: but whether he thought that the accounts were too imperfect to merit quotation, or that the African plant was not the *Tiru Calli*, I cannot say: from this time forward, however, India is considered as the only native country of the *Tiru Calli*.

In the commentary on the *Ela Calli* I have mentioned the error of Rumphius (*Herb. Amb.* iv. 88.) in considering the *Tiru Calli* as the same with the *Sudu Sudu Tikos*, a plant with strong prickles: but he afterwards gave an excellent account of the *Tiru Calli* under the name of *Ossifraga lactea* (*Herb. Amb.* vii. 62. *t.* 29.).

In the *Species Plantarum*, followed by the younger Burman (*Fl.*

(*Fl. Ind.* 111.), the plant of the *Flora Zeylanica*, with the addition of the *Ossifraga lactea*, becomes the *Euphorbia Tirucalli*, with a termination rather barbarous.

M. Lamarck (*Enc. Meth.* ii. 418.), without adding Africa to its native habitation, restores the Egyptian *Telfel-Tavil* to the synonyma; but this is again omitted by Willdenow (*Sp. Pl.* ii. 890.).

Bahel Schulli, *p.* 87. *fig.* 45.

The Malabar genus *Schulli* implies plants of the natural order of *Acanthaceæ*, prickly in some of their parts, and having erect woody stems and stiff leaves; and these circumstances make the arrangement natural, although the plants belong to different Linnæan genera. Commeline's comparison of the *Bahel Schulli* with the *Genista* is an attempt at classification more rude than that of the natives.

The only author, since the time of Commeline, who notices this plant, is M. Lamarck (*Enc. Meth.* i. 379.), who considers it justly as the *Barleria longifolia* of Linnæus, a species originally founded in the *Amœnitates Academicæ* from the *Anchusa angustifolia verticillis longis aculeis armatis* (*Pluk. Alm.* 30; *Phyt. t.* 133. *f.* 4.), and for which no authority, except Plukenet, is ever quoted by the Linnæan school. I have no doubt that the quotation in M. Lamarck is right; but I doubt much of the plant being a *Barleria*; and its leaves are by no means ensiform as Linnæus and M. Lamarck assert. It was perhaps owing to its differing so much from the generic character of *Barleria*, and from the specific character given by Linnæus, while the *Bahel Schulli* was not quoted by any author which he consulted, that Dr. Roxburgh never introduced this plant into the catalogue of the botanical garden at Calcutta, although it grows abundantly there. He knew that it was the *Bahel Schulli*, he found that this was not quoted, and it is so very common, that he thought it must

must be described, yet he did not know by what name it was called. Such was nearly the dilemma in which at one time he told me he was placed.

In its habit this plant has no resemblance to any *Barleria* that I know; but it strongly resembles the *Acanthus ilicifolius*, one of the genus *Schulli*. Its flower, however, differs much from both, as will be seen from the following note.

Bahel Schulli.
Habitat in totius Indiæ aquosis vulgatissima.

Caulis erectus, rigidus. *Folia* linearia, sessilia. *Flores* in singulis verticillis plures; singuli foliolo lanceolato bracteati; universi bracteis spiniformibus 6 vel 8 cincti. *Calyx* teres quadrifidus, laciniis lateralibus parvis, summa majore, ima bifida. *Corolla* tubulosa, bilabiata. *Limbus* bipartitus; labio superiore apice bilobo, inferiore trilobo. *Stamina* didynama. *Filamenta* duo dimidio breviora. *Antheræ* subæquales.

Rheede mentions a *Bahel Schulli* with a white flower, which I consider as a mere variety, the change from blue to white not being unusual even among uncultivated plants.

Nir Schulli, *p.* 89. *fig.* 46.

The specific name implies water, and is probably meant to distinguish it from the following species, although the two other species of *Schulli* also grow in water. Commeline is exceedingly unlucky in comparing it to a *Teucrium*.

Plukenet imagined that he had received from Coromandel a plant resembling the *Nir Schulli*, which he called *Gratiolæ affinis Indiæ orientalis digitalis æmula* (*Alm.* 264. errore typographi 254.); but I cannot say that the figure which he gives (*Phyt. t.* 49. *f.* 3.) seems to me at all like the *Nir Schulli:* and it must be considered

sidered as representing three plants; that is, there are three plants very like each other; but they differ so much in the essential point of seed, that they must be three distinct species; and unfortunately, Plukenet neglects to inform us to which of the seeds the branch represented belongs; only as these marked *a* are placed near the capsules annexed to the branch, they probably belong to it, the seeds *b* and *c* having separate capsules placed by them. Plukenet himself afterwards (*Mant.* 90.) compares his plant with his *Gratiolæ affinis Maderaspatana, Digitalis æmula, folio Chinopodii, capsulis in verticillis positis* (*Alm.* 180.; *Phyt. t.* 193. *f.* 3.): but this also has little resemblance to the *Nir Schulli*, and cannot even belong to the same genus, having the corolla divided into four equal segments. There is no representation of the flower in *t.* 49. *f.* 3.; but the capsules *a* and *b* strongly resemble those of the *Nir Schulli*, and these plants may belong to the same genus at least.

No further notice seems to have been taken of the *Nir Schulli*, until Willdenow thought (*Sp. Pl.* iii. 374.) that it might be a variety of the *Ruellia difformis*, first described by the younger Linnæus. This is saying very little; nor does M. Poiret say more (*Enc. Meth.* vi. 348.). I do not therefore wonder that Dr. Roxburgh described the plant as a new species, which he called *Ruellia obovata* (*Hort. Beng.* 46.); for it by no means agrees with what Linnæus states of his *Ruellia difformis*. Roxburgh, however, does not quote the *Nir Schulli*, because he found it already taken up. I doubt very much the propriety of considering this as a *Ruellia*, and think that it should be associated with the *Hygrophila* of Brown (*Nov. Hol.* i. 479.). The specimens, however, which I have presented to the Collection of the East India Company are marked *Ruellia? obovata*, while those of a species very nearly allied are marked *Ruellia? quadrivalvis*. As I look upon this last as entirely new, I shall give a full

full description of it, contenting myself with noticing the few points in which the *Nir Schulli* differs.

