

THE ANDEAN SPECIES OF PILEA

By ELLSWORTH P. KILLIP

INTRODUCTION

Pilea is by far the largest genus of Urticaceae. Weddell in his final monograph¹ of the family recognized 159 species as valid, about 50 of which were said to occur in the Andes of South America. That these species had a very limited range of distribution was indicated by the fact that more than 30 were known from only a single collection and that only 9 of the others were in any sense widely distributed in the Andean countries. Two, *P. microphylla* and *P. pubescens*, occurred throughout the American Tropics, and *P. hyalina* and *P. dendrophila* extended eastward in South America. In the 50 years following the publication of this monograph only 10 species were described from the Andean region.

Because of the large number of specimens of *Pilea* collected by expeditions to the Andes sponsored by the Smithsonian Institution, the New York Botanical Garden, the Gray Herbarium and the Arnold Arboretum of Harvard University, the Field Museum of Natural History, and the Academy of Natural Sciences, Philadelphia, which were submitted to me for identification but which could not be assigned to any known species, I began the preparation of a monograph of all the Andean species. This was completed in 1935 but unfortunately could not be printed in its entirety at that time. Instead, a greatly abridged paper was published,² which contained a key to all the Andean species, descriptions of 30 new ones, and a few changes of name and of rank. In this there was no opportunity to present descriptions of the earlier species or to discuss their synonymy. It therefore seems highly desirable that the preliminary survey be followed as soon as possible by this more extensive one.

As the present paper appears in the same volume of the Contributions from the United States National Herbarium as the first, there is little need to reproduce the key or to give diagnoses of the species which were there described as new. A slight alteration to the key is suggested in the discussion of *P. poeppigiana*; for two names in the key, *P. leptophylla* (species no. 55) and *P. macrophylla* (species no. 89), *P. fendleri* and *P. picta* should be substituted, respectively. In order to retain the numbering of the species used in the key I

¹ DC. Prodr. 16¹: 32-235. 1869.

² Contr. U. S. Nat. Herb. 26³: 367-394. 1936.

have given "a" numbers to the single species, *P. cushiensis*, described in the interim, and to the three species now newly proposed. Numerous transfers of specific names to *Adicea* by Kuntze are omitted from the synonymy.

In the preparation of this revision I have had the opportunity of examining nearly all the type specimens of the Andean species, photographs of which are deposited in the National Herbarium. I wish again to express my appreciation to those in charge of the herbaria I have consulted for the many courtesies extended. These herbaria are indicated thus in the citation of specimens:

- A, Arnold Arboretum of Harvard University.
- B, Botanisches Museum, Berlin-Dahlem.
- Bas, H. W. Bassler Herbarium, consulted at Iquitos, Peru; now on deposit at the New York Botanical Garden.
- BM, British Museum (Natural History).
- Bo, Boissier Herbarium, Geneva.
- Bog, Instituto de la Salle, Bogotá.
- Brux, Jardin de l'État, Brussels.
- BW, Willdenow Herbarium, Berlin-Dahlem.
- F, Field Museum of Natural History, Chicago.
- G, Gray Herbarium of Harvard University.
- Gen, Conservatoire et Jardin Botaniques, Geneva.
- Go, Goeldi Museum, Pará.
- HNC, Herbario Nacional de Colombia, Bogotá.
- K, Royal Botanic Gardens, Kew.
- Ma, Jardín Botánico, Madrid.
- Mo, Missouri Botanical Garden, St. Louis.
- P, Muséum d'Histoire Naturelle, Paris.
- Ph, Academy of Natural Sciences, Philadelphia.
- Pr, Národní Museum, Prague.
- S, Riksmuseet, Stockholm.
- US, United States National Museum.
- Ut, Rijks Universiteit, Utrecht.
- V, Naturhistorisches Museum, Vienna.
- Y, New York Botanical Garden.

SYSTEMATIC TREATMENT

PILEA Lindl.

PILEA Lindl. Coll. Bot. *pl.* 4. 1821.

ADICEA Raf. Anal. Nat. 179. 1815, hyponym.

Plants annual or perennial, herbaceous, sometimes suffrutescent, often succulent, repent, decumbent, or erect, monoecious or dioecious; stipules intra-axillary, connate, deciduous or persistent; leaves opposite (those of a pair equal or markedly unequal, similar or very dissimilar), usually petiolate, toothed or entire, trinerved, triplinerved, or rarely penninerved, usually bearing numerous fusiform, linear, punctiform, or rarely stellate cystoliths; flowers unisexual, in unisexual or androgynous clusters, these solitary or forming cymes or panicles; bracts small and deciduous, rarely large and subpersistent; staminate perianth 4-parted (rarely 2- or 3-parted), the stamens as many as the segments; pistillate perianth 3-parted, the middle segment usually much larger than the lateral segments; stigma sessile, penicillate; achene compressed.

I. MICROPHYLLAE

1. *Pilea microphylla* (L.) Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 296. 1851.

Parietaria microphylla L. Syst. Nat. ed. 10, 1308. 1759.

Urtica callitrichoides H. B. K. Nov. Gen. & Sp. 2: 40. 1817.

Pilea muscosa Lindl. Coll. Bot. pl. 4. 1821.

Pilea callitrichoides Kunth, Ind. Sem. Hort. Berol. 12. 1846.

Succulent herb, 4 to 30 cm high, glabrous throughout, variable in size and habit; leaves usually crowded, short-petioled, obtuse or subacute at apex, entire, those of a pair unequal, the larger prevailingly obovate, up to 10 mm long, the smaller orbicular or obovate-orbicular, up to 3 mm long, the upper surface transversely striate with linear cystoliths; plants monoecious, rarely dioecious, the flower clusters androgynous or unisexual, sessile or subsessile; achenes ovate, about 0.3 mm long.

DISTRIBUTION: Throughout the American Tropics from Mexico and southern Florida to Peru and northern Brazil, up to 2,000 meters altitude; often cultivated.

CURACAO: *Boldingh* 5648 (P).

VENEZUELA.

SUCRE: Cristóbal Colón, *Broadway* 9 (G, US, Y). Caripe, *Humboldt & Bonpland* (type of *Urtica callitrichoides*, B, P).

MONAGAS: Cerro de Turumiquire, *Tate* 351 (US).

MIRANDA: Las Motasas, *Allart* 185 (US).

FEDERAL DISTRICT: La Guayra, *Kuntze* 1328 (Y); *Gollmer* in 1853 (B).

Caracas, *Pittier* 9551 (G, Gen, US, Y); *Bailey & Bailey* 313 (US); *Ernst* in 1878 (V). El Valle, *Pittier* 11972 (Gen, US, Y).

ARAGUA: Colonia Tovar, *Fendler* 1240 (G, Gen, K, Ph). Maracay, *Cornelio* 132 (US).

MÉRIDA: Mérida, *Reed* 185 (US).

COLOMBIA.

MAGDALENA: Santa Marta, *H. H. Smith* 1460 (K, US, Y). Pueblo Viejo, *Seifríz* 317 (US). San Miguel, *Seifríz* 541a (Ph).

ATLÁNTICO: Barranquilla, *Elias* 564 (US).

BOLÍVAR: Cartagena, *Heriberto* 342 (US). Turbaco, *Killip & Smith* 14353 (G, US, Y), 14470 (G, US, Y).

HUILA: Neiva, *Rusby & Pennell* 458 (G, US, Y).

