

STUDIES IN WEST MALESIAN PIPERACEAE. I

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Recently, while going through the old collections of Malesian, Australian, and Pacific materials of *Piperaceae* in connection with the study of the New Guinea species of this family, taxonomic problems that need clearing up were encountered. These are of such a diverse nature that it is best they are discussed separately in each species and not summarized here.

This paper is the first of many which will be published seriatim as work on this difficult group progresses. As implied in the title, this series does not deal with New Guinea species which are the subject matter of another series. It is hoped that these contributions will pave the way for a comprehensive revision of the family in Malesia in which more than 400 species have been described or recorded.

1. *Piper amplilimbum* C. DC., *Candollea* 1 (1923) 213; Schroeder, *Candollea* 3 (1926) 135. — Fig. 1.

Type: Moluccas, Amboina: *Teysmann s.n.*, 1905 (holotype BO).

Dioecious trees, entirely glabrous. Twigs 5—8 mm diam.; internodes smooth; stipular scars prominent. *Lamina* symmetrically ovate, (23—) 25—27 cm long, 14—19 cm broad, somewhat coriaceous; apex acuminate, acumen to 2 cm long; base rounded; margin entire; lateral veins 3—4 pairs, very prominent, the distal pair arising alternately from the midrib at 2—3 cm from the base, the others directly from the base; intercostals numerous, not straight, quite prominent. Petioles *c.* 2 cm long, smooth. Stipules to 8 cm long, 1 cm broad, apparently not adnate to petioles. *Inflorescences*: males unknown; females 11—13 cm long, 0.7 cm broad, the peduncular stalk *c.* 1.5 cm long, glabrous. Female flowers sessile; ovary pyramidal; stigmas 3-fid, short, sessile, slightly reflexed; bracts somewhat irregularly circular, peltate. *Fruits* ovoid, sessile, *c.* 3 cm long; crowded, not concrescent.

Distribution: Moluccas.

Notes. *P. amplilimbum* was validly published by De Candolle in his monographic key in 1923, but was not given a detailed description subsequently in 1925 when a number of others, similarly proposed, were described. A full description is given here together with information on the type material and locality.

With *P. gibbilimbum* and *P. plagiophyllum* of New Guinea, our species forms a very natural alliance characterized by the arborescent habit, the large size of the stipules, and the female flowers sessile with 3-fid reflexed stigmas. It distinguishes itself from *P. gibbilimbum* in having a different venation pattern and from *P. plagiophyllum* in having longer peduncular stalks and some other minor characteristics. It is also close to *P. sundaicum*.

This is probably a rare species: it is known only by the holotype collection.

