NOTES ON THE PIPERACEAE OF THE LESSER ANTILLES

RICHARD A. HOWARD

THE FOLLOWING NOTES were derived from a study of the Piperaceae in preparation for a flora of the Lesser Antilles. Casimir de Candolle published an account of the family in Urban's *Symbolae Antillanae* in 1902, recognizing 154 species and additional varieties in the Antilles. Subsequently numerous new taxa have been added by Urban, C. de Candolle, Trelease and Stehlé, so the family stands today as one of the larger families of the area, and one with a high percentage of endemic species. The difficulty of establishing a valid species concept within the family and the existing overdescription of taxa is recognized. A treatment of species from a small area is not a satisfactory and certainly not a scientific approach. No monographer is available, and one might ask if a single lifetime would be enough to straighten out one of the worst messes in plant taxonomy.

Subsequent to De Candolle's treatment in 1902 is his analytical key to the Piperaceae published posthumously (Candollea 1: 65–415. 1923). In the period from 1930 to 1940 Henri Stehlé collected extensively in the French Islands of Guadeloupe and Martinique and sent his materials to Trelease. Trelease supplied identifications which Stehlé published in a variety of ways. Often the names alone were given as a list of the flora of an area or island (e.g., Flore de la Guadeloupe et Dépendances 2(1): 2, 3, 8. 1937), often with type collections cited, but since descriptions were lacking, these names were *nomina nuda*. Stehlé planned and apparently wrote a treatment of the family; however, only a part was published as "Flore descriptive des antilles françaises II, Les Piperales, Piperacées et Chloranthacées," Fascicule 1, 1–144. 1940. In various subsequent publications it is indicated that this work was completed. The part cited covers the three genera, *Pothomorphe*, *Sarcorhachis*, and *Piper*, and six of the 42 species of *Peperomia* included within a key to the genus. This appears to be an independent publication; however, it is one which parallels but is more comprehensive than that of the Bulletin Agricole Martinique (9(3): 145–221. 1941), a publication which cannot be located in libraries in the United States. Stehlé prepared the illustrations for the unpublished part of this paper, and photographs of them are associated with herbarium specimens in the Trelease collections at the University of Illinois. A word of warning must be expressed over the inconsistencies or errors which exist between the specimens which Stehlé and Trelease annotated, the early usually invalid publication, and the subsequent publications. Trelease frequently used local place names as epithets. Both Trelease and Stehlé have handwriting of difficult legibility.

In their coöperative effort, numbers on specimens are reversed; types are changed; taxonomic status altered; and spellings are varied.

Yuncker and Trelease collaborated in the preparation of the two-volume work, *The Piperaceae of Northern South America*, published in 1950. A few of the species of the Lesser Antilles are included in this work. Yuncker also published treatments of the family for Panama (Annals Missouri Bot. Gard. **37**: 1–120. 1950); Trinidad and Tobago (Lilloa **26**: 239–278. 1953); Jamaica (Bull. Inst. Jamaica, Science Ser. **11**: 1–56. 1960); and for the Netherlands Antilles (Uitg. Nat. Stud. voor Suriname **42**: 71–87. 1966). All of these publications have been useful in consideration of the taxa within the Lesser Antilles. More recently Burger's treatment for the *Flora of Costa Rica* (Fieldiana Bot. **35**: 5–227. 1971) represents a major contribution with notes which have value to the present work. In all of these there has been a gradual addition of synonyms by the reduction of taxa described by C. de Candolle and by Trelease. However, none of the works has given consideration to the "names" published by Trelease and Stehlé for the Lesser Antilles.

The species concept of Trelease and Stehlé cannot be accepted today. These authors clearly state that their use of a name applies to a plant occurring on a particular island, and they admit that the same plant on another island or in South America or Central America has a different specific name. In this practice, for example, they ignored all older epithets which were based on plants collected from Dominica, the island between Guadeloupe and Martinique, or on islands north or south of the French islands. The present study might receive comparable criticism, for it is not possible to consider all of the species which have been described for the Greater Antilles or for South America and Central America. There is slight satisfaction in recognizing that, in general, older names are those of the Antillean area, and that my colleagues have been equally guilty in not considering Antillean taxa in their comparisons.

Stehlé stresses the importance of knowing the plants of the Piperaceae in the field. He reported the differences between juvenile and mature foliage, and the changes to be observed when specimens are taken into cultivation. However, he handles minor variations in leaf shape or pubescence by recognition of an excessive number of forms and varieties. The present study is based on much more material than was available to earlier workers in the area, and on personal collections and field observations. Field work by Walter Hodge and the recent collaborators on the Smithsonian Institution project has amassed large numbers of vouchers from Dominica. My own work with several colleagues has added many specimens from St. Vincent and St. Lucia. The collections of George Proctor from islands throughout the area have been most important for filling in geographic gaps and producing high quality specimens. The work of Proctor and much of my own has been supported at times by grants from the National Science Foundation.

The plants of the Piperaceae are mostly succulent, and unless prepared quickly and properly in the field, result in poor quality herbarium speci-

mens. With the use of heat the specimens can be dried quickly. The generally accepted idea that some species turn black on drying is not necessarily true. Unfortunately, heat for drying was not always available to earlier collectors and the quality of many collections is poor. The types of many of the Trelease and Stehlé species can only be described as fragments, and are contained in packets. The succulence of the specimens, particularly in *Peperomia*, presents additional problems in the understanding of previous descriptions. Inflorescences may be crushed in pressing, and the final appearance varies with the age of the inflorescence. Flowering inflorescences must be prepared differently from infructescences. The adhesion of the bract and the pedicel often reported in species of *Peperomia* is commonly an artifact of compression. The number of stamens per flower in species of *Piper* is at best a difficult characteristic to ascertain, although it appears to be associated with the shape of the mature drupe: i.e., three stamens with a triangular drupe, four stamens with drupes that are round or oblong in top view. Dahlstedt's monograph (Kongl. Sv. Vet. Akad. Handl. 33(2): 1–218. 1900) contains many illustrations of fruit types within *Peperomia*. It is often difficult to find and select mature fruiting specimens in the field, and as the fruits are glandular in most cases in the Lesser Antilles, these adhere to the pressing papers and are lost. The packaging of a few infructescences with mature fruit in packets in the field has proven to be most useful.

Little is known of the floral biology of the Piperaceae. I have found no data on pollinators or on methods of fruit distribution. Some species of *Piper* are known to be dioecious. Such a condition is suggested for other species from the examination of much herbarium material, but no field observations have been made to verify this conclusion. In some species of *Peperomia* it appears that the fertility is extremely low, or that many fruits abort in development. Abnormal fruits have been observed also as larger than previously reported for the species, and appearing to be empty when dissected. This is indeed a group in need of study.

I have been able to examine the type specimens of most of the taxa considered in the present work. Regrettably, some of the authentic specimens have been lost or cannot be located. I am grateful for the cooperation I have received from staff members of many herbaria in the search for specimens or for the solutions to specific problems. A complication of this investigation has been the failure of earlier authors to cite the location of a particular type. De Candolle and Dahlstedt saw material from several herbaria. They also worked with mixed collections so that a species is often based on a particular collection "in part" or with a suffix letter, as 123b. The problem of the Duss collections is a familiar one to workers on the Antillean flora. Someone in the past thought his several collections of different numbers were the same species, and distributed the specimens with one, two, three, or even four different collection numbers on the same label. The problem of the identification of isotypes is obvious when the holotype is one of those numbers "in part."

In the following notes extensive new synonymy is suggested. For con-

venience the synonymous taxa are listed alphabetically under the accepted species. To aid others in finding a specific name, I am supplying here alphabetical lists of names which have been used under treatments of *Peperomia* and *Piper*, and I indicate their present assignment. Some of the names given have been found only on herbarium sheets in the handwriting of De Candolle or Trelease. While the listing of such names is not usually an acceptable practice, it is done here for three reasons. Some of the collections are widely distributed: e.g., Duss, Stehlé, H. H. & G. W. Smith. Trelease traveled extensively and annotated specimens in many herbaria, and the majority of the unpublished binomials or trinomials are his. Finally, Stehlé's writings are often in obscure or local agricultural journals of Martinique and Guadeloupe, some of which have not been located. The author has no copies (personal communication), and the librarians on those islands, although cooperative, have not found the articles. There is a possibility that some of the names have appeared in print.

The distributions cited include only those islands from which I have seen specimens.

Lepianthes Rafinesque, Sylva Tellur. 84. 1838

Pothomorphe Miquel, Comm. Phyt. 36. 1840. TYPE SPECIES: *Piper umbellatum* L.

The generic name *Lepianthes*, suggested by Rafinesque, has been overlooked by all recent workers except for Trelease and Yuncker (Piperaceae North. S. Am. 2: 435. 1950), and Yuncker (Ann. Missouri Bot. Gard. 37: 72. 1950), who listed the name in the synonymy of *Pothomorphe* but rejected it by stating "*Lepianthes* Raf. Sylv. Tellur. 85. 1838, not *Lepanthes* Sw. 1799." Rafinesque noted that the genus *Piper* had increased to about 150 species and that he would "endeavor to indicate several Genera of it." The majority of his genera are not acceptable, but recently the name *Pothomorphe* has been used for the plants with peltate leaves and stalked umbellate inflorescences. De Candolle (Symb. Antill. 3: 208–211. 1902) used *Piper peltatum* and *P. umbellatum* for the two common species of *Pothomorphe*, but Britton and his co-workers, León, Trelease, Yuncker, Stehlé, Burger, and Adams have all accepted *Pothomorphe* in their respective floras. Recently Liogier (Rhodora 67: 327. 1965) corrected the nomenclature of Britton and Wilson in their Sci. Surv. Porto Rico Virgin Is. from *Pothomorphe peltata* and *Pothomorphe umbellata* to assignment of these species in *Piper*. He offered no discussion. Burger, however, noted that (Fieldiana Bot. 35: 197. 1971) some species described in the genus *Piper* are more closely related to species of *Pothomorphe* than they are to some species of *Piper*. He concluded "that the lack of a functional classification within *Piper* and these very unusual inflorescences make it advisable to maintain the genus *Pothomorphe*."

If the genus *Pothomorphe* is accepted as distinct from *Piper*, then

Rafinesque's name must be used. Certainly there can be no confusion between *Lepanthes* Sw. (Orchidaceae) and *Lepianthes* Raf. (although the latter name is spelled *Lepianthus* in the Index of Sylv. Tellur. 180. 1838). Nor is there need to propose the name of this small genus for conservation.

Rafinesque cited four species to be included in *Lepianthes* when he stated "Type Lep. vel P. umbellatum, peltatum, maculosum, granulatum and many others." The combinations are attributed to him in Index Kewensis. *Piper umbellatum* L. and *Piper peltatum* L. are generally accepted as species of *Pothomorphe*. *Piper maculosum* L. is accepted by Trelease and Yuncker (Piperaceae North. S. Am. 2: 721. 1950) and others as *Peperomia maculosa* (L.) Hook. "Piper granulatum" as listed by Rafinesque presents a problem. It is not a Linnaean species. Merrill (Index Rafinesquianus p. 106. 1949) suggested this epithet is a misspelling of *Piper granulosum* Ruiz & Pavon, a species currently recognized in the flora of Peru. Subsequently *Piper granulatum* was published by Trelease (Contr. U.S. Natl. Herb. 26: 175. 1929) with *Pittier 3593* as the type, collected in 1891 in Costa Rica. *Lepianthes granulatum* Raf. is stated to be the equivalent of *Piper angustifolium* (Index Kew. 3: 55. 1904), a name which was published independently by Lamarck, Roxburgh, and Ruiz & Pavon.

Additional species of *Pothomorphe* are recorded in the literature. Older names are to be found in Miquel's work (Syst. Piperacearum 202–216. 1843). Trelease described several species in the Flora of Panama (Ann. Missouri Bot. Gard. 27: 306, 307. 1940), and Yuncker added one for Ecuador (Ark. Bot. 4: 410. 1962). Rather than add to the confusion of names in this family, I leave the possible new combinations to others who can evaluate the species.

The type species of the genus *Pothomorphe* selected by Britton and Wilson (Sci. Surv. Porto Rico Virgin Is. 5: 229. 1924) was *Piper umbellatum* L. Trelease and Yuncker (Piperaceae North. S. Am. 2: 435. 1950) incorrectly indicated *Piper peltata* as the type species.

Lepianthes peltata (L.) Raf. Sylv. Tellur. 84. 1838.

Piper peltatum L. Sp. Pl. 1: 30. 1753 (sphalm. pelatum). TYPE: Hispaniola (?), *Plumier*, Amer. 56. *t. 74*. 1693.
Pothomorphe peltata (L.) Miq. Comm. Phyt. 37. 1840.
Pothomorphe dussii Trel. in Stehlé, Fl. Descr. Antill. Fr. 2(1): 61. *pl. 1*. 1940. TYPE: Martinique, *Duss 1340* (holotype US).

Stehlé distinguished *Pothomorphe dussii* from *P. peltata* by leaves which are rounded, deltoid-acuminate, and retuse at the base, and by its fewer, shorter spikes. These characteristics are within the range of variation of a wide-ranging species. The illustration made by Stehlé is purely imaginative and does not conform to any of the specimens cited; nor does it agree with the descriptions given. It is in fact more similar to *Lepianthes umbellata* than to *L. peltata*.

DISTRIBUTION: Montserrat, Dominica, Martinique, St. Lucia, St. Vincent, Grenada, Barbados.

