

## THE GENUS PAUSANDRA RADLK.

by

J. LANJOUW.

The genus *Pausandra* Radlk. belongs to the Tribe *Cluytieae* of the *Euphorbiaceae*. It was described by Radlkofer in 1870 in Flora LIII pp. 79—95. The genus is based on *Thouinia Morisiana* of Casaretto. In his paper Radlkofer discussed at length that this species does not belong to the Sapindaceous genus *Thouinia*, but represents a new genus of the *Euphorbiaceae*. As at that time female flowers were unknown Radlkofer stated that the systematic position of the new genus was still doubtful, but that most probably it should belong to a new subtribe of the *Jatrophaeae*. Two new species were described in the genus in 1873 by Baillon, *P. Trianae* Baill. based on *Pogonophora Trianae* Müll. Arg. which was published in 1864, and *P. Martinii* Baill. based on very young material and erroneously described by Baillon as being 3-merous, as will be discussed below. He placed the genus in the affinity of *Argithamnia* Sw., which is certainly not right as this genus is quite different both in habit and in flower-characters. A fourth species was added by Müller Arg. in 1874 in Flora Brasiliensis XI. II., where he inserted the genus in the same group as was suggested by Radlkofer. No more species had been described when Pax published in 1911 his monograph of the Tribe *Cluytieae* Pax in Engler, Das Pflanzenreich IV. 147. III. He inserted the genus *Pausandra* Radlk. with the genera *Givotia* Griff. and *Ricinodendron* Müll. Arg. in a new subtribe *Ricinodendrinae* Pax. I think that this is the right position for the genus, though it could be placed in a separate subtribe for its penninerved, glanduliferous leaves and the capsular fruits. It was a pity that Pax published this monograph without studying the original material. He now copied Baillon's bad descriptions and the lack of a thorough study on the genus caused the publication of several superfluous species in recent years. *P. quadriglandulosa* Pax et K. Hoffm. and *P. extorris* Standley described in 1919 and 1929 are the same as *P. Trianae* (Müll. Arg.) Baill. *P. flagellorbachis* Lanj. is identic with

*P. Martinii* Baill., while it was proved that the latter species is not trimerous. *P. integrifolia* Lanj. could not be maintained in the genus. Only the two new species published by Ducke in 1925 were truly new ones. Moreover three new species were recognized in the recent collections made by Krukoff in Brazil. It is for all these reasons that it seemed to me highly desirable to give a new treatment of this genus. Perhaps several of the old and new species can be united, as one can find often only small differences, but for the present I think it advisable to keep them separate.

*Pausandra* Radlk. has been described to be dioecious, but recently it has been proved in some species that they are monoecious, so it is probable that most of them are under special circumstances.

The genus is restricted to tropical South and Central America. No specimens were collected in the West Indian Islands.

I have studied material of the following herbaria: Brussel (B.), Chicago, Field Museum (C.), Berlin-Dahlem (D.), Genève (G.), Kew (K.), Leiden (L.), Paris (P.), and Utrecht (U.). For the hospitality and the loan of the material I am indebted to the Directors of these Institutes.

*Pausandra* Radlk. in Flora LIII (1870), p. 92, t. 2; Müll. Arg. in Fl. Bras. XI. 2. (1874) p. 503, t. 99; Bentham et Hook. Gen. pl. III. (1880) p. 298; Pax in Engler u. Prantl, Pflanzenfamilien III. 5. (1890) p. 87; id. 2nd ed. vol. 19c (1931) p. 173; Pax in Engler, Das Pflanzenreich IV. 147. III. (1911) p. 41, fig. 13, 14; Lemée, Dict. plantes Phan. V. (1934) p. 84; — *Pausandra* Radlk. sect. *Eupausandra* Lanj. in Kew Bull. 1932 p. 184.