SANTANDER: Bucaramanga, *Killip & Smith* 16200 (G, US, Y), 16258 (G, US, Y).

CUNDINAMARCA: Nariño, *Pérez* 351 (US).

ANTIOQUIA: Medellín, *Archer* 1 (US), 2 (US), 690 (US), 770 (US); *Charetier* 65 (US).

EL CHOCÓ: Quibdó, *Archer* 1793 (US).

EL VALLE: Dagua, *Killip* 5439 (G, US, Y). Río Dagua, *André* 2517 (K). Cali, *André* 442 (K). Cascajal, *André* 3692 (F, G, K). Buga, *Dryander* 94 (B).

EL CAUCA: Olaya, *André* 2890 (F, G, K, Y). Río Quilcacé, *André* 2823 (K).

ECUADOR: *André* K722 (K).

GUAYAS: Guayaquil, *Mille* 20 (US), 93 (US).

CHIMBORAZO: *André* K723 (K). Pallatanga, *Sodiño* 153/17 (B).

LOS RÍOS: Guaduas, *Remy* in 1856 (P).

PERU: *Ruiz & Pavón* (B, Ma); *Poeppig* (B).

AMAZONAS: Chachapoyas, *Mathews* 3101 (G, Gen, K).

SAN MARTÍN: Tarapoto, *Spruce* 4028 (B, BM, Brux, G, K); *Ule* 6657 (B, Gen, Go, K); *L. Williams* 6071 (US). San Roque, *L. Williams* 7233 (US). Río Huallaga, *L. Williams* 4082 (US), 6662 (US). Zepelacio, *Klug* 3719 (US).

LORETO: Iquitos, *Killip & Smith* 27500 (US, Y). Puerto Melendez, *Tessmann* 4742 (B).

HUÁNUCO: Piedra Grande, *Macbride* 3690 (F, Gen, US). Cochero, *Poeppig* in 1830 (V).

JUNÍN: La Merced, *Killip & Smith* 24073 (F, US, Y). Paucartambo Valley, *Killip & Smith* 25329 (F, US, Y).

Numerous segregates of *P. microphylla* have been proposed, but nearly all of them appear to represent forms which the species assumes under different environmental conditions. These variations are chiefly in the height of the plant, in its habit, whether it is prostrate or ascending, and in the size of the leaves. Within the Andean countries only three other species of the *P. microphylla* relationship occur: *P. foliosa*, which in reality is more closely allied to *P. diversifolia*, *P. herniarioides*, a creeping plant with filiform stems and different cystolithic marking, and *P. serpyllacea*, distinguished by elongate peduncles and rounder, often crenulate leaves. *Pilea microphylla* is a native of warm, tropical regions, although it has been introduced as a border plant and is grown in pots at high altitudes; *P. serpyllacea* grows only in the high mountains.

2. *Pilea foliosa* Killip, Contr. U. S. Nat. Herb. 26: 377. 1936. PLATE 30.

DISTRIBUTION: Central Peru, at 1,200 to 3,000 meters altitude.

PERU.

JUNÍN: Carpapata, 3,000 meters, *Killip & Smith* 24400 (F, US, type, Y). Huacapistana, *Killip & Smith* 24281 (F, US, Y). Chanchamayo Valley, *Schunke* 498 (F, US), 678 (F), 992 (F, US).

EXPLANATION OF PLATE 30.—*Pilea foliosa*, the type specimen. One-half natural size.

3. *Pilea serpyllacea* (H. B. K.) Liebm. Vid. Selsk. Skrivt. V. 2: 296. 1851.

Urtica serpyllacea H. B. K. Nov. Gen. & Sp. 2: 37. 1817.

Urtica thymifolia H. B. K. Nov. Gen. & Sp. 2: 37. 1817.

Pilea globosa Wedd. Ann. Sci. Nat. III. Bot. 18: 208. 1852.

Pilea thymifolia Blume, Mus. Bot. Lugd. Bat. 2: 44. 1855.

Pilea subcrenata Wedd. in DC. Prodr. 16¹: 148. 1869. Not *P. subcrenata* Blume, 1855.

Plant very succulent, glabrous, reddish-tinged throughout; leaves subglobose, 1 to 5 mm in diameter, entire or shallowly crenulate, transversely striate with fusiform cystoliths; plants monoecious, or staminate flowers sometimes wholly wanting, the pistillate flowers in long- (5 to 10 mm) peduncled cymes 1.5 to 2 mm wide, the staminate flowers very few to a plant, sessile or subsessile and solitary at the base of the peduncles of the pistillate cymes, the perianth subglobose, about 1 mm in diameter; achenes 0.4 to 0.5 mm long.

DISTRIBUTION: Western Venezuela to Peru and Bolivia, at 2,000 to 3,500 meters altitude.

VENEZUELA.

MÉRIDA: Mucurubá, *Gehriger* 258 (US).

COLOMBIA.

CUNDINAMARCA: Bogotá, *Guevara* 218 (US).

ANTIOQUIA: Medellín, *Triana* 898 (B, K, P, Y).

EL CAUCA: Between Coconuco and Popayán, *Killip* 6888 (B, G, K, Ph, US, Y). Portachuela, *André* 2453 (K). Popayán, *García* 4652 (US).

- NARIÑO: Between Almaguer and Pasto, *Humboldt & Bonpland* (B, Herb. Willd. 17422, P, type). Between Pasto and Teindala, *Humboldt & Bonpland* (type of *Urtica thymifolia*, B, BW, P). Río Esmita, *Lehmann* 5411 (B, K). Guaitara Valley, *Stübel* 432 (B). Pasto, *Triana* 899 (HNC, K, P).
- ECUADOR: *Sodiño* 153/18 (B), 153/19 (B). "Andes," *Jameson* 481 (B, BM, P, type of *P. subcrenata* Wedd., V). *Lusco, Hall* 28 (B). Chuquiribamba, *André* 4440 (K, Y).
- IMBABURA: *Pinllar, Firmin* 369 (US). *Ibarra, Benoist* 3583 (P).
- PICHINCHA: *Guápulo, Firmin* 271 (US); *Benoist* 2292 (P). *Antisanilla, Anthony & Tate* 338 (US). *Antisana, Sodiño* 153/20 (B).
- TUNGURAHUA: *Tungurahua, Tate* 643 (US). *Ambato, Pearce* (K); *Pachano* 3 (US, Y); *Heinrichs* 32 (Gen).
- CHIMBORAZO: *Punín, Anthony & Tate* 425 (US). *Chimborazo, Couthouy* (G). *Riobamba, Rimbach* 136 (US).
- LOJA: Between Loja and San Lucas, *Hitchcock* 21445 (US).
- PERU: *Ruiz & Pavón* (B, BM, type of *P. globosa*, Bo, Ma); *Jussieu* (P).
- CAJAMARCA: *Hualgayoc, Weberbauer* 4054 (B); *Raimondi* 2209 (B). *Callacate, Raimondi* 5639 (B).
- HUÁNUCO: *Huacachi, Macbride* 3868 (F, US), 4087 (F, Gen, US). *Huánuco, Macbride* 3512 (F, US); *Pearce* 118 (BM, K). *Casapí, Poeppig* 1381 (V).
- LIMA: *Río Blanco, Killip & Smith* 21601 (US, Y). *Matucana, Macbride & Featherstone* 447 (F, US).
- JUNÍN: *Carpapata, Killip & Smith* 24334 (F, US, Y). Between Tambo de Viso and Chaupichaca, *Weberbauer* 158 (B).
- CUZCO: *Herrera* 51 (B); *Weberbauer* 4892 (B). *Urubamba Valley, Cook & Gilbert* 262 (US), 1035 (US); *Herrera* 2288 (B). *Apurímac Valley, Herrera* 3065 (US). *Ollantaitambo, Pennell* 13657 (Ph).