1. *Ruellia?* vel *Hygrophila quadrivalvis.*
Habitat in Mithilæ hortis mangiferis.

Radix perennis, lignosa, ramosa. *Caulis* lignosus, tres pedes altus, ramosissimus, diffusus. *Rami* glabri, tetragoni; laterum duobus convexis, duobus concavis, internodiis medio attenuatis. *Folia* opposita, apice obtusa, basi in petiolum decurrente acuta, costis supra depressis rugosa, venosa, utrinque hispida, inferiora oblonga, superiora subrotunda. *Petiolus* brevis, annulo ciliato amplexicaulis, pilosus, concavus. *Flores* in verticillis integris multifloris congesti, tubo et labio superiore albidis rubri, nunc omnino sessiles, tunc in capitulum pedicellatum axillare elevati. *Bracteæ* ad singulos verticillos communes circiter octo, foliaceæ, patentes, oblongæ, ciliatæ, calycem fere æquantes. *Calyx* glaber, cylindricus, paulo incurvus, ad medium fere quinquefidus laciniis linearibus erectis. *Corolla* ringens, pubescens; tubus longitudine calycis tenuis; fauces inflatæ; labium superius erectum, concavum, apice bifidum lobis emarginatis; inferius reflexum, subtus lacunosum, trifidum laciniis subæqualibus. *Filamenta* didynama. *Antheræ* sagittatæ, subæquales, biloculares loculis longitudinalibus, basi divaricatis. *Germen* superum. *Stylus* filiformis. *Stigma* simplex, incurvum. *Capsula* quadrangularis, obtusiuscula, glabra, bilocularis, bivalvis. *Valvulæ* medio septiferæ, apice dehiscentes, longitudinaliter per septa bipartibiles. *Semina* plura, plana, retinaculis suspensa; immatura dentata, denticulis maturitate evanescentibus.

2. *Ruellia?* vel *Hygrophila obovata.* Hort. Beng. 46.
Ruellia difformis. *Willd. Sp. Pl.* iii. 374? *Enc. Meth.* vi. 348?
Nir Schulli. *Hort. Mal.* ii. 89. *t.* 46.
Habitat in Tripura australe.

Flores albidi labio inferiore purpureo. *Calyx* pubescens, ciliatus. *Antherarum* loculi paralleli lineares. *Semina* etiam immatura integra.

"*Capsulæ* rotundæ, superne aculeatæ ac pungentes instar spinarum, in longum sex striis sulcatæ." *H. M.*

Cara Schulli, *p.* 91. *fig.* 47.

In comparing this to a *Capparis*, Commeline is no less unfortunate than with the two preceding species of *Schulli*; yet Plukenet followed him, calling it *Capparis forma, frutex spinosus malabaricus* (*Alm.* 80.). This accordingly led the elder Burman into the gross error of quoting the *Cara Schulli* for his *Capparis spinosa foliis oblongis* (*Thes. Zeyl.* 53.), which is not however the plant which Plukenet considered the same with the *Cara Schulli*, but the *Capparis indica spinosa angustiore salicis folio* (*Mant.* 36.), and this is the *Capparis zeylanica* of Linnæus (*Fl. Zeyl.* 210.).

Linnæus therefore in the *Flora Zeylanica* does not at all quote the *Cara Schulli.* In the *Species Plantarum* he afterwards joined it with an American plant, *spinis axillaribus solitariis oppositis*, to form the *Barleria buxifolia*, which is accordingly said to belong to both the Indies (*Willd. Sp. Pl.* iii. 377.). M. Lamarck indeed quotes the *Cara Schulli* for the *Barleria buxifolia* (*Enc. Meth.* i. 380.), and makes no mention of this plant growing in the West Indies; but Linnæus, from the nature of the specific character, probably saw only the West Indian plant; and M. Lamarck himself, in the very same page, refers the *Cara Schulli* to the

Barleria

Barleria cristata β, which both he and M. Poiret (*Enc. Meth. Sup.* i. 589.) confess should be considered as a distinct species.

I judge that the specific character of Linnæus does not belong to the *Cara Schulli*, but to the West Indian *B. buxifolia*, on account of the words respecting the spines already quoted; for although in some parts of Rheede's figure they are represented as solitary at each leaf, and of course opposite, yet in other parts they are represented as growing by pairs from the same point, as is usual in the genus *Barleria*, where the spines are in fact bracteæ. That this is really the case in the *Cara Schulli*, although the figure represents it ill, I infer from the description: "Spinæ binæ et binæ prodeunt. *Folia* in nodis infra ad exortum spinarum proveniunt. *Flores* supra ex origine foliorum e medio duarum spinarum petiolis brevissimis proveniunt." Now, converted into Linnæan language, I consider this to mean: *Folia* opposita. *Pedunculus* axillaris brevissimus uniflorus bracteis duabus spiniformibus munitus. That no dependence can be placed on the accuracy of the figure is clear, from its representing many of the spines placed below the leaves; while in the description the leaves are expressly said to be placed below and the spines above. The real *B. buxifolia* of Linnæus is therefore a West Indian plant.

I think that in Mysore I found the *B. cristata* β of M. Lamarck, and gave specimens, a description, and drawing to Sir J. E. Smith under the name of *B. obovata*. I think it quite different from both the *B. cristata* of Lamarck and that of Linnæus, for these are not the same; but, notwithstanding the difficulties mentioned by M. Lamarck, I think it the *Cara Schulli*. The following description will enable others to judge.

Barleria obovata bracteis spiniformibus simplicissimis, floribus solitariis alternis, calyce spinulis denticulato, foliis obovatis.