Peperomia Ruiz & Pavon, Prodr. 8. 1794

In the original generic description Ruiz and Pavon mention three species of *Piper* described by Linnaeus. No type species was designated. Their later comprehensive treatment of the genus (Fl. Peruv. Chil. 1: 29–33. 1798) contained 24 species and illustrations of most of them. Hugo Dahlstedt, Casimir de Candolle, and William Trelease apparently never selected a lectotype. Britton (Flora of Bermuda 94. 1918) appears to have been the first to choose a "type species," selecting *Peperomia secunda* Ruiz & Pavon. This selection is repeated in Britton and Millspaugh's *The Bahama Flora* (101. 1920). In the Sci. Surv. Porto Rico Virgin Is. (5: 223. 1924), Britton and Wilson chose *Peperomia scutellaefolia* Ruiz & Pavon as the type species. The only explanation for this unnecessary change appears to be that *P. scutellaefolia* is the first species listed by Ruiz and Pavon, while *P. secunda* is the third. In The Piperaceae of Northern South America (2: 443. 1950) Trelease and Yuncker designated *Peperomia pellucida* (L.) H.B.K. as the type species.

Peperomia alpina A. Dietr.

The identification "Peperomia alpina A. Dietr.?" was given to a collection by *H. H. and G. W. Smith 1643* from St. Vincent in a list in Kew Bull. 1893, p. 272. The specimen in the herbarium at Kew was annotated "P. vincentensis" by Trelease, but this name has not been published. The specimen is *Peperomia myrtifolia* (Vahl) A. Dietr., and is quite distinct from *Peperomia alpina* (Sw.) A. Dietr. as currently recognized in the flora of Jamaica.

Peperomia blanda (Jacq.) H.B.K. Nov. Gen. & Sp. 1: 56. 1816.

Piper blandum Jacq. Collect. 3: 211. 1791. TYPE: Venezuela.

Yuncker (Fl. Neth. Antill. 2: 78, 79. 1966) accepted this species in his treatment of *Peperomia* of the Netherlands Antilles. I have seen but one (*Boldingh 3041*) of the specimens he cited from Curaçao, St. Eustatius, and St. Martin, and refer that specimen to *Peperomia questeliana*. A further discussion of the nomenclature is given under that species.

Peperomia ciliata Kunth, H.B.K. Nov. Gen. & Sp. 1: 56. 1816.

Grisebach (Fl. Brit. W. Ind. Is. 168. 1860) recorded this species from Antigua, and recent material has been so identified. De Candolle (Urb. Symb. Antill. 3: 266. 1902) cited under this name a specimen from Puerto Rico and the record of Grisebach from Antigua and Trinidad. Britton and Wilson (Sci. Surv. Porto Rico Virgin Is. 5: 228. 1924) considered

the Puerto Rican material to be "Peperomia humilis" (= *Peperomia questeliana*). Trelease and Yuncker (Piperaceae North. S. Am. 2: 557. 1950) placed *P. ciliata* H.B.K. in the synonymy of *Peperomia blanda* and recognized the variety *P. blanda* var. *langsdorfii*. They attributed both taxa to the West Indies. The Antigua material I have seen is assigned to *Peperomia questeliana* in this paper.

Peperomia cordifolia (Sw.) A. Dietr. in L. Sp. Pl. ed. 6. 1: 154. 1831.

This species has been attributed to Jamaica and Dominica by several authors including Adams (Flora Jam. 207. 1972). A loan from Kew included two sheets which by their shape were clearly once one sheet and held four small specimens of *Peperomia*. Annotations clearly indicate that one specimen collected by Imray on Dominica, numbered 331, is *Peperomia rotundifolia* (L.) H.B.K. This specimen also bears an annotation label supplied by Trelease, suggesting it is the "Type of *P. imrayana* (ined.)." The other three specimens were collected by McFayden in Jamaica, and are *Peperomia cordifolia*, a species considered endemic to Jamaica.

Peperomia emarginella (Wikstr.) DC. Prodr. 16(1): 437. 1869.

Piper emarginellum Wikstr. Stockh. Kongl. Vet. Akad. Handl. 1827: 56. 1828. TYPE: Jamaica, *Swartz*.
Peperomia emarginella var. *exilis* (Miq.) Stehlé, Bull. Soc. Bot. Fr. 85: 576. 1938.
Acrocarpidium exile Miq. Syst. Piperacearum 56. 1843. TYPE: Ind. Occ. *Poiteau* [G-hb. Delessert].
Peperomia exilis (Miq.) Griseb. Fl. Br. W. Ind. Is. 164. 1860.

DISTRIBUTION: St. Kitts, Nevis, Dominica, St. Vincent.

Peperomia glabella (Sw.) Dietr. in L. Sp. Pl. ed. 6. 1: 156. 1831.

Piper glabellum Sw. Prodr. 16. 1788. TYPE: Jamaica, *Swartz*.
Peperomia glabella var. *eustatiana* C. DC. in Urb. Symb. Antill. 3: 236. 1902. TYPE: St. Eustatius, *Suringar*.
Peperomia glabella var. *nervulosa* (C. DC.) Yuncker, Ann. Missouri Bot. Gard. 37: 98. 1950. TYPE: Surinam, *Hostmann 437*.
Peperomia sabae Trel. Unpublished herbarium name.
Piper scandens Sw. Prodr. 16. 1788.

Trelease and Yuncker Piperaceae North. S. Am. 2: 587, 590, 591. 1950) recognize *Peperomia glabella* and raise the question of its relationship to *Peperomia nigropunctata* Miq. which is based on material from Martinique. In 1966 Yuncker (Fl. Neth. Antill. 2: 79–81. 1966) recognized both species using the key character of "stems subnodally lineately ciliate; petioles ciliate . . ." to characterize *P. glabella*. In the same treatment he recognized var. *glabella* and var. *nervulosa* but did not mention De Candolle's var. *eustatiana*. The three varieties are based on variations in venation, surface reticulation, and leaf shape, and do not appear worthy of further recognition.

Burger (Fieldiana Bot. **35**: 37. 1971) used *Peperomia glabella* and included *P. nigropunctata* among the synonyms assigned to it. I have maintained the two species using as a distinguishing character the presence or absence of ciliate pubescence on the petiole and in lines on the stem below the node. *P. glabella* can be recognized in the field by the characteristic light color of stems and leaves and the greater number of spikes, in contrast to the darker green color of stems and leaves and the fewer spikes of *P. nigropunctata*.

A collection from Barbados (*Eggers 7359*), cited by Dahlstedt (Kongl. Sv. Vet. Akad. Handl. **33**(2): 119. 1900) under the name *Peperomia caulibarbis*, was referred to *P. glabella* by De Candolle (Urb. Symb. Antill. **3**: 235. 1902). *Peperomia caulibarbis* Miq. Syst. Piperacearum 98. 1843 was typified by the collection of *Gaudichaud 287* from Brazil.

DISTRIBUTION: Saba, St. Eustatius, St. Vincent, Grenada.

Peperomia hernandiifolia (Vahl) Dietr. in L. Sp. Pl. ed. 6. **1**: 157. 1831.

Piper hernandifolium Vahl, Enum. **1**: 344. 1804. TYPE: Ind. Occ.
Peperomia ponthieui Miq. Syst. Piperacearum 186. 1843. TYPE: Guadeloupe, *Ponthieu s.n.*

DISRTIBUTION: Saba, St. Kitts, Nevis, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent, Grenada.

Peperomia hirtella Miq. in Hooker, Lond. Jour. Bot. **4**: 414. 1845.

TYPE: Dominica, *Imray 244* (K).

Peperomia allorgeana Stehlé, Candollea **8**: 76. 1940. TYPE: Martinique, *H. & M. Stehlé 3386.*
Peperomia allorgeana forma *genuina* Stehlé, Fl. Descr. Antill. Fr. **2**(1): 137. 1940. TYPE: Guadeloupe, *Stehlé 3386* (Herb. Stehlé).
Peperomia allorgeana forma *lata* Trel. in Stehlé, *Ibid.* 141. TYPE: Martinique, *Stehlé 3389* (ILL).
Peperomia allorgeana forma *major* Trel. in Stehlé, *Ibid.* 140. TYPE: Martinique, *Stehlé 3211* (ILL).
Peperomia allorgeana forma *minor* Trel. in Stehlé, *Ibid.* TYPE: Martinique, *Stehlé 3390* (ILL).
Peperomia belangeri C. DC. Prodr. **16**(1): 411. 1869. TYPE: Martinique, *Belanger 137* (G–hb. Boiss.) not seen.
Peperomia bracteiflora C. DC. Mem. Soc. Phys. Hist. Nat. Genève **27**(2): 317. 1882. TYPE: Martinique, *Hahn 647* (G–DC).
Peperomia bracteiflora var. *stigmatifera* C. DC. in Urb. Symb. Antill. **3**: 274. 1902. TYPE: Martinique, *Duss 16.*
Peperomia casimiri Heurck & Müll. Arg. in Heurck, Obs. Bot. fasc. **1**: 111. 1870. TYPE: Trinidad, *Sieber s.n.* (G–DC, photo.).
Peperomia cataractaegaudens Trel. in Stehlé Fl. Descr. Antill. Fr. **2**(1): 144. 1940. TYPE: Guadeloupe, *H. & M. Stehlé 1625* (NY).
Peperomia dissitiflora C. DC. in Briq. Ann. Jard. Bot. Genève **2**: 279. 1898. TYPE: Martinique, *Hahn 649*, not seen.

Peperomia dussii C. DC. in Urb. Symb. Antill. **3:** 231. 1902. TYPE: Martinique, *Duss, 14* in part (G–DC, photo.).

Peperomia evadens Trel. in Stehlé, Fl. Descr. Antill. Fr. **2**(1): 134. 1940. TYPE: Guadeloupe, *Stehlé 330* (NY).

Peperomia hahnii C. DC. in Linnaea **37:** 368. 1872. TYPE: Martinique, *Hahn 257* (G–DC, photo.).

Peperomia herminieri C. DC. Mem. Soc. Phys. Hist. Nat. Genève **27**(2): 306. *t. 14.* 1882. TYPE: Guadeloupe, *l'Herminier s.n.* (G–hb. Boiss.)

Peperomia herminieri var. *stigmatifera* C. DC. in Urb. Symb. Antill. **3:** 273. 1902. SYNTYPES: Guadeloupe, *Duss 2567a*; Martinique, *Duss 4038.*

Peperomia subbracteiflora C. DC. in Urb. *Ibid.* **5:** 298. 1907. TYPE: Guadeloupe, *Duss 4107* in Herb. Duss.

Peperomia subvillosa Heurck & Müll. Arg. in Heurck, Obs. Bot. fasc. **1:** 113. 1876. TYPE: Martinique, *Sieber s.n.* (Herb. Heurck).

Peperomia subvillosa forma *candolleana* Stehlé & Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 61. 1948. TYPE: Guadeloupe, *Duss 15* (B).

Peperomia subvillosa forma *dumauseana* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* TYPE: Guadeloupe, *Stehlé 3369.*

Miquel based *Peperomia hirtella* on a collection by Imray from Dominica, and the holotype (K) has been seen. No additional collections from Dominica or elsewhere have been assigned to this species by subsequent authors or collectors. Instead, the numerous minor morphological variations of leaf form have been described as new taxa by three principal workers who regarded their species as island endemics. A comparison of the types of most species cited above with the holotype indicates to me that only one species with a distribution including Guadeloupe, Dominica, Martinique, and St. Lucia is involved.

Peperomia hirtella is an erect plant with varying degrees of pubescence on the stems and leaves. The character of a bracteate short-stalked flower appears to be an artifact of drying.

DISTRIBUTION: Guadeloupe, Dominica, Martinique, St. Lucia.

Peperomia hispidula (Sw.) Dietr. in L. Sp. Pl. ed. 6. **1:** 165. 1831.

Piper hispidulum Sw. Prodr. 15. 1788.

Dahlstedt (Kongl. Sv. Vet. Akad. Handl. **33**(2): 14. 1900) attributed this species to Martinique on the basis of the lower of two fragments mounted on a single sheet in the Willdenow herbarium. The distribution of Jamaica and Martinique is similarly reported by Adams (Fl. Jam. 205. 1972). De Candolle noted (Urb. Symb. Antill. **3:** 224. 1902) that Urban, in a letter, suggested that the upper plant (*Peperomia rotundifolia* as *P. nummularifolia*) was collected by Isert in Martinique, and that the lower collection (*Peperomia hispidula*) was probably a Swartz specimen from Jamaica. *Peperomia hispidula* appears to be a plant of Hispaniola and Jamaica; the lectotype was selected by Urban.

Peperomia magnoliifolia (Jacq.) Dietr. in L. Sp. Pl. ed. 6. 1: 153. 1831.