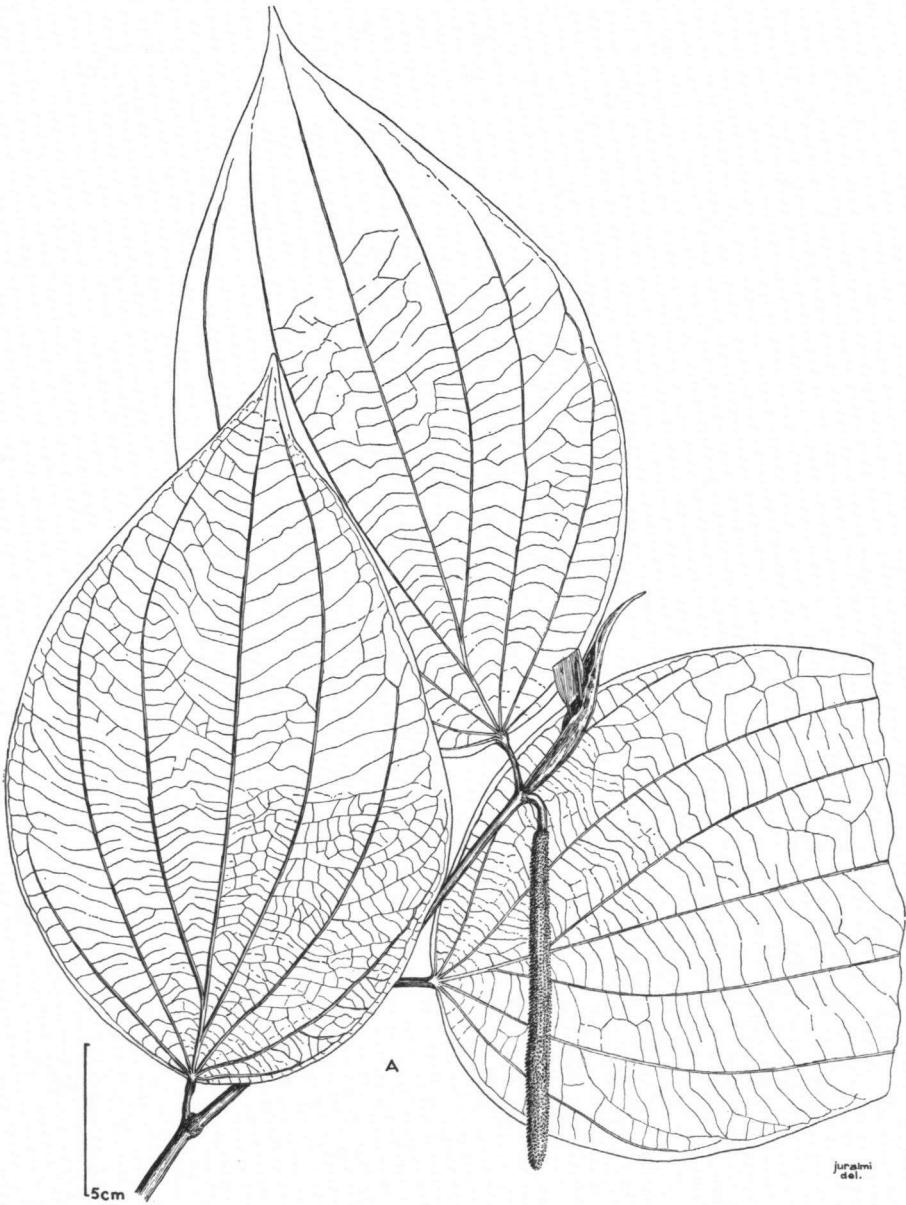


Fig. 1. *Piper amplilimbum* C. DC. (*Teysmann s.n.*, holotype)

2. *Piper haenkeanum* Opiz in Presl, Rel. Haenk. 1 (1828) 159; Quisumb., Philip. J. Sc. 43 (1930) 138, f. 74. — *P. merrittii* C. DC., Philip. J. Sc. Bot. 5 (1910) 460. — *P. obovatibracteum* C. DC., Leaf. Philip. Bot. 3 (1910) 784. — *P. villilimbium* C. DC., l.c. 788. — *P. gelalae* C. DC., Philip. J. Sc. Bot. 11 (1916) 260, *syn. nov.* — *P. bonthainense* C. DC., Ann. Cons. Jard. Bot. Genève 21 (1920) 302, *syn. nov.* — *P. boerlagei* C. DC., Candollea 1 (1923) 226, *syn. nov.*

Type: Philippines: Luzon: Sorsogon Prov.: *Haenke s.n.* (PR).

Dioecious climber, entirely villose. *Lamina* narrowly to broadly ovate, c. 15 cm long, 5 cm broad; apex long acuminate; base cuneate, asymmetrical; lateral veins 3 pairs, one arising from the midrib a little above the base, the others from the base, the basal pair often very faint. Petioles 1—2 cm long, usually shorter than the peduncular stalks. *Inflorescences* about as long as leaves, the males very slender and frail; bracts sessile, peltate, somewhat oval and concave; peduncular stalks slightly longer than petioles. Male flowers 2- or 3-staminate; anthers basifixed, 2-celled, dehiscing by lateral longitudinal slits; filaments slightly shorter than anthers. Female flowers sessile; stigmas 4-fid, reflexed; bracts sessile, peltate, orbicular, somewhat concave. *Fruits* pedicellate, ovoid or globose, c. 3 mm diam.; pedicel c. 2.5 mm long; not crowded.

