

NOTES ON THE RUBIACEAE OF SURINAM

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In my revision of the Rubiaceae in Pulle's Flora of Surinam two genera, viz. *Pagamea* and *Perama*, which are now usually included in this family, are relegated to an appendix.

On account of its superior ovary *Pagamea* was formerly reckoned to the Loganiaceae, from where it was referred to the Rubiaceae by Baillon and K. Schumann, who were of opinion that its solitary ascending ovules, and the valvate aestivation of the corolla lobes assigned it a place among the Psychotriaceae. I think however that they overestimated the value of these characters, which are of a rather general nature, and that *Pagamea* both in the structure of its inflorescence and in that of its flowers shows so little resemblance to the Psychotriaceae that it is impossible to include it in this group. In my opinion its removal from the Loganiaceae was not justified.

Perama is a genus which so far has not received the attention which it deserves. It was placed by Poiret, though for what reason is not clear, in the Verbenaceae, but Bentham (Hook. Journ. Bot. III p. 239, 1841), who was of opinion that it showed affinity with *Staelia*, a genus belonging to the Spermaceae, referred it to the Rubiaceae: on his authority it was since then always included in the

Spermacoaceae. That *Staelia* is a member of this tribe can not be doubted, but its resemblance to *Perama* is rather superficial, and in all the more important characters the two genera are so strikingly different that there can exist no real affinity. The absence of stipules, the parallel-nerved leaves, the peculiar inflorescence, the remarkable position of the two linear calyx lobes (or are they bracteoles? cf. Baillon, *Hist. d. Pl.* VII p. 392) on the abaxial side of the flower, the usually trimerous corolla and trilocular ovary, and the triquetrous seeds are all characters which do not occur either in *Staelia* or elsewhere among the Rubiaceae. Its real affinity however remains obscure, and a more detailed knowledge of its characters, especially of the structure of its ovule and of its embryo will be needed before we can allocate it its true place in the system.

The sequence in which the other genera are presented is nearly the same as that in which they follow each other in K. Schumann's monograph of the family in Engler & Prantl. In order to understand the significance of this sequence we will have to pay some attention to the groups in which the family is to be divided.

Attempts to arrange all the genera in two or three main groups have not led to satisfactory results. In these attempts use has been made of the number of ovules in the ovary cells. Benth and Hooker distinguished with the aid of this character three groups: one for the genera with several ovules in each cell, one for those with collateral ovules, and one for those with solitary ovules. As more genera with collateral ovules were discovered, the artificiality of the second group became more and more evident, and in K. Schumann's system this group is therefore suppressed. The two remaining groups however are not satisfactory either.

In this connection it is perhaps not superfluous to point out that dichotomous classifications are almost always

unnatural. This is caused by the circumstance that they are usually (as in our case) based on a quantitative contrast in a single character, very often on its presence or absence. Now, though the development of a character to a certain degree, or its presence or absence may be correlated with other characters, and therefore may possess taxonomic value, it is by no means certain, and perhaps not even probable that the contrasting value will also show such correlations, and it is therefore quite possible that the latter may have no taxonomic value at all. A few examples may serve to illustrate this.

The now antiquated juxtaposition of Phanerogams and Cryptogams was based on the presence or absence of flowers. The presence of the latter is always correlated with several other peculiarities, and is therefore of great taxonomic importance: the group which it characterizes is consequently a natural one. The absence of flowers however is not correlated with other characters, and has therefore no taxonomic value: this explains why the group of the Cryptogams had to be dissolved.

In the example just given the artificiality of the classification is now generally recognized. There are however many juxtapositions of the same nature which, notwithstanding their obvious artificiality, are still almost universally accepted. Here are two examples.

The division of the Vascular Plants in Pteridophytes and Spermatophytes rests on the presence or absence of seeds. Here again one of the groups, namely that of the Spermatophytes, is a natural one: the presence of seeds in this group is correlated with various other characters as for instance the monopodial structure of the stem and the axillary origin of the branches, the presence of a peculiar type of stelar structure, the fertilisation by means of a pollentube, etc. In the other group however the absence of seeds is not correlated with other characters: there is

no uniformity either in the mode of branching, in the vascular system, or in the arrangement or structure of the reproductive organs, and the character of this group is therefore entirely negative. The subdivisions of the Pteridophytes: Equisetales, Lycopodiales, Ophioglossales, Hydropterides, and Filicales are as independent of each other as they are of the Spermatophytes, and they are therefore groups of the same taxonomic rank as the latter. In the same way in which the Vascular Plants are now divided in Spermatophytes and Non-spermatophytes, and of course with as little justification, we might divide them in Equisetes and Non-equisetes, or in Lycopods and Non-lycopods, etc. I must add however that the fact that seeds have been found in fossil representatives of Non-spermatophytes is not such a strong corroboration of the view here brought forward, as one might be inclined to think: the homology of these structures with the seeds of the Spermatophytes is not beyond doubt.

The division of the Spermatophytes in Gymnosperms and Angiosperms is our second case in point: it is founded on the presence or absence of fruits. As the presence of fruits, in the Angiosperms, is correlated with several other characters, its taxonomic importance can not be doubted. The absence of fruits in the other group however does not show any well-marked correlations with other characters, and it is therefore taxonomically without importance: here too the subdivisions of the group are of the same taxonomic value as the group of the Angiosperms, and a really satisfactory system should have no place for a special group of Gymnosperms.

There are also some such divisions in which neither of the groups is taxonomically sound. A good instance is the division of the Vascular Plants in Microphyllous and Megaphyllous forms, as neither the possession of small leaves nor that of large leaves show any definite correlations

with other characters. This juxtaposition has no more importance than the long abandoned, but indeed very similar division in woody plants and herbs. As a third case in point the purely conventional division of the organisms in animals and plants might be mentioned.

Against the division of the Rubiaceae in two main groups the same objection can be raised: the number of ovules in the ovary cells shows no definite correlation with other characters, or in other words, the affinity between the various tribes brought together in each of these two groups is, with a few exceptions which I will indicate hereafter, not closer than that between them and the members of the other group. A further argument against their acceptance is the occurrence in the same tribe of forms with one and with several ovules. It is for instance impossible to exclude the genus *Tarenna* on account of its usually multi-ovular ovary cells from the *Ixoreae*, which have as a rule but one ovule in each cell: even the placenta and the ovules themselves show the closest resemblance to those of the other *Ixoreae*, the placentation being of a type which is found in no other tribe.

The various tribes proposed by Bentham and Hooker, and with slight modifications accepted by Schumann, are on the other hand fairly satisfactory. Their number however is in my opinion still too small, and several of them will have to be split up. Of the tribes represented in Surinam this applies to the *Rondeletieae*, the *Cinchoneae*, and the *Mussaendeae*. The only Surinam genus of the *Rondeletieae*, *Sipanea*, ought to be excluded from that tribe on account of the contorted aestivation of its corolla lobes, and of its herbaceous growth. Together with the nearly related *Limnosipanea* it forms a separate tribe, for which I propose the name: *Sipaneae*. Among the *Cinchoneae* the genus *Manettia* with its winding shoots and axillary flowers or cymes occupies a quite isolated position: the taxonomic

importance of these characters demands the creation of a new tribe: *Manettieae*. The *Mussaendeae* in their present delimitation form a very heterogeneous mixture. In the first place we will have to reinstate Bentham and Hooker's *Hamelieae*, as their incorporation in this tribe by Schumann was in no way justified. Of the Surinam genera which Bentham and Hooker themselves included in the *Mussaendeae* *Sabicea* should be excluded on account of its axillary inflorescences, *Schradera* on account of its large deciduous stipules and involucrate capitula, and *Coccocypselum* because of its herbaceous shoots, persistent simple stipules, tetramerous corolla and baccate fruit. For these genera I propose three new tribes: *Sabiceae*, *Schradereae*, and *Coccocypseleae*.

The following list gives a survey of the tribes and genera represented in the flora of Surinam. The number of species is added in brackets.

Hedyotidae: Oldenlandia (2).

Sipaneae: Sipanea (5).

{ *Manettieae*: Manettia (1).

{ *Chimarrheae*: Chimarrhis (2).

{ *Cinchoneae*: Hillia (1); Ferdinandusa (1); Coutarea (1);
Capiroa (1).

{ *Naucleae*: Uncaria (2).

Sabiceae: Sabicea (2).

Schradereae: Schradera (1).

Mussaendeae: Isertia (4); Gonzalagunia (3).

Coccocypseleae: Coccocypselum (1).

Hamelieae: Bertiera (1).

Gardenieae: Posoqueria (3); Randia (2); Basanacantha (1);

Gardenia (1); Tocoyena (1); Genipa (1); Alibertia (3);

Ibetrulia (1); Duroia (3); Amajoua (1).

Retiniphyllae: Retiniphyllum (1).

Guettardeae: Malanea (2); Guettarda (1); Chomelia (2).

Ixoreae: *Coffea* (1); *Ixora* (5).

Morindeae: *Bellynkia* (2); *Morinda* (1).

Coussareae: *Faramea* (7); *Coussarea* (6).

Psychotriaceae: *Palicourea* (5); *Naletonia* (1); *Mapouria* (7);
Notopleura (2); *Geophila* (2); *Ronabea* (1); *Chytropsia* (2);
Gamotopea (4); *Petagomoa* (3); *Cephaëlis* (9); *Nonatelia* (1); *Psychotria* (11); *Strem-
 pelia* (1); *Rudgea* (2).

Spermacoceae: *Diodia* (4); *Borreria* (8); *Mitracarpus* (2).

The bracketed tribes show a closer affinity; the others however are, as far as we can judge at present, entirely independent of each other, and could be placed as well in another sequence. The small tribes are in the majority, but this is a peculiarity common to all our classifications, whether the classified units are groups of a lower order, e.g. species, or of a higher order, e.g. tribes or families. Though this phenomenon is so often observed, it is by no means certain that it is everywhere due to the same cause or causes. The following two examples may serve to elucidate the possible nature of the latter.

In looking at the F_2 of a cross between two organisms differing in a great number of characters, we will observe a number of phaenotypes of whom a few will be represented in large numbers, whereas others, and the latter will as a rule be more numerous, will be present in small numbers only. We know however that the abundantly represented phaenotypes (i.e. the large groups) comprise each a large number of genotypes, and that if the latter could be made visible, a much more even distribution of the various types would be obtained (not of course a quite even distribution, for the polyhybrids would always be more numerous than the other forms, but at any rate the differences in frequency between the various groups would be less striking). In this example the greater size of some of the groups rests there-

fore at least partly on our inability to detect their heterogeneousness (partly of course also on the circumstance that if two groups of unequal partners both present in the same number are united in pairs, of the three possible combinations the unequal pair is formed twice as often as each of the even pairs; if coupling takes place, the inequality of the groups will be due partly to that cause).

If on the other hand in a genus consisting of a number of species between two of them hybridization takes place, it is to be expected that a large number of new species will make their appearance, and as they will possess the same characters as their parents (but of course in different combinations), they will all appear closely related. If we knew nothing of their origin, we would probably regard them as a subgenus, and the other species, which of course are more conspicuously different from each other, as the representatives of other subgenera. Now that we know their origin, two possibilities offer themselves for consideration. If the two parent species were the only ones between which the physiological possibility for hybridization existed (the latter should, for reasons which I need not discuss here, be regarded as a sign of affinity), they and their offspring would form a natural group sufficiently distinct from each of the other species. If however the fact that no hybridization took place with the other species was not due to the absence of that physiological possibility, but to the circumstance that they were prevented by their separation in space or time from availing themselves of its presence, than of course the distinction between the large group and the small ones would not rest on a sound foundation. Leaving the latter possibility out of consideration, and assuming that the parent species of the hybrid swarm were nearer related than the other species, we come to the conclusion that a slight inequality in the size of the groups may ultimately lead to an important difference.

A similar situation might be created by the appearance of a swarm of mutants, but as we know too little of this possibility, I will not discuss it. As hybridization between species belonging to different groups of higher order, e.g. tribes or families, does not take place, and as such groups, as far as we know, do not arise by mutation, the influence of these two factors is limited.

In the groups of higher order we are nevertheless confronted with the same possibilities: the larger groups may owe their existence to our inability to recognize their heterogeneousness, but it is also possible that they are really homogeneous. The existence of such homogeneous large groups side by side with small groups might be the result of selection: if in some groups more members died out than in others, the latter of course would become smaller. This is the explanation usually brought forward by evolutionists. Now, though it need not be doubted that extinction plays a part, it is difficult to see that it would lead to the result we wish to explain. One would expect to see the majority of the groups reduced in a moderate way, and an ever decreasing number either more mildly or more severely dealt with: groups of average size would therefore be the most common. In reality however small groups form the majority. We know however so little of the way in which this factor acts, that it is hardly worth discussing it.

That on the other hand our inability to recognize existing differences must play an important part, seems obvious. It is quite plausible that some characters will remain concealed when certain other characters of a more „dominant” nature are present. The groups with these „dominant” characters will therefore always appear larger, because their heterogeneousness remains undetected. This view agrees well with our common experience that the larger groups are usually those with the largest number of

„general” characters, i.e. characters which are not confined to that group, but reappear in a great number of other groups, which are often but distantly related: their „generality” makes it probable that they are the „dominant” ones. The „specialized” characters on the other hand are typical for the smaller groups, and are either confined to them, or but rarely met in other groups. The „generality” of the characters in the large groups explains why the latter, e.g. the genus *Psychotria*, are so difficult to delimitate: they comprise very often what is left after the removal of the more easily recognizable groups, i.e. those with the „specialized” characters. Unfortunately the decision whether a character in a given instance is to be regarded as „general” or „specialized”, remains so far a matter of inference. In the case of varieties a hybridization experiment will decide which characters are dominant and which recessive, but no such experimentum crucis exists for our purpose.

The list given above contains six new generic names. With the exception of the monotypic *Ibetralia*, a new genus of the Gardenieae, they all belong to the Psychotrieae, and were formerly included either in *Psychotria* or in *Cephaelis*. At the same time three old genera belonging to this tribe, namely *Nonatelia*, *Strepelia*, and *Ronabea*, have been revived. The union of *Bellynkxia* with *Appunia* is rejected, and *Bellynkxia* reinstated. The division of *Chimarrhis* in *Chimarrhis* and *Pseudochimarrhis* proposed by Ducke, and that of *Chomelia* in *Chomelia* and *Anisomeris*, advocated by Rusby, were found unacceptable, so that *Chimarrhis* and *Chomelia* appear here in their former delimitation. The distinction between *Diodia* and *Hemidiodia* was also found unsatisfactory, so that the two are here united.