Piper magnoliaefolium Jacq. Collect. 3: 210. 1798. TYPE: Venezuela.
Peperomia amplexicaulis (Sw.) Dietr. var. *magnoliaefolia* (Dietr.) Griseb. Fl. Brit. W. Ind. Is. 167. 1860.
Peperomia conulifera Trel. in Stehlé, Bull. Soc. Bot. Fr. **84:** 409. 1937 (invalid); in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 44. 1948 (valid). TYPE: Barbados, *Eggers 7202* (US ex Stehlé).
Peperomia conulifera var. *acutifolia* Trel. in Stehlé, Bull. Soc. Bot. Fr. **85:** 578. 1938 (invalid). TYPE: Guadeloupe, *Stehlé 1620* (NY ex Trel.).
Peperomia conulifera var. *kerveganti* Trel. in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 46. 1948 (*nomen nudum*). TYPE: Martinique, *Stehlé & Kervegant 2324* (NY ex Trel.).
Peperomia conulifera var. *matoubana* Trel. in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 45. *f. 1.* 1948 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 2558* (NY).
Peperomia conulifera var. *Stehleae* Trel. in Stehlé, Bull. Soc. Bot. Fr. **83:** 628. 1936 (*nomen nudum*); *Ibid.* **85:** 579. 1938 (invalid); in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 45. *f. 3.* 1948 (*nomen nudum*). TYPE: Marie Galante, *Mme. Stehlé 299* (ILL).
Peperomia conulifera var. *Stehlei* Trel. in Stehlé, Bull. Soc. Bot. Fr. **83:** 628. 1936 (*nomen nudum*); in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 46. *45. f. 2.* 1948 (valid). TYPE: Guadeloupe, *Stehlé 24* (NY).
Peperomia conulifera var. *tenuispica* Trel. in Stehlé & Quentin, *Ibid. 45. f. 5.* (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 2547* (NY ex Trel.).
Peperomia conulifera var. *tivoliana* Trel. in Stehlé & Quentin, *Ibid.* 46. (*nomen nudum*). TYPE: Martinique, *Stehlé 2328* (NY ex Trel.).
Peperomia conulifera var. *typica* Trel. in Stehlé & Quentin, *Ibid.* 46. (*nomen nudum*). TYPE: not indicated.
Peperomia glandulirostrea var. *stehleae* Trel. in Stehlé, Bull. Soc. Bot. Fr. **83:** 628. 1936 (*nomen nudum*). TYPE: Guadeloupe, *M. Stehlé s.n.*
Peperomia praestigiatrix Trel. in Stehlé & Quentin, Fl. Guad. Depend. 2(1): 3. 1937 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1619* (NY ex Trel.).
Peperomia pustulaebacca Trel. in Stehlé, Carib. For. 6, Suppl. 344. 1945 (*nomen nudum*). TYPE: Barbados, *Stehlé 1647* (NY ex Trel.).
Peperomia pustulatibacca Trel. & Stehlé in Stehlé, Candollea **10:** 288. 1946 (valid). TYPE: Barbados, *H. & M. Stehlé 1647* (NY).

De Candolle (Urb. Symb. Antill. 3: 254. 1902) did not recognize *Peperomia magnoliifolia*, placing it in the synonymy of *P. obtusifolia* (L.) A. Dietr. More recent authors offer alternate treatments. Trelease and Yuncker (Piperaceae North. S. Am. 2: 651. 1950) distinguish the two species primarily on the basis of the slender, sharply hooked beak of *P. obtusifolia* and the awl-shaped, tapering but straight beak of *P. magnoliifolia*. Burger (Fieldiana Bot. **35:** 52. 1971) accepts *P. obtusifolia* but does not list *P. magnoliifolia* in synonymy. He stated "the criteria used by Yuncker to separate *P. magnoliaefolia* from *P. obtusifolia* are not biologically significant." Adams (Fl. Jam. 204. 1972) uses the fruit characters to distinguish the species, and on this basis mature specimens of the Lesser

Antillean plants may be assigned easily to the appropriate one of these two taxa.

The name *Peperomia conulifera* Trel. was used in print by Stehlé frequently before its publication with a Latin diagnosis in 1948. At that time he indicated the species was "*Peperomia magnoliaefolia* pro parte" and "*Peperomia obtusifolia* pro parte." Technically the epithet was superfluous when published, for Stehlé also listed in synonymy *Peperomia cuneata* Miq., a species which I place in the synonymy of *P. obtusifolia*. Although Stehlé failed to give any characters distinguishing *P. conulifera*, the illustrations he published show the straight fruit beak of *P. magnoliifolia*, a character verified by an examination of many specimens annotated by Trelease and by Stehlé.

No place of publication has been found for the species *Peperomia glandulirostrea*, and the variety cited is only listed by Stehlé, and is, therefore, a *nomen nudum*.

The collection *Stehlé 1619* is the only one cited for *Peperomia praestigiatrix*. The type sheet (NY) is *P. magnoliifolia*, but the specimen under the same number at Illinois is *P. nigropunctata* Miq.

DISTRIBUTION: Saba, Montserrat, St. Eustatius, St. Martin, Nevis, Guadeloupe, Martinique, Dominica, Grenada, Grenadines, St. Vincent, Barbados, Marie Galante, La Desirade.

Peperomia myrtifolia (Vahl) A. Dietr. in L. Sp. Pl. ed. 6. **1**: 147. 1831.

Piper myrtifolia Vahl, Enum. **1**: 341. 1804. TYPE: St. Croix, *Pflug s.n.* (C).
Peperomia auberyana Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 57. 1948. TYPE: Guadeloupe, *Aubrey 1622* (ILL, NY).
Peperomia barthelemyana Trel. in Questel, Flora St. Barth. 94. 1941 (invalid); Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 58. 1948 (valid). TYPE: St. Barts, *Questel 275* (NY).
Peperomia barthelemyana var. *genuina* Stehlé & Quentin, *Ibid.* TYPE: St. Barts, *Questel 275* (NY).
Peperomia barthelemyana Trel. var. *reducta* Trel. in Questel, Flora St. Barth. 94. 1941 (invalid); Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 58. 1948 (valid). TYPE: St. Barts, *Questel 361* (NY).
Peperomia boldinghii C. DC. in Urb. Symb. Antill. **7**: 186. 1912. TYPE: Saba, *Boldingh 2105*.
Peperomia broadwayi C. DC. *Ibid.* **3**: 240. 1902. TYPE: Martinique, *Duss 1262* (US 846008, selected by Trel.).
Peperomia doleana Trel. in Stehlé, Candollea **10**: 288. 1946. TYPE: Guadeloupe, *Trelease 66* (ILL).
Peperomia dolosa Trel. in Stehlé, Bull. Soc. Bot. Fr. **83**: 628. 1936 (*nomen nudum*); Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 52. 1948 (valid). TYPE: Iles des Saintes, *H. & M. Stehlé 155*.
Peperomia guadeloupensis C. DC. in Seeman, Jour. Bot. **4**: 139. 1866. TYPE: many syntypes from several islands.
Peperomia myrtifolia var. *major* Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 59. 1948. TYPE: St. Barts, *Questel 803* (NY).

Peperomia myrtifolia var. *typica* Trel. in Stehlé & Quentin, *Ibid.* TYPE: St. Barts, *Questel 804* (NY).

Peperomia persuccosa C. DC., Fedde Repert. Spec. Nov. **15:** 3. 1917. TYPE: Guadeloupe, *Duss 2830.*

Peperomia persuccosa var. *benae* Stehlé, Candollea **10:** 289. 1946. TYPE: Guadeloupe, *Bena, Stehlé & Quentin 5260* (Herb. H. & M. Stehlé, not seen).

Peperomia persuccosa var. *bertautii* Stehlé, *Ibid.* TYPE: Guadeloupe, *Stehlé 5259.*

Peperomia rupertiana C. DC. Prodr. **16**(1): 413. 1869. TYPE: Dominica, *Prince Rupert s.n.* (K).

Peperomia rupertiana var. *genuina* Stehlé, Candollea **10:** 290. 1946. TYPE: Dominica, *Jardin s.n.* (not seen).

Peperomia rupertiana var. *pinchonii* Stehlé, *Ibid.* 291. TYPE: Martinique, *Stehlé & Pinchon 5833* (Herb. H. & M. Stehlé).

Peperomia rupertiana var. *rosetteana* Stehlé, *Ibid.* 291. TYPE: Martinique, *Stehlé & Rose-Rosette 3744* (Herb. H. & M. Stehlé).

Piper tenuiflorum Vahl in West, Bidr. Ste. Croix 195. 1793, not Opiz in Presl, Reliq. Haenk **3:** 163. 1828, from Mexico.

Peperomia vanhuerckii C. DC. in Heurck & Müll. Arg. Obs. Bot. fasc. **1:** 116. 1876. TYPE: Martinique, *Sieber s.n.* (G–DC) microfiche.

Peperomia vincentensis Trel. ined. TYPE: St. Vincent, *H. H. & G. W. Smith 1643.*

This taxon is commonly cited as "Peperomia myrtifolia (Vahl) Miq." (Syst. Pip. 92. 1843). Miquel listed *Piper myrtifolia* Vahl with a question mark, and cited only a Sellow collection from Brazil. The description indicates that he was considering a different species; the Miquel combination is a later homonym of *P. myrtifolia* (Vahl) A. Dietr.

The oldest basionym for this species would be *Piper tenuiflorum* Vahl in West (1793); however, this epithet cannot now be transferred to *Peperomia* since it is antedated by *Peperomia tenuiflorum* Opiz in Presl (1828) for a species from Mexico. *Peperomia myrtifolia* (Vahl) A. Dietr. is the oldest available name and is based on *Piper myrtifolia* Vahl which is typified by a Pflug collection from St. Croix. This specimen in the herbarium at Copenhagen represents an erect plant which rooted only at the lower nodes, if at all, along the stem. Recent collections from St. Croix compare favorably with the original description and the holotype. The plants generally occur on rocks and in drier habitats, contrasting with the other species of *Peperomia* from the Lesser Antilles. The stems are glabrous. The leaves are moderately black-punctate and show a tremendous range of variation in shape and size from the lower leaves of a stem to the upper, and also between plants of different ages.

Most specimens assigned to this species have been identified in herbaria as *Peperomia guadeloupensis* C. DC. and this epithet was accepted by Trelease (Fl. Neth. Antill. 2: 82. 1966). The original description of *P. guadeloupensis* is not explicit, and specimens are cited from Cuba, St. Croix, Guadeloupe and Ecuador. No lectotype has been selected subsequently, to my knowledge.

Specimens of *Peperomia barthelemyana* and its varieties in the herbarium of the New York Botanical Garden carry the annotation "Yuncker, letter to Monachino Sept. 24, 1953, thinks = *P. myrtifolia.*"

The type specimen of *Peperomia vanhuerckii* represents the extreme expression of this species in having short broad leaves with a rounded base. Stehlé and Quentin (Fl. Guad. Depend. **2**(2): 62. 1948) suggest this is a glabrous form of *P. subvillosa.* This leaf shape is matched by recent collections from St. Kitts, which can be included within the range of variation accepted for the species.

DISTRIBUTION: St. Croix, St. Barts, Saba, St. Eustatius, Montserrat, Redonda, St. Kitts, Guadeloupe, La Desirade, Dominica, Martinique, St. Lucia, St. Vincent, Grenadines, Grenada, Barbados.

Peperomia nigropunctata Miq. Syst. Pip. 188. 1843. TYPE: Martinique, *Sieber 6* (B, isotype GH)

Peperomia acuminata DC. Symb. Antill. **3**: 242. 1902, not Ruiz & Pavon, Fl. Peruv. Chil. **1**: 32. 1798.

Peperomia ajoupana Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(1): 3. 1937 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1772.*

Peperomia balineorum Trel. in Stehlé, Bull. Soc. Bot. Fr. **84**: 408. 1937 (*nomen nudum*); Trel. & Stehlé in Stehlé, Candollea **8**: 80. 1940 (valid). TYPE: Guadeloupe, *H. & M. Stehlé 230.*

Peperomia balneolorum Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(1): 3. 1937 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1348.*

Peperomia glabella var. *nigropunctata* Dahlst. Kongl. Sv. Vet. Akad. Handl. **33**: 122. 1900.

Peperomia houelmonte Trel. in Stehlé, Bull. Soc. Bot. Fr. **83**: 628. 1936 (*nomen nudum*), in Stehlé & Quentin, Fl. Guad. Depend. **2**(1): 3. 1937 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 365.*

Peperomia martinicensis C. DC. (msc.) in Stehlé, Bull. Soc. Bot. Fr. **84**: 409. 1937 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé & Branquec 975.*

Peperomia martinicensis Trel. in Stehlé, *Ibid.* **85**: 578. 1938 (*nomen nudum*). TYPE: Martinique, *Hahn 649* (US 38124).

Peperomia martinicensis var. *lata* Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(1): 3. 1937 (*nomen nudum*). TYPE: Martinique, *Stehlé 976.*

Peperomia martinicensis almeana Trel. Herbarium name never published. TYPE: Martinique, *Stehlé 2354* (ILL).

Peperomia nigrescens Stehlé, Candollea **8**: 80. 1940. TYPE: Guadeloupe, *H. Stehlé & Quentin 233.*

Peperomia palpebrata Trel. in Stehlé, Bull. Soc. Bot. Fr. **84**: 409. 1937 (invalid); **85**: 577. 1938 (*nomen nudum*); Candollea **8**: 81. 1940 (valid). TYPE: Martinique, *H. & M. Stehlé "894,"* error for *984* (holotype, NY).

Peperomia palpebrata var. *absalonis* Trel. in Stehlé, Bull. Soc. Bot. Fr. **85**: 577. 1938 (invalid). TYPE: Martinique, *Stehlé 2169.*

Peperomia palpebrata var. *carbetensis* Trel. Herbarium name never published.

Peperomia palpebrata var. *lata* Trel. & Stehlé in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 63. 1948 (*nomen nudum*). TYPE: Martinique, *H. & M. Stehlé 3248.*

Peperomia palpebrata var. *major* Trel. in Stehlé, Bull. Soc. Bot. Fr. **85:** 578. 1938 (invalid). TYPE: Martinique, *Stehlé 2193.*

Peperomia palpebrata var. *paniculata* Trel. & Stehlé in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 63. 1948 (*nomen nudum*). TYPE: No specimens cited.

Peperomia palpebrata var. *ramulosior* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* (*nomen nudum*). TYPE: No specimens cited.

Peperomia palpebrata var. *typica* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* (*nomen nudum*).

Peperomia stehleana Trel. in Stehlé, Bull. Soc. Bot. Fr. **83:** 627. 1936 (*nomen nudum*); **84:** 408. 1937 (*nomen nudum*); Candollea **8:** 79. 1940 (valid). TYPE: Guadeloupe, *H. & M. Stehlé 25* (holotype, NY).