BOLIVIA.

LA PAZ: *Sorata, Mandon* 1005 (BM, G, Gen, K, Y).

In proposing *Urtica thymifolia* H. B. K. the authors stated that it was very close to *U. serpyllacea*, differing in being smaller in every way and in having suborbicular leaves and a monoecious inflorescence. I have made direct comparison of the types of both of these in the Humboldt Herbarium at Paris and am confident that only a single species is represented. Weddell adopted the specific name *globosa*, taken from a Ruiz and Pavón specimen, for *P. thymifolia*, observing that the latter name was inappropriate. The Peruvian plant may not be conspecific with the one from farther northward. When fresh, it has a reddish hue and the leaves are like little globules, without a vestige of crenation. When dried, this plant falls to pieces, whereas typical *P. serpyllacea* remains fairly intact.

Pilea serpyllacea closely resembles *P. microphylla*, the most satisfactory differentiating character being the well-developed peduncles of *P. serpyllacea*. In herbaria the leaves are nearly orbicular, whereas in *P. microphylla* they are obovate. *Pilea serpyllacea* is a plant of the higher mountains, *P. microphylla* of low elevations though sometimes cultivated at higher altitudes.

The material here cited shows gradations between forms with definitely crenulate leaves, as in the type of *P. subcrenata* Wedd., and those with entire leaves.

Pilea serpyllifolia (Poir.) Wedd. (*Parietaria serpyllifolia* Poir.³) was considered by Weddell as synonymous with *P. serpyllacea*. I have seen two specimens of this, the type in the Lamarck Herbarium, from Martinique, and a specimen, also at Paris, bearing the data "Nov. Granata? ex herb. Bonpland." *Pilea serpyllifolia* is distinguished from *P. serpyllacea* and *P. microphylla* by having ciliate leaves

³ Lam. Encycl. 5: 16. 1804.

with conspicuous cystoliths on their upper surface. In view of the uncertainty in the locality data the species is not included in the present synopsis.

LOCAL NAMES: "Accoicarpa," "quisa," "kkuru-quisa" (Peru).

4. *Pilea herniarioides* (Swartz) Lindl. Coll. Bot. under *pl.* 4. 1821.

Urtica herniarioides Swartz, Svensk. Vet. Akad. Handl. 8: 64. *pl.* 2, *f.* 1. 1787.

Pilea muscosa var. *herniarioides* Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 174. 1856-57.

Pilea microphylla var. *herniarioides* Wedd. in DC. Prodr. 16¹: 106. 1869.

Slender, prostrate or creeping, glabrous herb with a filiform stem; leaves of a pair subequal, rhombic-orbicular, 1.5 to 5 mm long and wide, obtuse at apex, abruptly tapering to a filiform petiole subequal to or longer than the blade, entire; plants usually monoecious, the clusters androgynous or unisexual, sessile in the axils of the upper leaves; achenes ovate-elliptic, 0.4 to 0.5 mm long.

DISTRIBUTION: Mexico and southern Florida to Colombia and British Guiana, at low elevations, the type from Hispaniola (BW, type collection!).

CURAÇAO: Curran & Haman 3 (G, US, P).

COLOMBIA.

MAGDALENA: Santa Marta, H. H. Smith 1222 (B, F, Mo, US, Y).

BOLÍVAR: Turbaco, Killip & Smith 14690 (G, US, Y).

CUNDINAMARCA: Quetamé, Pennell 1738 (Y).

The Curaçao plant and Killip & Smith 14690 are perhaps better referred to *P. microphylla*. The exact limits of *P. herniarioides* are not well established. As it is primarily West Indian, barely entering our limits, I am not attempting to present final conclusions.

II. PARIETARIAE

5. *Pilea nerteroides* Killip, Contr. U. S. Nat. Herb. 26: 377. 1936.

Pilea cordifolia Killip, Journ. Washington Acad. Sci. 15: 50. 1925. Not *P. cordifolia* Benth. 1888.

Slender repent herb, leafy throughout; stem villosulous; stipules ovate, about 1 mm long, persistent; leaves cordate, up to 4 mm long and 5 mm wide, entire, inconspicuously 3-nerved, villosulous, covered with punctiform cystoliths; plants monoecious; staminate flowers borne singly or in pairs, the peduncles 3 to 6 mm long, the segments narrowly ovate; pistillate flowers in 4 to 6-flowered, pedunculate umbels; achenes ovoid, about 0.7 mm long.

DISTRIBUTION: Known only from the type locality.

PERU.

HUÁNUCO: Tambo de Vaca, alt. 4,200 meters, Macbride 4395 (B, F, type, Gen, K, US).

6. *Pilea nitida* Wedd. Ann. Sci. Nat. III. Bot. 18: 211. 1852.

Plant very slender, up to 10 cm high, glabrous; leaves elliptic-ovate, obtuse at apex and base, 4 to 15 mm long, 2.5 to 8 mm wide, entire or rarely subcrenulate, obscurely 3-nerved, lustrous, bearing linear cystoliths on upper surface; plants monoecious, the flowers in sessile compact androgynous heads barely half as long as the petioles.

DISTRIBUTION: Probably confined to the lower mountain slopes of western Peru.

PERU: Dombey [or Ruiz & Pavón?] (Gen, Ma, P, type).

CAJAMARCA: San Pablo, alt. 2,300 meters, Weberbauer 3872 (B).

LIMA: San Agustín, alt. 400 meters, Weberbauer 5244 (B).

7. *Pilea lindeniana* Wedd. Ann. Sci. Nat. III. Bot. 18: 210. 1852.

Pilea lindenii Blume, Mus. Bot. Lugd. Bat. 2: 49. 1855.

Stem subligneous, repent, with numerous suberect, glabrous branches up to 50 cm long; stipules ovate-oblong, 2.5 to 3.5 mm long, subpersistent; leaves ovate-lanceolate, 2.5 to 5 cm. long, 2 to 3 cm wide, acuminate at apex, rounded or cordulate at base, entire, hirsute on both surfaces, the cystoliths inconspicuous, linear and punctiform and very minute above, linear beneath; plants usually monoecious, the inflorescences unisexual; staminate inflorescence paniculiform, borne in the upper axils, the flowers in glomerules and subtended by persistent suborbicular bracts; pistillate inflorescence borne in lower axils, longer than the adjacent petioles.

DISTRIBUTION: Western Venezuela and Eastern Cordillera of Colombia, at 1,500 to 3,000 meters altitude.

VENEZUELA. MÉRIDA: Páramo de Mucuty, *Moritz* 1293 (B, BM). La Asulita, *Reed* 780 (US), 792 (US), 796 (US).

COLOMBIA: *Mutis* 1900 (Ma).