The following pages contain descriptions and critical

remarks on these and some other genera, and on various new species and varieties. The type specimens of the new species and varieties are in the Herbarium at Utrecht except those marked H.L.B., which are kept in Leiden.

SIPANEA Aubl.

Of the genus *Sipanea* two species were known already from Surinam, viz. *S. pratensis* Aubl. and *S. biflora* (L. f.) C. et S. *S. pratensis* is a rather polymorphous plant, varying in stature, in the density of its pubescence, and in the colour of its flowers. According to notes found on the labels the latter may be white, pink, mauve, or yellow.

The three following species are new.

Sipanea Staheli Brem. sp. n.

Herba decumbens. Caulis teres, pilis brevibus adpresse pubescens, ad nodos inferiores radicans. Folia petiolata. Petiolus gracilis, 0.7—1.5 cm longus. Lamina lanceolato-oblonga, 3.5—6.5 cm longa, 1.2—2.6 cm lata, subacuminata, basi contracta, glabrescens, subtus nervis tamen pubescens; nervi utroque latere costae circ. 7. Stipulae longe acuminatae. Inflorescentia terminalis et dichasialis, multiflora. Bractae lineares, glabrescentes, calycis lobis subsimiles, inferiores tamen longiores. Flores brevissime pedicellati. Pedicellus et ovarium dense pubescentes. Calycis lobi 3 mm longi, glabrescentes. Corollam et capsulam non vidi.

Hab. Wilhelmina Range, Stahel 7168.

Related to *S. pratensis* Aubl., but at once recognizable by the adpressed pubescent shoots and petiolate glabrescent leaves. Not known from elsewhere.

Sipanea coppenamensis Brem. sp. n.

Herba decumbens. Caulis teres, hirsutus, ad nodos inferiores radicans. Folia petiolata. Petiolus gracilis, 0.3—1 cm longus. Lamina ovato-lanceolata, 1.5—2.5 cm longa,

0.7—1.2 cm lata, acuta an mucronata, basi paulum contracta, utrimque longe pilosa; nervi utroque latere costae circ. 5, angulo acuto adscendentes. Stipulae lineares, mucronatae. Inflorescentia terminalis, dichasialis, plerumque 5-flora, interdum duobus ramulis floriferis axillis foliorum supremorum insertis comitata et hoc modo subcorymbosa. Flores subsessiles. Bractae lineares, lobis calycis subsimiles. Ovarium et calyx pilis sparsis muniti. Calycis lobi lineares, 4 mm longi. Corolla tubo cylindrico, circ. 13 mm longo, extus dimidio superiore piloso, intus dimidio superiore pilis luteis dense barbato, lobis ovato-oblongis, circ. 8 mm longis. Capsulam non vidi.

Hab. Coppename River near Turcotabbetje, B.W. 5326.

Related to *S. pratensis* and to the preceding species, but differing from both in the sparsely hairy ovary, from *S. pratensis* moreover in the petiolate leaves, and from *S. Staheli* in the hirsute pubescence of leaves and shoots. Not known from elsewhere.

***Sipanea ovalifolia* Brem. sp. n.**

Herba repens. Caules graciles, adpresse pilosi. Folia petiolata. Petiolus 0.5—1 cm longus, adpresse pilosus. Lamina ovata, 2—2.5 cm longa, 1.3—1.7 cm lata, acuta an subobtusa, basi paulum contracta, utrimque sed praesertim nervis pilis longis et rigidis vestita; nervi utroque latere costae 4 an 5. Stipulae subulatae, dense pilosae. Inflorescentia terminalis an saepius excrescentione rami axillaris in positionem pseudo-axillarem coacta, dichasialis, circ. 5-flora. Pedunculus 2—3 cm longus, gracilis, pilosus. Bractae lineares, lobis calycis subsimiles, minus pilosae tamen. Flores subsessiles. Ovarium pilis longis applanatis dense vestitum. Calycis lobi lineares, 3 mm longi, pilis similibus vestiti. Corolla alba, tubo 3 mm longo, extus glabro, intus supra insertionem staminum albo-barbato, lobis 2.5 mm longis, ovatis. Stamina dimidio inferiori

tubi inserta, filamentis brevibus et antheris oblongis munita. Capsulam non vidi.

Hab. Saramacca River, Pulle 222.

Related to *S. biflora* (L. f.) C. et S., but with longer flowers in groups of five instead of solitary or in pairs. The same species has also been collected at the Ketokvorsoe Fall, Surinam River (Tresling 367), but not yet in other localities.

CHIMARRHIS Jacq.

The genus *Chimarrhis* is represented in Surinam by *C. turbinata* D.C. and a new species, which I will describe below. *C. turbinata* was removed by Ducke (Arch. Jard. Bot. Rio de Jan. III p. 255. 1922, et *ibid.* IV p. 178, 1925) to a new genus *Pseudochimarrhis*, which is said to differ from *Chimarrhis* in the vertical position of the seeds and in the longer and narrower flowers. The seeds of *Chimarrhis cymosa* Jacq., the type species of the genus, however are arranged in exactly the same way as those of *C. turbinata*, and the longer and narrower flower is a character of so little importance that it is in itself not sufficient to justify the creation of a new genus. *Pseudochimarrhis turbinata* (D.C.) Ducke is therefore referred back to *Chimarrhis* and *P. barbata* Ducke becomes *Chimarrhis barbata* (Ducke) Brem. comb. n.

The second Surinam species is:

Chimarrhis longistipulata Brem. sp. n.

Arbor magna. Rami graciles, glabri. Folia petiolata. Petiolus gracilis, circ. 2 cm longus. Lamina coriacea, elliptica, 7—12 cm longa, 4—6 cm lata, acuminata, basi acuta, glabra; nervi utroque latere costae circ. 10, axillis domatiis fauce pilosis muniti. Stipulae lineares, circ. 4 cm longae, glabrae. Inflorescentiae axillares ad apicem ramorum oppositae. Ramuli posteriores pedicellique puberuli. Bractae

parvae an minutae; bracteoli nulli. Calyx annuliformis, dentibus brevissimis munitus. Corollam non vidi. Capsula globosa, apice depressa, circ. 2 mm longa.

Hab. Kabalebo River near the Avanavero Falls, Pulle 379.

Though the material is rather incomplete, there can be no doubt that the plant belongs to the genus *Chimarrhis*, and that it is a good species. In the enormous length of the stipules it resembles *C. parviflora* Standley, where they are however pubescent. The leaves in that species are pubescent on the nerves beneath, but there are no tufts of hairs in the axils of the nerves. Our species is known in one specimen only.

HILLIA Jacq.

The only species of this genus found in Surinam appears in Pulle's Enumeration under the name of *Hillia illustris* (Vell.) K. Sch., and it is doubtless the plant described under this name in the Flora Brasiliensis. Schumann's identification of his plant with *Saldanha illustris* Vell. however is not acceptable: judging from the figure in the Flora Fluminensis the latter is an entirely different species. The oldest name for Schumann's plant appears to be *Hillia tubiflora* Cham.

CAPIRONA Spruce.

Capirona is at once distinguishable from the other genera of the Cinchoneae by its large intrapetiolar stipules. It is represented in Surinam by three hitherto undescribed species. One of these is described here; of the other two the material is unfortunately insufficient.

Capirona surinamensis Brem. sp. n.

Arbor glabra. Rami crassi. Folia petiolata. Petiolus 1.5—3 cm longus, sparse pubescens an glabrescens, parte apicali

canaliculatus. Lamina obovato-spathulata, 12—32 cm longa, 6—13 cm lata, acuta, basi rotundata an acuta an paulum decurrens, supra glabra, subtus nervis sparse pubescens; nervi utroque latere costae 8—13, subtus prominentes. Stipulae lanceolatae, acutae, 2—4 cm longae, 0.5—1 cm latae, rectinervae, extus pubescentes, intus glabrae, axilla pilosae. Flores sessiles, in paniculam magnam, sparse pubescentem, axe uno an duobus jugis foliorum munitam dispositi. Calyx late campanulatus, lobis brevibus, obtusis an acutis irregulariter lobatus; floribus nonnullis unus lobus productus et lamina ovali, conspicue quinquenerva, basi in petiolum longum contracta munitus. Corolla ante expansionem clavata et tubo cylindrico crasso, plicis 15 profunde sulcato, 13 mm longo munita; corolla aperta infundibuliformis, ampla, intus dense villosa, lobis suborbicularibus, 5 mm diam. Stamina ad basin corollae inserta, basi in anulum tenuem connata; pars libera filamentorum 2 mm longa; antherae 8 mm longae connectivo dorso latissimo. Discus glaber, 1.2 mm altus. Stylus 9 mm longus. Capsula oblonga, 32 mm longa, 8 mm diam., 10-costata, calyce coronata. Semina ala oblonga circumdata, 8 mm longa, 1.3 mm lata.

Hab. Surinam River, Forest Reserve Section 0, tree n. 710 (B.W. 1411, 1829, 2416).

This species differs from *C. decorticata* Spruce and from *C. Huberiana* Ducke in the smaller size of its flowers, the clavate buds with their 15-sulcate tube, and the form of the leaves. It shows a strong resemblance however to a plant from French Guyana which I found in the Kew Herbarium under the name of *C. leiophloea* R. Ben. The flower buds of the latter are less distinctly clavate, and its inflorescence is somewhat more hairy. Still, it is not impossible that the two may prove conspecific. I have not been able however to find the description of this plant. Tree n. 106 at the same place, and tree

n. 1115 in the Forest Reserve Brownsberg belong also to our new species.

Tree n. 704 in Forest Reserve Section 0 (B.W. 1122 and 1408, both without flowers or fruits) is on account of its intrapetiolar stipules also to be regarded as a *Capirona*. It differs from the other species in its ferrugineous hirsute shoots, and in the ferrugineous pubescence on the underside of the coarsely nerved leaves.

Tree n. 1513 in Forest Reserve Watramiri (B.W. 1978, without flowers or fruits) is for the same reason probably also a *Capirona*. Its shoots are ferrugineously adpressed pubescent and rather slender, and its leaves are very thin.

UNCARIA Schreb.

The plant described by Miquel in his *Symbolae Surinamenses* (Linnaea XIX p. 129. 1847) under the name of *Uncaria surinamensis* resembles *U. tomentosa* (Willd.) D.C. in all essential points except in its unisexuality, a peculiarity overlooked by its author. As this character is in itself not of sufficient importance, I refer Miquel's plant to *U. tomentosa*, and call it *Uncaria tomentosa* (Willd.) D.C. var. *dioica* Brem. var. n. (Varietas a typo recedit floribus unisexualibus). It is known in one specimen only, a female plant: Kappler 1684.

ISERTIA Schreb.

Among the Surinam material of *Isertia coccinea* (Aubl.) Gmel. I found a plant with 5-merous in stead of 6-merous, and at the same time somewhat smaller flowers. The differences however are not of sufficient importance to justify a complete separation. I regard it as a variety.

Isertia coccinea (Aubl.) Gmel. var. *pentamera* Brem. var. n.

Varietas a typo recedit floris pentameris, corolla 5.5 cm longa.

Hab. Marowyne River, Joeba Creek, Gonggrijp 3745,

Isertia hypoleuca Bth. was regarded by K. Schumann as a variety of *I. coccinea*. As it differs from the latter not only in its pubescence, but also in the number of the nerves, and in the texture of the leaves, it is doubtless a good species.

GONZALAGUNIA R. et Pav.

This genus is represented in Surinam by three species: *Gonzalagunia spicata* (Lam.) Gómez, *G. dicocca* C. et S., and a new one. *G. dicocca* was reduced by K. Schumann to a variety of the first named species. The two are however doubtless specifically distinct: they differ for instance in the shape and size of the leaves and in the number of their nerves, and in the size of the flowers.

The following species is new:

Gonzalagunia surinamensis Brem. sp. n.

Frutex, circ. 2 m altus. Rami graciles, dense et adpresse sericeo-pubescentes. Folia subsessilia, oblonga, 4.5—11 cm longa, 1.8—3.5 cm lata, apice basique attenuata, utraque facie colore subsimilia, supra sparse pubescentia costa tamen dense pubescente, subtus breviter pubescentia et costa nervisque dense pubescentibus, pubescentia ubique pilis brevibus rigidis cum paucis pilis longis mollibus intermixtis composita; nervi utroque latere costae 7—10. Stipulae triangulares, acutae, circ. 5 mm longae, extus praesertim parte inferiore dense pubescentes, intus villosae. Inflorescentia magis elongata, pedunculo circ. 1.5 cm longo munita, axe et floribus dense villosis. Flores minimi, alii fasciculati, alii solitarii. Bractea 1 mm longae, bracteoli minutissimi. Flores 4-meri, brevissime pedicellati. Calycis lobi triangulares, 0.2 mm longi, erecti, glabri. Corolla 6 mm longa, fauce pubescens. Drupa globosa, sparse villosa, circ. 2.5 mm diam., bisulcata, bipyrena.

Hab. Kabalebo River, Avanavero Falls, Pulle 385.

Differs from the other species in its pubescence and in the nearly concolorous leaves. From *G. dicocca* C. et S., which it resembles in the small size of the flowers, it differs moreover in the very short erect calyx lobes. It is not known from elsewhere.

RANDIA Houst.

Some of the *Gardenieae* bear their flowers solitary or in fascicles at the end of short shoots. The dioecious species of this group belong to *Basanacantha*, a genus confined to America; those with bisexual flowers I have referred to *Randia*, though I am well aware that this genus is a rather heterogeneous mixture. One of our species, *R. Ruiziana* D.C. is often treated as a variety of *R. formosa* (Jacq.) K. Sch. The differences however are so varied and well marked that this can not be correct. The flowers of *R. Ruiziana* are more than twice as long as those of *R. formosa*, the calyx is entirely glabrous inside and not, as in that species, sericeous at the base, and the fruits are cylindrical and not globose.