Peperomia stehleana var. *ajoupana* Trel. & Stehlé in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 49, 50. *f. 3.* 1948 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1722.*

Peperomia stehleana var. *balineorum* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* 49. (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1348.*

Peperomia stehleana var. *bourgesensis* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* 49, *50. f. 4.* (*nomen nudum*). TYPE: Guadeloupe, *H. & M. Stehlé 2557.*

Peperomia stehleana var. *branquecii* Stehlé & Trel. in Stehlé & Quentin, *Ibid. f. 6.* 1948 (valid). TYPE: Guadeloupe, collected by R. P. Branquec cited as *Stehlé 2550* (holotype, NY).

Peperomia stehleana var. *charpentieri* Trel. & Stehlé in Stehlé & Quentin, *Ibid. f. 1.* (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 2551.*

Peperomia stehleana var. *houelmonti* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* 49. (*nomen nudum*).

Peperomia stehleana var. *praestigiatrix* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1619.*

Peperomia stehleana var. *regretteana* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* 49, 50. *f. 5* (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 2552.*

Peperomia stehleana var. *tardenaevifera* Trel. in Stehlé, Bull. Soc. Bot. Fr. **83:** 629. 1936 (*nomen nudum*); in Stehlé & Quentin, Fl. Guad. Depend. **2**(1): 3. 1937 (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 336.*

Peperomia stehleana var. *tardigranulata* Trel. in Stehlé & Quentin, *Ibid.* (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1752.*

Peperomia stehleana var. *typica* Trel. & Stehlé, in Stehlé & Quentin, *Ibid.* **2**(2): 49, 50. *f. 2.* 1948 (*nomen nudum*).

Peperomia stehleana var. *variifolia* Trel. & Stehlé in Stehlé & Quentin, *Ibid.* 49. (*nomen nudum*). TYPE: Guadeloupe, *Stehlé 1233.*

Peperomia thionvilleana Trel. in Stehlé & Quentin, *Ibid.* 59. TYPE: Guadeloupe, *H. & M. Stehlé & Quentin 2582.*

Peperomia wilsonii Stehlé, Candollea **8:** 78. 1940; Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 55, 56. 1948. TYPE: Guadeloupe, *H. & M. Stehlé 2545.*

An extensive new synonymy is presented above for this much misunderstood species.

In the original description of *Peperomia nigropunctata* Miquel cited a single collection, *Sieber 6* from Martinique, with the type in Berlin. Such a specimen apparently no longer exists, but a duplicate was found in the collections of the Gray Herbarium, identified as *Piper monostachyon.* The isotype agrees completely with the description given by Miquel. The

specimen represents a climbing plant, rooting freely at the nodes. It has variously shaped leaves which are primarily ovate and acuminate at the apex. The plant is glabrous except for a few short hairs at the ciliate leaf apex. The leaves and the inflorescence are heavily black-punctate when dry.

In 1869 Casimir de Candolle (Prodr. 16(1): 409) accepted the species *P. nigropunctata* and cited additional specimens from St. Thomas, Cuba, and Antigua.

Hugo Dahlstedt in 1900 (Kongl. Sv. Vet. Akad. Handl. 33(2): 122) referred the Miquel species to varietal status as *Peperomia glabella* (Sw.) Dietr. var. *nigropunctata* (Miq.) Dahlst., citing additional specimens from other islands in the Greater and Lesser Antilles as well as from Brazil. I consider *Peperomia glabella* to be a distinct species, as do Trelease and Yuncker (Piperaceae North. S. Am. 2: 587. 1950), Yuncker (Bull. Inst. Jamaica Sci. Ser. 11: 40. 1960), and Adams (Fl. Jamaica 207. 1972), although Burger (Fieldiana Bot. 35: 37. 1971) reduced *P. nigropunctata* to complete synonymy under *P. glabella*. Yuncker also accepted *P. nigropunctata* in his treatment of the Piperaceae in the Netherlands Antilles (Fl. Neth. Ant. 2: 81. 1966).

Casimir de Candolle later presented still another opinion in his treatment of the genus (Urb. Symb. Antill. 3: 242. 1902) when he reduced *P. nigropunctata* to the synonymy of *Peperomia acuminata* (L.) DC., based on *Piper acuminatum* L. This, however, is not *Peperomia acuminata* Ruiz & Pavon (Fl. Peruv. Chil. 1: 32. 1798) and probably not *Piper acuminata* L. (Sp. Pl. 1: 30. 1753) which is based on a Plumier reference and a plant from Hispaniola.

The name *Peperomia martinicensis* has been used several times, but was never validly published. In 1937 Stehlé attributed the name to De Candolle as a manuscript annotation, and in 1938 he attributed the epithet to Trelease who, he said, described the species in a letter. In synonymy Stehlé & Trelease list "Peperomia acuminata auct. p.p. pour l'archipel caribe."

After using the name *Peperomia stehleana* in several publications, Stehlé finally supplied valid publication for it (Candollea 8: 79, 81. 1940) as well as for *Peperomia palpebrata* Trel. in Stehlé. No mention is made of *Peperomia martinicensis*, however, and Stehlé repeated "Peperomia nigropunctata Miq. pro. part. Syst. 188. 1843 et auct. mult. pro insula Guadelupa," and for *Peperomia palpebrata* he stated "Espèce polymorphe, incluse dans le '*complexus glabellae*' équivalente du P. Stehleana Trel. de la Guadeloupe . . ." and noted that his *P. palpebrata* was endemic to Martinique. In 1948 Stehlé & Quentin (Fl. Guad. Depend. 2(2): 62) noted that *P. palpebrata* is the homologue of *P. stehleana* Trel. for Guadeloupe and of *P. acuminata* C. DC. and *P. nigropunctata* of French Guiana. Subsequently a number of varieties were described, some validly published and some not, based on variations in leaf shape. All taxa are clearly to be included in *Peperomia nigropunctata* Miq.

A specimen of *Peperomia houelmonte* Trel. in the Illinois herbarium

bears an annotation in Trelease's hand that the species equals *Peperomia stehleana*.

I have not seen the single specimen (*Stehlé & Quentin 233*, Herb. Stehlé) cited in the description of *Peperomia nigrescens* (Candollea **8**: 80. 1940). None of Stehlé's subsequent papers again refers to the species except for his incompleted monograph of the Piperaceae (Fl. Desc. Antill. Fr. 2(1): 126. 1940) where the name is included in the key. No specimens in either the herbarium at New York or the one at Illinois bear this name. Stehlé, in his observations, compares the new species to *Peperomia nigropunctata* and the varieties of *P. stehleana*, all of which are included in the present consideration.

Peperomia wilsonii Stehlé is based on a collection from Guadeloupe by *H. & M. Stehlé 2545*. The species is said to be distinctive in possessing long cilia on the peltate bracts of the inflorescence, and is so illustrated by Stehlé & Quentin (Fl. Guad. Depend. 2(2): 56. 1948). Such a character would indeed be unusual in *Peperomia*. I have examined two specimens of the type number (NY, ILL) and found no evidence of the cilia.

DISTRIBUTION: St. Martin, St. Kitts, Nevis, Montserrat, Antigua, Guadeloupe, Marie Galante, Dominica, Martinique, St. Lucia.

Peperomia obtusifolia (L.) A. Dietr. in L. Sp. Pl. ed. 6. 1: 154. 1831.

Piper obtusifolium L. Sp. Pl. **1**: 30. 1753. TYPE: "America calidiore," "prototype" ex Yuncker, Plumier, Pl. Amer. p. 53. *pl. 70*. 1693, ex Santo Domingo.

Peperomia cuneata Miq. in Hook. Lond. Jour. Bot. **4**: 429. 1845. TYPE: St. Vincent, *Guilding s.n.* (K).

Peperomia obtusifolia var. *cuneata* Duss, Fl. Phan. Antill. Fr. 173. 1897.

Peperomia obtusifolia forma *oblongifolia* Miq. in Hook. Lond. Jour. Bot. **4**: 429. 1845. SYNTYPES.

The relationship of this species is discussed under *Peperomia magnoliifolia* (q.v.). *Peperomia cuneata* Miq. is a small-leafed variant.

DISTRIBUTION: Antigua, Guadeloupe, Dominica, St. Lucia, St. Vincent, Grenada.

Peperomia pellucida (L.) H.B.K. Nov. Gen. & Sp. 1: 53. 1816.

Piper pellucidum L. Sp. Pl. **1**: 30. 1753. TYPE: America calidiore, Plum. Pl. Amer. 54. *t. 72*. 1693.

Peperomia pellucida baileyana Trel. Herbarium name, never published. TYPE: Martinique, *L. H. & E. Z. Bailey 297* (ILL).

This is the only truly weedy species of *Peperomia* in the Lesser Antilles. It is common as an adventive in gardens, on rock paths and walls.

DISTRIBUTION: Saba, St. Eustatius, St. Kitts, Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent, Grenada, Barbados.

Peperomia questeliana Stehlé & Trel. in Stehlé, Candollea **8**: 77. 1940. TYPE: St. Bartholomew, *Questel 2518* (Herb. Stehlé).

Piper humile Vahl, Enum. **1**: 349. 1804, not Miller 1804. TYPE: St. Croix, *West.*

Peperomia humilis (Vahl) A. Dietr. in L. Sp. Pl. ed. 6. **1**: 168. 1831.

Peperomia humilis var. *stehlei* Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 54. 1948. TYPE: Guadeloupe, *H. & M. Stehlé & Quentin 2547* (NY).

This species has been called *Peperomia humilis* (Vahl) Dietr. in the majority of floras of the Antilles. Unfortunately the basionym *Piper humile* Vahl (Enum. **1**: 349) was published after June 28, 1804 (Stafleu, Reg. Veg. **52**: 480. 1967) and so is a later homonym of *Piper humile* Miller (Dict. No. 4, 1768) and *Piper humile* Mill. ex Poir. (Lam. Encycl. Meth. **5**: 473. 1804) published Jan. 11, 1804 (Chron. Bot. **5**: 439. 1939).

Piper humile Miller was renamed *Piper milleri* Römer & Schultes (Syst. Veg. 1: 337. 1817) and the species was placed in the synonymy of *Peperomia obtusifolia* (L.) Dietr. by C. de Candolle (Urb. Symb. Antill. **3**: 254. 1902).

Casimir de Candolle (Urb. Symb. Antill. **3**: 266. 1902) accepted the epithet *Peperomia langsdorfii* (Miq.) Miq. (Syst. Pip. 116. 1843) for this species, placing in synonymy *Peperomia humilis* (Vahl) A. Dietr. and *Piper humile* Vahl. Britton and Wilson (Sci. Surv. Porto Rico Virgin Is. **5**: 228. 1924) used the older epithet *Piper humile* Vahl not recognizing that it was a later homonym. They placed in synonymy *Peperomia langsdorfii* Miq.

Peperomia langsdorfii (Miq.) Miq. is based on material, theoretically from Brazil, cultivated in Europe. The oldest use of the specific epithet appears to be *Piper langsdorfii* Schrank & Martius (Hort. Reg. Monacensis 47. 1829) as a *nomen nudum.* Miquel described the plant in 1839 (Icon. Comment. phytogr. **2**: 52. *tab. 8, f. f*) as *Micropiper langsdorfii* suggesting the species was similar to *Peperomia blanda.* The combination in *Peperomia* was made by Miquel in 1842 (Syst. Pip. 116). The species is currently offered in the Index Seminum of various European botanical gardens, but no specimens of cultivated material can be located.

Trelease and Yuncker (Piperaceae North S. Am. **2**: 558. 1950) accepted *Peperomia blanda* var. *langsdorfii* (Miq.) Henschen (Nova Acta Soc. Sci. Upsal. ser. 3. **8**: 39. 1873) indicating its distribution to be Trinidad, Venezuela, Colombia, and Brazil. Material from this range identified and annotated by Trelease and Yuncker is not the same as the specimens of the Lesser Antilles and St. Croix.

None of the other synonyms given by the various authors seem to apply to the plants of the Lesser Antilles, and the only available name appears to be *Peperomia questeliana* Stehlé & Trelease, which was described as a new species and without comparison with other species of the area. Since the specimens are from St. Barts, the species was not included in Stehlé's key (Fl. Descr. Antill. Fr. **2**(1): 120–126. 1940).

The location of Stehlé's personal herbarium cannot be determined at this time, and the cited specimen has not been seen. A poorly prepared isotype (ILL) consists of a packet of fragments.

DISTRIBUTION: St. Croix, St. Martin, Antigua, St. Barts, St. Kitts, Guadeloupe.

Peperomia rotundifolia (L.) H.B.K. Nov. Gen. & Sp. 1: 54. 1816.

Piper rotundifolium L. Sp. Pl. 1: 30. 1753. TYPE: America calidiore, prob. Martinique, *fide* Yuncker; Plum. Pl. Amer. 52. *pl. 69*. 1693.
Peperomia imrayana Trel. ined. TYPE: Dominica, *Imray 331* (K).
Piper nummularifolium Sw. Prodr. 16. 1788. TYPE: Jamaica.
Peperomia nummularifolia (Sw.) H.B.K. Nov. Gen. & Sp. 1: 54. 1816.
Acrocarpidium nummularifolium forma *pilosior* Miq. Linnaea 18: 710. 1844. TYPE: Mexico, *Schiede s.n.*
Peperomia rotundifolia var. *nummularifolia* (Kunth) Stehlé, Bull. Soc. Bot. Fr. 85: 577. 1938.
Peperomia rotundifolia var. *pilosior* (Miq.) C. DC. in Urb. Symb. Antill. 3: 230. 1902.
Peperomia rotundifolia forma *pubescens* C. DC. ex Dahlst. in Dahlst. Kongl. Sv. Vet. Akad. Handl. 33(2): 102. 1900.
Peperomia vernouana Trel. in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 55. 1948. TYPE: Guadeloupe, *H. & M. Stehlé & Quentin 3003* (NY).

DISTRIBUTION: Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent, Grenada.

Peperomia serpens (Sw.) Loud. Hort. Brit. 13. 1830.