Barleria buxifolia. *Hort. Beng.* 45. *Hort. Kew.* iii. 59?
Barleria cristata β. *Enc. Meth.* i. 380. *Ill. Gen. t.* 549. *f.* 2.
Capparis forma, frutex spinosus malabaricus. *Pluk. Alm.* 80.
Cara Schulli. *Hort. Mal.* ii. 91. *t.* 47.
Habitat in Malyalæ sterilibus saxosis.

Frutex diffusus, ramosissimus. *Rami* pilosi, tetragoni, laterum duobus convexis, duobus concavis. *Folia* opposita, subsessilia, obovata, spina brevissima mucronata, integerrima, supra scabra, subtus ad marginem præsertim pilosa, venosa, internodiis longiora, stipulis nuda. *Flores* axillares, alterni, erecti, folio triplo longiores, nunc sessiles, tunc pedicellati, ad imam spinis duabus semiteretibus validis pilosis divaricatis indivisis bracteati, cærulei. *Calycis* quadripartiti laciniæ duæ exteriores plano-parallelæ, subæquales, ellipticæ, venosæ, spinoso-dentatæ; interiores lanceolatæ, parvæ, integerrimæ. *Corollæ* tubus teres, incurvus, calyce duplo longior: limbus patens, quinquepartitus laciniis obtusis, oblongis, subæqualibus. *Filamenta* e tubi medio quinque subulata, quorum tria minima (unde Rheedii oculos effugerint) antheris sterilibus, inclusis; duo limbo paulo breviora antheris fertilibus oblongis incumbentibus bifidis. *Germen* superum. *Stylus* filiformis longitudine staminum fertilium. *Stigma* acutum, aduncum.

In campis Cheræ sterilibus planta vix specie diversa flores habet albos, calycis foliola exteriora subcordata, cætera omnia simillima.

M. Lamarck objects to this being the *Cara Schulli* on account of the short spines at the end of the leaves, which are not represented in some of the leaves figured by Rheede, and are not mentioned in the description; but they are so small as not to have attracted the notice of the botanists of former days; and they are more

more clearly represented in some leaves of Rheede's figure, than they are in any one of the figure given by M. Lamarck. This botanist also objects, that Rheede describes the leaves of the calyx as entire on the edges, and in the figure they are certainly so represented; but I have already pointed out how faulty this is; and in the description we have as follows: "*Calyx*—constat quatuor foliis, duobus grandiusculis—exterius ex origine costulis, quæ in oris apicibus raris minutis—eminent—striatis."

That this is totally different from the *B. cristata* of both M. Lamarck and Linnæus will appear from the following accounts.

The former I found in the south of India, and gave specimens, a drawing and description to Sir J. E. Smith under the name of

Barleria ramosa bracteis spiniformibus multifidis, floribus axillaribus solitariis, calycis pilosi foliolo superiore spinoso-dentato.

Barleria cristata. *Enc. Meth.* i. 380. (exclusis synonymis.) *Ill. Gen. t.* 549. *f.* 1.

Habitat in Cheræ locis siccis duris.

Frutex cubitum altus, diffusus, ramosissimus. *Rami* teretes, pilosi, alterni, annulo ad folia cincti. *Folia* opposita, subsessilia, cuneiformia vel elliptica, integerrima, mucronata, setis in pagina præsertim inferiore aspersa, stipulis nuda. *Flores* albi, summo mane decidui, axillares, sessiles, solitarii, alterni, folio triplo longiores, erecti, ad basin utrinque bracteati spina patente valida multifida. *Calycis* quadripartiti, foliola duo exteriora, parallela, nervosa, ovata, mucronata, superiore latiore spinoso-denticulato, inferiore integerrimo: duo interiora parva, erecta, lanceolata, concava. *Corollæ* tubus medio angustatus, incurvus, pilosus. *Limbus* brevissimus, quinquepartitus laciniis ovalibus, quarum duæ paulo minores.

minores. *Filamenta* e medio tubi quatuor subulata, quorum duo brevissima antheris sterilibus, duo longiora antheris bifidis, inclusis. *Germen* ovatum. *Stylus* filiformis longitudine staminum majorum. *Stigma* incrassatum, oblique truncatum. *Capsula* longitudine calycis compressa, bivalvis. *Valvulæ* naviculares, medio septiferæ. *Semina* in singulis loculis duo, septo adnato insidentia, retinaculis subtensa.

The *B. cristata* of Linnæus is a larger, less rigid shrub, with leafy bracts, and is cultivated in the gardens of Gangetic India as an ornamental flower, and called *Jhungti*. As in most cultivated plants, a considerable number of varieties have arisen; nor have I been able to discover any specific character, on which I could depend to distinguish this *B. cristata* (*Hort. Beng.* 45.) from Dr. Roxburgh's *B. dichotoma*; so that I suspect both may belong to the same species, exceedingly different from the *Cara Schulli*, but differing very little from Dr. Roxburgh's *Barleria cærulea*, which may be the uncultivated plant; and this again is scarcely sufficiently distinct from a shrub called *Nundhekuja*, which I found on the lowest part of the Himalya mountains near the Gandaki river. Specimens of all these have been presented to the East India Company's Collection; and they are all easily distinguished from the *Cara Schulli* by wanting spines.

In the south of India, however, I found another species of *Barleria*, much more allied to the *Cara Schulli* than these plants of Gangetic India, and which it may require some care to distinguish. I gave specimens and a drawing to Sir J. E. Smith, under the name of *Barleria rubra*, and shall here give a description.

Barleria rubra bracteis spiniformibus simplicissimis, floribus axillaribus solitariis alternis, calyce integerrimo, foliis pilosis.
Habitat in Carnatæ campis sterilibus.