IBETRALIA Brem. gen. n.

Versteeg collected at the Lawa River a female specimen, and at the Litanie River a male plant which belong without any doubt to the same species. In some of its characters it resembles the species of *Alibertia*, whereas in others it comes nearer to *Duroia* and *Amajoua*. It is not possible however to include it in anyone of them. For this plant I propose the name *Ibetrulia surinamensis*, making it the type of a new genus. The generic name is an anagram of *Alibertia*.

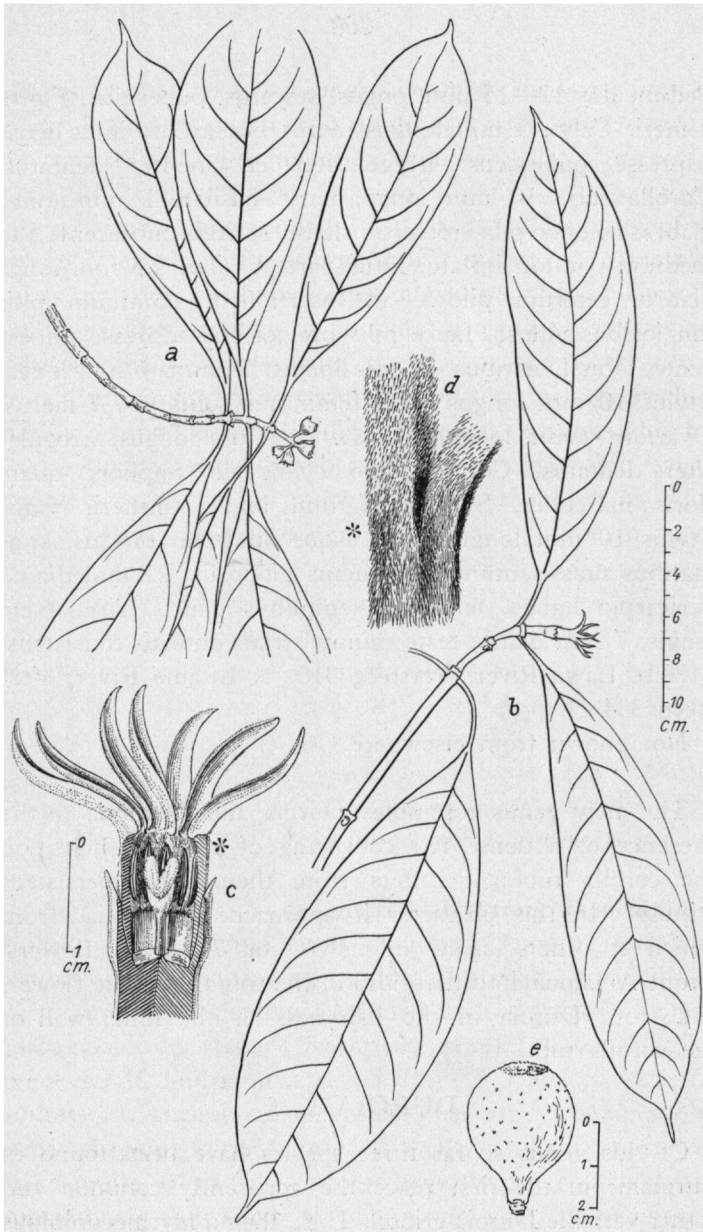
Ibetrulia gen. n.

Frutices foliis oppositis, stipulis interpetiolaribus, simplicibus, persistentibus. Flores dioecii; masculini in capi-

tulum terminale pedunculatum dispositi, femininus solitarius sessilis. Flos masculinus 6-merus, femininus 7-merus. Ovarium floris masculini rudimentarium, floris feminini ovoideo-cylindricum, carnosum, ovulis axilibus in series 4 longitudinaliter dispositis, quoque ovulo excrescentione placentae circumdato. Calyx cupularis, irregulariter dentatus. Corolla hypocrateriformis, tubo cylindrico floris masculini angustiore quam floris feminini, ad medium paulum inflato, extus parte basilari excepta pilis retrorsis dense sericeo-pubescente, intus usque ad insertionem staminum glabro, ad insertionem staminum pilis retrorsis sericeo-villoso, fauce pilis retrorsis brevibus dense adpresse pubescente, lobis linearibus aestivatione contorta, extus dense pubescentibus, intus puberulis. Stamina inclusa, antheris subsessilibus, dorsifixis, linearibus, apiculatis; floris feminini paulo minora quam floris masculini, antheris vidis munita. Discus planus. Stylus floris masculini fusiformis, apice breviter bilobatus, floris feminini crassus, clavatus, fere usque ad basin divisus. Fructus globosus, pericarpio ligneo, haud crasso et seminibus paucis, muco immersis compositus. Semina ovoidea, angularia, minutissime striata, albimine copioso munita. Embryo parvus, radiculo longiore et cotyledonibus parvis munitus.

***Ibetrulia surinamensis* Brem. sp. n.**

Frutex magnus, circ. 6 m altus, ramis glabris, primum complanatis, deinde teretibus et cortice griseo-brunneo vestitis. Folia petiolata. Petiolus canaliculatus, ciliatus, 1.5—2.5 cm longus. Lamina chartacea, obovata an oblanceolata, 15—23 cm longa, 5.5—13 cm lata, interdum 21 cm longa et 5.5 cm lata, acuminata, basi acuta an cuneata, in petiolum decurrens, margine ciliata et subtus nervis puberula; costa canaliculata; nervi utroque latere costae 9 an 10. Stipulae late triangulares, 5 mm longae, ciliatae, axilla pilis glandulisque munitae. Capitulum florum masculinorum ebracteatum.



Ibetralia surinamensis Brem. a Versteeg n.:334, branch of male plant. b-e Versteeg nr. 310 (type): b branch of female plant. c ♀ flower split open, d indumentum of the corolla at *, e fruit.

Pedunculus 12—15 mm longus, sulcatus, puberulus. Flores 6-meri. Calyx 5 mm longus, extus puberulus, intus dense adpresse pubescens, irregulariter et breviter dentatus. Corolla tubo 10 mm longo, parte basilari 1 mm longa glabra excepta pilis retrorsis dense sericeo-pubescente, ad medium paulum inflato, intus parte basilari 2.5 mm longa glabro, ceterum piloso, ad insertionem staminum pilis longioribus villosis, fauce pilis brevioribus adpresse pubescente, lobis linearibus, 12 mm longis. Stamina 6 mm longa. Stylus 10 mm longus. Flos femininus solitarius, 7-merus. Ovarium 9 mm longum. Calyx 5—7 mm longus, irregulariter dentatus. Corolla tubo cylindrico ampliore quam floris masculini. Stamina 5 mm longa, antheris vidis. Stylus 10 mm longus, fere usque ad basin bifidus, stigmatibus crassis munitus. Fructus globosus, 22 mm diam., pericarpio ligneo, tenuiore, seminibus paucis, circ. 1 cm longis, 7 mm diam., teste minute striata obtectis consistens.

Hab. Lawa River, Versteeg 310 ♀; Litanie River, Versteeg 334 ♂.

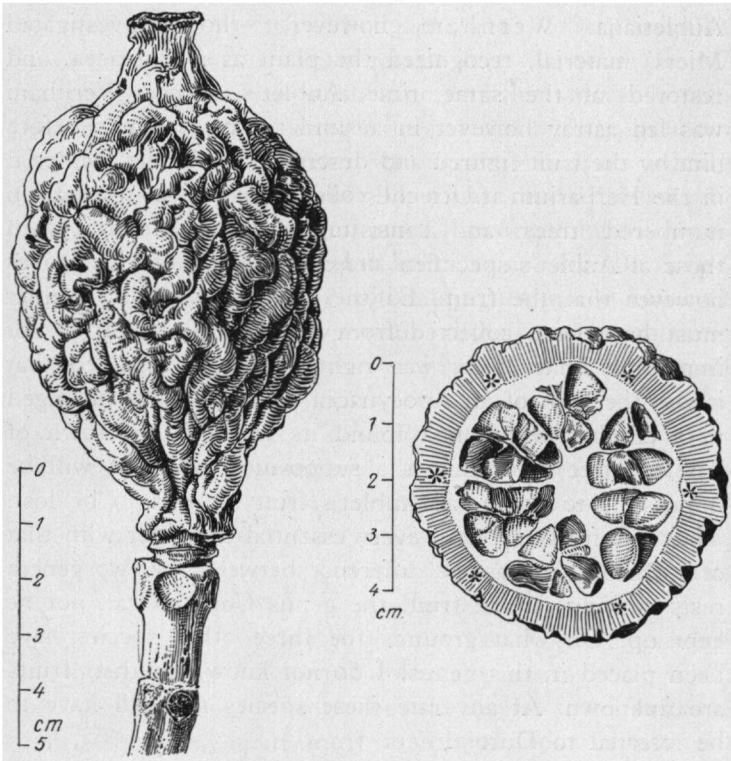
Not known from elsewhere.

The new genus resembles *Duroia* and *Amajoua* in the presence of a dense felt consisting of retrorse hairs on the corolla tube; it differs from them in its persistent stipules. In this character it approaches *Alibertia*, from which it differs again in its 6- or 7-merous flowers. From *Amajoua* it differs also in the solitary female flower, and from *Duroia* in the hairyness of the inner wall of the corolla tube.

DUROIA L. f.

Of this genus so far three species have been found in Surinam: in the first place the apparently common and rather variable *Duroia eriopila* L. f., then a myrmecophilous species: *D. Sprucei* Rusby, which accommodates its guests

in some of its shoots, and thirdly a plant known so far under the name of *Coupou aquatica* Aubl.



Fruit of *Duroia aquatica* (Aubl.) Brem. Brownsberg Tree n. 1164 (B. W. 2811); in the transverse section the false dissepiments are indicated by asterisks.

The genus *Coupou* has baffled several taxonomists. It is founded on a short description in the Supplement of Aublet's *Plantae Guianenses* and on his plate 377, on which a shoot and a fruit are figured. The older botanists were inclined to regard it as a Myrtacea, but when flowers became available, this proved incorrect. Miers, who was the first to study these flowers (they were male ones),

thought that they belonged to an Apocynacea, for which he rather arbitrarily proposed a new name *Cupirana Aubletiana*. Wernham however, who reinvestigated Miers' material, recognized the plant as a Rubiaceae, and restored at the same time Aublet's name. Wernham was led astray however in a similar way as Miers before him by the fruit figured and described by Aublet. Material in the Herbarium at Utrecht, collected at various times from numbered trees, and consisting of leaves identical with those of Aublet's specimen and of flowers and fruits, proves however that the fruit and the leaves figured by Aublet must have been collected from different plants. It is not impossible that Miers was right, when he assumed that it was the fruit of an Apocynacea (it might have belonged to a climber which had found its way in the crown of Aublet's tree), but this is a supposition which it will be impossible to prove, as Aublet's fruit appears to be lost. The real fruit agrees in every essential character with that of a *Duroia*, and as the difference between the two genera rests entirely on the fruit, the genus *Coupoui* can not be kept up. On what grounds the three other species have been placed in this genus, I do not know, for their fruits are unknown. At any rate these species too will have to be referred to *Duroia*.

Coupoui aquatica Aubl. = *Duroia aquatica* (Aubl.) Brem. comb. n.

Coupoui brasiliensis Wernham = *Duroia macrophylla* Hub.

Coupoui Martiniana (Miers) Wernham = *Duroia Martiniana* (Miers) Brem. comb. n. (a species very near to *D. eriopila* L. f.).

Coupoui micrantha James Ladbrook = *Duroia Sprucei* Rusby.

As *Duroia aquatica* (Aubl.) Brem. comb. n. on account of the incomplete material has never been properly described, a new description may find here a place.

Arbor. Rami novelli sicut petioli stipulaeque pilis adpressis dense cinereo- an plerumque ferrugineo-pubescentes; rami veteriores glabrescentes, sulcati, cortice brunneo vestiti. Folia in verticillos 5-meros disposita, longe petiolata. Petiolus usque ad 10 cm longus, sulcatus. Lamina oblongo-obovata, usque ad 35 cm longa et 15 cm lata, acuminata, basi cordata an subpeltata, supra costa excepta glabra, subtus sparse pubescens, costa nervisque dense adpresse pubescentibus; nervi utroque latere costae circ. 20, subtus prominentes; venae tertiariae numerosissimae et conspicuae, nervos laterales transverse connectentes. Calyptra stipulacea decidua pentagonalis, acuminata, circ. 3 cm alta, extus adpresse sericea, intus axilla glandulis munita. Flores masculini circ. 24 in umbellam terminalem sessilem, primum calyptra stipulacea circumdatam dispositi, 6-meri; pedicelli graciles, 3—4 cm longi, sulcati, adpresse cinereo-pubescentes. Ovarium rudimentarium. Calyx tubulosus, 24 mm longus, denticulatus, extus parte basilari dense pubescens, apicem versus glabrescens, intus parte inferiore puberulo, apice paulum constricto, lobis ovato-lanceolatis, 3 cm longis, acutis. Stamina antheris 14 mm longis munita. Stylus 22 mm longus, fusiformis, indivisus, parte inflata costatus, basi puberulus. Flos femininus partialiter calyptra stipulacea rupta circumdatus, solitarius, sessilis. Ovarium 2—2.5 cm altum, parte superiore verticillo interdum incompleto foliorum rudimentariorum subulatum, 1.5—2 cm longorum, deciduorum ornatum, extus dense adpresse pubescens, placentis parietalibus 5, rare 6, usque ad centrum penetrantibus ubi utroque latere plica longitudinali recurvata munitae sunt; ovula in plicas longitudinales immersa. Calyx cupularis, subobliquus, 10- an 12-dentatus, dentibus majoribus triangularibus cum minoribus linearibus alternantibus, pubescentia calyci floris masculini similis. Corolla longitudine corollae floris masculini similis, sed latior et 10- an 12-mera. Stamina 6.5 mm longa, sterilia. Discus 10 an 12

crenulationibus ornatus. Stylus 2.5 cm longus, glaber, crassus, 5 an 6 lobis erectis, apice paulum patentibus munitus. Fructus ovoideus, verrucosus, glabrescens, basin conicam et apicem conicum versus adpresse pubescens tamen, 10 cm altus, 5.5 cm diam., disco coronatus, pericarpio ligneo crassissimo, placentis centro unitis in loculos 5 an 6 divisus; loculi extensionibus placentarum in cavernas seminiferas partiti. Semina numerosa, sectione transversali mediana quaque serie radiali 3, circumferentia parietem adnexa circ. 15, angulosa, circ. 8 mm diam., nigra, minute striata, margine brunnea.