Piper serpens Sw. Prodr. 16. 1788. TYPE: Jamaica, *Swartz*.
Piper guildingianum Spreng. Syst. Veg. cur. post. 20. 1827 (illegit.).
Acrocarpidium guildingianum Miq. in Hook. Lond. Jour. Bot. 4: 412. 1845 (illegit.).
Peperomia reniformis Hook. Exot. Fl. 3: *pl. 164*. 1827. TYPE: cultivated plant from St. Vincent, *Guilding*.
Peperomia repens H.B.K. Nov. Gen. & Sp. 1: 54. 1816. TYPE: Cumanacon, Nova Andalusia.
Peperomia scandens Ruiz & Pavon, Fl. Peruv. Chil. 1: 32. *pl. 51, f.b*. 1798. TYPE: Peru.
Piper scandens (Ruiz & Pavon) Vahl, Enum. 1: 346. 1804, not Swartz 1788.

Casimir de Candolle (Symb. Antill. 3: 248. 1902) used the name *Peperomia scandens* Ruiz & Pavon for this species, placing in its synonymy *Piper serpens* Sw., with a question. Britton and Wilson (Sci. Surv. Porto Rico Virgin Is. 5: 224. 1924) and more recent authors have used the nomenclature given above.

Piper scandens Sw. (Prodr. 16. 1788) has been used incorrectly as the basionym in some annotations. Trelease and Yuncker (Piperaceae North. S. Am. 2: 587. 1950) reported that *Piper scandens* Sw. is to be referred to *Peperomia glabella*.

DISTRIBUTION: St. Eustatius, St. Kitts, St. Lucia, St. Vincent, Grenada.

Peperomia smithiana C. DC. in Urb. Symb. Antill. 3: 235. 1902. TYPE: St. Vincent, *H. H. & G. W. Smith 1645b*.

Peperomia diaphanoides Dahlst. var. *vincentensis* Dahlst. Kongl. Sv. Vet. Akad. Handl. 33(2): 114. 1900. TYPE: St. Vincent, *H. H. & G. W. Smith 1645* (Herb. Krug & Urb.).

De Candolle did not indicate the location of the holotype in the original description. The specimen in the Kew herbarium so marked is numbered "Smith 1646." The type locality is Morne Garu not "Morne Gavon" as published.

The type of *Peperomia diaphanoides* var. *vincentensis* Dahlst. was not located in Berlin. The specimen of the same number at Kew does not agree with the description given by Dahlstedt. The distinctions to separate *P. smithiana* and *P. diaphanoides* var. *vincentensis*, used in the key to the Antillean taxa by De Candolle (Urb. Symb. Antill. 3: 219. 1902), are obviously based on the published descriptions and not on the specimens. The two taxa cannot be separated as De Candolle suggested, and are here considered identical.

DISTRIBUTION: St. Lucia, St. Vincent.

Peperomia tenella (Sw.) A. Dietr. in L. Sp. Pl. ed. 6. 1: 153. 1831.

Piper tenellum Sw. Prodr. 16. 1788. TYPE: Jamaica, *Swartz*.
Peperomia tenella var. *epiphytica* Trel. in Stehlé, Bull. Soc. Bot. Fr. 83: 628. 1936 (*nomen nudum*); Stehlé & Quentin, Fl. Guad. Depend. 2(2): 41. 1948. TYPE: Guadeloupe, *Duss 3248* (US 846773).

DISTRIBUTION: Guadeloupe, Dominica.

Peperomia trifolia (L.) A. Dietr. in L. Sp. Pl. ed. 6. 1: 173. 1831.

Piper trifolia L. Sp. Pl. 1: 30. 1753. TYPE: Martinique ex Yuncker, Plumier plate.
Peperomia balbisii Dahlst. in Duss, Fl. Phan. Antill. Fr. 174. 1897. TYPE: Guadeloupe, *Duss 2566*; Kongl. Sv. Vet. Akad. Handl. 33(2): 164. 1900. SYNTYPES: Guadeloupe, *Balbis* (Herb. Spreng.), *Duss 2566, 2836*.
Peperomia caespitiformans Trel., in Stehlé & Quentin, Fl. Guad. Depend. 2(1): 3. 1937 (*nomen nudum*). TYPE: Guadeloupe, *H. & M. Stehlé 1753*.
Peperomia caespitiformis Trel. Herbarium spelling, never published.
Peperomia coespitiformans Trel. in Stehlé, Fl. Descr. Antill. Fr. 2(1): 120. 1940; Stehlé & Quentin, Fl. Guad. Depend. 2(2): 53. 1948.
Peperomia fimbriata Miq. Syst. Pip. 178. 1843. TYPE: St. Lucia, *Anderson* (Herb. Deless.).
Peperomia obovata C. DC. in Urb. Symb. Antill. 3: 269. 1902.
Piper obovatum Vahl, Eclog. 1: 5. 1796, not Ruiz & Pavon 1794. TYPE: Montserrat, *Ryan*.
Peperomia obversa (Vahl) Dietr. in L. Sp. Pl. ed. 6. 1: 173. 1831.
Piper obversum Vahl, Enum. 1: 354. 1804 (illegit.).
Peperomia ovalifolia Hook. Exot. Fl. 3: 165. 1827. TYPE: cultivated plant from St. Vincent, *Guilding*.

Peperomia trifolia var. *balbisii*. Herbarium name, never published.
Peperomia trifolia forma *genuina* Stehlé in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 48. *f. 5*. 1948 (illegit.).
Peperomia trifolia forma *obovalifolia* Stehlé in Stehlé & Quentin, *Ibid. f. 2.* (illegit.). TYPE: No specimens cited.
Peperomia trifolia forma *suborbiculata* Stehlé in Stehlé & Quentin, Fl. Guad. Depend. 2(2): 48. *f. 1*. 1948 (illegit.). TYPE: No specimens cited.

Several authors have used the citation *Peperomia trifolia* (Sw.) A. Dietr., but the basionym is *Piper trifolia L.* The formae Stehlé listed and illustrated have no descriptive text, nor specimen citations. The combinations must be considered illegitimate.

Two specimens of the type number of *Peperomia caespitiformans* Trel. were studied and neither agreed with the descriptions given by Stehlé. There is no evidence for the "pseudocupule" and the leaves are frequently ternate.

Hooker described *Peperomia ovalifolia*, citing specimens collected by Guilding from St. Vincent and Imray from Santo Domingo. Imray collected only on Dominica, to my knowledge, which must surely be the island intended.

Dahlstedt (Kongl. Sv. Vet. Akad. Handl. 33(2): 167. 1900) emended De Candolle's description of *Peperomia grisebachii* and included in its distribution plants from Cuba and Montserrat, the latter being a Ryan specimen, the type of *P. obovatum* Vahl.

Leon and Alain (Fl. Cuba 2: 24. 1951) regard *P. grisebachii* as endemic to Cuba.

DISTRIBUTION: Nevis, Montserrat, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent, Grenada.

Peperomia truncigaudens C. DC. in Urb. Symb. Antill. 3: 237. 1902. TYPE: Guadeloupe, *Duss 3616b*.

This is one of the few species of the Lesser Antilles with opposite leaves. I have seen but one specimen "Duss 3616" in the herbarium of the New York Botanical Garden. De Candolle cited "Duss 3616b" as the only collection in the original description. I have been unable to locate a citation for a Duss collection of the same number without the sub "b" in De Candolle's treatment of the Piperaceae in Symbolae Antillanae. The NY specimen agrees with the original diagnosis.

DISTRIBUTION: Guadeloupe, known only from the type collection.

Peperomia urocarpa Fisch. & Mey. Index Sem. Petrop. 4: 42, no. 1577. 1837. TYPE: Cultivated plant in Europe, from Brazil. No specimens cited.

Peperomia davisii Britton, Torreya 2: 43. 1902. TYPE: St. Kitts, *Britton & Cowell 506* (NY).
Peperomia fumeana Stehlé & Trel. in Stehlé, Bull. Soc. Bot. Fr. 84: 408. 1937. TYPE: Guadeloupe, *Stehlé 340*.

Peperomia fumeana var. *genuina* Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 51, 52. 1948. TYPE: Guadeloupe, *Stehlé 340*.

Peperomia fumeana var. *Stehlei* Trel. in Stehlé, Bull. Soc. Bot. Fr. **84**: 408. 1937; Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 51, 52. 1948. TYPE: Guadeloupe, *Stehlé 370*.

Peperomia hederacea Miq. in Mart. Fl. Bras. **4**(1): 20. 1853 (illegit.), superfluous.

Acrocarpidium majus Miq. Syst. Pip. 60. 1843. SYNTYPES: *Gaudichaud* (Herb. Deless.), *Sellow 1204* (B).

Peperomia major (Miq.) C. DC. in Prodr. **16**(1): 432. 1869.

Peperomia negotiosa Trel. in Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 60. 1948. TYPE: Guadeloupe, *H. & M. Stehlé & Quentin 1613*.

This species has never been typified. The original description does not refer to a collection, and there is no indication in the work of subsequent authors that one exists. I have not seen specimens from cultivation in Europe.

Britton regarded *Peperomia davisii* as endemic to St. Kitts. The original collection, clonal propagations of it, and additional collections have been studied, and all are indistinguishable from material which has been called *P. urocarpa*.

In 1935 Stehlé (Fl. Guad. Depend. **1**: 206) cited "Peperomia fumeana nov. sp." with a brief invalid description in French. In the addenda and errata of the same volume (page 268) he stated "Au lieu de Peperomia fumeana lire Peperomia davisii Britton." On page 226 he cited again "Peperomia fumeana Trel." which in the errata (page 269) he suggested be deleted. However, Stehlé did publish validly *Peperomia fumeana* (Bull. Soc. Bot. Fr. **84**: 408. 1937), adding the comment that it is intermediate between *P. urocarpa* and *P. davisii*. In 1948 Stehlé illustrated *Peperomia fumeana* Stehlé & Trelease (Stehlé & Quentin, Fl. Guad. Depend. **2**(2): 49.) and cited in its synonymy "P. urocarpa Fisch. & Mey. pro insula Guad." and "P. inophylla Griseb. pro insula Guad."

DISTRIBUTION: Saba, St. Kitts, Guadeloupe.

Peperomia vincentiana Miq. in Hook. Jour. Bot. **4**: 415. 1845. TYPE: St. Vincent, *Guilding* (K).

DISTRIBUTION: St. Vincent, Grenada.

Piper L. Sp. Pl. **1**: 28. 1753.

TYPE SPECIES: *Piper nigrum* L. (Britt. & Wils. Sci. Surv. Porto Rico Virgin Is. **5**: 219. 1924).

Piper aduncum L. Sp. Pl. **1**: 29. 1753. TYPE: Jamaica.

Piper hebecarpum C. DC. in Urb. Symb. Antill. **3**: 183. 1902. SYNTYPES: Martinique, *Duss 18, 1334*.

Piper martinicense C. DC. in Briquet, Ann. Jard. Bot. Genève **2**: 259. 1898. TYPE: Martinique, *Hahn 1143* (G–DC).

Piper martinicense var. *genuinum* Stehlé, Fl. Descr. Antill. Fr. 2(1): 106. 1940.

Piper martinicense var. *montis-pilati* C. DC. in Urb. Symb. Antill. 3: 196. 1902. SYNTYPES: Martinique, *Hahn 267*, *Duss 4472*.

Piper stehleorum Trel. in Stehlé, Fl. Descr. Antill. Fr. 2(1): 100. 1940. TYPE: Guadeloupe, *H. & M. Stehlé 3257* (ILL).

Piper subrectinerve C. DC. in Urb. Symb. Antill. 3: 180. 1902. SYNTYPES: St. Vincent, *Eggers 6924, 6736*.

To my knowledge no lectotype has been selected for this species. Linnaeus cited three references, *Piper longum* etc. Sloan. hist. 1: 135. *t. 87, f. 2*. 1696; *Saururus foliis ovato-lanceolatis*, etc. Hort. cliff. 140, Roy. lugdb. 8; and *Saururus arborescens* etc. Plum. amer. 58. *t. 77*. An appropriate specimen probably can be found in the Clifford or Sloane herbaria.

Piper hebecarpum C. DC. was distinguished from *P. aduncum* by De Candolle on the basis of the shape of the leaf base. Two collections were cited, *Duss 18* and *Duss 1334*. I have seen two collections of this where both numbers appear on one label, one being "18, 1334" and the other "1334, 18." De Candolle did not recognize *P. aduncum* as occurring on Martinique. The Duss collections are within the range of variation of *P. aduncum* on adjacent islands.

Stehlé supplied a footnote to the original description of *Piper stehleorum* comparing this species with *P. aduncum* of Grenada and *P. hebecarpum* of Martinique. The syntypes examined do not differ significantly from material of the wide-ranging *P. aduncum*. Trelease had annotated one of the syntypes, *Stehlé 3257*, in the herbarium at Illinois as the "type."

Piper subrectinerve C. DC. is a representative of *P. aduncum* on the island of St. Vincent. Sufficient additional collections from the area of the type collection allow this species to be assigned here in synonymy.

DISTRIBUTION: Guadeloupe, Dominica, Martinique, St. Vincent, Grenada.

Piper aequale Vahl, Eclog. 1: 4. *t. 3*. 1796. TYPE: Montserrat, *Ryan* (C).

Piper aequale forma *acutispicum* Trel. in Stehlé, Fl. Descr. Antill. Fr. 2(1): 82. 1940. TYPE: Martinique, *Stehlé 3382* (ILL).

Piper aequale var. *dussii* C. DC. in Urb. Symb. Antill. 3: 204. 1902. TYPE: Guadeloupe, *Duss 2565* (US).

Piper aequale var. *lasiocarpum* C. DC. in Urb. *Ibid.* SYNTYPES: Martinique and St. Vincent.