Frutex

Frutex pedes duos altus, diffusus, ramosissimus. *Rami* alterni, pilosi, tetragoni, laterum duobus concavis, duobus striatis. *Folia* opposita, subsessilia, ovalia, integerrima, spina mucronata, supra scabra, subtus pilosa, internodiis breviora, stipulis nuda. *Flores* axillares, alterni, solitarii, folio multoties longiores, nunc sessiles, tunc pedunculo brevi insidentes, rubri, ad basin bracteati spinis duabus rectis divergentibus pilosis. *Calycis* quadripartiti laciniæ duæ exteriores ellipticæ, venosæ, integerrimæ; interiores minimæ. *Corollæ* tubus calyce multo longior, rectiusculus: *limbus* patens, subæqualis, quinquepartitus, laciniis quatuor obovatis, quinta acuta minore. *Filamenta* e tubi medio quinque, quorum tria brevissima antheris sterilibus; duo elongata antheris incumbentibus, sagittatis. *Germen* ovatum, superum. *Stylus* filiformis, staminibus longior. *Stigma* acutum, aduncum. *Capsula* elliptica, tetragona, compressa, calyce longior, bivalvis. *Valvulæ* naviculares, medio septiferæ. *Semina* solitaria, villosa, compressa.

PAINA SCHULLI, *p.* 93. *f.* 48.

Commeline compares this to the *Ruscus sylvestris*, an old name for what is now called *Ilex aquifolium*; and the resemblance is so striking, especially in the living plant, that I do not wonder at Plukenet calling it *Aquifolia facie arbor malabarica, Acanthii flore albo cucullato* (*Alm.* 38.; *Phyt. t.* 261. *f.* 4.); and although it is not a tree but a small bush, and the flowers, so far as I have seen, are always blue, as Rheede describes, yet there can be no doubt of the plant's being the same; and Plukenet's comparison of its form to the *Acanthus* is quite correct.

Although not so fortunately classed as by Plukenet, there can be no doubt also, that the *Paina Schulli* is the *Eryngium indicum, aquaticum*,

aquaticum, Ilicis aculeatæ folio, floribus cæruleis of the elder Burman (*Thes. Zeyl.* 94.), the *Mahalkiri* of the Ceylonese, under which name it is mentioned by Linnæus (*Fl. Zeyl.* 638.), who conjectured that it might be the *Paina Schulli*. It is admitted by both, that the plant had previously been described by Bontius under the name of *Myracanthum seu Eryngium indicum*.

Rumphius (*Herb. Amb.* vi. 163.), although he does not quote Rheede, described shortly the *Paina Schulli* by the name of *Aquifolium indicum mas*; but most of what he says in the chapter belongs to another plant called *Aquifolium indicum femina*, of which he gives a figure (*t.* 71. *f.* 1.). Yet, on the establishment of the species called *Acanthus ilicifolius* by Linnæus, this figure is quoted as if it belonged to the same species with the *Paina Schulli*, and *Aquifoliæ facie arbor* &c. of Plukenet (*Burm. Fl. Ind.* 138.); nor have I it in my power to say which plant Linnæus meant.

M. Lamarck, perceiving this error, goes into the contrary extreme, and does not quote Rumphius at all; although, as I have said, he no doubt described the *Paina Schulli*. By this omission, however, of the figure given by Rumphius, we know that the *Paina Schulli* is the plant meant by M. Lamarck. Ray had called this plant *Frutex indicus spinosus, foliis Agrifolii, siliqua geminata brevi*; and, after quoting this, Linnæus had added the plate and figure in the *Phytographia* of Plukenet, where it is represented without a name; for it would appear, that Plukenet's account of the plant in the *Almagestum* always escaped the notice of Linnæus. By an error very unusual with M. Lamarck, he omits altogether to mention Ray; but quotes Plukenet's figure under the name which Ray had given to the plant.

Carambu,

CARAMBU, *p.* 95. *fig.* 49.

Commeline gratuitously annexes the word *Maram*, or tree, to the generic word *Carambu*, which is a herb from $1\frac{1}{2}$ to 2 feet high; and is no where mentioned by Rheede as being applied to the *Carambu*. On the strength of this word, however, joined to the plant having a fruit shaped externally like a clove, he considers it as a species of *Caryophyllus* or Clove-tree; for his words will not admit of our supposing that he meant the herbaceous *Caryophyllus*, which would have been a rather more fortunate conjecture.

Plukenet, adhering still somewhat to the resemblance to the clove, which is indeed striking, but seeing the absurdity of comparing a low, insipid, annual plant with an aromatic tree, calls it after Hermann, *Lysimachia indica non papposa, flore luteo minimo, siliquis Caryophyllum aromaticum æmulantibus* (*Alm.* 235.).

I think it probable, although he no where quotes the *Carambu*, that the elder Burman mentioned it by the name of *Lysimachia indica, aquatica, glabra, flore flavo, siliqua angulosa, stellata* (*Thes. Zeyl.* 146.), which is mentioned by Linnæus (*Fl. Zeyl.* 498.) by the name of *Dyanilla*.

Linnæus in the *Flora Zeylanica* (66.) quotes the *Carambu* for his *Ludwigia*; and, from the description which he gives, he no doubt saw the plant of Rheede: but then he considers the *Dyanilla* as different, and says that his *Ludwigia* is the *Kikirinda* of the Ceylonese, which Burman called *Lysimachiæ species fructu caryophylloideo* (*Thes. Zeyl.* 146.), and considered as the *Nir Carambu* of the *Hortus Malabaricus*, which is a *Jussieua*; and all the other synonyma quoted by Burman, right or wrong, point to the latter genus. Whether or not any transfer of names in Hermann's collection had taken place in the interval between Burman's inspection and that of Linnæus, I cannot say; but it

is evident, that the quotation from Burman should be excluded from the *Ludwigia* of the *Flora Zeylanica*.

This *Ludwigia* of the *Flora Zeylanica* in the *Flora Indica* (37.) of the younger Burman, together with the *Carambu*, both of which have alternate leaves and four petals, and the plant of the elder Burman, which has five petals, became the *Ludwigia perennis foliis oppositis!* and, what is still worse, the same *Carambu* and plant of Burman, with the plant of Hermann, quoted as above mentioned by Plukenet, which is no doubt the *Carambu*, is quoted for the *Jussieua suffruticosa*, while it is an annual plant! Such inaccuracies, copied probably from the first edition of the *Species Plantarum*, increase very much the suspicion, that it was Linnæus, and not the elder Burman, that had fallen into the error respecting the *Kikirinda* and *Dyanilla*.