Hab. Forest Reserve Brownsberg tree n. 1164 ♀; Goddo, Wilhelmina Range Exped. 52 ♂ et 90 ♀. French and Dutch Guyana.

CHOMELIA Jacq.

As indicated above Rusby (Bull. Torrey Bot. Club LII p. 137. 1925) has tried to establish a difference between *Chomelia* Jacq. and *Anisomeris* Presl. The latter is according to him characterized by the possession of sagittate anthers and by the presence of an appendage at the tip of the corolla lobes. This distinction however breaks down in *Chomelia tenuiflora* Bth., where the anthers are sagittate, but the corolla lobes lack the appendage. The other species are moreover so similar to each other that it is not necessary to separate them.

Chomelia is represented in Surinam by the above named *C. tenuiflora* Bth. and by a second species, of which the description follows.

Chomelia Splitgerberi Brem. sp. n.

Frutex, 4.5—6 m. altus. Rami novelli dense pubescentes, veteriores cortice cinereo lenticellis subprominentibus punctato vestiti. Folia opposita, petiolata. Petiolus 3 mm longus, pubescens. Lamina ovata, 1.8—4 cm longa, 1.1—2.4 cm lata, ramorum longorum major et proportionaliter angustior

quam ramorum brevium, acuta an subacuminata, basi obtusa, subtus pallidior, supra praesertim nervis sparse pubescens, subtus nervis dense pubescens et inter nervos sparse pubescens; nervi utroque latere costae 5; reticulatio rectangularis subtus impressa. Stipulae triangulares, aristatae, usque ad 6 mm longae, extus dense pubescentes, intus sparse pubescentes, axilla glandulosae. Flores solitarii ramos longos et breves ornantes. Pedunculus pubescens, 0.5—1.5 cm longus, apice duobus bracteolis linearibus, liberis, 2.5—3 mm longis coronatus. Ovarium dense pubescens, cylindricum. Calycis tubus dense pubescens, lobi lineares 3 mm longi, carinati et ciliati. Corollam non vidi. Drupa cylindrica, sparse adpresse pubescens, bisulcata, 8 mm longa, 2.5 mm diam. Pyrena bilocularis.

Hab. Plantation Canawappibo, Splitgerber 307, H.L.B. 908.212.689.

Apparently near *C. tenuiflora* Bth., but distinguished by the entirely free bracteoles at the base of the ovary, the smaller drupes, and the pubescence of the leaves. Known in one specimen only.

IXORA L.

The species of *Ixora* occurring in Surinam are partly introduced and partly native. The latter belong to a quite distinct group formerly considered as a separate genus *Siderodendron*. It is represented in Surinam by three species, *I. graciliflora* Bth. and two new ones.

Ixora surinamensis Brem. sp. n.

Frutex an arbor parva. Rami novelli paulo puberuli, mox glabrescentes, teretes, deinde cortice griseo-brunneo, opaco vestiti. Petiolus crassus, canaliculatus, 0.5—1 cm longus. Lamina coriacea, glabra, siccitate haud conspicue decolorata, interdum brunnea, 12—15 cm longa, 4.5—5 cm lata, caudato-acuminata, basi acuta; nervi utroque latere

costae 7—10, cum 1—4 nervis tenuioribus alternantes; venae minores reticulatae. Stipulae e parte basilari lata et brevissima et ex arista longa compositae, 4 mm longae, axilla villosae et glandulosae. Inflorescentiae rare ramos ordinarios terminantes, plerumque ramulos laterales brevissimos, parti defoliatae ramorum insertos terminantes, qui ramuli coarctati 1—3 jugos bractearum subulatarum, longitudine stipulas non superantium ferunt. Inflorescentia panicula laxa, 9—15 flores ferens, omnino minute puberula; bracteae parvae, subulatae; bracteoli oppositi, minuti, ad basin ovarii inserti et eo breviores. Calycis lobi minutissimi, late triangulares, 0.2 mm longi, intus glabri. Corollae tubus rubroluteus an ruber, 1 cm longus, gracillimus, fauce subluteus, lobi lutei an virides, ovati, obtusi, 4 mm longi. Antherae sessiles, 1.5 mm longae, apiculatae. Stylus glaber, subexsertus; lobi lineares, 1 mm longi.

Hab. Corantyne River, Wonotobo, Stahel et Gonggrijp 2547.

This species resembles *I. ferrea* (Jacq.) Bth., but differs in the larger inflorescences, which are usually borne on the old wood. It is apparently not rare in Surinam, and has also been collected in French Guyana (Sagot 824 H.K.) and in British Guyana (e.g. Jenman 127 H.K.).

***Ixora Versteegii* Brem. sp. n.**

Frutex, 3—4 m altus. Rami novelli glabri, sulcati, complanati, deinde teretes et cortice subnigro et opaco vestiti. Folia opposita, sessilia. Lamina herbacea, siccitate viridis an coerulea, ovato-lanceolata, 6—13 cm longa, 2.2—4.2 cm lata, cauda apice acutissima munita, basi obtusa an subacuta; nervi utroque latere costae circ. 10, cum nervis tenuioribus alternantes; reticulatio inconspicua. Stipulae triangulares, aristatae, 4 mm longae, intus villosae et glandulosae. Inflorescentiae ad apicem ramorum ordinariorum tres, i.e. una terminalis, duae laterales ramos coarctatos

axillis foliorum supremorum insertos terminantes; terminalis lateralesque subsessiles an brevissime pedunculati, paniculati; ramuli pedicellique breves et sicut flores puberuli; bracteoli ad basin ovarii inserti, subulati, longitudine ovarium aequantes. Ovarium 1 mm altum. Calyx 1.2 mm longus, usque ad basin divisus; lobi anguste triangulares, acuti, axilla glandulosi. Corollae tubus 20 mm longus, 0.5 mm diam., intus glaber; lobi lanceolati, 5 mm longi, apiculati. Antherae subsessiles, 1.2 mm longae, apiculatae. Stylus 24 mm longus; lobi oblongi 1.2 mm longi. Drupa coerulea, globosa et sulcata, bipyrena, 7 mm diam.

Hab. Tapanahoni River, Versteeg 650.

This plant differs from the other American species by its sessile leaves, subsessile, contracted inflorescences, and rather large flowers. Not known from elsewhere.

BELLYNKXIA Müll. Arg.

The genera *Appunia* Bth. et Hook. f. (Gen. Pl. II p. 120. 1873) and *Bellynkxia* Müll. Arg. (Flora LVIII p. 465 et 475. 1875) were united by Baillon in his *Histoire des Plantes*, and K. Schumann accepted this decision in his monograph of the family in Engler and Prantl. In my opinion however the two genera are totally different.

Bellynkxia is at once recognizable by the peculiar position of the inflorescence. The latter is originally terminal, and of the pair of leaves at its base one only is developed. In several species moreover the last internode does not grow out, and in that case a false whorl consisting of three leaves is formed at the base of the inflorescence. Another peculiarity is the early development of a shoot in the axil of the solitary leaf: in this way the inflorescence is brought in an extra-axillary position. Such extra-axillary inflorescences are also found in *Morinda*, a genus which is doubtless nearly related with *Bellynkxia*, but they do not occur in

Appunia: in that genus they are always axillary, and arranged in opposite pairs.

The ovary of *Bellynkxia* was described by Müller Argau as 4-celled, and the ovules as solitary. A reinvestigation of the type species however led to a different result: the ovary is in reality bilocular, and the ovules are collateral. This type of ovary occurs also in the other species which show the type of inflorescence which I have just described as characteristic for *Bellynkxia*, whereas the species of *Appunia*, i.e. those with the axillary inflorescences, appear to possess 4-celled ovaries with solitary ovules.

As in the *Morindeae* no other genera with axillary inflorescences are found, the position of *Appunia* in that tribe is perhaps not so well established as it is generally assumed.

Of those species of *Appunia* which I have seen the following will have to be referred to *Bellynkxia*:

Appunia angulata (Müll. Arg.) Baill. = *Bellynkxia angulata*
Müll. Arg.

Appunia calycina (Bth.) Sandwith = *Bellynkxia calycina*
(Bth.) Brem. comb. n.

Appunia odontocalyx Sandwith = *Bellynkxia odontocalyx*
(Sandwith) Brem. comb. n.

Appunia triphylla Ducke = *Bellynkxia triphylla* (Ducke)
Brem. comb. n.

The two Surinam species are new.

Bellynkxia surinamensis Brem. sp. n.; *Cordia* *surinamensis* Miq. inedit. in Herb. Ultraject.

Frutex glaber. Rami subquadrangulares, tenuiores. Folia opposita, breviter petiolata; jugi supremi ad basin inflorescentiae unum rudimentarium, alterum normaliter expansum. Petiolus 3—5 mm longus. Lamina herbacea, ovato-oblonga, 11—15 cm longa, 3.5—4 cm lata, caudata, basi contracta, supra nitida, subtus opaca; nervi utroque latere costae

6 an 7, haud prominentes. Stipulae extus intusque glabrae, 4 mm longae, 2 mm latae. Inflorescentia sessilis, umbellata, primum terminalis, mox ramo axillari repulsa; radii umbellae tres, 3.5—4 cm longi, capitula parva ferentes. Flores 5-meri. Bracteae subinvolucratae, ovato-lanceolatae, acutae, 1.5 mm longae. Ovarium 1.2 mm altum, glabrum. Calyx cupularis, 1.2 mm altus, denticulatus. Corolla (an matura?) 15 mm longa; tubus 9 mm longus; lobi 6 mm longi. Stamina parte superiore tubi inserta, inclusa; filamenta 0.5 mm longa; antherae 2.5 mm longae, acutae. Discus parvus. Stylus 2.5 mm longus; stigma capitatum, magnum, 0.6 mm diam. Fructum non vidi.

Hab. Surinam, Kappler 1453.

This species resembles *B. calycina* (Bth.) Brem. comb. n., but lacks the large calyx. It is known in one specimen only.

***Bellynkxia brachycalyx* Brem. sp. n.**

Arbor parva. Rami quadrangulares, sulcati, primum puberuli, deinde glabrescentes. Folia opposita, longe petiolata; ad basin inflorescentiae folium solitarium an folia pseudo-ternata. Petiolus usque ad 2 cm longus, puberulus. Lamina membranacea et pellucida, oblongo-lanceolata, 12—18 cm longa, 3.2—5.5 cm lata, longe caudata, basi contracta et sensim in petiolum attenuata, supra costa excepta glabra, subtus sparse puberula; nervi utroque latere costae circ. 10. Stipulae 4 mm longae, 3 mm latae. Inflorescentia terminalis, sessilis, umbellata; radii plures, circ. 1.2 cm longi, puberuli, capitula parva ferentes; bracteae bracteolique minutissimi. Flores 4-meri. Ovarium globosum, 1.5 mm diam., puberulum. Calyx subinteger, annularis, 0.2 mm altus, patens. Corolla 15 mm longa, extus puberula, intus glabra. Stamina parti inferiori tubi inserta, inclusa; filamenta 0.7 mm longa; antherae 3 mm longae. Discus planus, annulo angusto coronatus. Stylus

glaber, 12 mm longus; lobi lineari-spathulati. Fructum non vidi.

Hab. Emma Range, Gonggrijp et Stahel 5679.

This plant resembles *B. triphylla* (Ducke) Brem. comb. n., where the flowers however are 5-merous, and where the stamens are inserted in the upper part of the tube. It is known in one specimen only.

FARAMEA Aubl. (*Evea* Aubl.; *Thiersia* Baill.).

Evea guianensis Aubl. was transferred by Willdenow to *Cephaëlis*, and on his authority it has remained in that genus until now: not so long ago Standley even proposed to replace the name *Cephaëlis* by *Evea*, because the latter is older. I can not believe however that Aublet's plant was ever seriously studied. That Baillon, who also accepted Willdenow's decision, had not seen Aublet's specimen, seems clear, for he described an identical, or at least very similar plant under the entirely new name *Thiersia insignis*.

The resemblance between *Evea* and *Cephaëlis* however is quite superficial. An examination of the flowers reveals at once that the two genera do not even belong to the same tribe: those of *Evea* are of exactly the same type as those of *Faramea* and *Coussarea*, and it can not be doubted therefore that *Evea* does not belong to the *Psychotrieae*, but to the *Coussareae*.

Whether *Evea* ought to be retained as a separate genus, or whether it ought to be included in *Faramea*, which it resembles in the shape of its stipules, is not so easy to decide. On first view it differs rather conspicuously from *Faramea* by the position and shape of the inflorescences. The latter are borne on peduncle-like short shoots consisting of a single internode, and are surrounded at the base by large involucre bracts. Peduncle-like short shoots however occur also in a species of *Faramea* which I will describe below, and in another species axillary inflorescences are said to

occur. If these species become better known, it will perhaps be desirable to place them in separate genera; at present however it appears better to treat them all as species of the same genus. In the case of *Evea* we are handicapped by the circumstance that the fruits are still unknown, but as apart from the involucre there appears to be no important difference, I think that its inclusion in *Faramea* is for the present the best solution. I call it therefore *Faramea guianensis* (Aubl.) Brem. comb. n.

The two following species are new:

***Faramea quadricostata* Brem. sp. n.**

Frutex glaber. Rami graciles, primum acute quadrangulares et sulcati, deinde bicostati, postea teretes. Folia brevissime petiolata. Petiolus canaliculatus, 2.5 mm longus. Lamina coriacea, oblonga an oblanceolata, 5.5—9 cm longa, 1.4—3.8 cm lata, in caudam linearem obtusam exeuns, basi acuta an cuneata, supra grisea, subtus pallide viridis; nervi utroque latere costae 8—10, supra prominentes, subtus albi; costa utroque latere sulco comitata. Stipulae e parte basilari triangulari, 1.5 mm longa, et ex arista 4 mm longa, in costam internodiam decurrente compositae, intus pluribus glandulis parvis munitae. Inflorescentia ramum ordinarium terminans, pedunculata; ramuli breves, pauciflori; bractae filiformes an nullae. Pedicelli 2—2.5 cm longi. Flores non vidi. Drupa globosa, 7 mm diam., calyce cylindrico, 1.5 mm alto, truncato an obsolete denticulato et disco depresso globoso, 1 mm alto coronata. Semen solitarium, basi insertum, globosum, minute papillosum, annulo verticali impressum et hilo amplo, intermedio tubi cum excavatione centrali connecto munitum.