CUNDINAMARCA: *Rodriguez* 36 (US). Falls of Tequendama, *Linden* 799 (BM, Bo, Brux, Gen, P, type, V); *Cuatrecasas* 3087 (US); *Troll* 3737 (B). Bogotá, *Pennell* 2278 (US, Y); *Ariste Joseph* A322 (BM, Bog, US), A888 (US), B80 (US); *Goudot* (P); *Triana* 236 (HNC, K, P), 877 (B, BM, HNC, P); *Goudot* (K, P); *Cuatrecasas* 2586 (US), 3093 (Ma). Quetamé, *Pennell* 1863 (US, Y). Río Arzobispo, *Holton* in 1852 (Y).

META: Villavicencio, *Dawe* 265 (K, US).

This is distinguished from near relatives by the dense indument, by the larger, persistent stipules, and by the conspicuous bracts.

8. *Pilea rhombea* (L. f.) Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 305. 1851.

Urtica rhombea L. f. Suppl. Pl. 417. 1781.

Plant herbaceous; stem and branches slender, glabrous, bearing a few or no cystoliths; stipules up to 1 mm long, soon deciduous; leaves rhombic or ovate, 1 to 3.5 cm long, 1 to 2 cm wide, narrowed to an acute or subobtuse apex, entire, membranous, glabrous or sparingly pubescent with hyaline hairs, sometimes ciliate, the cystoliths linear, obscure, scant on lower surface; plants monoecious, the cymes shorter than the adjacent petioles, androgynous, the staminate flowers few, ebracteate; achenes about 0.7 mm long.

DISTRIBUTION: Venezuela and Colombia, at 1,000 to 2,800 meters altitude.

VENEZUELA: *Lansberg* (B); *Ernst* 458 (BM), 1164 (BM).

FEDERAL DISTRICT: Sanctorquiz, *Eggers* 13445 (US). Galipán, *Pittier* 10448 (Gen, US, Y). Caracas, *Gollmer* in 1852 (B); *Pittier* 11127 (Gen, US).

MÉRIDA: Chama, *Moritz* 1294 (B, BM, K). Páramo de la Sal, *Jahn* 595 (US). Mucurubá, *Gehriger* 203 (Gen, US), 248 (Gen, US).

COLOMBIA.

SANTANDER: Las Vegas, *Killip & Smith* 15541 (G, US, Y). Suratá *Killip & Smith* 16421 (G, US). 16584 (G, US, Y). California, *Killip & Smith* 16989 (G, US), 17025 (G, US, Y), 17090 (G, US, Y). La Baja, *Killip & Smith* 18023 (G, US, Y). Charta, *Killip & Smith* 18849 (G, US, Y).

NORTE DE SANTANDER: Tapatá, *Killip & Smith* 20202 (US). Loso, *Killip & Smith* 20403 (G, US, Y).

CUNDINAMARCA: *Mutis* (type, Linnaean Herbarium); *André* 1302 (F, K, Y). Quebrada de la Vieja, *Cuatrecasas* 3092 (US).

Usaquén, *Ariste Joseph* A329 (Bog, US). Monserrate, *Guevara* 252 (US).

HUILA: Neiva, *Rusby & Pennell* 553 (Mo, US, Y).

EL CAUCA: El Tambo, *Sneidern* 968 (S).

This and the following species have been confused with the West Indian *P. parietaria* (L.) Blume. In typical Jamaican material of that species the leaves

bear numerous elongate conspicuous cystoliths on the lower surface and are prevailingly much larger than in the South American specimens here referred to *P. rhombea* and *P. alsinifolia*. The individual staminate flowers of *P. parietaria* are only about half as large as those of the two South American relatives. Final disposition of this complex group of species must await a more detailed study of West Indian, Mexican, and Central American material.

9. *Pilea alsinifolia* Wedd. Ann. Sci. Nat. III. Bot. 18: 211. 1852.

Plant up to 1.5 meters high, with thick succulent glabrous branches, bearing very numerous cystoliths, these usually imparting a whitish or yellowish coloring; stipules up to 1 mm long, soon deciduous; leaves orbicular-ovate or rhombic, 1 to 2.5 cm long, 1 to 1.5 cm wide, obtuse or subacute at apex, entire, glabrous or sparingly hirsute, thick, pale beneath, densely covered with short-linear and punctiform cystoliths above, nearly destitute of cystoliths beneath, sparingly to densely lepidote beneath; plants dioecious, rarely monoecious; staminate inflorescence paniculiform, longer than the leaves, the flowers ebracteate, in dense glomerules; pistillate inflorescence similar, shorter than the leaves.

DISTRIBUTION: Eastern Cordillera of Colombia, at 1,500 to 3,000 meters, and Western Cordillera.

COLOMBIA.

SANTANDER: California, *Killip & Smith* 17014 (G, US, Y). Charta, *Killip & Smith* 19097 (G, US, Y), 19119 (G, US, Y). Tona, *Killip & Smith* 19405 (G, US, Y), 19457 (G, US, Y), 19464 (G, US, Y).

NORTE DE SANTANDER: Tapatá, *Killip & Smith* 20188 (G, US, Y). Ocaña, *Kalbreyer* 1023 (B, K).

CUNDINAMARCA: Bogotá, *Goudot* (P, type).

EL VALLE: Río Dagua, *André* K1673 (F, K, Y).

Goudot's type, which has ciliate leaves sparingly pilose on both surfaces, is exactly matched only by *Killip & Smith* 20188, the rest of the material here cited being glabrous throughout. However, I can not believe that more than a single species is represented by these specimens. The plant has a wholly different aspect from *P. rhombea*, having much stouter, pale stems, thicker leaves, and a more diffuse inflorescence.

10. *Pilea argentea* Killip, Journ. Washington Acad. Sci. 15: 290. 1925.

Plant erect, glabrous; stipules soon deciduous; leaves of a node equal, oblong, up to 8 cm long, 3 cm wide, obtusely acuminate at apex, subauricular at base, sessile or nearly so, entire, dark green and bearing linear and punctiform cystoliths above, silvery-lustrous beneath, bearing numerous linear cystoliths; plants dioecious, the inflorescence of staminate plants confined to upper axils, that of pistillate plants at most axils, the flowers in dense glomerules forming panicles 3 to 4 cm long; achenes suborbicular, about 0.5 mm long.

DISTRIBUTION: Eastern Cordillera of Colombia, between 1,500 and 2,000 meters altitude.

COLOMBIA.

HUILA: Neiva, alt. 1,500 to 2,000 meters, *Rusby & Pennell* 654 (Y, type), 938 (US).

CUNDINAMARCA: Fusagasugá, *André* 1895 (K).

11. *Pilea tatei* Killip, Contr. U. S. Nat. Herb. 26: 377. 1936.

DISTRIBUTION: Mountains of northeastern Venezuela.

VENEZUELA.

MONAGAS: Cerro de Turumiquire, alt. 2,200 meters, *Tate* 187 (US), 188 (US), 190 (US, type).

12. *Pilea aenea* Killip, Contr. U. S. Nat. Herb. 26: 378. 1936.

DISTRIBUTION: Known only from the type specimen, from Colombia.
COLOMBIA: Mutis 1908 (Ma, type).

13. *Pilea angustata* Killip, Contr. U. S. Nat. Herb. 26: 378. 1936.

DISTRIBUTION: Peru or, more probably in view of other Grisar collections, Ecuador.

ECUADOR OR PERU: Grisar (P, type).

III. FALLACES

14. *Pilea lippioides* Killip, Journ. Washington Acad. Sci. 15: 296. 1925.