Flowers dioecious or monoecious. Male flower: Calyx unequal 5- rarely 3-lobed, imbricate. Corolla more or less gamopetalous, inside barbate at the throat, 5-lobed, lobes imbricate. Disk extrastaminal, urceolate, sometimes deeply 5-lobed. Stamens 3—7, usually 6, 5 epipetalous and 1 central; anthers oblong, longitudinally dehiscent. Rudimentary ovary 0. Female flower: Calyx 5-lobed. Petals 5, free (or connate?), inside barbate at the middle. Disk urceolate or 5-lobed. Ovary hairy, 3-celled; 1 ovule in each cell. Styles 3, 2-lobed. Capsule 3-coccos, loculicidally dehiscent; seeds oblong, more or less marmorate, caruncled. — Small trees, laticiferous. Leaves petiolate, bistipulate, penninerved, often cuneate-spathulate, glanduliferous serrate-dentate, biglandular at the base. All parts of the plants, especially when young, often more or less clothed with dibrachiate hairs, rarely with simple hairs. Inflorescences of both sexes spicate sometimes more or less pani-

culate; flowers in dichasial glomerules, bibracteolate, in the axils of biglandular bracts.

Distribution: Species 9. Tropical Central and South America, not in the West Indian Islands.

Key to the species.

- 1a. Side-nerves fewer than 23. Limb usually much shorter than 30 cm ..... 2
- b. Side-nerves usually more than 23. Limb usually longer than 30 cm ..... 7
- 2a. Only male flowers present ..... 3
- b. Only female flowers present ..... 6
- 3a. Leaves not long cuneate to the base. Branches, petioles and midrib patently hirsute ..... 9. *P. hirsuta* Lanj.
- b. Leaves long cuneate to the base. Plants not patently hirsute 4
- 4a. Petioles very short, 1—1.5 cm long. Limb glabrous at both sides. Disk deeply 5-lobed ..... 8. *P. macropetala* Ducke
- b. Petioles usually much longer than 1.5 cm. Limb sparsely clothed with dibrachiate hairs beneath. Disk urceolate, slightly undulate ..... 5
- 5a. Spikes flagelliform, gracile, usually much longer than 10 cm; internodes between the glomerules of flowers usually 2—4 cm long ..... 6. *P. Martinii* Baill.
- b. Spikes not flagelliform and gracile, usually not longer than 10 cm. Internodes between the glomerules of flowers usually much shorter ..... 1. *P. Morisiana* (Casar.) Radlk.
- 6a. Leaves glabrous at both sides, shorter than 30 cm; c. 20 side-nerves. Disk deeply 5-lobed .... 8. *P. macropetala* Ducke
- b. Leaves sparsely clothed with appressed hairs beneath, longer than 30 cm; c. 30 side-nerves. Disk urceolate, slightly undulate ..... 7. *P. sericea* Lanj.
- 7a. Margin of the leaves serrate with upwards curved, subheliceform teeth. (See fig. 1a) Basal glands usually 4 ..... 3. *P. Trianae* (Müll. Arg.) Baill.
- b. Teeth of the margin not upwards curved. (See fig. 1b) Basal glands 2 ..... 8
- 8a. Inflorescences ♂, 7—11 cm long. Glomerules 3-flowered .... 2. *P. megalophylla* Müll. Arg.
- b. Inflorescences ♂, longer than 20 cm. Glomerules 6—40-flowered ..... 9
- 9a. Glomerules c. 6—12-flowered. Internodes short ..... 4. *P. macrostachya* Ducke
- b. Glomerules very densely flowered, more than 20, usually c.

30—40. Internodes rather long . . . . . 5. *P. densiflora* Lanj.

1. *Pausandra Morisiana* (Casaretto) Radlk. in Flora LIII (1870) p. 92, t. II; Müll. Arg. in Mart. Fl. Bras. XI. 2 (1874) p. 503, 707, t. 99; Pax in Engler, Das Pflanzenreich IV. 147. III (1911) p. 42, 110, fig. 13 A-B, 14; — *Thouinia Morisiana* Casaretto, Novar. Stirp. Brasil. Deced. IX (1845) p. 75; Walpers Repert. Bot. V (1845/46) p. 365.