Hab. Nickerie River near Fallawatra, Tulleken 455, H.L.B. 903.322.1587.

Easily recognizable by the long-pedicellate, umbellate flowers, and the dull grey colour of the leaves with their

long linear tail. The same species was also collected in British Guyana (Drake, without number, H.K.).

Faramea umbelliflora Brem. sp. n.

Frutex glaber, 2 m altus. Rami novelli complanati, longitudinaliter costati et striati. Folia breviter petiolata. Petiolus usque ad 0.5 cm longus, canaliculatus. Lamina herbacea, lanceolata, 8—12 cm longa, 1.8—3.2 cm lata, caudata et calloso-mucronata, basi cuneata an contracta; nervi utroque latere costae circ. 8, subtus albi et prominentes; domatia nulla. Stipulae subliberae, late triangulares, 1 mm longae, arista 1 mm longa, in costam internodiam decurrente munitae, intus glabrae et paulum supra axillam annulo denso glandularum munitae. Inflorescentiae ramos laterales, oppositos, 2.5—4 cm longos, ex uno internodio constantes terminantes, pedunculo circ. 2 cm longo, apice jugo secundo foliorum foliis jugi primi minorum munitae. Flores umbellati; pedicelli circ. 1 cm longi. Corollam non vidi. Drupa coerulea, depressa et complanata, 5 mm alta et crassa, 10 mm lata, calyce minimo lobis late triangularibus munito et disco globoso parvo coronata. Semen luteum, 7 mm latum, 4.5 mm altum et crassum, glabrum, excavatione basali usque ad centrum penetrante munitum.

Hab. Surinam River, Tresling 439.

Easily recognizable by the arrangement of the umbellate inflorescences at the top of lateral and opposite short shoots. Known from Surinam only.

COUSSAREA Aubl.

Of the six Surinam species of *Coussarea* three are new.

Coussarea surinamensis Brem. sp. n.; *Faramea surinamensis* Miq. inedit. in Herb. Ultraject.

Frutex glaber. Rami angulares, siccitate longitudinaliter plicati. Folia petiolata. Petiolus 1 cm longus. Lamina herbacea, oblonga an subobovata, 9—14 cm longa et

3.2—4.5 cm lata, caudata, basi acuta; nervi utroque latere costae 6 an 7, foliorum veteriorum subtus prominentes; domatia nulla. Stipulae brevissimae et latae, una alteram apice amplectens; axilla annulo glandularum munitae. Inflorescentia pedunculata, paniculata, ebracteata et ebracteolata, minutissime puberula. Flores breviter pedicellati. Pedicelli, ovaria, calyces et corollae brevissime puberuli. Ovarium 0.7 mm altum; calyx 1 mm altus, brevissime denticulatus, interdum intus areolis glandulosis munitus. Corolla probabiliter 1 cm longa (flores maturos non vidi); lobi 5 mm longi. Antherae 3 mm longae, plerumque basi paulo inaequales. Discus cylindricus, 0.7 mm altus. Stylus glaber; lobi lineares. Fructum non vidi.

Hab. Surinam, Focke sine numero.

Near *C. racemosa* A. Rich., but easily distinguishable by the herbaceous leaves with 6 or 7 pairs of nerves only, and by the finely puberulous inflorescence. Known in one specimen only.

***Coussarea micrococca* Brem. sp. n.**

Arbor parva an frutex magnus, 5 m altus, glaber. Folia breviter petiolata. Petiolus 0.7 mm longus, canaliculatus. Lamina oblongo-lanceolata, 7—12 cm longa, 1.3—4 cm lata, longe caudata, basi acuta; nervi utroque latere costae 8 an 9, aliquibus axillis domatia patentia, glabra monstrantes. Stipulae late ovatae, obtusae an subacutae, glabrae, subpersistentes, axilla glandulosae. Inflorescentiae ramos ordinarios terminantes, paniculatae, basi jugo foliorum parvorum munitae, axillis ramulorum intumescentiis provisae. Pedunculus ramulique lutei, subglutinosi; bractee bracteolique nulli. Pedunculus 1.5 cm longus; flores ad apicem ramulorum subumbellati; pedicelli 2 mm longi, puberuli. Ovarium 0.7 mm altum; calyx 1 mm altus, cupulatus et truncatus, puberulus. Corolla alba, tubo 7 mm longo, parte inferiore puberulo, lobis 3.5 mm longis.

Stamina ad medium tubum inserta; filamenta 1 mm longa; antherae 3 mm longae, subinclusae. Discus subglobosus, altitudine calyci aequalis. Stylus 6 mm longus, glaber, lobis linearibus munitus. Drupa globosa, 0.5 cm diam., viridis, uni-seminalis.

Hab. Brownsberg, Stahel et Gonggrijp 334.

Among the species with conical leafbuds and ovate or acute stipules easily recognizable by the presence of wide-open, glabrous domatia, and by the small size of the fruits. Not known from elsewhere.

***Coussarea mapourioides* Brem. sp. n.**

Arbor parva, circ. 5 m alta, subglabra. Folia petiolata. Petiolus 1—1.5 cm longus. Lamina coriacea, elliptica, 12—18 cm longa, 6—10.5 cm lata, longe et tenuiter caudata, basi acuta an obtusa an subito contracta; nervi utroque latere costae 7—9, subtus prominentes, axillis sine domatiis, sed pilis instructis; costa subtus pubescente. Stipulae ovato-triangulares, diu persistentes; intus fere totaliter glandulis obtectae. Inflorescentia terminalis, pedunculata, paniculata; bractee bracteolique nulli; flores ad apicem ramulorum subumbellati. Pedicellus, ovarium, calyx, corolla puberuli. Ovarium 1.5 mm altum, apice contractum. Calyx truncatus, 1.7 mm altus, 1.5 mm diam., intus areolis glandulosis munitus. Corolla alba, tubo 12.5 mm longo, lobis 5.5 mm longis. Stamina supra medium tubum inserta, filamentis brevibus, antheris 6.5 mm longis. Discus annularis, brevis. Stylus 18 mm longus, glaber, lobis linearibus munitus. Fructum non vidi.

Hab. Saramacca River, Pulle 204.

This plant resembles *C. paniculata* (Vahl) Standley, but its stipules are subsistent, and its flowers much larger. The dark brown colour of its leaves in herbarium material reminds one of the genus *Mapouria*. Also collected at the Upper Marowynne River (Kappler 154, 1862).

PALICOUREA Aubl.

Aublét described the ovary of his *Palicourea guianensis* as bilocular. The number of ovary cells in the plants collected in Surinam is however always three or four. A reinvestigation of Aublet's material showed that his description is correct. This condition however is rather exceptional: plants with tri- or quadrilocular ovaries are much more common. As the number of ovary cells does not vary on the same plant, it evidently characterizes definite varieties.

Palicourea guianensis Aubl. var. *trimera* Brem. var. n. Varietas a forma typica recedit ovariis trilocularibus.

Hab. Surinam, Hostmann 1006.

Also collected in French and in British Guyana.

Palicourea guianensis Aubl. var. *tetramera* Brem. var. n.

Varietas a forma typica recedit ovariis quadrilocularibus.

Hab. Forest Reserve Zanderij I, Samuels 250, ex herb. Gray.

Also in French and in British Guyana.

The form with bilocular ovaries has been found in French and in British Guyana, but not yet in Surinam.

There can be no doubt that *P. guianensis* belongs to those species which Müller Argau brought together in the section *Oribasia* of his genus *Psychotria*. The plants belonging to this section are all very similar: they are easily recognizable by the pellucid punctation of the leaves, a character which apparently has escaped Müller's attention. The name of the section is not well chosen, as none of the species which Gmelin assigned to Schreber's genus *Oribasia* belong to it. The name of Müller Argau's section *Palicourea*, which is characterized by the possession of bilocular ovaries, is also unfortunate, as it does not include the type species of *Palicourea*. In referring Müller Argau's

section *Oribasia* from *Psychotria* to *Palicourea*, we might change at the same time its name to *Eupalicourea*. As his section *Palicourea* even after the exclusion of *P. guianensis* remains a rather heterogeneous mixture, it will have to be split up.

Of the other species of *Palicourea* occurring in Surinam *P. crocea* (Sw.) D.C. deserves our attention, because it is rather polymorphous. Several authors recognize besides *P. crocea* the existence of a second species (sometimes regarded as a variety) *P. riparia* Bth., and it can not be denied that there is some difference between the two, but the variability is so great that it is difficult to draw the line between them. On the whole one gets the impression that the two types are more or less accidentally chosen among a large number of very similar forms. For this reason I prefer to treat them as one species.

NALETONIA Brem. gen. n.

The type species of this new genus, Aublet's *Nonatelia violacea*, was transferred by Raeuscher to *Psychotria*, and by Richard to *Palicourea*. The details of Aublet's description are partly wrong: the flowers are not pentamerous, but tetramerous, and the fruit described by him as 5-celled is in reality 2-celled; the latter character excludes it from *Nonatelia*. Apart from the tetramerous corolla its most distinctive characters are the large deciduous, entire or notched stipules, and the imbricate aestivation of the corolla. From *Palicourea* it differs moreover in the absence of the swelling at the base of the corolla tube, and of the ring of hairs on the inner wall of the tube, by which the basal swelling in *Palicourea* is always accompanied. The name of the new genus is an anagram of *Nonatelia*.

Naletonia gen. n.

Frutices. Folia multinerva; nervi principales cum nervis

tenuioribus regulariter alternantes. Stipulae interpetiolares, indivisae an apice emarginatae, expansione foliorum jugi sequentis rejectae, axilla pluribus glandulis linearibus et tumore subquadrato munitae. Inflorescentiae terminales, paniculatae; ramuli subverticillati, cymosi; bracteae usque ad apicem ramulorum translatae; bracteoli filiformes an nulli. Flores tetrameri, heterostyli. Ovarium biloculare, quoque loculo ovulo solitario ascendente munito. Calyx urceolatus, breviter lobatus. Corolla infundibuliformis, fauce subvillosa, ceterum glabra; lobi aestivatione imbricata. Stamina ad medium tubum inserta, floris brevistyli exserta, floris longistyli inclusa; antherae dorsifixae. Discus bilobatus. Stylus floris brevistyli inclusus, floris longistyli exsertus, lobis duobus brevibus, linearibus munitus. Fructus drupa bipyrena. Pyrena facie convexa costata, facie plana fissura longitudinali profunde sulcata. Semina costata et verrucosa, fissura longitudinali usque ad centrum penetrante munita. Embryo parvus.

Hab. Guyanam.

As the existing descriptions of the only species belonging to this genus are not very satisfactory, a new one is perhaps not superfluous.

Naletonia violacea (Aubl.) Brem. comb. n. = *Nonatelia violacea* Aubl. Pl. Guian. I p. 188 tab. LXXIII (1775); D.C. Prodr. IV p. 465 (1830); Miq., Symb. Sur., Linnaea XVIII p. 736 (1844). — *Oribasia violacea* (Aubl.) Gmel. Syst. Nat. p. 367 (1791). — *Psychotria amplifolia* Raeusch. Nomencl. Ed. III p. 56 (1797). — *Palicourea violacea* (Aubl.) A. Rich. Mém. sur les Rub. p. 95 (1829).

Frutex glaber an subglaber, 2—3 m altus. Rami graciles, primum subcomplanati et sulcati, deinde teretes. Cortex flavus, longitudinaliter striatus. Folia brevissime petiolata, opposita. Petiolus crassus, canaliculatus, circ. 0.5 cm longus. Lamina elliptica, 15—20 cm longa, 4.5—6.5 cm lata,

caudata et in apicem acutissimum exeuns, basi acuta; nervi utroque latere costae usque ad 20, utraque facie prominentes, cum venis tenuioribus alternantes. Stipulae oblongae, 1—2 cm longae, indivisae an emarginatae, plurinervae. Inflorescentia pedunculata et paniculata. Pedunculus 4—9 cm longus; ramuli saepe in pseudo-verticillos tetrameros dispositi, prima ramificatione dichasiali, ulterioribus monochasialibus; bracteae usque ad basin florum ascensae, lineares, 4—10 mm longae, ciliatae. Flores albi an pallide violacei, sessiles, interdum duobus bracteolis filiformibus minutissimis muniti. Ovarium 0.5 mm altum. Calyx 0.5 mm altus, lobis late triangularibus. Corolla anguste infundibuliformis, tubo 7 mm longo, lobis 4 mm longis. Stamina floris brevistyli exserta, floris longistyli inclusa. Stylus floris brevistyli inclusus, floris longistyli 3 mm exsertus. Drupa ovoidea, 7 mm alta, bipyrena. Pyrena fortiter costata.

Hab. Guyana, e.g. Surinam, Hostmann 1197.

MAPOURIA Aubl.

The Surinam species of *Mapouria* belong with one exception to Müller Argau's section *Eumapouria*, group *Genuinae*. The other groups and sections proposed by Müller Argau are so widely different from this one, that their inclusion in the same genus is not justified. Of the six Surinam species belonging to this section three are new, and one, *Mapouria Fockeana* (Miq.) Brem. comb. n., was known up to now as *Psychotria Fockeana* Miq. The seventh species does not belong to *Eumapouria*, and its inclusion in the genus is perhaps not fully justified. It is *Psychotria microdon* (D.C.) Urban (Symb. Antill. IX p. 539. 1928) = *Rondeletia microdon* D.C. = *Psychotria horizontalis* Griseb. non Sw. = *P. pinnularis* Sessé et Moc. It has to be excluded from *Psychotria* on account of the absence of a longitudinal furrow in the pyrenes; it differs however from *Mapouria*, section *Eumapouria* in the

stipules, which, though simple and deciduous, leave on each side a marcescent remnant; in herbarium material the colour of the leaves is also strikingly different from the brown or reddish brown colour usually assumed by the species of *Eumapouria*. When its characters become better known, we will perhaps be forced to remove it to a new genus, but for the moment it is better to treat it as a species of *Mapouria*. Its name becomes therefore *Mapouria microdon* (D.C.) Brem. comb. n.