Plant up to 60 cm high, glabrous, the stem repent and suffrutescent below; petioles of a pair unequal, the longer 1.5 to 4 cm long, the shorter usually less than half as long; leaves of a pair similar but unequal (smaller leaf one-third to two-thirds as long as the longer), ovate-elliptic, 2 to 10 cm long, 1.5 to 6 cm wide, acute at apex, rounded or acute at base, coarsely crenate-serrate, penninerved; plants monoecious or dioecious; staminate flowers in slender-peduncled globose heads borne singly in the upper axils, subtended by an involucre of 8 persistent or deciduous, white, pink-striped bracts, the outer 4 orbicular, the inner 4 oblong, the perianth lobes 3, with long slender tips; pistillate flowers in short-peduncled cymes in the axils of the lower leaves; achenes 1.5 mm long.

DISTRIBUTION: Eastern and Central Cordilleras of Colombia, at 2,400 to 3,000 meters altitude.

COLOMBIA.

SANTANDER: Las Vegas, Killip & Smith 16054 (G, Gen, US, Y). Between Piedecuesta and Las Vegas, Killip & Smith 15559 (G, US, Y).

NORTE DE SANTANDER: Ocaña, Kalbreyer 531 (K).

HUILA: Río Paez Valley, Pittier 1216 (US, type).

The conspicuous involucre bracts subtending the staminate flower clusters and a 3-lobed, rather than the normal 4-lobed perianth of the staminate flowers, isolate this species from other South American representatives of *Pilea* of which the staminate inflorescence is known. In the type specimen the leaves at a node are more nearly equal than in the Santander material cited.

Pilea lippioides may be identical with *P. obetiaefolia*, known only from a single pistillate plant, in which the petioles and nerves on the under surface of the leaves are distinctly hirtellous. The specimens here cited as *P. lippioides* have no vestige of pubescence. Until further collecting is done in the northwest part of Colombia and staminate material of *P. obetiaefolia* discovered, it seems best to regard the two as distinct.

15. *Pilea obetiaefolia* Killip, Journ. Washington Acad. Sci. 13: 359. 1923.

Erect herb about 30 cm high, the stem simple (?), glabrous, or the younger portions hirsutulous; petioles hirsutulous, those of a pair unequal, the longer up to 4 cm, the smaller up to 2 cm; leaves oblong-lanceolate, 5 to 10 cm long, 2 to 4 cm wide (those of a pair slightly unequal), short-acuminate, crenate-serrate nearly to base, the nerves hirsutulous beneath, the cystoliths fusiform, conspicuous on both surfaces; plants apparently dioecious; pistillate flowers in compact cymes; achenes broadly ovate.

DISTRIBUTION: Known only from the type locality, in the northern part of the Western Cordillera of Colombia.

COLOMBIA.

CALDAS: Cerro Tatamá, alt. 2,700 meters, Pennell 10374 (US, type).

16. *Pilea hitchcockii* Killip, Journ. Washington Acad. Sci. 15: 297. 1925.

Plant herbaceous, the stem repent, at length erect or suberect, 15 to 30 cm high, ferruginous-strigillose; leaves of a node subequal, narrowly elliptic to

rhombic-ovate, 2 to 10 cm long, 0.7 to 3 cm wide, acute or acuminate, coarsely crenate-serrate or sinuate-serrate, strigillose on the nerves beneath, otherwise glabrous, the narrower leaves penninerved, the broader ones triplinerved; cystoliths faint, linear and subpunctate above, punctate beneath; plants monoecious, the cymes unisexual (staminate at lower nodes, pistillate at upper), slender-peduncled; staminate flowers about 2 mm wide, the segments with a filiform tip about 1 mm long; achenes broadly ovoid, strongly compressed, about 1 mm long.

DISTRIBUTION: Central Ecuador.

ECUADOR:

TUNGURAHUA: Pastaza River, alt. 1,500 meters, *Hitchcock* 21825 (G, US, type, Y).

NAPO-PASTAZA: Tena, alt. 400 meters, *Mexia* 7177 (US).

In the type specimen the leaves are all penninerved, but in the more ample type material at the Gray Herbarium and in the *Mexia* collection the broader leaves are distinctly triplinerved.

17. *Pilea sublobata* Rusby, Bull. Torrey Club 28: 311. 1901.

Plant lax, the stem and branches very slender, glabrous; leaves ovate, oblong, or oblong-lanceolate, 0.5 to 2 cm long, 0.3 to 1 cm wide (rarely a few larger), thin, slender-petioled, coarsely crenate-serrate, glabrous, obscurely triplinerved, the lateral nerves not extending beyond lower quarter of margin; cystoliths linear, faint; plants monoecious, the staminate and pistillate cymes in the axils of the upper leaves, often both in same axil, the peduncles of the staminate slightly longer than those of the pistillate.

DISTRIBUTION: Western Bolivia.

BOLIVIA.

LA PAZ: Unduavi, *Buchtien* 383 (F, K), 794 (B, F, G, US, Y); *Rusby* 1484 (Y, type). Pongo, alt. 3,600 meters, *Tate* 184 (Y).

18. *Pilea pauciserrata* Killip, Journ. Washington Acad. Sci. 15: 293. 1925.

Low slender herb, glabrous throughout, the stem repent, at length erect; leaves narrowly obovate or oblanceolate, 6 to 20 cm long, 2 to 5 cm wide, cuneate-attenuate at base, sharply serrate with divaricate teeth, the cystoliths on upper surface linear, on lower punctiform; plants apparently dioecious; staminate flowers sessile or short-pedicelled in few-flowered pedunculate heads.

DISTRIBUTION: Western Bolivia.

BOLIVIA.

LA PAZ: Unduavi, *Buchtien* 2811 (US, type), 8935 (US).

19. *Pilea trichosanthos* Wedd. in DC. Prodr. 16¹: 120. 1869.

Prostrate or repent, much-branched, slender, glabrous herb; stipules about 1 mm long; leaves unequal, opposite or sometimes in 4's due to the presence of a short branch, the larger leaves oblong or oblanceolate, 0.8 to 2 cm long, 3 to 7 mm wide, subacute at apex, cuneate at base, oblique, coarsely serrate above middle, 1-nerved, the smaller ones subrotund, 2 to 4 mm wide, sessile, entire or 2 or 3-toothed, 1-nerved or obscurely triplinerved, the cystoliths filiform, about 1 mm long, conspicuous on the upper surface, fewer and obscure beneath; plants dioecious; staminate cymes sessile or short-peduncled, 3 to 5-flowered, the perianth segments pilosulous without.

DISTRIBUTION: Ecuador.

ECUADOR.

BOLIVAR: Between Guranda and Bodegas, *Remy* (P, type).

NAPO-PASTAZA: Canelos, alt. 300 to 400 meters, *Mexia* 6881 (US). Tena, *Mexia* 7178 (US), 7211 (US).

This species I placed in *Fallaces* because of the 1-nerved leaves of the type specimen. In the recent *Mexia* collections the smaller leaves are obscurely

triplinerved. The type has the crowded leaves characteristic of *Diversifoliae*, but in the Mexía specimens the leaves are in pairs.

20. *Pilea fallax* Wedd. in DC. Prodr. 16¹: 120. 1869.

Pilea fallax var. *glabra* Wedd. in DC. Prodr. 16¹: 121. 1869.