A small tree. Young branches clothed with dibrachiate appressed hairs, glabrescent; bark dark reddish brown, lenticellate. Petioles (1) 2.5—6 cm long, longitudinally striate, at the top transversely rugulose and slightly thickened, sparsely clothed with appressed hairs, glabrescent. Limb (10) 16—30 cm long, (3) 6—10 cm broad, chartaceous or subcoriaceous, oblanceolate or oblanceolate-oblong, shortly acuminate at the apex, long cuneate to the base, dark-brown and glabrous above, much paler and very sparsely clothed with appressed hairs beneath; basal glands two, small, shortly stipitate, subpatelliform, margin glanduliferous serrate-dentate; side-nerves 15—21, midrib slightly impressed in the basal part and slightly prominent in the upper part of the limb above, strongly prominent beneath, side nerves prominent at both sides. Inflorescence ♂ spicate, usually 1 rarely 2 in the axils of the leaves, 5—10 (26) cm long, rhachis densely clothed with appressed dibrachiate hairs, flowers in dichasial, few-flowered glomerules at short distances along the rhachis in the axils of small, hardly 1 mm long, triangular bracts, which are hairy outside; flowerbuds nearly sessile, subglobose, bibracteolate, bracteoles lanceolate, hairy outside. Calyx thick, 5-lobed, lobes unequal, triangular and subacute or oblong and obtuse, glabrous. Petals 5, whitish, oblong, connate at the base, rotundate or slightly emarginate at the apex, minutely ciliolate along the margin, glabrous outside, and at about 1/4 from the base rufous-barbate inside. Disk urceolate, slightly undulate. Stamens 6, slightly shorter than the petals; anthers ovate, subcordate at the base, introrse, with a rather broad connective. Inflorescence ♀ 7—8 cm long, appressed pubescent. Sepals ovate, subacute, outside hairy, 4 mm long. Petals 5 mm long, free, rhombeoid-lanceolate, obtuse. Ovary 3-celled, pubescent. Fruit c. 22 mm high; seeds brownish, obscurely marmorate, c. 16 mm long and 11 mm broad, caruncled.

**Distribution:** Southern Brazil.

Rio de Janeiro (Glaziou 3100! [B.K.P.], ♂ fl.; Glaziou 6140! [D.G.K.P.], ♂ fl.; Glaziou 7564! [D.P.], ♂ fl.; Glaziou 9582! [D.B.G.K.P.], ♂ fl.; Glaziou 17211! [B.G.K.P.], ♂ fl.; Kuhlmann, H.J.B.R. 16594! [D.U.], ♂ fl. Nov.; Kuhlmann, H.J.B.R. 20727! [D.], fr. Nov.; Sello 500!

[D.], ♂ fl.; Sello 599! [D.], ♂ fl.); Rio de Janeiro, Serra da Estrella (Casaretto 695! [G.], ♂ fl. *Type of the genus!*); Buger Creek near Blumenau, Santa Catharina (Ule 1190! [D.], ♀ fl.); Brazil without precise locality (Luschnath s.n.! [D.K.P.], ♂ fl.; Riedel s.n.! [P.], ♂ fl.; Burchell 3825! [B.P.], ♂ fl.); Amazonas, near mouth of Rio Embira, tributary of Rio Tarauaca (Krukoff 4797! [U.], very young ♂ fl. A specimen with abnormal large leaves, up to 40 cm long, which probably belongs to this species).

2. *Pausandra megalophylla* Müll. Arg. in Mart. Fl. Bras. XI 2 (1874) p. 504; Pax in Engler, Das Pflanzenreich IV. 147. III (1911) p. 42, 110.

A small tree. Young branches lenticellate, clothed with more or less patent hairs, glabrescent. Stipules 8—10 mm long, lanceolate, slightly hairy outside, deciduous. Petioles 2—6 cm long, rather thick, sparsely clothed with hairs especially in the upper part, glabrescent, longitudinally striate, at the apex articulate but not conspicuously rugulose. Limb lanceolate, shortly acuminate at the apex, long cuneate to the base, with 2 small, 1—1.5 mm long basal glands, chartaceous, margin glanduliferous serrate-dentate, sparsely clothed with dibrachiata hairs beneath, nerves prominent at both sides, especially beneath, 32—80 cm long, 10—24.5 cm broad; side-nerves 25—38. Inflorescences ♂, spicate, often branched in the lower part, flowers in three-flowered dichasia in the axils of c. 2 mm long, triangular bracts, which are sparsely hairy and glabrescent outside, rhachis densely clothed with more or less patent hairs. Calyx c. 4 mm long, unequally 5-lobed, 2 lobes small, triangular and subacute, and 3 larger, oblong or ovate and obtuse or emarginate, sparsely hairy, soon glabrescent. Petals c. 8 mm long, connate in the lower part, just below the middle, lobes oblong, obtuse, outside glabrous, inside barbate at the throat. Stamens 6, about as long as the petals, introrse, connective rather broad. Disk deeply 5-lobed, lobes subovate, c. 1 mm long. Inflorescences ♀, 7—11 cm long, not branched, bracts denser clothed with subpatent hairs. Flowers in the specimens seen very young. calyx and petals 5-lobed, disk annular, ovary 3-celled.