The three new species are:

***Mapouria wonotobensis* Brem. sp. n.**

Frutex. Rami primum ferrugineo-pubescentes, deinde glabrescentes et cortice cinereo vestiti. Folia petiolata. Petiolus circ. 1 cm longus, supra planus et glaber, subtus ferrugineo-pubescent. Lamina elliptica, circ. 11 cm longa et 4.5 cm lata, acuminata, basi acuta an cuneata, supra glabrescens, subtus nervis pubescens; costa canaliculata; nervi utroque latere costae circ. 9; venae minores inconspicuae. Stipulas mox deciduas non vidi. Inflorescentia pedunculata, duplo an triplo umbellata, omnibus partibus ferrugineo-pubescent. Pedunculus circ. 3 cm longus; radii primarii 0.5—1.2 cm longi; radii secundarii 0.3 cm longi an breviores. Basi umbellae primariae interdum dua folia et duae stipulae ovatae; bracteae aliae parvae; bracteoli minuti, filiformes. Ovarium 0.5 mm altum, cylindricum, pubescens. Calyx campanulatus, sparse pubescens, tubo 0.7 mm alto, intus sub incisionibus glanduloso, lobis anguste triangularibus, 1.2 mm longis, patentibus. Corolla alba, hypocrateriformis, 3.2 mm longa, extus glabra, tubo 1.7 mm longo, ad insertionem staminum villosa, lobis 1.5 mm longis, puberulis, cucullatis. Stamina floris longistyli inclusa, parti superiori tubi inserta, filamentis inconspicuis, antheris 0.8 mm longis, apice basiue obtusis. Discus annularis. Stylus floris longistyli exsertus, 3.5 mm longus;

lobi 0.5 mm longi. Florem brevistylum et drupam non vidi.

Hab. Corantyne River near Wonotobo, Stahel et Gonggrijp 3042.

As the fruits are unknown, it is not absolutely sure that this species is a *Mapouria*; its general habit makes it however very probable. The long calyx lobes and the twice or three times umbellate inflorescence distinguish it from all other species. It is known in one specimen only.

***Mapouria ornithophila* Brem. sp. n.**

Frutex glaber, 2—3 m altus. Folia subcoriacea, lanceolata, 8—13 cm longa, 2.2—4.6 cm lata, acuta, basi cuneata et in petiolum brevissimum attenuata, siccitate fulvo-brunnea; nervi utroque latere costae 8 an 9, subtus plus minusve prominentes. Stipulae oblongae, 4—5 mm longae, 2.5—4 mm latae, obtusae, haud carinatae, paulo ciliatae, axilla annulo denso pilorum ferrugineorum glandulis intermixtorum munitae. Inflorescentia pedunculata, corymbosa. Pedunculus circ. 2 cm longus; ramuli inferiores oppositi an ternati; bracteae bracteolique ciliati. Flores sessiles. Ovarium 0.4 mm altum. Calycis tubus campanulatus, 0.6 mm longus, glaber; lobi late triangulares, minute ciliati, eglandulosi. Corolla pallide viridis, tubo 1.5 mm longo, lobis 2 mm longis, cucullatis. Filamenta floris brevistyli 1.5 mm longa; antherae 1 mm longae. Discus conicus, 0.5 mm altus. Stylus floris brevistyli 3 mm longus, lobis linearibus 1 mm longis. Florem longistylum et drupam non vidi.

Hab. Wajombo River, near Donder Creek, Gonggrijp et Stahel 818.

Near *M. Fockeana* (Miq.) Brem. comb. n., but differing in its entirely glabrous leaves with 8 or 9 instead of 10 to 12 pairs of nerves, its shorter peduncles, and the opposite or ternate, not quaternary branchlets of the inflorescence. Not known from elsewhere.

Mapouria opaca Brem. sp. n.

Arbor glabra, 12 m alta. Rami subcomplanati, interdum bisulcata, mox cortice griseo vestiti. Folia opposita, petiolata. Petiolus usque ad 3 cm longus. Lamina coriacea, elliptica, oblonga an oblanceolata, 12—18 cm longa, 4.2—7 cm lata, acuminata, basi cuneata et in petiolum contracta, utraque facie opaca, siccitate griseo-brunnea; nervi utroque latere costae 6—8, subtus prominentes. Stipulae ovato-oblongae, 1—1.5 cm longae, 0.5—0.7 cm latae, obtusae, glaberrimae; folia inclusa glutinosa. Inflorescentia pedunculata, corymbosa an paniculata. Pedunculus 6—11 cm longus; ramuli decussati, ferrugineo-pubescentes; bractee bracteolique ciliati. Flores breviter pedicellati. Ovarium 0.7 mm altum. Calycis tubus campanulatus, 0.6 mm altus, subtruncatus, intus glandulosus. Corolla alba, tubo 4 mm longo, lobis 3 mm longis, cucullatis. Stamina dimidio superiori tubi inserta, antheris 1.5 mm longis. Discus ovoideus, 0.8 mm altus, breviter bilabiatus. Stylus puberulus, lobis costatis et truncatis, 1 mm longis. Drupa globosa. 5 mm alta. Pyrena facie convexa 4-sulcata.

Hab. Forest Reserve Section 0, tree n. 754 (B.W. 1369, 1641, 3971).

Near *M. chionantha* (D.C.) Müll. Arg., but with 6 or 7 in stead of 10 to 12 pairs of nerves in the leaves, somewhat narrower stipules, and ferrugineous pubescent branchlets of the inflorescence. Not known from elsewhere.

NOTOPLEURA Brem. gen. n.

Notopleura is the name given in Bentham and Hooker's *Genera Plantarum* to one of the sections of the genus *Psychotria*. I have raised this section here to generic rank. From the true *Psychotriae* it differs in the absence of the longitudinal furrow on the flat side of the pyrene, and in the simple stipules. In these characters it approaches *Mapouria*; the stipules however are not as in that genus

thrown off by the expansion of the next pair of leaves. The suffruticose habit and its succulence, the pseudo-axillary inflorescences, the imbricate aestivation of the corolla lobes, and the dorsally flattened pyrenes assure it a special position among the Psychotrieae.

Notopleura gen. n. = *Psychotria*, sectio *Notopleura* Bth. et Hook. f. Gen. Pl. II p. 124 (1873).

Suffrutices glabri, simplices an subsimplices, erecti, ramis foliisque succulentis. Folia opposita, petiolata, supra viridia, subtus costa excepta pallida. Stipulae interpetiolares, simplices, basi connatae, interdum ultra partem connatam non conspicue productae. Inflorescentia terminalis, sed ramo axillari mox in positionem pseudo-axillarem repulsa, corymbosa et pedunculata; bractee bracteolique nulli. Flores pentameri, probabiliter heterostyli. Ovarium cylindricum, cum apice pedicelli brevis articulatum, biloculare, quoque loculo ovulo solitario ascendente munitum. Corolla alba, infundibuliformis, fauce villosa; lobi aestivatione imbricati. Stamina ad medium an infra medium tubum inserta; antherae dorsifixae. Discus annularis. Stylus filiformis, apice in lobos duos divisus. Fructus drupa bipyrrena. Pyrena dorso-ventraliter complanata, facie mediana plana an carina prominente cristata, facie dorsali sulcis duobus munita.

Hab. Americam meridionalem tropicalem.

The type species of this genus is *Notopleura uliginosa* (Sw.) Brem. comb. n. = *Psychotria uliginosa* Sw. It occurs also in Surinam. A second species found in Surinam is *Notopleura tapajozensis* (Standley) Brem. comb. n. = *Psychotria tapajozensis* Standley.

Other species of the new genus are: *Notopleura micayensis* (Standley) Brem. comb. n. = *Psychotria micayensis* Standley, and *Notopleura longissima* (Standley) Brem. comb. n. = *Psychotria longissima* Standley.

RONABEA Aubl.

The almost generally accepted inclusion of *Ronabea* in *Psychotria* is in no way justified. *Ronabea* occupies a rather isolated position among the *Psychotrieae*. It is for instance the only genus of this tribe with axillary inflorescences. Where such inflorescences are said to occur in species of *Psychotria* or *Cephaelis*, closer investigation will always reveal that they are not really axillary, but pseudo-axillary, i.e. terminal, but pushed aside by the development of a branch in the axil of one of the highest leaves. It differs also from the other genera in the very small size of the inflorescences.

The affinity with *Psychotria* is very small indeed. It differs from that genus also in its simple stipules, and in the absence of the longitudinal fissure on the flat side of the pyrenes. In these characters it resembles the genera *Mapouria*, *Notopleura* and *Geophila*. From the two latter it differs however both in habit and in the shape of the pyrenes, and from *Mapouria* in the absence of the peculiar discoloration of the leaves, but mainly of course in the position and shape of the inflorescences.

Ronabea latifolia Aubl. is the only species of this genus. *Ronabea erecta* Aubl. is apparently not specifically distinct, and *Coffea subsessilis* Bth. = *Mapouria subsessilis* (Bth.) Müll. Arg. *genuina* Müll. Arg. is a hispidulous variety, for which I propose the name *Ronabea latifolia* Aubl. var. *hispidula* Brem. var. n. *Ronabea latifolia* is widespread; in Surinam it is apparently rare.

CHYTROPSIA Brem. gen. n.

As the pyrenes in this genus lack the longitudinal furrow, it would fall in *Mapouria* as defined by Müller Argau. From *Mapouria* as delimited above it differs in the persistent bilobate stipules, the contracted inflorescences, from *Eumapouria* moreover in the absence of the peculiar

discoloration in herbarium material. The name of this new genus is an anagram of *Psychotria*.

***Chytropsia* gen. n.**

Frutices glabri, siccitate virides. Folia opposita, brevissime petiolata. Stipulae bilobatae, persistentes. Inflorescentia terminalis, pedunculata, e capitulis solitariis an umbellate dispositis composita. Flores pentameri, homostyli. Ovarium biloculare, quoque loculo ovulo solitario ascendente munitum. Calyx campanulatus, repando-dentatus an breviter lobatus. Corolla hypocrateriformis, fauce villosa, lobis aestivatione valvata. Stamina fauci inserta, exserta; antherae dorsifixae. Discus annularis. Stylus filiformis, apice in lobos duos breves divisus. Fructus drupa bipyræna. Pyræna facie convexa integra an costata, facie plana integra.

Hab. Americam tropicalem.

As type species of this new genus I select *Chytropsia astrellantha* (Wernham) Brem. comb. n. = *Psychotria astrellantha* Wernham. The next species is new:

***Chytropsia guianensis* Brem. sp. n.**

Frutex glaber, circ. 2 m altus. Rami graciles, primum subcomplanati. Folia brevissime petiolata. Lamina rhomboidea an obovata, 8—12 cm longa, 3—4.7 cm lata, apice basique attenuata; nervi utroque latere costae 7—9, subtus prominentes. Stipulae in vaginam connatae, circ. 2 mm altam, utroque latere duobus aristis 1 mm longis munitam, intus pubescentem, axilla villosam. Inflorescentia capitulum globosum, breviter pedunculatum. Pedunculus 0.5—1.5 cm longus. Capitulum 6 mm diam. Ovarium 0.5 mm altum. Calycis tubus 0.6 mm longus, lobi 0.3 mm longi. Corollam non vidi. Drupa rubra, ovoidea. Pyræna facie convexa fortiter costata.

Hab. Emma Range, Gonggrijp et Stahel 5667. Upper Nickerie River, Tulleken 451 co-type.

Resembles *Mapouria sessiliflora* Müll. Arg. = *Chytropsia sessiliflora* (Müll. Arg.) Brem. comb. n., but differs in several minor points, a.o. in the shape of the leaves. The new species was also collected on the Brownsberg (Stahel et Gonggrijp 6712), but not yet elsewhere.

GAMOTOPEA Brem. gen. n.

It is now customary to bring all Psychotriaceae with capitate or subcapitate more or less conspicuously involucrate inflorescences together in the genus *Cephaëlis*. A genus *Cephaëlis* defined in this way however is a very heterogeneous mixture. I have excluded therefore in the first place those species which possess a more or less involucrate inflorescence, but where the flowers themselves are not provided with bracts or bracteoles: these species I refer to *Psychotria*. From the rest the species with narrow, free or nearly free involucre bracts, and linear-lanceolate or narrowly triangular calyx lobes are separated, and referred to two new genera: *Gamotopea* and *Petagomoa*. The names of these two genera are both anagrams of *Tapogomoa*, the oldest name of *Cephaëlis*. The difference between the two new genera lies partly in the structure of the pyrenes: those of *Petagomoa* are provided with a longitudinal furrow, those of *Gamotopea* not; and partly in their habit: the species of *Gamotopea* are decumbent herbs, and those of *Petagomoa* pseudo-dichotomously branched suffrutices.

Gamotopea gen. n.

Herbae hirsutae, decumbentes. Caules parte inferiore ad nodos radicanes. Folia opposita, petiolata, ovata an lanceolata, obtusa an acuta, basi cordata, rotundata an subacuta. Stipulae interpetiolares, lobis duobus linearibus an filiformibus munitae. Inflorescentia pedunculata, contracta et pauciflora; flores bracteis bracteolisque ovatis an linearibus circumdati, sessiles, pentameri, heterostyli. Ova-

rium biloculare, quoque loculo ovulo solitario ascendente munitum. Calyx usque ad basin fissus; lobi anguste triangulares an lineares. Corolla infundibuliformis, tubo lobos longitudine pluries superante, intus dimidio superiore villosa; lobis aestivatione valvatis, cucullatis, extus hirsutis. Stamina dimidio superiori tubi inserta, floris longistyli inclusa, floris brevistyli breviter exserta; filamenta glabra; antherae dorsifixae an interdum subbasifixae. Discus e glandulis duabus compositus. Stylus glaber an puberulus, filiformis, apice in lobos duos filiformes breves divisus. Drupa bipyrena. Pyrena costata.