Piper aequale var. *latifolium* Stehlé, Fl. Descr. Antill. Fr. 2(1): 82. 1940 (*nomen nudum*).

Piper aequale var. *latum* Trel. in Stehlé, Bull. Soc. Bot. Fr. 83: 627. 1926 (*nomen nudum*); Fl. Descr. Antill. Fr. 2(1): 81. *pl. 4, f. 1*. 1940. TYPE: Guadeloupe, *H. & M. Stehlé 362*.

Piper aequale var. *ovalifolium* C. DC. Prodr. 16(1): 311. 1869. TYPE: Trinidad, *Sieber 192*.

Piper aequale var. *typicum* Stehlé, Fl. Descr. Antill. Fr. 2(1): 80. 1940.

Piper aequale var. *variifolium* Trel. in Stehlé, *Ibid.* 81. TYPE: Guadeloupe, *H. & M. Stehlé 3394* (holotype, ILL).
Piper dominicanum C. DC. in Urb. Symb. Antill. **3:** 205. 1902. TYPE: Dominica, *Duss 19.*
Piper hahnii C. DC. Linnaea **37:** 354. 1871–3 as to description, not as to holotype cited.

The subspecific taxa described by the several authors are based on variations of leaf shape. These names may be applied to single herbarium specimens but the several leaf forms can be found on single plants when examined in the field. *Piper aequale* var. *dussii* is supposed to be a climbing plant; however, the label data state the plant is "accidentally more or less climbing."

Piper dominicanum C. DC. is based on a collection from Dominica, *Duss 19*, but no herbarium location is given. Such a specimen could not be located in the De Candolle herbarium. A specimen, *Duss 19* (NY), is also cited from Martinique as a syntype of *Piper aequale* var. *lasiocarpum*. De Candolle distinguished *Piper dominicanum* from *Piper aequale* only on the size of the leaf. Many of the recent collections of Hodge from Dominica approach the size noted by De Candolle.

DISTRIBUTION: Montserrat, St. Kitts, Nevis, Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent.

Piper amalago L. Sp. Pl. 1: 29. 1753.

Piper amalago var. *medium* (Jacq.) Yuncker, Brittonia **14:** 189. 1962.
Piper fishlockii Trel. Herbarium name never published. TYPE: Tortola, *Fishlock 149.*
Piper mac-intoshii Trel. in Stehlé, Carib. For. 6, Suppl. 386. 1945 (*nomen nudum*); Candollea **10:** 286. 1946. TYPE: Barbados, *MacIntosh 3001* (NY).
Piper plantagineum Lam. Tab. Encycl. Ill. **1:** 80. 1791. TYPE: Hispaniola.
Enckea sieberi Miq. Syst. Pip. 358. 1843. SYNTYPES: Trinidad, St. Croix.
Piper sieberi C. DC. Prodr. **16**(1): 248. 1869.

Yuncker (Brittonia **14:** 189. 1962) studied material of *Piper amalago* and *P. medium* throughout the range, and stated that they "are very closely related forms of what appears to be the same species." He concluded "that *P. medium* should be regarded as having at most varietal status," to which he assigned it. Subsequently Burger (Fieldiana Bot. **35:** 99. 1971) and Adams (Fl. Jam. 211. 1972) have accepted *P. amalago* as the correct name for plants of Costa Rica and Jamaica, respectively.

The typification of this species raises some question of the lectotype. Miquel (Syst. Pip. 258. 1843) noted that Linnaeus (Sp. Pl. 1: 29. 1753) included three references in the protologue and suggested that the name be expunged from botanical catalogues. De Candolle (Prodr. **16**(1): 248. 1869) restricted *Piper amalago* L. to the synonyms of Sloane and Plukenet of the second edition of Species Plantarum (p. 41) although he cited the Clifford reference among the examples listed. In his treatment of the Piperaceae for the Antilles (Urb. Symb. Antill. **3:** 167.

1902), C. de Candolle cited "Sp. Pl. ed. 1" without qualification, but ed. 2 "*quoad syn. Sloane.*" It appears that *Piper longum* etc., Sloane hist. 1. p. 134. *t. 87, f. 1*, is to be considered the type, and a specimen of this may exist in the British Museum.

Piper medium Jacq. (Ic. Pl. Rar. 1: *2. t. 8.* 1781) is illustrated in its original publication; and for most species Jacquin described, the illustration serves as the type. However, in the Illinois herbarium there is a sheet, a mixed collection, which is labeled "Piper medium Jacq., ex herb. Endlicher, Wien cult., in horte Schönbrunn." Trelease has annotated the one fertile fragment, "I take this to be equivalent to a co-type of P. medium." The other two fragments on the same sheet are sterile and obviously different. They were not identified by Trelease, and are not representative of any species in the Lesser Antilles. The "Schönbrunn" specimen has a very slight pubescence on the petioles.

Trelease examined the Lamarck Herbarium material and found three specimens labeled "Piper plantagineum." One of these, a specimen of M. Bodier, came from Guadeloupe and he reported it to be *P. sieberi.* The other two sheets are extraterritorial.

DISTRIBUTION: Montserrat, Antigua, Guadeloupe, Martinique, Marie Galante, St. Vincent.

Piper andersonii C. DC. in Urb. Symb. Antill. 3: 194. 1902.

No material labeled as this species has been located. De Candolle cited the type as St. Lucia, *Anderson*, herb. Forsyth nunc Kew et Krug & Urb. A request to the Forsyth Herbarium at Cambridge, England, produced three possible specimens, two of them collected by Anderson in St. Vincent in 1790, both of which are *Piper aequale* Vahl. The third specimen, collected in St. Lucia in 1785, had only the letter "B" for a collector, and this was *Piper amalago* L. A specimen loaned from the Kew Herbarium was collected by Anderson on St. Lucia. The printed label indicates it is a part of the Herb. Forsyth purchased in 1835. Only the genus name, *Piper*, is written on the label. An annotation by "R.A.R." suggests *Piper aequale* Vahl for this specimen and I agree.

De Candolle's description, especially the character of a vaginate petiole given in the key, suggests this species to be *Piper glabrescens.* Although De Candolle compared his species with *Piper citrifolium* Lam. he placed *Piper andersonii* in the text next to his *Piper macrophyllum* which is *Piper glabrescens.* Stehlé (Bull. Soc. Bot. Fr. **85**: 576. 1938) stated that Trelease had concluded his *Piper nottirbanum* and *Piper andersonii* DC. were very similar.

In spite of my inability to locate an authentic specimen, I have assigned *Piper andersonii* to the synonymy of *Piper glabrescens* on the basis of the published description.

Piper arboreum Aubl. Pl. Guian. 1: 23. 1775.

A collection by *Hahn 1216* (GH) is referred to this species. It was

made in the Jardin des Plantes, Martinique, in 1871, and remained unidentified for a century.

Piper betle L. Sp. Pl. 1: 28. 1753.

This species is reported from cultivation on the islands of Guadeloupe, Martinique, and St. Vincent by De Candolle (Urb. Symb. Antill. 3: 214. 1902). A few specimens so identified have been seen. The collection of *H. H. & G. W. Smith 1641* from St. Vincent (GH) is sterile and may well be this species. The specimen *Duss 2833* cited by De Candolle (Urb. Symb. Antill. 3: 214. 1902) and Stehlé (Fl. Descr. Antill. Fr. 2(1): 76. 1940) is in flowering condition, but seems to be assigned more properly to *Piper nigrum*. De Candolle did not examine any material but accepted Duss's identification. A specimen of *Duss 2833* was seen in the herbarium of the New York Botanical Garden.

Piper dilatatum L. C. Rich. Act. Hist. Nat. Paris 1: 105. 1792. TYPE: Area not specified.

Piper dilatatum var. *broadwayi* Trel. in Stehlé, Bull. Soc. Bot. Fr. 83: 627. 1936 (*nomen nudum*). TYPE: Guadeloupe, *Trelease 69* (ILL).

Piper dilatatum forma *calcicolens* Stehlé, Fl. Descr. Antill. Fr. 2(1): 93. 1940. TYPE: Guadeloupe, *H. & M. Stehlé 1143.*

Piper dilatatum forma *diamantense* Trel. in Stehlé, *Ibid.* 96. SYNTYPES: Martinique. LECTOTYPE: *H. & M. Stehlé 3215* (ILL).

Piper dilatatum forma *diversifolium* Stehlé, *Ibid.* 94. SYNTYPES.

Piper dilatatum forma *magnifolium* Stehlé. *Ibid.* 92. SYNTYPES.

Piper dilatatum forma *medium* Stehlé, *Ibid.* 93. SYNTYPES.

Piper dilatatum forma *naris-fractae* Stehlé, *Ibid.* 95. TYPE: Guadeloupe, *Duss 4174.*

Piper dilatatum forma *vauclinii* Trel. in Stehlé, *Ibid.* 94. TYPE: Martinique. LECTOTYPE: *H. & M. Stehlé 3208* (ILL).

Piper dilatatum var. *vincentianum* C. DC. in Urb. Symb. Antill. 3: 198. 1902. SYNTYPES.

Piper antiguanum Trel. Herbarium name, never published. TYPE: Antigua, *Rose, Fitch & Russell 3323* (NY).

Piper balbisianum C. DC. in Urb. Symb. Antill. 3: 205. 1902. TYPE: Guadeloupe, *Bertero* (B).

Piper boxii Trel. ined. TYPE: Antigua, *Box 829.*

Piper calciseligens Trel. in Stehlé, Bull. Soc. Bot. Fr. 84: 411. 1937 (*nomen nudum*); Fl. Descr. Antill. Fr. 2(1): 97. 1940. TYPE: Guadeloupe, *H. & M. Stehlé 1340.*

Piper eggersii C. DC. in Urb. Symb. Antill. 3: 200. 1902. TYPE: Barbados, *Eggers 7157.*

Piper naris-fractae Trel. in Stehlé, Fl. Descr. Antill. Fr. 2(1): 95. 1940 (invalid). TYPE: Guadeloupe, *Duss 4174* (G).

Piper readii C. DC. in Urb. Symb. Antill. 3: 197. 1902. TYPE: Guadeloupe, *Read.*

Piper shaferi Trel. ined. TYPE: Montserrat, *Shafer 252.*

Schilleria ulmifolia Kunth, Linnaea 13: 698. 1839. TYPE: Martinique, *Sieber 7.*

Piper dilatatum has been recognized as a species with considerable morphological variation. Stehlé (Fl. Descr. Antill. Fr. 2(1): 91. 1940) discussed the occurrence of juvenile as well as adult leaf forms; and the variation in the form of the leaves as well as in their pubescence and texture both in fresh condition and after drying. Nevertheless, he concluded that seven forms are to be recognized. The publication of these names was not in accordance with the International Code of Botanical Nomenclature, and the epithets are illegitimate.

Piper readii was described by De Candolle with a single collection by Read cited from Guadeloupe. No indication was given of the location of the type specimen, and such a collection could not be located by the staff in the herbarium at Geneva. Two specimens collected by Read are in the herbarium at the Philadelphia Academy, one of which, labeled "Piper capense" agrees with the published description. This specimen should be referred to *Piper dilatatum*.

De Candolle suggested in the original description of *Piper eggersii* that the style was persistent in the fruit producing a pointed drupe. An examination of two isotypes does not reveal this characteristic.

DISTRIBUTION: Saba, St. Eustatius, Antigua, Montserrat, St. Kitts, Nevis, Guadeloupe, Dominica, Martinique, Marie Galante, St. Lucia, St. Vincent, Grenada, Grenadines, Barbados.

Piper dussii C. DC. in Urb. Symb. Antill. 3: 190. 1902. TYPE: Guadeloupe, *Duss 2835*.

Piper dussii forma *Branquecanum* Stehlé, Fl. Descr. Antill. Fr. 2(1): 111. 1940. TYPE: Guadeloupe, *R. P. Branquec & H. & M. Stehlé 974*.
Piper dussii forma *dogueanum* Stehlé, *Ibid.* TYPE: Martinique, *H. & M. Stehlé 2320*.
Piper dussii forma *quentinianum* Stehlé, *Ibid.* 112. TYPE: Guadeloupe, SYNTYPES.
Piper dussii forma *scabridum* (C. DC.) Stehlé, *Ibid.* 113. TYPE: Martinique, *Duss 1337*.
Piper dussii var. *scabridum* C. DC. in Urb. Symb. Antill. 3: 191. 1902. TYPE: Martinique, *Duss 1337*.
Piper broadwayi C. DC. *Ibid.* SYNTYPES: Guadeloupe, Dominica, Grenada.
Piper hahnii C. DC. Linnaea 37: 354. 1871–3 as to holotype, *Hahn 263*.
Piper latilimbum C. DC. in Urb. Symb. Antill. 5: 295. 1907. TYPE: Guadeloupe, *Duss 4079*.

Stehlé (Fl. Descr. Antill. Fr. 2(1): 110. 1940) commented that plants of *Piper dussii* exhibited different aspects between juvenile and mature conditions. He reported the transplanting of specimens into a trial garden where different leaf shapes, sizes, and degrees of scabridity permitted the recognition of the several forms. When examined over the range of the species, these minor variations are not significant.

De Candolle cited three collections, *Krauss n. 1818* from Guadeloupe; *Ramage s.n.* from Dominica; and *Broadway 1480* from Grenada in the

original description of *P. broadwayi*. I have photographs of the first two collections which are referred to *Piper dussii*.

Stehlé (Fl. Descr. Antill. Fr. 2(1): 96. 1940) cited "Krauss s.n. 1818, in herb. C. de Candolle à Genève" among the specimens he considered to be *Piper dilatatum* forma *diamentense* Trel. Krauss collected in Guadeloupe prior to 1838 (Urb. Symb. Antill. 3: 69. 1902) and it is not clear if "1818" is the date or the collector's number. Two Krauss specimens are in the Prodromus herbarium, both annotated *P. broadwayi* by De Candolle.