*Distribution*: Southern Brazil, Rio de Janeiro.

Rio de Janeiro near Mandioca (Riedel s.n.! [G. P.], ♂ fl. *Type of the species!*); Serra dos Orgaos (Glaziou 7434! [P.], young ♀ fl.; Glaziou 17211a! [P.], ♂ fl.); Jacaripago (Glaziou 2524! [B.K.P.], young ♀ fl.); Brazil, without precise locality (Burchell 257A! [K.], young ♂ fl.).

This species is closely related to *P. Trianae* (Müll. Arg.) Baill. from which it differs in having 2 basal glands only, in the teeth along the margin which are not curved, in the lobed disk and in the shorter inflorescences. From *P. macrostachya* Ducke it is

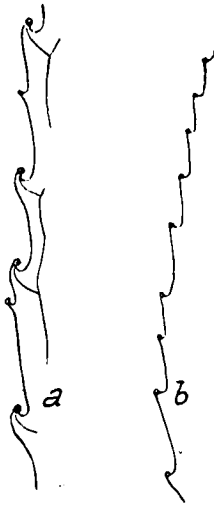


Fig. 1. Margin of the leaves of a. *P. Trianae* Baill. and b. *P. megalophylla* Müll. Arg.

only to distinguish by the small leaf-glands and the short inflorescences with only 3-flowered glomerules.

3. *Pausandra Trianae* (Müll. Arg.) Baill. in *Adansonia* XI (1873) p. 92; Pax in Engler, *Das Pflanzenreich* IV. 147. III (1911) p. 42; — *Pogonophora Trianae* Müll. Arg. in *Flora* XLVII (1864) p. 434; Pax l.c. p. 109; — *Pausandra quadriglandulosa* Pax et K. Hoffm. in Engler, *Das Pflanzenreich* IV. 147. XIV (1919) p. 43; — *P. extorris* Standley in *Publ. Field Mus. Bot. Ser. IV* (1929) p. 219.

A small tree, 5—15 m high (Ule). Young branches lenticellate, densely clothed with appressed hairs, glabrescent. Petioles 1.5—5.5 mm long, longitudinally striate, thickened and rugulose at the apex. Limb 30—60 cm long, 8.5—15.5 cm broad, oblanceolate, shortly acuminate and rounded at the apex, long cuneate to the base, usually 4-glandular at the base, rarely 2-glandular, coriaceous, subcoriaceous or chartaceous, margin serrate-dentate, with upwards curved c. 1 mm broad glanduliferous teeth, brownish above, paler beneath, densely clothed with yellowish brown hairs on both surfaces when young, soon glabrescent; nerves prominent at both sides, especially the midrib, side-nerves 25—30. Inflorescences ♂ 10—20 cm long, in the lower part sometimes with c.

2 cm long side-branches, with small few-flowered glomerules of flowers at c. 1 cm distance from each other along the rhachis; rhachis densely clothed with yellowish brown, appressed hairs; flowers shortly pedicellate, c. 8 mm long. Calyx shortly 5-lobed, outside covered with short hairs, lobes obtusely triangular. Petals connate up to  $\frac{1}{3}$  of their length, lobes oblong or ovate-oblong, rounded, outside glabrous, inside at the throat with a ring of woolly hairs. Disk long cupulate, with a slightly undulate margin. Stamens 5—7, about as long as the corolla, with long filiform filaments and small oblong or rarely subtriangular anthers.

**Distribution:** From Nicaragua to Brazil.

Nicaragua: Region of Braggman's Bluff (F.C. Englesing 216! [C.], young ♂ fl., Type of *P. extorris* Standley); Choutales, alt. 600 m (Lévy 484! [K.P.], ♂ fl. June).

Colombia: New Granada, Prov. Bogota, plains of Sn. Martin, Meta R., alt. 300 m (Triana 2597! [G.P.K.], young ♂ fl., Type of *Pogonophora Trianae* Müll. Arg.).

Brazil: Rio Acre, Seringal S. Francisco (Ule 9538! [D.G.L.U.], young ♂ fl. April, Type of *P. quadriglandulosa* Pax et K. Hoffm.).