Plant suffrutescent or small examples herbaceous, the lower portion of stem stout, woody, radican, with numerous erect branches up to 50 cm high, densely hirsute above with hyaline hairs; stipules cordate-ovate, up to 8 mm long, persistent; larger leaves ovate or ovate-lanceolate, 2 to 4.5 cm long, 0.8 to 2 cm wide (rarely much smaller), acuminate or subobtusate at apex, acute or rounded at base, coarsely serrate, entire at base, petiolate, dark green and usually densely hirsute with white or brown, hyaline hairs above, appressed-ferruginous-hirtellous on nerves beneath, or the leaves glabrous throughout; smaller leaves broadly ovate or suborbicular, 0.5 to 1.5 cm long, acute; cystoliths linear or fusiform, conspicuous especially on the paler lower surface of the leaves; staminate cymes 8 to 12-flowered, short-peduncled; pistillate cymes 3 to 7-flowered, subsessile or on peduncles up to 6 mm long, the perianth segments subequal, broadly ovate, about 2 mm long, acutish, bearing coarse linear cystoliths without; achene broadly ovate, about 2 mm long, 1.2 mm wide.

DISTRIBUTION: Western Venezuela and Colombia to Ecuador, at 2,700 to 3,000 meters altitude.

VENEZUELA.

MÉRIDA: Mucunután, *Gehriger* 592 (US).

COLOMBIA.

CUNDINAMARCA: Fusagasugá, *Guevara* F.1 (US).

CALDAS: Cerro Tatamá, *Pennell* 10376 (G, US), 10377 (US). Salento, *Pennell* 9336 (G, Ph, US, Y), 9401 (US, Y).

EL CAUCA: Paletará, *Pennell* 6944 (G, Ph, US, Y). Mount Puracé, *Killip* 6777 (G, US). San José, *Pennell & Killip* 7336 (G, Ph, US, Y), 7375 (G, Ph, US, Y); *Pennell* 7559 (G, Ph, US, Y). El Tambo, *Sneidern* 414 (S), 964 (S), 965 (S).

NARIÑO: Cocha, *Stübel* 362b (B). Páramo Chimbacán, *André* 2987 (F, K, Y). Tabano, *André* 3035 (K), K1674 (K, Y), K1675 (K). Quebrada Yacuco, *André* K725 (K), K1676 (K). Minas, *Lehmann* K332 (K).

ECUADOR. "In Andes," *Spruce* 6107 (K, type of *P. fallax* var. *glabra*, V).

PICHINCHA: San Florencio, *André* K724 (K).

TUNGURAHUA: *Spruce* 6106 in part (BM, Gen, K, type, V, Y).

These specimens vary somewhat in degree of indument and shape and size of the leaves. In *Spruce* 6107 and *Sneidern* 414 the foliage is glabrescent. Most of the specimens have short-acuminate or subobtusate leaves, but in this same *Sneidern* plant they are rather long-acuminate. *Guevara* F.1 is a variant with very small leaves, none of them being over 1 cm long.

21. *Pilea vegasana* Killip, Contr. U. S. Nat. Herb. 26: 379. 1936. PLATE 31.

DISTRIBUTION: Eastern Cordillera of Colombia, at an altitude of about 2,600 meters.

COLOMBIA.

SANTANDER: Las Vegas, *Killip & Smith* 16020 (G, US, Y), 16025 (G, US, Y), 16043 (G, Gen, US, type, Y), 16082 (G, US, Y). Mount San Vicente, near Charta, *Killip & Smith* 18968 (G, US, Y).

EXPLANATION OF PLATE 31—*Pilea vegasana*, the type specimen. One-half natural size.

IV. DIVERSIFOLIAE

22. *Pilea nutans* (Poepp.) Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 196. pl. 7, f. 11-13. 1856-57.

Urtica nutans Poepp.; Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 196. 1856-57, as synonym.

Pilea herrerae Mildbr. in Herrera, Anal. Univ. Cuzco 1: 147. 1926, name only.

Plant diffuse, much-branched glabrous throughout; leaves appearing in 4's (rarely in 3's), due to the presence at each node of a pair borne on very short branchlets, serrate or crenate-serrate, triplinerved, bearing linear cystoliths on both surfaces, those of the upper surface smaller and more numerous, the larger leaves rhombic-ovate or rhombic-lanceolate, 0.8 to 2.5 cm long, 0.4 to 1.5 cm wide, acute or acuminate at both ends, the petioles 1 to 10 mm long, the smaller leaves rhombic or broadly ovate, up to 5 mm long, sessile or short-petioled; plants dioecious; staminate cymes small, sessile or short-peduncled, few-flowered, the flowers pedicellate, about 1 mm wide, the lobes obtuse, mucronate; pistillate cymes shorter than the leaves; achenes obliquely rounded.

DISTRIBUTION: Peru and Bolivia, at 800 to 2,200 meters altitude; apparently also in northeastern Colombia.

COLOMBIA.

NORTE DE SANTANDER: Ocaña, alt. 1,050 meters, *Schlim* 1134 (Brux); alt. 2,100 meters, *Triana* (HNC), 492 (P, labeled "Province d'Antioquia," but clearly a part of the *Triana* Ocaña collection).

PERU: *Dombey* (P); *Haenke* 1731 (Y).

HUÁNUCO: Cochero, *Poeppig* 1565 (B, BM, Gen, P, type, V).

JUNÍN: Huacapistana, *Killip & Smith* 24274 (F, US, Y). Dos de Mayo, Pichis Trail, *Killip & Smith* 25789 (US, Y). Porvenir, Pichis Trail, *Killip & Smith* 25895 (F, US, Y). Pasla, *Raimondi* 9290 (B).

CUZCO: Río Yanamayo, *Pennell* 14049 (F, Ph, US, Y). Urubamba Valley, *Cook & Gilbert* 1095 (US). Cosñipata Valley, *Herrera* 6 (B). La Maquiña, West 8035 (G).

PUNO: Ollachea, *Raimondi* 9649 (B).

BOLIVIA.

COCHABAMBA: Incachaca, *Steinbach* 8890 (B, F, Ph, S).

SANTA CRUZ: Province of Sara, *Steinbach* 5028 (B, F, G, Y).

Most of the specimens cited above are without a well-developed inflorescence, either staminate or pistillate, and I have merely reproduced Weddell's description of the inflorescence in the *Prodromus*, which differed slightly from his earlier one. *Killip & Smith* 25895, a staminate plant, has mature flowers, but they are in compact clusters on filiform peduncles 1.5 to 2 cm long, a floral arrangement at variance with Weddell's description. As the leaves, moreover, are not congested, it is quite possible that this collection represents an undescribed species. The Colombian specimens, also with good staminate flowers, are far out of range and may likewise belong elsewhere. *Triana's* 492 I cited (p. 384) as *P. rojasiana*, but having compared the additional Colombian material with the type of that species, I am inclined to think that it is better placed in *P. nutans*, under which it was listed by Weddell.

In the six species of the group *Diversifoliae* the leaves are very numerous and appear to be in three's or in four's at a node. This is due to the fact that at most of the nodes there is a very short branch which usually bears a single pair of leaves, one large, one small. Sometimes this second small leaf is wanting, so that there are three leaves associated with the node; sometimes the branch is elongate and

bears several pairs of leaves, of which the lowermost pair is so close to the stem that the leaves appear to be in four's.

LOCAL NAMES: "Chia-chia," "quisa," "yunca-quisa" (Peru).