Distribution: Philippines, Celebes, and Moluccas.

Notes. The species *P. merrittii*, *P. obovatibracteum*, and *P. villilimbium* were reduced to *P. haenkeanum* by Quisumbing in 1930. I have examined authentic and type materials of these species and I agree that the four are conspecific.

The other three species, i.e. *P. gelalae*, *P. bonthainense*, and *P. boerlagei* have been found by me to come within the concept of *P. haenkeanum*. Their type materials have been studied and found to differ only in minor points. *P. gelalae* is based on a specimen gathered from the end twig of a male plant. The leaves being very narrowly ovate and the inflorescences frail is therefore quite in accord with its nature. The type of *P. bonthainense*, on the other hand, had obviously been gathered from the climbing portion of the plant where the leaves tend to develop deeply cordate bases as in many species. The only difference of any significance between *P. bonthainense* and *P. haenkeanum* is in the stigma which is either 4- or 5-fid in the former species and almost constantly 4-fid in *P. haenkeanum*.

As for *P. boerlagei*, the type consists of a collection with slightly more ovoid fruits. All other essential characteristics are, however, quite in accord with those of *P. haenkeanum*.

With these reductions, the range of distribution of this species has now been extended from the Philippines to Celebes and the Moluccas.

PHILIPPINES. *Leyte:* Wenzel 308 (NSW). — *Luzon.* Sorsogon Prov.: Ramos 23309 (NSW). Tayabas Prov., Lucban: Elmer 7382 (BO), 7927 (type of *P. obovatibracteum*, BO). — *Mindanao.* Camaguin: Elmer 14225 (NSW). — *Panay.* Capiz: Martelino & Edaño 35477 (NSW), Ramos & Edaño 30850 (NSW).

CELEBES. Lanjienga, Bonthain: Teysmann 13655 (type of *P. bonthainense*, BO).

MOLUCCAS. Morotai. G. Sabatai: Lam 3555 (BO). — *Amboina.* Gelala: Robinson Rel. Rob. 1606 (type of *P. gelalae*, BO). Mt. Horiel: Boerlage 45 (type of *P. boerlagei*, BO).

3. *Piper protractum* C. DC., Rec. Bot. Sur. Ind. 6.1 (1912) 18; J. & Proc. Asiat. Soc. Beng. 75.3 (1914) 326; Ridl., Fl. Mal. Pen. 3 (1924) 33. — *P. malaccense* C. DC., l.c. 12, *syn. nov.* — *P. gegarvum* C. DC., Ann. Cons. & Jard. Bot. Genève 21 (1920) 287, *syn. nov.* — *P. fulvirameum* C. DC., Candollea 1 (1923) 228, *syn. nov.*

Type: Singapore, Sungei Jurong: Ridley 6723, May 1894 (lectotype SING).

Monoecious shrubs with pilose twigs. *Lamina* rhombic, then obtusulate at maturity, *c.* 25 cm long, 6 cm broad, the upperside subglabrous, the lowerside pilose on the veins; apex attenuate; base asymmetrically round to unilaterally cordate; lateral veins *c.* 3 pairs, two arising from the midrib, the 3rd from the base. Petioles pilose, *c.* 0.5 cm long, *Inflorescences* bisexual, *c.* 6 cm long, shorter than leaves; peduncular stalk pilose, slightly longer than petioles; bracts obovate, sessile, attached to rhachis at its narrower end. Male flowers 2-, rarely 3-staminate, usually at the apex of the inflorescence; anthers 2-valved, slightly shorter than filaments, dehiscing by lateral longitudinal slits. Female flowers sessile; stigmas 3- or 4-fid, subsessile, reflexed. *Fruits* obovoid, stoutly pedicellate.

Distribution: Malay Peninsula and Banka.

Notes. The three species noted in the synonymy above are entirely conspecific with *P. protractum*. I have examined the type materials and have found them similar in all essential characteristics. They differ only in the size of lamina and height of the plants; but these have no taxonomic significance whatsoever in these species.