4. *Pausandra macrostachya* Ducke in Arch. Rio de Janeiro IV (1925) p. 114.

A small tree. Young branches densely hairy, glabrescent, lenticellate. Stipules c. 1 cm long, lanceolate, acuminate, outside clothed with short hairs, deciduous. Petioles c. 7 cm long, sparsely hairy, glabrescent, at the apex transversely rugulose and sulcate above. Limb 33—50 cm long, 12—16 cm broad, oblanceolate, shortly acuminate at the apex, cuneate to the base, subcoriaceous, margin glanduliferous serrate-dentate, basal glands rather large c. 2—3 mm long and 1.5 mm broad, covered with hairs and patent, glabrous above sparsely clothed with hairs beneath; nerves prominent at both sides especially beneath, side-nerves c. 23. Inflorescence ♂ 20—40 cm long, solitary or geminate, spicate, flowers in glomerules of dichasia in the axils of small c. 1—1.5 mm long, triangular densely hairy bracts; rhachis densely clothed with appressed hairs. Calyx c. 3 mm long, shortly 5-lobed, lobes obtuse, densely hairy outside. Corolla 5-lobed, lobes short, obtuse, outside glabrous, inside barbate at the throat. Stamens 3—7, slightly longer than the corolla. Disk urceolate, slightly undulate. Female flowers unknown.

**Distribution:** Brazil (Pará).

Pará, primitive forest near Francez, Tapajoz R. (Ducke, H.J.B.R. 17897! [D.U.], ♂ fl. Oct., Type).

This species is closely related to *P. megalophylla* Müll. Arg.