Willdenow (*Sp. Pl.* ii. 577.), perceiving the error of quoting the *Carambu* for two plants, gives it to the *Jussieua suffruticosa*, although I strongly suspect, that for this he ought to have quoted the *Cattu Carambu*, next to be noticed, and which the younger Burman called *Jussieua suffruticosa* β (*Fl. Ind.* 103.), which has 4 petals and 8 stamina. Willdenow's meaning, however, concerning the *Jussieua suffruticosa* is very difficult to ascertain, as he quotes for it *Rumph. Amb.* 6. *t.* 41., in which three plants are represented, one being the *Lycopodium Phlegmaria*, and the other two seem to be *Orchideæ*. The *Ludwigia* of the *Flora Zeylanica*, which has alternate leaves, and which, from the description, is certainly the *Carambu*, Willdenow calls *Ludwigia oppositifolia*, by which he no doubt means the *L. perennis* of Linnæus and Burman.

M. Lamarck quotes the *Carambu*, and the plant of Hermann, cited by Plukenet as above mentioned, and no doubt the same with the *Carambu*, for his *Jussiæa caryophyllæa* (*Enc. Meth.* iii. 331.). He probably was unable in his dried specimen to observe the

the number of stamina. He adds as a variety the *Lysimachia non papposa humilis Maderaspatana, Clinopodii lutei foliis non crenatis, fructu caryophylloideo parvo* of Plukenet, (*Alm.* 236. *Phyt. t.* 203. *f.* 5.), which is no doubt remarkably like the *Carambu*; but I think Plukenet was too correct to describe one plant by two names on the same sheet of paper; and I therefore suppose this to be the *Lysimachiæ species fructu caryophylloideo* of the elder Burman, having five petals, that has often been confounded with the *Carambu*. In this case the name *Jussiæa caryophyllæa* should be confined to this variety, as it belongs to this genus; while the *Carambu* or *Jussiæa caryophyllæa* α is a *Ludwigia*, which I would call

Ludwigia diffusa caule diffuso, foliis lanceolatis, capsulis subpedunculatis folio dimidio brevioribus.

Habitat in Indiæ ultra et citra Gangem aquosis.

Radix fibrosa, annua. *Caulis* herbaceus, solidus, geniculis inferioribus radicans, linea elevata e petiolorum basi utrinque decurrente angulatus, glaber, ramis sparsis diffusus. *Folia* caulina alterna, lanceolata, integerrima, acuta, glabra, venis simplicibus instructa, plana: in ramulis floriferis folia conferta, sæpe opposita. *Petiolus* brevissimus, semiteres, glaber, basi rudimentis foliorum prodeuntium appendiculatus, stipulis nudus. *Flores* subsessiles, axillares, solitarii, folio multo breviores, flavi, nudi. *Calyx* superus, persistens, quadripartitus laciniis ovatis, acuminatis patentibus. *Petala* quatuor, calyce breviora, oblonga, concava, patentia, æqualia. *Filamenta* quatuor erecta, subulata, brevia. *Antheræ* magnæ, bisulcæ, ovales, erectæ. *Germen* tetragonum, calyce longius. *Stylus* teres, longitudine staminum. *Stigma* magnum, globosum. *Capsula?* tetragona, prismatica, obtusangula, calyce reflexo breviori coronata, apice quadri-

punctato truncata, quadrilocularis, ad latera indeterminate dehiscens, septis e medio laterum receptaculi centralis quadrangularis prodeuntibus. *Semina* plurima, parva, angulis receptaculi insidentia, conferta.

Under the name of *Ludwigia perennis*, no doubt given to it by Linnæus, I sent specimens of this plant from Ava, which were given to Sir Joseph Banks; and I have since presented others to the Collection of the East India Company, by the name of *Ludwigia diffusa*, for the name *perennis* can scarcely be continued to an annual plant. Whether or not Dr. Roxburgh meant to describe it under the name of *L. parviflora*, I cannot say. He quotes no synonyma (*Fl. Ind.* i. 440.); and some points of his description differ from mine; yet in most circumstances they agree, and a plant so common should have been known to him. That he meant this plant, is more probable from the native name *Bem Lubunga*, which is annexed to it in the *Hortus Bengalensis* (11.); for this name signifies the Wild Clove, from the very obvious similitude of its fruit.

Cattu Carambu, *p.* 97. *fig.* 50.

This plant is no doubt very nearly allied to the former; but the resemblance of its fruit to the clove is less striking than in the *Carambu*, so that Commeline is still less happy in calling it a *Caryophyllus*.

Linnæus (*Fl. Zeyl.* 170.) joined this with an American plant, which he called *Jussiæa erecta floribus tetrapetalis octandris sessilibus*, and which had become common in European gardens; but the name is now confined to the American plant, from which the *Cattu Carambu* is acknowledged to be different.

The younger Burman (*Fl. Ind.* 103.) quotes the *Cattu Carambu* for his *Jussiæa suffruticosa* β, although it would appear that the plant

plant which he meant, and which he had received from Java, had opposite leaves. Very little dependence can therefore be placed on this authority; but from the description annexed by Willdenow to his *Jussieua suffruticosa*, taken probably from the *Species Plantarum* of Linnæus, I have little doubt that the *Cattu Carambu* was the plant really meant: in which case the synonyma of Rumphius, Hermann, Rheede and Ray, given by Willdenow (*Sp. Pl.* ii. 577.) must be removed, and in their stead the *Cattu Carambu* introduced; for it is no where, that I can find, mentioned by Willdenow.