Hab. Guyanam, Brasiliam, insulam Trinitatis.

The following species belong to this genus:

Gamotopea purpurea (Aubl.) Brem. comb. n. = *Tapogomea purpurea* Aubl. = *Cephaëlis purpurea* (Aubl.) Willd. type!

Gamotopea alba (Aubl.) Brem. comb. n. = *Tapogomea alba* Aubl. = *Cephaëlis alba* (Aubl.) Willd.

Gamotopea callithrix (Miq.) Brem. comb. n. = *Cephaëlis callithrix* Miq.; *Cephaëlis tontaneoides* (Britton et Standley) Will. et Cheesm.

Gamotopea surinamensis (Standley) Brem. comb. n. = *Cephaëlis surinamensis* Standley.

PETAGOMOA Brem. gen. n.

The species which I bring together in this genus are very hirsute, pseudo-dichotomously branched shrublets, drying with a black or very dark olive-green colour. The capitate inflorescences are surrounded by an involucre consisting of free or nearly free, lanceolate to oblong, sometimes three- or more-lobed bracts. In Müller Argau's revision of the Psychotriaceae in the Flora Brasiliensis they appear as a special group Trichocephalae of the genus Psychotria.

Petagomoa gen. n.

Suffrutices erecti, pseudo-dichotome ramificati, ramis hirsutis. Folia opposita subsessilia, lanceolata an oblonga, siccitate olivaceo-nigra. Stipulae in vaginam brevem, utroque latere lobis duobus munitam connatae. Inflorescentia sessilis an pedunculata, capitata, involuocrata. Involucrum e bracteis liberis an subliberis, lanceolatis an oblongis, interdum lobatis compositum. Calycis tubus brevis, lobi lineares an lanceolati. Corolla hypocrateriformis tubo dimidio superiore villosa, lobis aestivatione valvatis. Stamina ad medium an supra medium tubum inserta; antherae dorsifixae. Discus e glandulis duabus compositus. Stylus glaber an puberulus, parte superiore costatus et in lobos duos lineares divisus. Drupa dense pubescens, calyce coronata, bipyrena. Pyrena facie convexa paulum sulcata, facie plana plica tenuissima in albumen profunde penetrante munita.

Hab. Americam meridionalem tropicalem.

I reckon to this genus the following species:

Petagomoa hirta (Miq.) Brem. comb. n. = *Cephaëlis hirta* Miq. type!

Petagomoa horridula (Müll. Arg.) Brem. comb. n. = *Psychotria horridula* Müll. Arg.

Petagomoa iodotricha (Müll. Arg.) Brem. comb. n. = *Psychotria iodotricha* Müll. Arg.

Petagomoa tricholoba (Müll. Arg.) Brem. comb. n. = *Psychotria tricholoba* Müll. Arg.

Petagomoa trichophoroides (Müll. Arg.) Brem. comb. n. = *Psychotria trichophoroides* Müll. Arg.

The two following species are new:

Petagomoa nigricans Brem. sp. n.

Suffrutex, circ. 50 cm altus. Rami graciles, teretes, sparsissime hirsuti, ad nodos tamen dense hirsuti. Folia lanceolata, 6—7 cm longa, 1.2—2 cm lata, caudata an

acuminata, mucronata, basi acuta, costa et margine ciliata, ceterum glabra, siccitate subnigra; nervi utroque latere costae circ. 10. Stipulae in vaginam cupularem, 1.7 mm altam connatae, lobis filiformibus 5 mm longis, ciliatis, approximatis, intus paucis glandulis linearibus munitae; series exteriores ciliarum in vaginam decurrentes, ubi se approximant et areolam triangularem includunt. Inflorescentia subsessilis; bractee plures, oblongae an lanceolatae, 10—12 mm longae et 1.8—4.5 mm latae, ciliatae, subliberae, simplices an lobo laterali parvo munitae. Ovarium villosum. Calycis lobi 4 mm longi, ciliati. Corolla extus ad apicem hirsuta, tubo intus dimidio superiore sparse villosa. Stamina ad medium tubum inserta, antheris linearibus, 2 mm longis, apiculatis munita. Stylus puberulus, parte superiore costatus et in lobos duos lineares divisus. Drupam non vidi.

Hab. Forest Reserve Brownsberg, Stahel et Gonggrijp 632.

Very near to *Petagomoa tricholoba* (Müll. Arg.) Brem. comb. n., but with narrower, almost entirely glabrous leaves. Not known from elsewhere.

***Petagomoa atricapilla* Brem. sp. n.**

Suffrutex, usque ad 70 cm altus. Rami teretes, rigidi, dense hirsuti. Folia oblonga, 5—7 cm longa, 1.8—3.4 cm lata, acuminata et mucronata, basi obtusa, supra costa et margine exceptis glabrescentia, subtus sparse hirsuta; nervi utroque latere costae 12 an 13, subtus prominentes. Vagina stipularis 2.5 mm alta; lobi filiformes 3—4 mm longi, pilis longis et rigidis ciliati, intus glabri. Inflorescentia sessilis, i.e. involucrium foliis supremis circumdatum. Involucrium e quattuor bracteis trilobatis, 1 cm longis, basi 3 mm latis, breviter connatis compositum; bractee involucrales pilis longis et rigidis fortiter ciliatae, extus hirsutae, intus glabrae, lobo mediano duplo latiore quam lobis lateralibus; bractee interiores lineares, 8.5 mm longae, 0.8 mm latae, similiter

ciliatae. Ovarium dense hirsutum. Calycis lobi lineares, 6 mm longi, 0.7 mm lati, fortiter ciliati. Corolla extus hirsuta, tubo intus villosa, 10.5 mm longo, lobis late triangularibus, 1.5 mm longis. Stamina parti superiori tubi inserta, exserta, filamentis 1.5 mm longis, antheris 2 mm longis, haud apiculatis. Stylus glaber, 8 mm longus, lobis 1 mm longis. Drupam non vidi.

Hab. Forest Reserve Brownsberg, B.W. 3319.

Near *P. horridula* (Müll. Arg.) Brem. comb. n., but the bracts with three lobes only, and the leaves with 12 or 13, not with 14—17 pairs of nerves. Not known from elsewhere.

CEPHAËLIS Sw.

After the exclusion of the species which I have referred above to my new genera *Gamotopea* and *Petagomoa*, and of a few species which are better placed in *Psychotria*, e.g. *Cephaëlis justiciifolia* Rudge = *Psychotria Rudgei* nom. n. vide infra, the genus *Cephaëlis* becomes a very natural group. It is represented in Surinam by no less than nine species; two of these are new.

For the following species a new combination is proposed:

Cephaëlis guianensis (Aubl.) Brem. comb. n. = *Carpichea guianensis* Aubl. Pl. Guian. I p. 168 tab. LXIV (1775) = *Cephaëlis involucrata* Willd. Sp. Pl. I p. 979 (1798) = *Cephaëlis Aubletii* D.C. Prodr. IV p. 536 (1830).

The new species are:

Cephaëlis amoena Brem. sp. n.

Suffrutex glaber, circ. 1 m altus. Caulis teres an obtuse quadrangularis. Folia petiolata. Petiolus canaliculatus, 1—1.3 cm longus. Lamina elliptica an lanceolata, 8—16 cm longa, 4—14 cm lata, acuminata an caudata, basi contracta an cuneata; nervi utroque latere costae 13 an 14, minutissime puberuli, utraque facie prominentes; supremi ab aliis

remoti et semi-circulariter apicem versus curvati. Stipulae liberae an subliberae, e parte basali 2 mm alta et duobus lobis triangularibus, 1.5 mm longis compositae, intus glabrae, sed ad basin loborum glandulis linearibus fasciculatis munitae, prius quam folia deciduae. Inflorescentia pedunculata. Pedunculus glaber, teres (siccitate quadrangularis), circ. 3 cm longus. Capitulum depresso globosum, 2—3 cm diam., 1.5—2 cm altum. Receptaculum ovale, 2 cm longum, 1.4 cm latum. Involucrum rubrum an violaceum, e duobus foliis reniformibus, 4.8 cm latis et 2 cm longis, receptaculi lateribus angustioribus insertis compositum. Flores in quattuor fascicula lateralia, decussata et in fasciculum terminale dispositi; quodque fasciculum laterale bractea reniformi, 2.2 cm lata, 1.5 cm alta, fasciculum terminale duabus bracteis orbicularibus circumdatum. Quoque fasciculo flores dichasialiter dispositi, quisque flos bractea bracteolisque spathulatis, 1.2 cm longis, ad apicem subciliatis, ceterum glabris munitus. Ovarium glabrum, 0.8 mm altum. Calyx glaber, tubo campanulato, 0.8 mm longo, lobis triangularibus, 0.5 mm longis, irregulariter dentatis. Corolla extus glabra, 1.5 cm longa, lobis 3 mm longis, triangularibus et recurvatis. Stamina paulum supra medium tubum inserta; filamenta floris longistyli 0.8 mm longa, basi pilis paucis munita; antherae 1.8 mm longae, obtusae. Discus cylindricus, integer. Stylus floris longistyli exsertus, 18 mm longus, basi glaber, ceterum puberulus; lobi lineares, recurvati. Drupa pyriformis, coerulea, 12 mm alta, 5 mm diam.; pyrena 6 mm alta, 2 mm diam.

Hab. Surinam River near Botopassie, Tresling 154.

This plant resembles *C. colorata* Willd., but differs in the obtuse involucre bracts, the eglandular calyx, and the larger flowers and fruits. It was also collected at the Gonini River (Versteeg 50), and at the Marowynne River (Versteeg 588), but is not known from elsewhere.

Cephaëlis silvatica Brem. sp. n.

Suffrutex ramis teretibus, primum hirsutis, deinde glabrescentibus. Folia petiolata. Petiolus 0.5 cm longus, pubescens. Lamina subcoriacea, 5.5—13 cm longa, 1.1—3.2 cm lata, caudata et mucronata, basi attenuata, supra costa pubescens, ceterum glabra, subtus sparse pubescens; nervi utroque latere costae 8—12, subtus prominentes. Vagina stipularis brevis, 0.8 mm longa, axilla annulo pilorum munita; lobi anguste triangulares, 6 mm longi, patentes, extus hirsuti, intus minute pubescentes et glandulis subulatis muniti. Capitulum pedunculatum. Pedunculus breviter hirsutus, usque ad 4 cm longus. Involucrum e duobus jugis foliorum decussatorum compositum; bractee jugi primi ovatae et acuminatae, 2.5 cm longae, 2 cm latae, pubescentes, subcarinatae, liberae; bractee jugi secundi ovatae et acutae, 1.2 cm longae et latae. Bractee florales et bracteoli spathulati, 7—3 mm longi, 2.5—0.8 mm lati, dense pubescentes. Calycis lobi ovati, acuti, pellucidi, 1 mm longi. Corolla 4 mm longa, lobis brevibus, extus puberulis. Stamina ad medium tubum inserta, floris longistyli filamentis brevissimis; antherae lineares 1 mm longae. Discus e glandulis duabus compositus. Stylus floris longistyli exsertus. Drupa ovoidea, 3.5 mm alta. Pyrena facie convexa quadrisulcata.

Hab. Wilhelmina Range, Stahel 7201.

This species resembles *C. glabrescens* (Müll. Arg.) Standley, but differs in the narrower leaves with their smaller number of lateral nerves, in the sparsely hirsute peduncle, and in the smaller corolla. It was also collected at the Nickerie River (Tulleken 356, H.L.B. 903.322. 1115), but is not known from elsewhere.

NONATELIA Aubl. emend. A. Rich.

Aublet says in his description of this genus: "Stylus longus bipartitus. Bacca sphaerica, quinquelocularis. Ossi-

cula quinque angulata." In the species which he included in his genus a bipartite style and a 5-celled ovary however exclude each other, and as a bipartite style is of common occurrence in the Psychotrieae, and therefore of no diagnostic value, we will do well to follow the example of A. Richard, and to exclude those species of which the ovary is not 5-celled. This leaves in the genus a single species, namely *Nonatelia racemosa* Aubl. It differs from *Psychotria*, in which it is now usually included, not only in the 5-celled ovary, the 5 lobes of the style, and the 5 disc glands, but also in its homostylous flowers, and in the insertion of the stamens at the base of the corolla tube.

The other species which Aublet included in his genus *Nonatelia* belong to three different genera.

Nonatelia officinalis Aubl. = *Psychotria officinalis* (Aubl.) Raeusch. The five seeds mentioned by Aublet in the French description are a mistake. Swartz, who had studied the type specimen in Banks' Herbarium, had seen this already. In his *Flora Indiae Occidentalis* I p. 414 (1797) he remarks: "sulcos 10 in baccis exsiccatis evidentes, pro distinctionibus inter semina quinque forte habuit".

Nonatelia paniculata Aubl. = *Psychotria paniculata* (Aubl.) Raeusch. Though the type specimen of this species appears to be lost, there is no doubt as to its identity.

Nonatelia longiflora Aubl. = *Palicourea longiflora* (Aubl.) A. Rich. Of this species too the type specimen appears to be lost, but notwithstanding the fruit was described by Aublet erroneously as 5-celled, its true nature appears sufficiently from his figure and the rest of the description.

Nonatelia violacea Aubl. = *Naletonia violacea* (Aubl.) Brem. see above.

Nonatelia lutea Aubl. is insufficiently known. A specimen of Aublet in Banks' Herbarium which bears this name is doubtless a *Coussarea*, but Aublet's figure and description show so little resemblance to this plant, that it is impossible

to assume that they refer to it. Description and figure suggest a species of *Palicourea*. Willdenow, who apparently had seen the type, described its stipules as bilobate, which they are not in the specimen in the British Museum, and placed it immediately after his *Psychotria Palicuria*, which is *Palicourea guianensis* Aubl. This makes it very probable that the real *Nonatelia lutea* was a *Palicourea*.

PSYCHOTRIA L.

The species of *Psychotria* occurring in Surinam show no very clear relation to the paleotropic species, and it is therefore doubtful whether their inclusion in this genus is really justified. This question however can not be solved before a more detailed knowledge both of the old world and of the new world species becomes available.

Of the eleven Surinam species two are new, and two were formerly included in *Cephaëlis*.