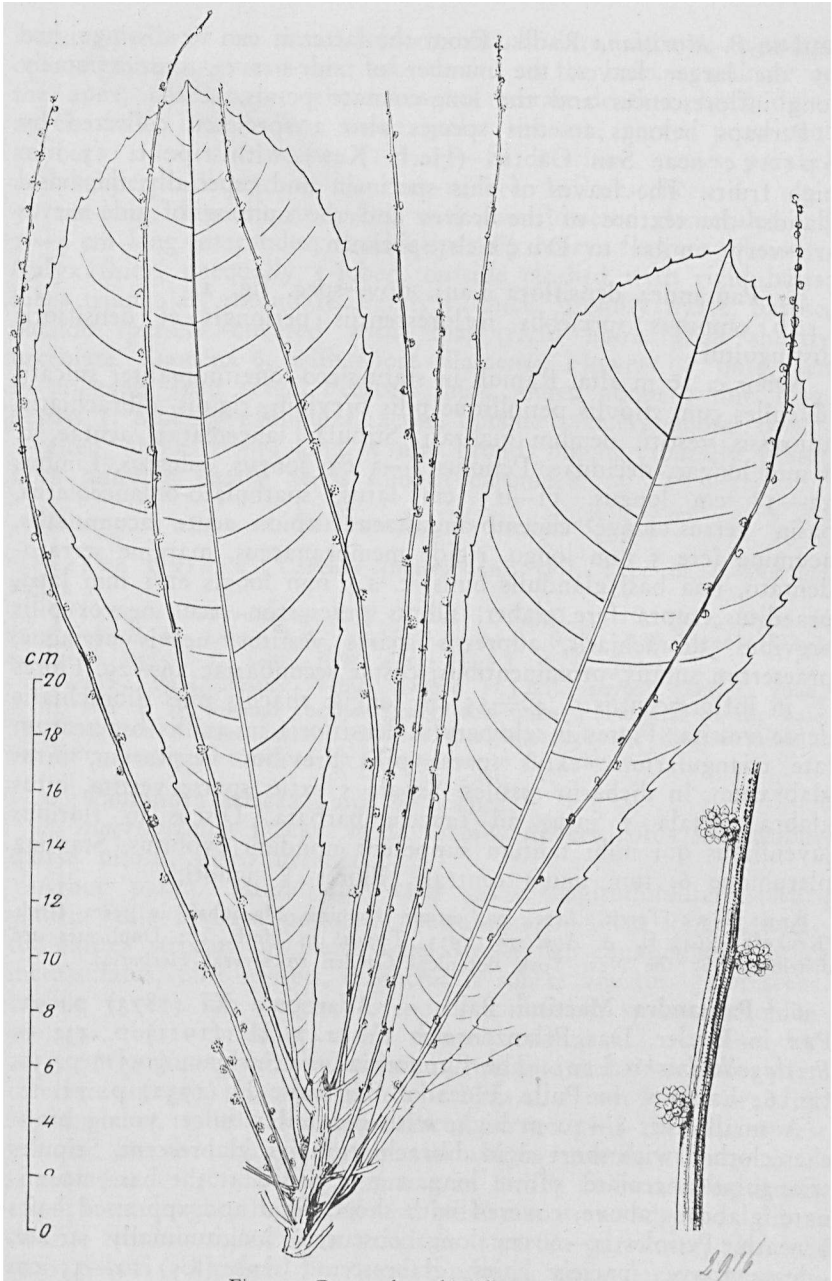


Fig. 2. *Pausandra densiflora* Lanj.



and to *P. Morisiana* Radlk. From the latter it can be distinguished by the larger leaves, the number of side-nerve, the extremely long inflorescences and the long-connate petals.

Perhaps belongs to this species also a specimen collected by Spruce near San Gabriel (Herb. Kew) with ripe c. 13 mm high fruits. The leaves of this specimen and especially the basal glands, the texture of the leaves and the number of side-nerve are very similar to Ducke's specimen.

5. *Pausandra densiflora* Lanj. nov. spec. fig. 2.

Ab omnibus speciebus inflorescentiis perlongis et densifloris distinguitur.

Arbor c. 10 m alta. Ramuli in statu sicco longitudinaliter sulcati, juveniles cum stipulis petiolisque pilis brevibus, rigidis, dibrachiatis, adpressis vestiti, demum glabrati. Stipulae lanceolatae, acutae, c. 8 mm longae, deciduae. Petiolus 2—3 cm longus, sulcatus. Limbus 33—38 cm longus, 11—13 cm latus, spathulato-oblancoelatus, basin versus longe cuneato-angustatus, apice acute acuminatus, acumine fere 5 mm longo, rigide membranaceus, margine serrato-dentato, ima basi glandulis binis, c. 1.5 mm longis et 1 mm latis, praeditus, supra fere glaber, subtus praesertim secus nervos pilis brevibus, dibrachiatis, adpressis sparse vestitus, nervis utrinque, praesertim subtus, prominentibus; costae secundariae 26—29. Flores ♂ in inflorescentiis c. 40—55 cm longis; rhachis pilis dibrachiatis dense vestita. Flores in glomerulis densifloris in axillis bractearum late triangularium, extus sparse pilis brevibus vestitarum, intus glabrarum, in dichasiis sessiles. Sepala 5 extus sparse vestita, intus glabra. Petala 5 intus ad faucem barbata. Discus in floribus juvenilibus qui mihi tantum suppetunt nondum evolutus. Stamina plerumque 6, tum unum centrale. Flores ♀ ignoti.

BRASILIA: Territ. Acre, pr. ostium fluminis Macauban in terra firma (Krukoff 5464! fl. ♂ Aug. 13, 1933, *Typus!* in Herb. U.; Duplicates are distributed by the New York Botanical Garden to several Herbaria).

6. *Pausandra Martinii* Baill. in *Adansonia* XI (1873) p. 92; Pax in Engler, *Das Pflanzenreich* IV. 147. III (1911) p. 43; — *P. flagellorhachis* Lanj., *The Euphorbiac. of Surinam* (1931) p. 30, fig. 6; Lanjouw in Pulle, *Flora of Suriname* II (1932) p. 71.

A small tree, 8—10 m high, with red milky juice; young branches clothed with short rigid dibrachiate hairs, glabrescent. Stipules triangular-lanceolate, 5 mm long, 2 mm broad at the base, acuminate, glabrous above, covered with short, rigid and appressed hairs beneath. Petioles 1—6 cm long, obscurely longitudinally striate, sulcate above, sparsely hairy, glabrescent. Limb (8.5) 12—35 cm