The only reference, therefore, that I can make with certainty to a systematic writer for the *Cattu Carambu*, is to the *Jussiæa villosa* of M. Lamarck (*Enc. Meth.* iii. 331.). This name should be retained, even should it be admitted, as is probable, that this was the plant actually described by Linnæus under the name of *J. suffruticosa*; for the term *suffrutex* is in no manner applicable to the *Cattu Carambu*; and the synonyma in Linnæus are so erroneously quoted, that in order to prevent confusion his name should be altogether abandoned, especially as it has been applied by Gærtner (*De Sem.* i. 159.) to a very different species.

This *Cattu Carambu* is the plant which Dr. Roxburgh called *Jussieua exaltata* (*Hort. Beng.* 33.); and its Sanscrit name *Bhoo Luvunga* implies Earth Clove, the similitude between its fruit and that of the Clove being still perceptible.

Nir Carambu, *p.* 99. *fig.* 51.

Commeline does not venture to conjecture concerning this plant, although its affinity to the preceding is evident; but its fruit did not mislead by so strong a resemblance to the Clove.

The *Nir Carambu* was annexed by the elder Burman to the *Lysimachiæ species fructu caryophylloideo* of Hermann (*Thes. Zeyl.* 146.) together with the *Lysimachia indica, non papposa, repens, flore*

flore pentapetalo, fructu caryophylloide of Ray, which is probably the same plant; but then he united it with a plant of Sloane, and with the *Herba Vitiliginum* of Rumphius, both having yellow flowers, and with the *Kikirindia* of the Ceylonese. Some mistake, I have mentioned in treating of the *Carambu*, seems to have happened to Linnæus respecting the *Kikirindia*, which is probably a plant in much request with the natives of Ceylon, as it has no less than five other names. Now the *Nir Carambu* in all parts of India is much used as a vegetable in the dishes of the natives, and therefore is likely to have many names.

Linnæus, joining the *Nir Carambu* with the plant of Ray already mentioned, called it *Jussiæa repens, floribus pentapetalis decandris, pedunculis folio longioribus* (*Fl. Zeyl. n.* 169.), which in the *Species Plantarum* became the *Jussiæa repens*. It is remarkable, that in the *Flora Zeylanica* no Ceylonese name should be attached to a plant so common and so much used; while no less than six names are given to the insignificant *Ludwigia*. This confirms me in the suspicion already mentioned, that some transposition of names has taken place, and that the *Lysimachiæ species fructu caryophylloideo Kikirindia zeylonensibus* of Hermann and Burman (*Thes. Zeyl.* 146.), with all its additional barbaric names, actually belong to the *Jussiæa repens*, while the *Dyanilla* (*Linn. Fl. Zeyl.* 498.) is the *Ludwigia diffusa* or *Carambu*.

It would indeed appear, when the younger Burman published the *Flora Indica* (103.), that he, and probably Linnæus, had become sensible of this mistake in the *Flora Zeylanica*; for among the synonyma of the *J. repens* we have the *Lysimachia fructu caryophylloideo Kikirindia zeylonensibus* of Burman, thus setting every thing right: but by some fatality this quotation is omitted by Willdenow, who refers to the *Flora Zeylanica* alone (*Sp. Pl.* ii. 574.), and does not mention Burman; and the same is the case with M. Lamarck (*Enc. Meth.* iii. 330.). I think, therefore,

therefore, that we may safely place the following synonyma to the *Nir Carambu.*

Jussiæa repens. Burm. Ind. 103. *Enc. Meth.* iii. 330.
Jussieua repens. *Willd. Sp. Pl.* ii. 574. (exclusis synonymis Swartzii et Brownii). *Hort. Beng.* 33.
Jussiæa repens, floribus pentapetalis decandris, pedunculis folio longioribus. *Linn. Fl. Zeyl. n.* 169.
Lysimachiæ species fructu caryophylloideo, Kikirindia zeylonensibus. *Burm. Thes. Zeyl.* 146. (exclusis synonymis Sloani et Rumphii).
Lysimachia indica non papposa repens, flore pentapetalo, fructu caryophylloide. *Commel. Malab.* 164. *Ed.* 8*vo.*
Caryophyllus spurius malabaricus pentapetalos aquaticus repens. *Raii Hist.* 1510.

PONNAM TAGERA seu PONNA VIREM, *p.* 101. *fig.* 52.

Although Commeline mentions, that of the five species of *Tagera* found in Malabar, two only are described by the authors of the *Hortus Malabaricus*, yet this must only mean that they are not described in this part of the work; for the other three are to be found, vi. *t.* 9. and 10.; vi. *t.* 25.; and ix. *t.* 30.; and it seems strange that Commeline should not have traced their affinity to genera then well known.

A plant very nearly allied to the *Ponnam Tagera* had been previously described under the name *Sophera*; and Plukenet, thinking it the same, calls it *Sena orientalis fruticosa Sophera dicta* (*Alm.* 342.); but joins it with a Mexican plant described by Hernandez and Camerarius, that is probably different; although it must be confessed that the *Cassia occidentalis* of America would seem to have a remarkably close resemblance to the *Ponnam Tagera.*

The

The elder Burman quotes the *Ponnam Tagera* for his *Senna vigintifolia siliquis teretibus* (*Thes. Zeyl.* 213.); but the figure which he gives (*t.* 98.) represents the legumina very differently from the figure of Rheede, and such as I have never seen; especially as they would seem to be hairy, which we may conclude is actually the case, as he quotes the *Sophera congener planta, siliqua compressis hirsutis, seminibus atris lucidis floribus aureis* of Hermann. But the legumina of the *Ponnam Tagera* are smooth; and I therefore suspect that it is not the plant which Burman describes, especially as it very rarely has near ten pair of leaflets. Burman further considers, that Plukenet was mistaken in considering the Indian *Sophera* as the same species with the *Sophera* of Egypt described by Alpinus, J. Bauhin and Parkinson; and he quotes several authorities supporting his opinion, which I conclude is right.