P. kotanum, also of the Malay Peninsula, is its closest relative from which it differs in being glabrous and in some other characteristics.

De Candolle had the details of the collectors and localities of the specimens completely confused. Ridley's collection from Castlewood in Johore, for instance, was cited as Castlewood's from Gunung Pulai, while the locality Chan Chu Kang in Singapore was recorded as Cheng Kang in Johore! The following citation should clear the confusion.

MALAY PENINSULA. Johore. Castlewood: *Ridley s.n.* (syntype of *P. protractum*, SING). — Malacca. Merlimau: *Goodenough 1617* (syntype of *P. malaccense*, SING). *Sine loc.*: *Alvins 2338* (syntype of *P. malaccense*, SING). — Negri Sembilan. Perhentian Tinggi: *Ridley 10019* (holotype of *P. fulvirameum*, SING). — Singapore. Sungei Jurong: *Ridley 6723* (lectotype of *P. protractum*, SING). Chan Chu Kang: *Goodenough s.n.*, Dec. 1889 (syntype of *P. protractum*, SING). Jurong: *Mat 5888* (syntype of *P. protractum*, SING). **BANKA.** Pangkal Pinang: *Teysmann s.n.* (holotype of *P. gegarvum*, BO).

4. Piper ridleyi C. DC., Rec. Bot. Sur. Ind. 6.1 (1912) 19; J. & Proc. Asiat. Soc. Beng. 75.3 (1914) 327; Ridl., Fl. Mal. Pen. 3 (1924) 33. — *P. velutibracteum* C. DC., Ann. Cons. Jard. Bot. Genève 21 (1920) 284, *syn. nov.*

Type: Malay Peninsula, Selangor, Ginting Peras: *Ridley 7609* (lectotype SING).

Monoecious shrubs. Twigs densely hirsute. *Lamina* ovate to obovate-pentagonal, *c.* 25 cm long, 12 cm broad, hirsute on both surfaces; apex shortly acuminate; base broadly cuneate to rounded, somewhat asymmetrical, those of lower leaves broadly cordate; lateral veins *c.* 6 pairs, 3 arising from the lower part of midrib, the others from the base. Petioles very short, 1—2 cm long, densely hirsute, those of lower leaves much longer. *Inflorescences* unisexual, rarely bisexual, then with male flowers toward apex; to 15 cm long, i.e. shorter than leaves; peduncular stalks longer than petioles, lightly hirsute; bracts obovate, subsessile, attached to rhachis at the narrower end. Male flowers 2-staminate; anthers somewhat rounded, dehiscing by lateral longitudinal slits. Female flowers sessile; stigmas 4-fid, sessile, reflexed. *Fruits* ovoid to globose, *c.* 5 mm diam., fairly long pedicellate; pedicel lightly hirsute.

Distribution: Malay Peninsula and Borneo.

Notes. I cannot find any significant difference between *P. ridleyi* of the Malay Peninsula and *P. velutibracteum* of North Borneo. Their type collections have been examined and compared closely and have been found to be similar in all important characteristics

In this species, variation in lamina shape and size and petiole length is fairly great. Lower leaves tend to be very large and very broad ovate to broad pentagonal in shape with fairly long petioles. The upper ones, on the other hand, are usually obovate-pentagonal, much narrower and usually borne on very short petioles.

P. ridleyi is close to the fairly common species *P. stylosum* from which it differs in having more lateral veins in the leaves, the inflorescences altogether larger, stigmas 4-fid, and in a few other characters.

MALAY PENINSULA. Perak. Waterloo: *Curtis 2697* (K). Maxwell Hill: *Curtis 2047* (SING). —
S e l a n g o r. Ginting Peras: *Ridley 7609* (lectotype, SING). Pahang Tract: *Ridley 8519* (SING).
BORNEO. North Borneo. Labuk Bay: *Ridley s.n.*, 1897 (holotype of *P. velutibracteam*, SING).