23. *Pilea myriophylla* Killip, Contr. U. S. Nat. Herb. **26**: 379. 1936. PLATE 32.

DISTRIBUTION: Ecuador.

ECUADOR: Uarunamaca, *André* K1667 (K, type). "4,000-5,000 feet," *Pearce* (K).

EXPLANATION OF PLATE 32.—*Pilea myriophylla*, portion of type specimen. Natural size.

24. *Pilea diversifolia* Wedd. Ann. Sci. Nat. III. Bot. **18**: 212. 1852.

Lax much-branched glabrous herb, the stem up to 1.5 meters long; larger leaves of a node cuneate-oblong, 5 to 10 mm long, 1 to 4 mm wide, coarsely 3 to 7-toothed, 1-nerved (secondary nerves faint), the smaller leaves suborbicular, 3 to 5 mm wide, entire or few-toothed, faintly triplinerved, the cystoliths linear, conspicuous, larger but less numerous on the lower surface; plants dioecious; pistillate cymes about 3 mm wide, on peduncles 4 to 5 mm long.

DISTRIBUTION: Central Peru, at 1,500 to 2,200 meters altitude.

PERU: *Ruiz & Pavón* 4677 (B, BM, type, Ma, US).

HUÁNUCO: Muña, *Macbride* 3984 (F, Gen, K, US).

JUNÍN: Dos de Mayo, Pichis Trail, *Killip & Smith* 25885 (F, US, Y).

AYACUCHO: Ccarrapa, between Huanta and Río Apurímac, *Killip & Smith* 22357 (F, US, Y).

25. *Pilea weberbaueri* Killip, Contr. U. S. Nat. Herb. **26**: 380. 1936. PLATE 33.

DISTRIBUTION: Known only from the type specimen, from central Peru.

PERU.

JUNÍN: Between Palca and Huacapistana, alt. 1,900 to 2,000 meters, *Weberbauer* 2022 (B, type).

EXPLANATION OF PLATE 33.—*Pilea weberbaueri*, the type specimen. About one-half natural size.

26. *Pilea pulegifolia* (Poir.) Wedd. Ann. Sci. Nat. III. Bot. **18**: 213. 1852.

Urtica pulegifolia Poir. in Lam. Encycl. Suppl. **4**: 224. 1816.

Stem elongate, apparently prostrate but not rooting at nodes, with numerous densely tomentellous, leafy branches; stipules ovate, persistent; leaves ovate, 3 to 6 mm long, 2 to 4 mm wide (those of a node similar but slightly unequal), obtuse at apex, cuneate at base, crenate-serrulate with 2 to 5 serrulations on each side, glabrous, the petioles up to 2 mm long, tomentellous, the cystoliths of upper surface linear, yellow, thick, white and less conspicuous beneath; staminate flowers in small cymes in the upper axils, the peduncles longer than the petioles, puberulent.

DISTRIBUTION: Known only from the type specimen.

PERU: Churugallana, *Dombey* (Bo, F, Ma, P, type).

This and the following species have the curious leaf arrangement of *Diversifoliae*, but unlike other representatives of the section the branches and petioles are densely pubescent.

27. *Pilea ramosissima* Killip, Contr. U. S. Nat. Herb. **26**: 380. 1936.

DISTRIBUTION: Central Peru, at 2,500 to 2,800 meters altitude.

PERU.

CAJAMARCA: Hualgayoc, *Raimondi* 7092 (B).

HUÁNUCO: Chaglla, *Macbride* 3650 (B, F, K, US, type).

V. IMPARIFOLIAE

28. *Pilea filicina* Killip, Journ. Washington Acad. Sci. **13**: 355. 1923.

Plant glabrous throughout, frutescent, pinnately branched, the branches divaricate; larger leaf ovate-orbicular, 10 to 13 mm long, 6 to 7 mm wide, 5-crenate

toward apex, abruptly tapering at base, sessile or subsessile; smaller leaf reniform-orbicular, 4 to 6 mm wide, sessile, entire or undulate, triplinerved; cystoliths on upper surface of leaves linear, faint, borne mainly near margin, those on lower surface numerous, punctiform; plants apparently dioecious; pistillate heads subglobose, 3 or 4-flowered, sessile or subsessile; achenes broadly ovate, 1 mm long.

DISTRIBUTION: Eastern Cordillera of Colombia.

COLOMBIA.

CUNDINAMARCA: Paime, *Ariste Joseph* A927 (BM, Bog, US, type, Y).

29. *Pilea bassleriana* Killip, *Contr. U. S. Nat. Herb.* 26: 381. 1936.

DISTRIBUTION: Amazonian Peru, at low elevations; also in southwestern Colombia.

COLOMBIA.

EL CAUCA: La Costa, *Sneidern* 1025 (S, US), 1614 (S).

PERU.

LORETO: Balsapuerto, alt. 150 to 350 meters, *Killip & Smith* 28429 (F, US, Y), 28467 (F, US, Y), 28471 (F, US, type, Y); *Klug* 2870 (F, G, Gen, US, Y). Santa Rosa, below Yurimaguas, *Killip & Smith* 28993 (US, Y). Pongo de Manseriche, *Dennis* (*Killip & Smith* 29145; US, Y); *Tessmann* 4603 (B), 4667 (B); *Mexia* 6355 (US), 6360 (US). Mouth of Río Pastaza, *Dennis* (*Killip & Smith* 29196; US, Y).

30. *Pilea daguensis* Killip, *Contr. U. S. Nat. Herb.* 26: 382. 1936. PLATE 34.

Pilea dendrophila var. *major* Wedd. in DC. *Prodr.* 16¹: 122. 1869.

Plant herbaceous, the stem repent, the branches erect, sulcate, 30 to 40 cm high, stout, glabrous; stipules ovate, 3 to 4 mm long, subpersistent; leaves dark green and glabrous above, bearing faint linear cystoliths, beneath paler, puberulent on the nerves, bearing punctiform cystoliths; leaves of a pair dissimilar and very unequal, the larger ones oblanceolate, 7 to 9 cm long, 1.2 to 3 cm wide, acuminate at apex, oblique and subemarginate at base, borne on petioles 2 to 3 mm long, coarsely crenate-serrate except in the lower third (teeth obtuse or rarely acutish, 8 or 9 to a side), triplinerved, the smaller leaves inequilaterally ovate or suborbicular, 5 to 10 mm long and wide, obtuse, obliquely cordate at base, sessile, entire or slightly undulate, obscurely triplinerved; plants dioecious, the cymes similar, 5 to 8 mm wide, subsessile, the staminate perianth with slender teeth, the segments of the pistillate perianth subequal; achenes nearly orbicular, 0.5 mm wide.

DISTRIBUTION: Western Colombia, at low elevations.

COLOMBIA: *Triana* 889 (B, BM, perhaps part of type collection, K, P, US).

EL CHOCÓ: Tutunendo, *Archer* 2129 (US). Headwaters of Río Tutunendo, *Archer* 2172 (US).

EL VALLE: "Province of Buenaventura, 300 meters," *Triana* (BM, type, also type of *P. dendrophila* var. *major*, HNC). Santa Rosa, Río Dagua, *Killip* 11550 (B, G, Ph, US, Y).

EL CAUCA: El Tambo, *Sneidern* 772 (S).

EXPLANATION OF PLATE 34.—*Pilea daguensis*. *Killip* 11550, one-half natural size.