When Burman composed his *Thesaurus Zeylanicus*, he considered the *Ponnam Tagera* as the same with the *Flos flavus* of the *Herbarium Amboinense* (iv. 63. *t.* 63.); but of this error he became sensible by the time that he published this great work of Rumphius, who merely says that the plants are of the same genus; and it is now admitted, as pointed out by Burman, that Rumphius described the *Ponnam Tagera* by the name of *Galinaria acutifolia* (*Herb. Amb.* v. 283. *t.* 97. *f.* 1.), although Rumphius himself, owing probably to his blindness, had been led to suppose that his *Galinaria acutifolia* was the *Tagera* of Rheede.

Linnæus, in forming the *Ponnam Tagera* into a species with the *Senna vigintifolia* of Burman (*Fl. Zeyl.* 150.), seems to have adopted the opinion of Burman, that this was not the *Sophera* of Egypt, as he quotes no author that could be supposed to describe the African species; but unless Burman describes a plant different from the *Ponnam Tagera*, and unless Linnæus meant to describe this plant of Burman, he gives a faulty specific character

racter (*foliolis decem parium*); for, as I have said, it is very uncommon to find a specimen of the latter that has near this number of leaflets. Linnæus indeed omits the plant of Hermann *siliquis hirsutis*, quoting only the plant of this author mentioned by Plukenet; nor is it easy to say whether he meant to describe the plant of Burman or that of Rheede, if they be really different, as I suspect. It is to be observed, however, that he does not quote the Ceylonese name *Mahatora*, given to this plant by Burman, which would appear not to have been in the collection submitted to his inspection: and this, joined to his not quoting the plant of Hermann *siliquis hirsutis*, both probably belonging to the *Senna vigintifolia*, may induce us to believe that then Linnæus meant the *Ponnam Tagera*. He did not at first quote Rumphius.

Although, as I have said, the *Ponnam Tagera* is not the original *Sophera*, an African plant; yet Linnæus, on bestowing specific names, called it *Cassia Sophera*, by which name it is now always known. The younger Burman (*Fl. Ind.* 97.) added to the synonyma the *Gallinaria acutifolia* of Rumphius, and the *Galegæ affinis* of C. Bauhin, both of which no doubt belong to the *Ponnam Tagera*; but he also added the *Sopheræ congener planta, siliquis compressis hirsutis, seminibus atris lucidis, floribus aureis* of Hermann. This throws every thing again into the confusion introduced by the elder Burman. The younger Burman indeed probably really meant his father's plant *legumine hirsuto*; for I am convinced that the plant of Java which he confounded (*Fl. Ind.* 96.) with the *Cassia occidentalis* was merely a specimen of the *Ponnam Tagera* with only four or five pair of leaflets, a very usual number. In Ava I was deceived by a similar specimen, which I sent home under the same name, and which is now probably in the collection of Sir J. Banks.

Willdenow indeed omits both the synonyma of Hermann,

conscious, perhaps, that they could not belong to the same species, and not knowing which to select; but he quotes both the *Ponnam Tagera* and the *Senna vigintifolia* of Burman for his *Cassia Sophera* (*Sp. Pl.* ii. 525.), leaving us without any hint to enable us to judge which he meant. He had not indeed seen the plant.

M. Lamarck, having seen specimens, fails not to observe that the legumen is not cylindrical, as asserted by Burman. It is therefore clear that he meant the *Ponnam Tagera*, although he quotes also Burman (*Enc. Meth.* i. 649.).

Dr. Roxburgh thought that there were three species of *Cassia* very nearly allied, the *C. Sophera*, *C. esculenta* and *C. purpurea* (*Hort. Beng.* 31.), and furnished me with the characters by which he thought they could be distinguished; but after much labour bestowed on examining many specimens in different situations and places, I could not observe any of these characters, that could be considered so appropriate to these different varieties, as to satisfy me that they were really distinct species. The furthest that I have been enabled to advance towards satisfaction on this point is, that perhaps the *Gallinaria acutifolia* of Rumphius may be considered as the *C. esculenta*, and may be distinguished *petalo supremo integro* from the *Ponnam Tagera* or *C. Sophera petalo supremo retuso*; but I am unwilling to rest on such minutiæ.

It must be observed that, before the legumen is fully ripe, it is much flatter than when it has come to maturity, when it is very turgid, although always compressed. Specimens from Ava, which I collected in this state, and with four or five pair of leaflets, as usual, were sent home under the name of *Cassia planisiliqua*; while those with fully matured legumina and more numerous leaflets, collected on the same journey, and compared by Dr. Roxburgh with his drawings, were called *C. purpurea*. Both are now probably under these names in the Banksian herbarium; and

and specimens of the three different varieties or species of Dr. Roxburgh have been placed in the East India Company's collection.

TAGERA, *p.* 103. *fig.* 53.

Plukenet, quoting the synonyma of Ray and Breynius, both of whom would seem to have described this plant, calls the *Tagera Senna spuria orientalis tenuissimis siliquis tetraphylla* (*Alm.* 342.).

Rumphius, as I have said when treating of the *Ponnam Tagera*, confounded the *Tagera* with his *Gallinaria acutifolia* (*Herb. Amb.* v. 284.); but his *Gallinaria rotundifolia* (*l. c. t.* 97. *f.* 2.) should rather have been quoted; although he himself considered this as the *Kattu Tagera* (*Hort. Mal.* ix. 55. *t.* 30.). This, however, is evidently a mistake, as the *Kattu Tagera* is undoubtedly the *Indigofera hirsuta*, while the *Gallinaria rotundifolia* is as clearly a *Cassia*, and may at any rate be considered as scarcely different from the *Tagera*.

It was no doubt from this plant that Linnæus derived his name *Cassia Tagera*; and accordingly the younger Burman (*Fl. Ind.* 95.) under that name unites the synonyma of Rheede, Ray, Breynius and Plukenet, already mentioned; and so far is well: but then he joins this annual plant with the *Cassia seu Senna spuria tetraphylla arborescens, siliquis tenuibus longissimis pendulis* of Ammannus.