Piper latilimbum C. DC. was distinguished from *P. dussii* by De Candolle by its larger leaves scabrous above, and the intramedullary bundles two-seriate. Independent work on the vascular structure of the stem, node and petiole of species of *Piper* indicates that the number of series of medullary bundles depends on the position of the section taken in relation to the node. A section from the middle of the internode may be one-seriate, whereupon the bundles branch into two series prior to the departure of the external series into the petiole. The number of series of intramedullary bundles is not a distinctive characteristic in the species of *Piper* which have been examined.

The type collection of *Piper latilimbum* (*Duss 4079*) is mixed. Two sheets referable here have fruit oblong in outline. One sheet (NY) having the fruit triangular in outline is referred to *Piper dilatatum*.

Trelease had annotated several herbarium specimens as "Piper dussii latilimbum" and "Piper dussii broadwayi," suggesting he, too, felt *P. latilimbum* and *P. broadwayi* were not distinctive species. One specimen labeled *Piper dussii broadwayi* is *H. & M. Stehlé 363* cited as a syntype of *Piper dussii* forma *quentinianum* Stehlé.

DISTRIBUTION: Nevis, Montserrat, Antigua, Guadeloupe, Dominica, Martinique, Marie Galante, St. Lucia, St. Vincent, Grenadines.

Piper glabrescens (Miq.) DC. Prodr. 16(1): 271. 1869.

Artanthe glabrescens Miq. in Hook. Lond. Jour. Bot. 4: 461. 1845. TYPE: British Guiana, *Parker* (K).

Piper glabrescens var. *venezuelense* (C. DC.) Trel. & Yuncker, Piperaceae North. S. Am. 1: 215. 1950.

Piper andersonii C. DC. in Urb. Symb. Antill. 3: 194. 1902. TYPE: St. Lucia, *Anderson*.

Piper macrophyllum H.B.K. Nov. Gen. & Sp. 1: 39. 1816, not Sw. 1788.

Piper nottirbanum Trel. in Stehlé, Bull. Soc. Bot. Fr. 85: 576. 1938. TYPE: Guadeloupe, *H. & M. Stehlé 1748*.

Piper quentini Trel. in Stehlé, *Ibid.* 84: 410. 1937 (*nomen nudum*); Candollea 8: 74. 1940 [as *Quentinii*]. TYPE: Guadeloupe.

Piper treleasanum Brit. & Wils. Sci. Surv. Porto Rico Virgin Is. 5: 222. 1924; Stehlé, Bull. Soc. Bot. Fr. 83: 627. 1936.

Piper venezuelense C. DC. Seem. Jour. Bot. 4: 216. 1866. TYPE: Venezuela, *Fendler 2572*.

De Candolle (Urb. Symb. Antill. 3: 194. 1902) accepted the name *Piper macrophyllum* Kunth for this species by excluding Swartz's plant from Kunth's circumscription and assigning the name *P. macrophyllum* Sw. to the synonymy of his *P. geniculatum* (= *P. arboreum*). Britton and Wilson (Sci. Surv. Porto Rico Virgin Is. 5: 222. 1924) supplied a new name for the species honoring William Trelease as *Piper treleasanum*.

Stehlé (Bull. Soc. Bot. Fr. 85: 576. 1938) proposed "**Piper nottirbanum** Trel. nov. spec." for "*Piper macrophyllum* Kunth et auct. mult. p.p. *Piper treleasanum* Brit. & Wils., p.p. (pour les Iles Caraïbes)," restricting the species to Martinique and Guadeloupe, and possibly St. Vincent, and cited *Stehlé 1748* as the type. He recognized the publication was invalid, and in 1940 (Fl. Descr. Antill. Fr. 2(1): 103. 1940) supplied a Latin description and cited the same type. The "type specimen" (ILL) consists of a single leaf and a three-inch piece of stem, but it still shows the characteristic stipular scars, pubescence, and glands of *P. glabrescens*.

A comparable and equally confusing situation involves *Piper quentinii*, which was published without description in 1937 but with a collection "Stehlé 1337" selected as the type. The valid description, published in Latin in 1940, is attributed to Trelease, and the type is indicated as *R. P. Quentin & H. Stehlé 1337*. The holotype at Illinois is designated in Trelease's handwriting as Father Quentin "1737." Also in 1940 (Fl. Descr. Antill. Fr. 2(1): 87. 1940), Stehlé cited "Quentin & Stehlé 1237." Neither of the type collections (ILL, NY) agrees with the illustration published by Stehlé (Fl. Descr. Antill. Fr. 2(1): 86. 1940) and both are sterile, consisting of very poorly preserved leaves. However, they can be referred to *Piper glabrescens* without question.

In their treatment of the Piperaceae of Northern South America (p. 215. *f. 178*. 1950) Trelease and Yuncker appear to have placed, for the first time, *Piper macrophyllum* H.B.K. and *P. treleasanum* Brit. & Wils. in the synonymy of *P. glabrescens* (Miq.) C. DC. However, they recognized also variety *venezuelense* on the basis of its pubescence. Yuncker annotated several collections from St. Vincent as this variety, yet the pubescence characteristic is to be found in many specimens cited by them under the species.

DISTRIBUTION: Guadeloupe, Dominica, Martinique, St. Lucia, St. Vincent.

Piper hahnii C. DC. Linnaea 37: 354. 1871–3.

Piper hahnii was published by C. de Candolle on the basis of a single specimen, *Hahn 263*, in the De Candolle herbarium (G–DC). The species was not included in De Candolle's treatment of the Antillean Piperaceae published in Urban's Symbolae Antillanae (3: 159–274. 1902). Stehlé, however, accepted the species in his treatment of the Piperaceae (Fl. Descr. Antill. Fr. 2(1): 84. 1940) and commented in a footnote: "The name of Hahnii DC. is in the handwriting of C. de Candolle on two sheets

in his herbarium in Geneva, collected by L. Hahn, in Martinique in 1867. The two specimens bear the same number *262* (sic), on one of them is inscribed 'Piper Hahnii C. DC. 1896,' and on the other 'Piper Hahnii C. DC. = Piper aequale Vahl, C. DC. 1907.' In his study of the Piperaceae of the Antilles, in Urb. Symb. Antill. 3: 1902, the species is not given as a valid binomial or as an invalid synonym, and the number 262 of Hahn is not cited in the enumeration of Antillean specimens of *Piper aequale* of Vahl or of its numerous varieties. In 'Piperacearum clavis analytica,' a posthumous work of C. de Candolle published in 1923, in Candollea 1: 65–415, Index Generis Piper p. 251, *P. Hahnii* C. DC. is cited (in Roman characters) as a species he maintains. Thus, with Prof. Wm. Trelease we think that the species is valid and has affinities to Piper aequale."

A request for a photograph of the type specimen of *P. hahnii* in Geneva produced a photograph of the collection *Hahn 263* made in Martinique, which bears the annotation *P. broadwayi* C. DC. No photographs of the collection *Hahn 262* were supplied.

De Candolle's original description of *P. hahnii* is similar to that Vahl published for *Piper aequale*. The type specimen cited and represented by *Hahn 263* is clearly a different species.

Stehlé has distinguished *P. hahnii* from *P. aequale* in his key by the leaf base characters of rounded or subcordate for the former, and base acute or narrowed for the latter. The additional specimens cited by Stehlé and Trelease are all to be referred to *P. aequale*.

The disposition of *Piper hahnii*, therefore, is to refer the description to the synonymy of *Piper aequale* Vahl and the holotype to *Piper dussii* C. DC.

Piper hispidum Sw. Prodr. 15. 1788.

Piper scabrum Sw. Fl. Ind. Occ. **1:** 59. 1797, not Lam. 1791.
Piper hirsutum Sw. *Ibid.* 60. (illegit.).
Piper hispidum var. *plurinerve* C. DC. Urb. Symb. Antill. **3:** 188. 1902. TYPE: St. Vincent, syntypes.
Piper malanganum Trel. in Stehlé, Bull. Soc. Bot. Fr. **83:** 627. 1937 (*nomen nudum*); Candollea **8:** 75. 1940. TYPE: Guadeloupe, *Stehlé 338*.
Piper dussii forma *dugommierianum* Trel. in Stehlé, Bull. Soc. Bot. Fr. **84:** 411. 1937 (*nomen nudum*); Fl. Descr. Antill. Fr. **2**(1): 112. 1940. TYPE: Guadeloupe, *H. & M. Stehlé 1292*.

Until the recent work of Burger (Fieldiana Bot. **35:** 142, 175. 1971), *Piper hispidum* Sw. and *Piper scabrum* Sw. (not Lam.) were considered synonymous. Adams (Fl. Jamaica 212. 1972) continues such a treatment. Burger, however, found a distinguishing characteristic in the shoot apex, recognized *Piper hispidum* Sw., and accepted the name *Piper sanctifelicis* Trel. for *Piper scabrum* Sw. I have had great difficulty in applying the ligule characteristic Burger described to the vast majority of specimens from the Antilles, and even to those from Costa Rica that Burger annotated. Burger stated "*Piper hispidum* and its allies are taxonomically

the most difficult group of pipers in Costa Rica" and "*Piper hispidum* should be considered as no more than a first approximation in treating a very difficult group of plants." Regarding *Piper sancti-felicis* Trel., Burger stated: "The rigidity of botanical nomenclature does not permit the use of Swartz's *P. scabrum*; I am sure that there must be another name earlier than that of Trelease." Burger did not cite *Piper hirsutum* Sw., and, therefore, did not indicate whether he saw the type of this older name. I can suggest further that *Piper dussii* and the synonyms given under that species must also be considered by some future worker who examines the "*Piper hispidum* complex" on a broader geographic scale.

I am accepting *Piper hispidum* for a relatively few collections from the Lesser Antilles in which the leaves are scabrous above from stiff, ascending hairs generally parallel to the leaf surface and arising from enlarged leaf bases. The hairs are not persistent, but their swollen bases form the "scabrous" condition of the upper leaf surface. This material also is much more pubescent on the stem than is the material which has been accepted as *P. dussii*. *Piper dussii* tends to have larger leaves than *P. hispidum* in this treatment. It has been recognized that young plants of *Piper dussii* have much larger and broader leaves than do the mature plants. Comparable specimens are not available or assigned to *Piper hispidum*. The present treatment is not completely satisfactory, and much pan-Caribbean collection and study is needed to clarify not only this species complex but all of the Piperaceae.

Piper malanganum was published with the citation of two collections, *Stehlé 338* as the type and *Questel 1376*. I have seen the type but not the Questel collection. The specimen is poorly prepared and consists of aged and much riddled leaves. The species as represented by the type specimen is not distinct. It appears to be best assigned to the synonymy of *Piper hispidum*.

DISTRIBUTION: St. Kitts, Guadeloupe, Martinique, St. Vincent.

Piper nigrum L. Sp. Pl. 1: 28. 1753.

This species was introduced and cultivated at Camp Jacob on Guadeloupe, according to data on a specimen, *Duss 2832*, collected in 1893. The most recent collection is from the Botanical Garden in Roseau, Dominica, made in 1958 (*Proctor 17525*). These are the only records I have seen from the Lesser Antilles.

Piper reticulatum L. Sp. Pl. 1: 29. 1753. TYPE: Martinique.

Piper duchassaingii C. DC. Prodr. **16**(1): 251. 1869. TYPE: Guadeloupe, *Duchassaing*.
Discipiper reticulatum (L.) Trel. & Stehlé, Candollea **10**: 283. 1946.
Enckea smilacifolia Griseb. Fl. Brit. W. I. 169. 1860.

Linnaeus cited discordant elements in the protologue of this species in both Species Plantarum ed. 1. 1: 29 and ed. 2. 1: 41. De Candolle

(Prodr. 16(1): 295. 1869) limited the species to the Plumier reference (Pl. Amer. 57. *t. 75*. 1693) for a plant from Martinique.

Trelease and Stehlé defined the genus *Discipiper* with *Piper reticulatum* and *Piper nicoyanum* as the basionyms of the only two species. The presence of a disc at the base of the style persisting in the mature fruit was regarded as the distinguishing characteristic. Yuncker did not accept the genus in his treatment of the family in the Netherlands Antilles (Fl. Neth. Antill. 2: 73. 1966) and recognized *Piper reticulatum*. Burger (Fieldiana Bot. 35: 99, 172. 1971) did not cite the generic name *Discipiper* but recognized *Piper reticulatum* and cited *Piper nicoyanum* DC. in the synonymy of *Piper amalago*. He noted the "disc-like area around the stigmas" in the fruit of *P. reticulatum*, but he did not comment on its existence in his disposition of *P. nicoyanum*.

DISTRIBUTION: St. Eustatius, St. Kitts, Antigua, Montserrat, Guadeloupe, Dominica, Martinique, Marie Galante, St. Vincent.

Piper retrofractum Vahl, Enum. 1: 314. 1804.

This climbing heterophyllous species is represented in the Lesser Antilles by specimens collected by *H. & M. Stehlé* (*3251, 3572*), from a plant cultivated in the Jardin d'Essais of Tivoli, Martinique, in 1939.

Piper sanctum (Miq.) Schlecht. ex C. DC. Prodr. 16(1): 330. 1869.

Artanthe? sancta Miq. Linnaea 18: 714. 1844. TYPE: Mexico, *Schiede 105*.
Piper papantlense C. DC. Prodr. 16(1): 338. 1869. TYPE: Mexico, *Fischer 74*.