Psychotria dichotoma (Rudge) Brem. comb. n. = *Cephaëlis dichotoma* Rudge.

Psychotria Rudgei nom. n. = *Cephaëlis justiciifolia* Rudge.

As there is already a *Psychotria justiciifolia* Standley, a new name had to be found for this species.

The two following species are new:

Psychotria Pullei Brem. sp. n.

Frutex glaberrimus, 50—150 cm altus. Rami luteo-virides, teretes. Folia brevissime petiolata. Petiolus canaliculatus, haud 2 mm longus. Lamina herbacea, lanceolata, 7—9 cm longa, 3—4 cm lata, caudata, basi acuta; nervi utroque latere costae circ. 9, utrimque prominentes. Stipulae in vaginam brevem, truncatam, utroque latere duobus lobis linearibus, 1.5 mm longis coronatam connatae, intus glabrae. Inflorescentia pedunculata, paniculata; pedunculus circ. 6 cm longus; ramuli dichasialiter ramificati; bractae bracteolique minuti. Flores sessiles, heterostyli. Ovarium

0.3 mm altum, puberulum. Calycis lobi late triangulares, acuti, 0.2 mm longi, tubus intus sub incisionibus glandulis minoribus munitus. Corolla rubra, 3 mm longa, tubo intus ad medium pubescente, lobis triangularibus, cucullatis. Stamina parte superiore tubi inserta, floris brevistyli exserta et filamentis 2 mm longis munita; antherae 1 mm longae. Discus annularis, glaber. Stylus floris brevistyli inclusus, 2.2 mm longus; lobi filiformes 0.6 mm longi. Drupae violaceo-nigrae, ramulis purpureis expositae. Pyrena facie convexa quinque costis obtusis munita.

Hab. Saramacca River, Pulle 17.

This species belongs to the same group as *P. paniculata* (Aubl.) Raeusch., *P. patens* Sw. and *P. atabapoensis* Standley. It differs from all three in its lanceolate leaves. The lobes on its stipules are much longer than in *P. paniculata*, where to be exact they are no more than teeth, slightly longer than in *P. atabapoensis*, and shorter than in *P. patens*. It is known from Surinam only, where it was collected however at several places.

***Psychotria surinamensis* Brem. sp. n.**

Frutex glaber, circ. 2 m altus. Rami quadrangulares, quoque nodo ramificati. Folia petiolata. Petiolus 1—2.5 cm longus, subcanaliculatus. Lamina herbacea, elliptico-oblonga, 14—27 cm longa, 6.5—13 cm lata, acuminata, basi acuta; nervi utroque latere costae 12—16, utrimque subprominentes. Stipulae usque ad basin fissae; lobi lanceolati, acuti, 12 mm longi et 3 mm lati, conspicue nervati; axilla paucis pilis brevibus munita. Inflorescentia breviter pedunculata, paniculata. Pedunculus 1.5—2 cm longus; ramuli dichasialiter furcati, in ramificationes monochasiales exeuntes. Flores sessiles, glabri. Calycis lobi late triangulares, acuti, 0.2—0.3 mm longi, tubus intus sub incisionibus glandulis solitariis munitus. Corolla 2.5—3 mm longa, tubo intus ad medium pubescente, lobis triangularibus acutis. Stamina

ad medium tubum inserta. Discus annularis, crassus, e duobus lobis semi-circularibus compositus. Stylus bifidus. Drupam non vidi.

Hab. Emma Range, Gonggrijp et Stahel 5735.

Near to the preceding species and to *P. paniculata*, *P. patens* and *P. atabapoensis*, but at once recognizable by the large, lanceolate stipular lobes.

STREMPELIA A. Rich.

The genus *Strempelia* is now usually included in *Rudgea*, but this is not right, for the two genera differ in several important points. The form of the stipules is one of these: those of *Strempelia* are truncate, and the numerous straw-coloured awns are inserted in the middle of the back; those of *Rudgea* on the other hand are provided with a long and narrow median lobe; the latter bears a group of small awns at the bidentate top, and two groups of much larger awns are found laterally on the back of the basal part. The inflorescence of *Strempelia* is moreover corymbose or umbellate, whereas that of *Rudgea* is paniculate. The flowers of *Strempelia* are heterostylous, those of *Rudgea* homostylous, and the pyrenes of *Strempelia* are in cross-section triangular, whereas those of *Rudgea* are semiglobose and costate. The species of *Rudgea* are moreover large shrubs or trees, those of *Strempelia* small shrubs.

The genus *Strempelia* is represented in Surinam by one species: *Strempelia fimbriata* (Bth.) Brem. comb. n. = *Psychotria fimbriata* Bth. = *Rudgea fimbriata* (Bth.) Standley; other synonyms are: *Rudgea micrantha* Müll. Arg. and *Psychotria Krausseana* Standley.

The following species belong also to this genus:

Strempelia articulicymosa (Wernham) Brem. comb. n. =
Psychotria articulicymosa Wernham.

Strempelia ceratopetala (Donn. Sm.) Brem. comb. n. =
Psychotria ceratopetala Donn. Sm.

Strempelia indulgens (Rusby) Brem. comb. n. = *Psychotria indulgens* Rusby.

RUDGEA Salis.

Rudgea is represented in the flora of Surinam by two species, *R. Hostmanniana* Bth. and the following:

Rudgea cornigera Brem. sp. n.

Frutex an arbor, 4—6 m altus, subglaber. Rami primum complanati, deinde teretes. Folia subsessilia an breviter petiolata. Petiolus usque ad 0.5 cm longus, crassus et canaliculatus. Lamina coriacea, elliptica, plerumque circ. 18 cm longa et 6.5 cm lata, apice basique attenuata, margine saepissime subrevoluta; nervi utroque latere costae 10 an 11, subtus subprominentes; domatia nulla. Stipulae 1.2 cm longae, extus intusque glabrae; lobus medianus 2 mm latus, bilobatus, apice duabus an tribus aristis coronatus; pars basalis utroque latere duabus aristis fortioribus munita. Inflorescentia breviter pedunculata, paniculata an subcorymbosa. Pedunculus usque ad 2 cm longus, saepissime brevior, sparse pubescens; ramuli inferiores verticillati, bracteis ovatis, mucronatis, parvis subtensi, sparse pubescentes, dichasialiter ramificati; ramuli ordinum superiorum sensim longitudine decrescentes; bractee florales parvae, ciliatae. Flores sessiles. Ovarium glabrum, 1 mm altum. Calycis lobi triangulares, fortiter ciliati et irregulariter denticulati, circ. 1 mm longi. Corolla alba an flava, subglabra, ad apicem loborum tamen appendice piloso ornata; tubus 5 mm longus; lobi 4 mm longi, intus sparse puberuli. Filamenta 0.8 mm longa; antherae 1.5 mm longae. Discus annularis, planus. Stylus parte superiore puberulus, 7 mm longus; lobi 1 mm longi. Drupa rubra, obovoidea, 0.9 mm alta, 0.6 mm diam. Pyrena facie convexa obtuse quinque-costata; facie plana intus processu semi-lunari in endospermium penetrante munita.

Hab. Forest Reserve Watramiri, tree n. 1655 (B.W. 1862, 2227, 2457, 2662, 4728).

This species differs from *R. Hostmanniana* Bth. in the subsessile or shortly petiolate leaves, in the shortness of the peduncle, and in the nearly glabrous corolla. Also collected in the Forest Reserve Zanderij I (B.W. 3356 and Samuels 430 ex herb. Gray), and near Paramaribo (Versteeg 515), but not known from elsewhere.

DIODIA [Gronov.] L.

The differences between some of the genera of the tribe Spermaceae are very small; that between *Diodia* and *Hemidiodia* for instance rests merely on the thickness of the septum in the ovary. This septum is in *Hemidiodia* very thin, and when the fruit opens it is partly destroyed; in *Diodia* on the other hand it is rather firm, and each of the two mericarps in which the fruit is divided, remains entirely closed. As this character however is apparently not correlated with any other differences, and as the differences between the only species of *Hemidiodia* and some of the species of *Diodia*, e.g. *D. sarmentosa* Sw., are smaller than those between these species and several other species of *Diodia*, the separation of *Hemidiodia* from that genus is not justified. For this reason its only species is here referred to *Diodia*: *Diodia ocimifolia* (Willd.) Brem. comb. n. = *Hemidiodia ocimifolia* (Willd.) K. Sch.

Diodia rudis Miq. I consider as a variety of *D. sarmentosa* Sw.: *D. sarmentosa* Sw. var. *bisepala* Brem. var. nov. Varietas a typo recedit sepalibus duobus.

The differences between *Diodia*, Spermaceae and *Borreria* are also very small, and hardly of sufficient importance to justify their separation. In contradistinction with the difference between *Diodia* and *Hemidiodia*, which is not only taxonomically of little value, but also difficult to see, the differences between *Diodia*, Spermaceae and *Borreria*

are at least easily recognizable. For this admittedly purely opportunistic reason I have retained these genera.

BORRERIA G. F. W. Mey.

The genus *Borreria* is represented in Surinam by 8 species. Two species are new, and of two others new varieties are proposed.

Borreria xanthophylla Brem. sp. n.

Herba erecta, usque ad 1 m alta. Caulis acute quadrangularis, glaber. Folia petiolata. Petiolus foliorum inferiorum dimidio brevior quam lamina, foliorum superiorum brevis. Lamina elliptica, magnitudine variabilior, 2—4 cm longa, 1—2 cm lata, acuta, basi contracta et sensim in petiolum attenuata, sicc. luteoviridis, supra sparse hirsuta, subtus glabrescens; nervi utroque latere costae 4—6. Vagina stipularis 1.5 mm alta; setae 1 mm longae. Inflorescentia capitulum terminale, involucre e tribus jugis foliorum composito circumdatum; folia involucralia inferiora elliptica, mediana et superiora ovata; superiora multum minora quam mediana; bracteae florales et bracteoli nulli. Ovarium cylindricum 2 mm longum, glabrum. Calycis lobi triangulares, 2.5 mm longi, hirsuti. Corolla violacea, 6.5 mm longa, glabra, lobis 1.5 mm longis. Filamenta 0.5 mm longa; antherae 0.5 mm longae. Stylus 7 mm longus, lobis 0.5 mm longis. Capsula 4 mm alta. Semen brunneum, granulatum, 3.5 mm longum, 2 mm diam.

Hab. Litanie River, Mount Teeboe, Versteeg 784.

The peculiar involucre and the solitary terminal inflorescence distinguish this species from all others. It is not known from elsewhere.

Borreria ocimoides (Burm.) D.C. is found in Surinam in two forms which differ in the number of calyx lobes, and also more or less in habit. I consider them as varieties of the same species. As it is impossible to say to which

of the two Burman's plant may have belonged, the choice of the type is arbitrary. I select the form with four sepals, and the other one therefore becomes the variety:

Borreria ocimoides (Burm.) D.C. var. *bisepala* Brem. var. n.

Varietas a typo recedit calyce bilobato, caulibus gracilioribus angulis hirsutis, foliis latioribus, floribus minoribus.

Hab. Corantyne River, Hulk 241.

Most of the plants which I found in the various collections under the name of *B. prostrata* D.C. belong to this variety. It is in the same way as the type widely distributed, not only in America, but also in the tropics of the old world, where it is a naturalized weed.

Borreria latifolia (Aubl.) K. Sch. is apparently a variable species. Miquel described his material partly as *B. Perottetii* D.C., and partly under two new names: *B. penicillata* and *B. tetraptera*, but the differences are so small, that it is better to unite all these forms with *B. latifolia*. His *B. Fockeana* is a hirsute variety of this species.

Borreria latifolia (Aubl.) K. Sch. var. *Fockeana* Brem. var. n. = *Borreria Fockeana* Miq., Symb. Sur., Linnaea XVIII p. 299 (1844).

Varietas a typo recedit partibus omnibus densius hirsutis, corolla 6 mm longa, semine hilo latissimo munito.

Hab. Surinam, Focke 505.

This variety is apparently as widely distributed as the type.

Borreria Splitgerberi Brem. sp. n.

Herba prostrata. Caules acute quadrangulares, breviter alati et fortiter ciliati. Folia sessilia, late ovato-elliptica, 2.5 cm longa et 1.5 cm lata, acuta, basi rotundata an breviter cuneata, sicc. luteo-viridia, utraque facie sparse hirsuta; nervi utroque latere costae circ. 4. Vagina stipularis 1.5 mm alta; setae 1.5 mm longae, hirsutae. Flores subsessiles, in glo-

merula axillaria densa dispositi. Ovarium hirsutum. Calyx usque ad basin divisus; lobi triangulares, 1.5 mm longi, acuti, omnes aequilongi. Corolla alba, 4 mm longa, lobis glabris 1 mm longis. Filamenta 0.5 mm longa; antherae 0.4 mm longae, globosae. Stylus 3 mm longus. Capsula 2.5 mm alta. Semen brunneum, 2 mm longum, 1.2 mm diam., hilo amplo munitum.

Hab. Jachtlust, Splitgerber 381, H.L.B. 905.317. 4.

Among the species with axillary inflorescences this new one is easily recognizable by its prostrate habit, its few-nerved leaves, and hirsute calyx. It is obviously nearly related to *B. latifolia*, with which it shares the peculiar yellowish-green colour (or discoloration?) of the leaves. It was also collected at Wanica (Focke 70, H.L.B. 905.317. 5), but not elsewhere.

PERAMA Aubl.

The genus *Perama* comprises on the one hand plants with a radical rosette consisting of rather large leaves, and on the other hand plants with small leaves arranged in well-spaced decussate pairs along the shoots. Of the first group no representatives have been found so far in Surinam. The second group is represented by *P. hirsuta* Aubl. and by a very nearly related plant which Bentham described as *P. stricta*. I consider it as a variety:

Perama hirsuta Aubl. var. *stricta* var. n. = *Perama stricta* Bth. Schomburgk's Guiana Pl. in Hook. Journ. Bot. III p. 239 (1841).

Varietas a typo differt caulibus sparse adpresse pubescentibus, foliis lanceolatis an lineari-lanceolatis, ad basin ciliis paucis munitis.

Hab. Forest Reserve Zanderij I, Boldingh 3906 et 3879. Also in British Guyana and Brasil.