long, 3.5—11.5 cm broad, oblong-oblancoelate, cuneate-angustate or sometimes angustate and subrounded to the base, acuminate at the apex, chartaceous, glanduliferous serrate-dentate, biglandular at the base, dark-brown above, paler beneath, nerves prominent at both sides; side-nerves (12) 17—22, tertiary nerves parallel and subperpendicular on the side-nerves. Inflorescences ♂, 10—30 cm long, flagelliform spikes, with few-flowered glomerules and 1—4 cm long internodes; rhachis sparsely hairy; flowers subsessile. Calyx thick, unequally 5-lobed, outside clothed with rigid hairs; lobes triangular, rotundate. Petals 5, thick, broadly ovate, obtuse, outside sparsely covered with small rigid hairs. Disk shortly urceolate. Stamens 6, with short filaments. Flowers ♀ only seen in an early fruit stage. Pedicels thick, short, about 2 mm long. Sepals 5, broadly triangular, acute, outside sparsely pilose. Ovary 3-celled, about 7 mm long, 5 mm broad, oblong, sparsely pilose. Disk annular, small. Seeds smooth caruncled.

**Distribution:** Suriname and French Guiana.

French Guiana: Cayenne (Martin s.n.! [P.], Type of *P. Martinii* Baill.).

Suriname: Brownsberg (B.W. 6725! [U.K.R.], ♂ fl. July, Type of *P. flagellorhachis* Lanj.; B.W. 724! [U.], ♂ fl. Sept.; B.W. 3290! [U.L.], young fr. and ♂ fl. Sept.; B.W. 6484! [U.P.], ♂ fl. June).

Brazil: Pará, Juruty Velho (Ducke H.J.B.R. 20790! [D.U.], young ♂ fl. and ♀ fl. without corolla. Leaves sometimes 4-glandular at the base. This specimen I have inserted in this species though the determination is not quite certain. It seems to be a transition to *P. Trianae*.)

7. *Pausandra sericea* Lanj. nov. spec.

*P. macropetalae* Ducke valde affinis, differt foliis longioribus, sparse pilosis, disco urceolato.

Arbor parva. Ramuli in statu sicco longitudinaliter sulcati, glabri. Folia alterna, petiolata; petiolus 4.5—8 cm longus, longitudinaliter striatus, in parte superiore leviter canaliculatus, apice incrassulatus, pilis sericeis, dibrachiatis sparse vestitus, glabrescens; limbus 33—50 cm longus, 8.5—10.5 cm latus, spathulato-oblancoelatus, basi cuneatus, apice acute acuminatus, acumine fere 2—3 cm longo, rigide membranaceus, margine serrato-dentato, parte inferiore integro, ima basi glandulis binis c. 1 mm longis praedita, supra glaber, subtus praesertim secus nervos pilis adpressis sparse vestitus, nervis utrinque praesertim subtus prominentibus; costae secundariae c. 30. Spicae femineae in axillis foliorum terminales, 12—18 cm longae, rhachi sericea, pilis non arcte adpressis, dibrachiatis; floribus solitariis in axillis bractearum parvarum, glandulis binis e basi rotundata breviter cylindricis, apice leviter impressis

praeditarum, 5—10 mm remotis. Flores c. 1 mm pedicellati; pedicellus cum calyce sericeus; sepala 5, late et obtuse triangularia vel ovata, imbricata, intus glabra, 1—1.5 mm longa; petala 5, libera, fere 5 mm longa, oblonga vel obovato-oblonga, extus glabra, intus circa medium barbata; discus brevis, cupulatus, obscure 5-lobatus; ovarium dense sericeum, stylis 3 crassiusculis, trigonis, apice breviter bilobatis. Fructus et flores ♂ ignoti.

Brasilia: prov. Matto Grosso, prope Tabajara, fluv. Machado sup. (Krukoff 1337! fl. Nov. Dec. 1931, Typus in Herb. Utrecht; duplicates distributed by the New York Bot. Gard. to several Herbaria). Upper Rio Negro (Ducke H.J.B.R. 23526! [D.], young ♂ fl. This specimen probably belongs to this species. Inflorescences up to 45 cm long with long internodes and few-flowered glomerules; calyx and corolla 5-merous, stamens c. 7).

8. *Pausandra macropetala* Ducke in Arch. Rio de Janeiro IV (1925) p. 114.