Piper papantlense C. DC. was attributed to the Lesser Antilles by De Candolle (Urb. Symb. Antill. 3: 212. 1902) on the basis of a specimen of a cultivated plant sent from Dominica to Kew by Imray. Three specimens are in the Kew herbarium, two having the annotation "Rec'd from Mr. Imray in 1877," but these were collected from the Kew Gardens on May 30, 1892. The third is a later collection dated April 1898. Mr. Peter Green of Kew kindly supplied the following information. "I have looked up Kew entry No. 284–77 and find that this consignment was, in fact, sent by Imray from Dominica and was received here on the 16 June 1877. It came in a Wardian case and from this I presume that the *Piper* was received as a living plant. It was not listed on arrival in the entry book with the other half dozen or so miscellaneous plants but the name was added subsequently. However, there is no reason to doubt that it was other than part of this consignment and there is a note in 1892 saying, 'Please send fruit when ripe'." No subsequent material from specimens growing in Dominica has been seen. Two of the sheets (K) are labeled respectively "Piper papantlense C. DC." and "Piper aff. P. papantlense." The specimens are comparable to recent material from Mexico annotated by Gómez-Pompa, who assigned the name *P. papantlense* to the synonymy of *Piper sanctum* (Edic. Inst. Méx. Rec. Nat. Renov. México 147. 1966).

Piper tuberculatum Jacq. Icon. Pl. Rar. 2(2): *pl. 211.* 1786.

The collection *Duss 2831* (NY) bears a label indicating this species was introduced and cultivated in several gardens at Basse Terre, Guadeloupe, in 1894. Stehlé (Fl. Descr. Antill. Fr. 2(1): 99. 1940) attributed this plant to "habitation La Jacinthe, jardin de Mazé." No modern collections have been seen.

Piper unguiculatum Ruiz & Pavon, Fl. Peruv. Chil. 1: 34. *pl. 57. f.b.* 1798.

Piper glaucescens Jacq. Eclog. 112. *pl. 76.* 1811.

The collection *Duss 4090* made in the botanical garden of Basse Terre, Guadeloupe, in 1902, was identified by C. de Candolle as *Piper unguiculatum*. An earlier collection from the same garden, *Duss 2833a*, was originally identified as "Piper recurvatum L.," apparently an unpublished name, and later annotated as *P. unguiculatum* by Trelease.

Specimens of this species have not been located in any herbarium. Trelease, in his treatment of the genus *Piper* for the Flora of Peru (Publ. Field Mus. Nat. Hist., Bot. 13: 248. 1936), cited the Ruiz and Pavon type and noted "Introduced into cultivation at Madrid by Ruiz & Pavon, and at present known only as cultivated in botanical gardens."

Sarcorhachis Trelease, Contr. U.S. Natl. Herb. 26: 16. 1927

TYPE SPECIES: *Piper incurvum* Sieber ex Schult.

Sarcorhachis incurva (Sieber ex Schult.) Trel. Contr. U.S. Natl. Herb. 26: 16. 1927.

Piper incurvum Sieber ex Schultes, L. Mant. Syst. Veg. 1: 238. 1822. TYPE: Guadeloupe, *Sieber 254.*

Piper guadeloupense C. DC. in Briq. Ann. Jard. Bot. Genève 2: 264. 1898. SYNTYPES from Guadeloupe, Dominica, Guiana.

Sarcorhachis incurva var. *stehlei* Trel. ex Stehlé, Bull. Soc. Bot. Fr. 83: 627. 1936 (*nomen nudum*); Fl. Descr. Antill. Fr. 2(1): 67. *pl. 2.* 1940. TYPE: Guadeloupe, syntypes.

Sarcorhachis incurva var. *treleasii* Stehlé, *Ibid.* TYPE: Guadeloupe, *H. & M. Stehlé, 1677.*

Sarcorhachis incurva var. *typica* Trel. in Stehlé, *Ibid.* 66. TYPE: Martinique, *Hahn 1303.*

Artanthe martinicae Miq. Syst. Pip. 413. 1843. TYPE: Martinique, *Sieber 254.*

The original generic description published by Trelease has been emended by Steyermark (Pittieria 3: 29–37. 1971) to acknowledge that the axillary spikes may be solitary or two and that the stigmas are four or five. Steyermark also concluded that the varieties described by Trelease and Stehlé cannot be distinguished from the typical material.

The basionym is credited either to Sieber ex Schultes or Sieber ex DC. (Prodr. 16(1): 294. 1869). In fact both are original descriptions, as is

that of *Artanthe martinicae* Miquel; all are based on the same collection, *Sieber 254*. Stehlé selected a different collection for the holotype of his var. *typica*, *Hahn 1303*, one of the syntypes cited in De Candolle's description of *Piper guadeloupense*.

FINDING LIST

The following list includes those names commonly assigned to specimens collected in the Lesser Antilles. It is not intended as a complete index to the epithets included in the text, nor to all the combinations which exist for the species. The names are followed by the equivalents accepted in this paper. The accepted species names are given with author citations in their proper alphabetical sequence. Names which are maintained appear in **boldface** type, names treated as synonyms are in *italics*.

Lepianthes
peltata (L.) Raf.

Peperomia
acuminata p.p. = **nigropunctata**
ajoupana = **nigropunctata**
allorgeana = **hirtella**
forma *genuina* = **hirtella**
forma *lata* = **hirtella**
forma *major* = **hirtella**
forma *minor* = **hirtella**
alpina q.v. = **myrtifolia**
auberyana = **myrtifolia**
balbisii = **trifolia**
balineorum = **nigropunctata**
balneolorum = **nigropunctata**
barthelemyana = **myrtifolia**
var. *genuina* = **myrtifolia**
var. *reducta* = **myrtifolia**
belangeri = **hirtella**
blanda p.p., q.v. = **questeliana**
boldinghii = **myrtifolia**
bracteiflora = **hirtella**
var. *stigmatifera* = **hirtella**
broadwayi = **myrtifolia**
caespitiformans = **trifolia**
caespitiformis = **trifolia**
caulibarbis = **glabella**
casimiri = **hirtella**
cataractaegaudens = **hirtella**
ciliata p.p., q.v. = **questeliana**
coespitiformans = **trifolia**
conulifera = **magnoliifolia**
var. *acutifolia* = **magnoliifolia**
var. *kerveganti* = **magnoliifolia**
var. *matoubana* = **magnoliifolia**
var. *stehleae* = **magnoliifolia**
var. *stehlei* = **magnoliifolia**
var. *tenuispica* = **magnoliifolia**
var. *tivoliana* = **magnoliifolia**
var. *typica* = **magnoliifolia**
cordifolia (Sw.) A. Dietr.
cuneata = **obtusifolia**
davisii = **urocarpa**
diaphanoides
var. *vincentensis* = **smithiana**
dissitiflora = **hirtella**
doleana = **myrtifolia**
dolosa = **myrtifolia**
dussii = **hirtella**
emarginella (Sw.) DC.
var. *exilis* = **emarginella**
evadens = **hirtella**
exilis = **emarginella**
fimbriata = **trifolia**
fumeana = **urocarpa**
var. *genuina* = **urocarpa**
var. *stehlei* = **urocarpa**
glabella (Sw.) A. Dietr.
var. *eustatiana* = **glabella**
var. *nervulosa* = **glabella**
glandulirostrea = **magnoliifolia**
var. *stehleae* = **magnoliifolia**
grisebachii p.p. = **trifolia**
guadaloupensis = **myrtifolia**
guildingianum = **serpens**
hahnii = **hirtella**
hederacea = **urocarpa**
herminieri = **hirtella**
var. *stigmatifera* = **hirtella**
hernandiifolia (Vahl) A. Dietr.
hirtella Miq.
hispidula (Sw.) Dietr. q.v.
houelmonte = **nigropunctata**

humilis = **questeliana**
var. *stehlei* = **questeliana**
imrayana = **rotundifolia**
langsdorfii p.p. = **questeliana**
magnoliifolia (Jacq.) Dietr.
major = **urocarpa**
martinicensis = **nigropunctata**
var. *almeana* = **nigropunctata**
var. *lata* = **nigropunctata**
myrtifolia (Vahl) A. Dietr.
var. *major* = **myrtifolia**
var. *typica* = **myrtifolia**
negotiosa = **urocarpa**
nigrescens = **nigropunctata**
nigropunctata Miq.
nummularifolia = **rotundifolia**
obovata = **trifolia**
obtusifolia (L.) Dietr.
forma *oblongifolia* = **obtusifolia**
obversum = **trifolia**
ovalifolia = **trifolia**
palpebrata = **nigropunctata**
var. *absalonia* = **nigropunctata**
var. *carbetensis* = **nigropunctata**
var. *lata* = **nigropunctata**
var. *major* = **nigropunctata**
var. *paniculata* = **nigropunctata**
var. *ramulosior* = **nigropunctata**
var. *typica* = **nigropunctata**
pellucida (L.) H.B.K.
var. *baileyana* = **pellucida**
persuccosa = **myrtifolia**
var. *benae* = **myrtifolia**
var. *bertautii* = **myrtifolia**
ponthieui = **hernandiifolia**
praestigiatrix = **magnoliifolia**
pustulatibacca = **magnoliifolia**
questeliana Stehlé & Trel.
reniformis = **serpens**
rotundifolia (L.) H.B.K.
var. *nummularifolia* = **rotundifolia**
var. *pilosior* = **rotundifolia**
rupertiana = **myrtifolia**
var. *genuina* = **myrtifolia**
var. *pinchonii* = **myrtifolia**
var. *rosetteana* = **myrtifolia**
sabae = **glabella**
scandens = **serpens**
serpens (Sw.) Loud.
smithiana C. DC.
stehleana = **nigropunctata**
var. *ajoupana* = **nigropunctata**
var. *balneolorum* = **nigropunctata**
var. *bourgesensis* = **nigropunctata**
var. *branqueci* = **nigropunctata**
var. *houelmonti* = **nigropunctata**
var. *praestigiatrix* = **nigropunctata**
var. *regretteana* = **nigropunctata**
var. *tardenaevifera* = **nigropunctata**
var. *typica* = **nigropunctata**
subbracteiflora = **hirtella**
subvillosa = **hirtella**
forma *candolleana* = **hirtella**
forma *dumauseana* = **hirtella**
tenella (Sw.) A. Dietr.
var. *epiphytica* = **tenella**
thionvilleana = **nigropunctata**
trifolia (L.) A. Dietr.
var. *balbisii* = **trifolia**
forma *genuina* = **trifolia**
forma *obovalifolia* = **trifolia**
forma *suborbiculata* = **trifolia**
truncigaudens C. DC.
urocarpa Fisch & Mey.
vanhuerckii = **myrtifolia**
vernouana = **rotundifolia**
vincentensis = **myrtifolia**
vincentiana Miq.
wilsonii = **nigropunctata**

Piper
aduncum L.
aequale Vahl
forma *acutispicum* = **aequale**
var. *dussii* = **aequale**
var. *lasiocarpum* = **aequale**
var. *latum* = **aequale**
var. *ovalifolium* = **aequale**
var. *typica* = **aequale**
amalago L.
var. *variifolium* = **aequale**
andersoni = **glabrescens**
antiguanum = **dilatatum**
arboreum Aubl.
balbisianum = **dilatatum**
betle L.
boxii = **dilatatum**
broadwayi = **dussii**
calciseligens = **dilatatum**
dilatatum L. C. Rich.
forma *calcicolens* = **dilatatum**
forma *diamentense* = **dilatatum**
forma *diversifolium* = **dilatatum**

forma *magnifolium* = **dilatatum**
forma *medium* = **dilatatum**
forma *naris-fractae* = **dilatatum**
forma *vauclinii* = **dilatatum**
var. *broadwayi* = **dilatatum**
var. *vincentianum* = **dilatatum**
dominicanum = **aequale**
duchassaingii = **reticulatum**
dussii C. DC.
forma *branquecanum* = **dussii**
forma *dogueanum* = **dussii**
forma *dugommierianum* = **hispidum**
forma *quentinianum* = **dussii**
forma *scabridum* = **dussii**
var. *dugommierianum* = **hispidum**
var. *scabrum* = **dussii**
eggersii = **dilatatum**
fishlockii = **amalago**
glabrescens (Miq.) DC.
var. *venezuelense* = **glabrescens**
guadaloupense = **Sarcorhachis incurva**
hahnii (description) q.v. = **aequale**
hahnii (holotype) = **dussii**
hebecarpum = **aduncum**
hirsutum = **hispidum**
hispidum Sw.
var. *magnifolium* = **hispidum**
var. *plurinerve* = **hispidum**
incurvum = **Sarcorhachis incurva**
latilimbum = **dussii**
mac-intoshii = **amalago**
macrophyllum Sw. = **arborescens**
macrophyllum H.B.K. = **glabrescens**
malanganum = **hispidum**
martinicense = **aduncum**
var. *montis-pilati* = **aduncum**
naris-fractae = **dilatatum**
nottirbanum = **glabrescens**
nigrum L.
papantlense = **sanctum**
peltatum = *Lepianthes peltatum*
plantagineum = **amalago**
quentini = **glabrescens**
readii = **dilatatum**
reticulatum L.
retrofractum Vahl
sanctum (Miq.) Schlecht.
scabrum Lam. = **aduncum**
scabrum Sw. = **hispidum**
shaferi = **dilatatum**
sieberi = **amalago**
stehleorum = **aduncum**
subrectinerve = **aduncum**
tuberculatum Jacq.
unguiculatum Ruiz & Pavon
verrucosum Sw. = **arboreum**
verrucosum Willd. = **dilatatum**

Pothomorphe
dussii = **Lepianthes peltata**
peltata = **Lepianthes peltata**

Sarcorhachis
incurva (Sieber ex Schultes) Trel.
var. *stehlei* = **incurva**
var. *treleasii* = **incurva**
var. *typica* = **incurva**

Schilleria ulmifolia = **Piper dilatatum**

ARNOLD ARBORETUM
HARVARD UNIVERSITY
CAMBRIDGE, MASSACHUSETTS 02138