M. Lamarck under the name of *C. Tagera* describes the *Tagera* of Rheede, omitting the synonyma quoted by Linnæus; and not only doubts of Linnæus having actually seen this plant, and therefore supposes him to have described some other, but he considers the *Tagera* of Rheede to be a mere variety of the *Cassia Tora* of Linnæus (*Enc. Meth.* i. 643.). M. Lamarck thus quotes the *Tagera* for his *C. Tagera*, and the *Gallinaria rotundifolia* for his *C. Tora*, considering them as mere varieties of each other. In fact, the name *Tachara*, which Plukenet (*Mant.* 170.)

says the Malabars give to the *Tala* or *Tora* of Ceylon, is evidently the same word with the *Tagera* of Rheede, although Plukenet distinguishes the plants from one having two and the other three pair of leaflets, a very insufficient mark of distinction.

Willdenow (*Sp. Pl.* ii. 515.) with propriety, as a mere editor of Linnæus, continues to describe the *Cassia Tagera* in the words of the original author; but he quotes with doubt the *Tagera* of Rheede; and he extends this doubt to the plant of Ammannus, quoted by Linnæus, as the *Tagera* of the latter was a *fruticulus procumbens*, while the plant of Ammannus is arborescent, and the *Tagera* of Rheede is a strong annual plant two or three feet high. Far, however, from attending to the mark of distinction pointed out by Plukenet of the *Tagera* having four leaflets and the *Tora* six, Willdenow in the specific character of both has *folia trijuga*; but, to show how little consequence he attached to number, in describing the *Tagera foliis trijugis*, he says *foliola quatuor*. As a variety of the *C. Tora* Willdenow adds an American plant described by Plumier; while he removes the *Gallinaria rotundifolia* of Rumphius, and joins it with another American plant, the *C. obtusifolia* of Linnæus; but, as I have said, I think that this plant of Rumphius can be scarcely considered as different from the *Tagera*.

Neither Roxburgh (*Hort. Beng.* 31.) nor the *Hortus Kewensis* (iii. 25.) quotes either Rheede or Rumphius for the *C. Tora*. The plant, however, which is meant in both works is probably the same, that is, the *Cassia siliqua quadrangulari* of Dillenius and the elder Burman (*Thes. Zeyl.* 56), although most of the synonyma quoted by the latter are by Willdenow rejected as belonging to a variety, or rather to a distinct species. Some of these synonyma at least belong to a plant, which I found very common in Mysore, and sent the seeds to Dr. Roxburgh, who considered it as forming a species very nearly allied to the *C. Tora*, and

and on that account called it *C. Toroides*; but I think it is the *Tagera* of Rheede, and scarcely different from the *Gallinaria rotundifolia* of Rumphius. I therefore consider this *C. Toroides* as the *C. Tagera* of M. Lamarck; and I also consider the *Gallinaria rotundifolia* or *C. Tora* of M. Lamarck as a plant scarcely sufficiently different to be distinguished as a species.

NANDI ERVATAM MAJOR, *p.* 105. *fig.* 54.

NANDI ERVATAM MINOR, *p.* 107. *fig.* 55.

In my Commentary on the first part of the *Hortus Malabaricus*, when treating of the *Curutu Pala*, I have stated it as my opinion, that the *Nandi Ervatam major* is the *Nerium coronarium flore pleno*, which is a *Tabernæmontana*; and that the *Nandi Ervatam minor* is probably, although not certainly, the *Nerium* or *Tabernæmontana coronaria* in a single state. I have there given an account of the plants and of their synonyma, to which I must refer the reader*; nor on consideration do I think it necessary to say more on this subject, as I intended when I wrote that Commentary.

CAPO MOLAGO, *p.* 109. *fig.* 56.

I know only one species of *Capsicum*; and what botanists still continue to call species, I consider as merely such varieties as arise among all plants much cultivated, and not more different from each other than the kinds of gooseberry common in our gardens. It must however be confessed, that by different modes of treatment some plants die annually, while others last for years; but with us, in India at least, this depends more on the management than on the kind. The plant, I suspect, is an exotic in India; but on its introduction into Malabar, on account of its qualities in seasoning food, obtained the generic appellation of

* *Trans. Linn. Soc.* vol. xiii. p. 519.

Molago,

Molago, previously given to the native *Piper nigrum*. *Capo*, the specific name, would seem to imply that it came originally from Africa, the natives of which, and not an Indian tribe, as Commeline asserts, are known in Malabar by the name Capo or Capro, derived from the Cafree, or rather Kaffur of the Arabs, who settled very early in Malabar, and who, having early much communication with Zanguebar and Mosambique, probably brought the Capsicum from thence, as those from Guinea took it to America. I must however confess, that the authority of Rumphius, always of the greatest weight, is here against me. We learn indeed from Mr. Maxwell, that this plant (Cayenne pepper) grows spontaneously in Congo (*Edin. Phil. Journ. n.* xi. 67.); but this, so far as I have seen, is not the case in either the East or West Indies.

The *Capo Molago* by Plukenet was called *Solanum mordens fructu oblongo pendulo minore* (*Alm.* 353.), and was quoted by the younger Burman for the *Capsicum annuum* (*Fl. Ind.* 57.); but, if this be the *Capsicum siliquis longis propendentibus* of Tournefort, the *Capo Molago* is a different variety, being the *C. minus flavum* of Rumphius, and having shorter and blunter berries. It is not quoted by Willdenow, unless, being included in the *Capsicum indicum* of Rumphius, it belongs to the *C. frutescens:* but the *C. indicum* of Rumphius includes three varieties, two of them more different from this than the *C. annuum* is.

The *Capo Molago* is not quoted in the *Encyclopédie*; but it probably is the *Capsicum luteum* of that work (v. 327.), called by the French *Piment de Mozambique*, from whence I suppose it came.

XIII. *The*