A small tree, monoecious. Young branches and petioles sparsely clothed with appressed dibrachiate hairs, glabrescent. Stipules c. 4 mm long, hairy outside. Petioles very short 1—1.5 cm long, obscurely longitudinally striate, slightly thickened and subrugulose at the apex. Limb 17—30 cm long, 6—9 cm broad, oblanceolate, shortly acuminate at the apex, long cuneate to the base, chartaceous to subcoriaceous, glaucous green, paler beneath, glabrous at both sides, margin serrate-dentate, nerves prominent at both sides, side-nerves c. 20. Inflorescences ♂ c. 12—15 cm long, with few-flowered glomerules in the axils of small c. 1 mm long, triangular, hairy, conspicuously biglandular bracts, rhachis clothed with appressed hairs. Flowers c. 5 mm long. Calyx c. 3—3.5 mm long, 3-lobed, lobes broadly ovate, rounded or subacute, densely hairy outside. Petals connate till above the middle, 5-lobed, lobes broad, rotundate, inside barbate at the throat. Stamens 6, glabrous. Disk deeply 5-lobed. Inflorescence ♀ 5 cm long, more robust than the male one, flowers solitary, as in the ♂ flowers or larger, ovary densely sericeous, styles 3, short, thick, bipartite. Fruit c. 13 mm high. Seed oblong, 9 mm long, 7 mm broad, marmorate, caruncled.

Distribution: Brazil (Pará).

Tapajoz River near Montanha cataract (Ducke, H.J.B.R. 17896! [D.U.], ♂ fl. The Type in Herb. Rio de Janeiro bears ♂ and ♀ flowers after the description of Ducke); Rio Solimoes, near Sao Paulo de Olivenca (Ducke, H.J.B.R. 20789! [D.], fr. Nov.).

From this species I have only seen a male branch in the Utrecht Herbarium and a fruiting specimen from Berlin. The species is closely related to *P. sericea* Lanj., from which it differs in size and indument of the leaves and in the nearly free disk glands.

9. *Pausandra hirsuta* Lanj. nov. spec.

A *P. Martinii* Baill., cui valde affinis est, differt ramulis costis petiolisque pilis simplicibus hirsutis, calyce glabro, foliis haud cuneatis.

Frutex c. 6 m altus, ramulis longitudinaliter striatis, hirsute patenti-pilosis, foliis alternis, bistipulatis; stipulae lanceolatae, c. 8 mm longae, acutae, extus in parte inferiore margineque pilis rigidis vestitae. Petiolus 1.5—3.5 cm longus, longitudinaliter striatus, apice non vel vix incrassatus, dense hirsuto-pilosus. Limbus (12) 18—25 cm longus, 4—9.5 cm latus, basin versus acute angustatus, basi glandulis binis c. 1.5 mm longis, subacutis ornatus, chartaceus, supra glaber, subtus pallidior, in costa hirsuto-pilosus, in nervis secundariis tertiariisque pilis sparsissime vestitus, margine serrato-dentatus, dentibus parvis glanduliferis, nervis venisque utrinque prominentibus, nervis lateralibus 15—16. Spicae ♂ graciles, 5—10 cm longae, florum glomerulis parvis, paucifloris, remotis, in axillis bractearum biglandularum, lanceolarum, acutarum, basi et margine pilosarum. Flores (juveniles tantum visi) in axillis bractearum triangularium, acutarum, carinatarum, praeter carinam et marginem glabrarum. Calyx 5-lobatus, praeter pilos raros, minutos glaber, lobis subrotundatis, margine fimbriatis. Stamina 6, quorum unum centrale, filamentis brevibus. Discus parvus, cupulatus. Flos ♀ et fructus ignoti.

Brasilia: Amazonas, Humayata prope Três Casas (Krukoff 6084! fl. Sept. Oct. 1934, Typus in Herb. Utrecht; duplicates distributed by the New York Bot. Garden to several Herbaria).

## Excluded species:

*Pausandra integrifolia* Lanj. in Kew Bull. 1932, p. 183.

Now that I have examined all the material of the genus I am convinced that this species must be excluded from the genus. As it differs in several characters from the genus I had placed the species in a new sect. *Pausandrella* Lanj. It seems highly probable that it represents a second species of the genus *Dodecastigma* Ducke described some years ago from Brazil. The petioles, the glands and the texture of the leaves, the inflorescence, the hairs, the indument of the disk and the pollen grains suggest its being a member of this new genus. Ducke's species is 4-merous and has more stamens and also the shape of the leaves is different. As I did not see good female material of my species and Mr. Sandwith, who collected the type-material, thinks it highly probable that new specimens can be obtained from British Guiana, I think it better to wait with transferring it definitely to the genus *Dodecastigma* Ducke till new material has been collected.