31. *Pilea imparifolia* Wedd. *Ann. Sci. Nat. III. Bot.* 18: 212. 1852.

Pilea dendrophila Miquel in *Mart. Fl. Bras.* 4¹: 202. 1853.

Decumbent herb with numerous suberect branches; larger leaves rhombic-ovate to elliptic-oblong or obovate, 2 to 6 cm long, 0.8 to 2 cm wide, narrowed at apex, acute or attenuate at base, oblique, sessile or short-petioled, crenate-serrate above middle, obscurely triplinerved, the smaller leaves obovate-orbicular or orbicular-

reniform, 0.8 to 1.5 cm long, strongly asymmetrical, subentire; cystoliths linear on upper leaf surface, punctiform, rarely linear beneath; plants dioecious, the staminate and pistillate cymes sessile or subsessile, few-flowered; segments of staminate flowers mucronulate; achenes about 1 mm long.

ILLUSTRATION: Arch. Mus. Hist. Nat. (Paris) 9: pl. 7, f. 1-3.

DISTRIBUTION: Colombia to northern Peru, eastward to the Guianas and Amazonian Brazil; at low elevations. Type from French Guiana, collected by Melinon (no. 55).

COLOMBIA: Triana (P); Dawe 772 (K, US).

BOLÍVAR: Río Esmeralda, Pennell 4541 (US, Y).

EL CHOCÓ: La Concepción, Archer 2081 (US). Río Tutunendo, Archer 2190 (US).

CALDAS: Salento, Killip & Hazen 8786 (B, G, Ph, US, Y).

EL VALLE: La Cumbre, Killip 5698 (G, Ph, US, Y).

EL CAUCA: El Tambo, Sneidern 895 (S).

PUTUMAYO: Umbría, Klug 1931 (B, BM, F, G, US, Y).

ECUADOR.

ORO: Santa Rosa, Jameson 734 (BM, K).

PERU.

SAN MARTÍN: Tarapoto, Spruce 4434 (B, BM, Brux, K, P, V, Y).

LORETO: Río Itaya, Killip & Smith 29308 (F, US, Y), 29515 (F, US, Y), 29572 (F, US, Y). Mouth of Río Santiago, Meria 6365 (US). Mouth of Río Napo, Tessmann 3721 (Bas, Gen). Maucallacta, Klug 3950 (US). Between Río Ucayali and Río Huallaga, Huber 1519 (Go).

JUNÍN: San Nicolás, Pichis Trail, Killip & Smith 26038 (US, Y).

These specimens show considerable variation in the size and shape of the larger leaves, those with small leaves approaching *P. flicina* and those with large ones *P. bassleriana*.

LOCAL NAME: "Estrella caracha" (Putumayo).

VI. CENTRADENIOIDEAE

32. *Pilea trianaeana* Wedd. in DC. Prodr. 16¹: 121. 1869.

Stem radicant, at length erect to a height of about 15 cm, puberulous or subglabrous; larger leaf oblong or elliptic-oblong, 8 to 16 cm long, 3 to 6 cm wide, acuminate at apex, acute at base with a slender petiole 1 to 3 cm long, crenate-serrate, glabrous above, often sparsely pilose on the nerves beneath, the smaller leaf similar, 2 to 4 cm long, 0.3 to 1.3 cm wide, acute or acuminate, the cystoliths linear and punctiform, conspicuous on upper surface; plants dioecious; staminate flowers in loose cymes in the upper axils, the peduncles about 1 cm long, the tips of the perianth segments filiform, 1 to 1.5 mm long; pistillate flowers in lax, pedunculate panicles up to 5 cm long; achenes about 1 mm long.

DISTRIBUTION: Western Colombia, at elevations up to 1,000 meters.

COLOMBIA.

BOLÍVAR: Boca Antizales, Pennell 4502 (Y).

EL CHOCÓ: La Concepción, Archer 1977 (US).

EL VALLE: Río Dagua, Triana (BM, P, type).

33. *Pilea centradenioides* Seem. Bot. Voy. Herald 194. 1854.

Semi-epiphytic herb, the stem repent in the lower part, strigose-hirsute; stipules ovate-oblong, 6 to 10 mm long, thin-membranous, subsistent; leaves coarsely dentate-serrate, trinerved or subtriplinerved, sparingly pubescent above with hyaline hairs, or glabrous, appressed-pilose on the nerves and veins beneath, white-

striped along the nerves, the cystoliths of the upper surface linear, not more than 0.3 mm long, those of the lower surface similar but slightly longer, obscure, the leaves of a node strongly unequal and dissimilar, the larger elliptic-lanceolate, rarely oblanceolate, 3 to 15 cm long, 1 to 5 cm wide, caudate-acuminate at apex, subcuneate at base, the petiole 1 to 5 cm long, the smaller one ovate or rhombic-ovate, 1 to 2.5 cm long, 7 to 13 mm wide, acute, sessile or with a petiole 3 to 5 mm long; plants dioecious; staminate cymes shorter than the longer of the adjacent petioles, at length up to 2 cm wide, pedunculate, the perianth globose, about 1.5 mm in diameter, the lobes with filiform tips 1.5 to 2 mm long.

DISTRIBUTION: Northwestern Colombia and in the Magdalena Valley; at low elevations:

COLOMBIA.

SANTANDER: Barranca Bermeja, *Haught* 1274 (US), 1305 (US), 1592 (US).

BOYACÁ: El Humbo, *Lawrance* 652 (F, US).

EL CHOCÓ: Cape Corrientes, *Seemann* 1099 (BM, K, type). Tamaná, *Triana* 887 (HNC, K, P).

Haught's field notes state that this is a delicate, semi-epiphytic herb, growing on the base of trees. His specimens are larger in every way than the Seemann type. In the Triana material the leaves are more densely pubescent, and their teeth more rounded.

34. *Pilea seemannii* Killip, Contr. U. S. Nat. Herb. 26: 382. 1936.

Pilea variegata Wedd. in DC Prodr. 16¹: 123. 1869. Not *P. variegata* Seem., 1854, a transfer of *Urtica variegata* Spreng.

Stem repent at base, at length erect, 25 cm high or more, appressed-ferruginous-hirsute; leaves of a node strongly unequal and dissimilar, the larger one ovate or elliptic-lanceolate, 6 to 11 cm long, 2 to 3 cm wide, oblique, acuminate at apex, sharply serrate, glabrous and longitudinally white-fasciate above, appressed-hirsute on the nerves, the petiole up to 5 mm long, the smaller leaf ovate or orbicular-ovate, 5 to 8 mm long, rounded or cordulate, crenate-serrate, sessile; cystoliths on upper surface of leaves very conspicuous, linear, nearly 1 mm long, straight or bent, numerous, those of the lower surface few and inconspicuous; plants dioecious, the staminate and pistillate cymes similar, 8 to 10 mm wide, the peduncles slender, 3 to 6 mm long; staminate perianth with filiform lobes; pistillate perianth with subequal segments; achenes ovate, 1 to 1.5 mm long.

DISTRIBUTION: Western Colombia, at low elevations.

COLOMBIA.

EL CHOCÓ: Alt. 100 meters, *Triana* 888 (B, BM, HNC, K, P, US). Cape Corrientes, *Seemann* (BM, type of *P. variegata* Wedd., P).

EL VALLE: Córdoba, *Killip* 5117 (G, Ph, US, Y).

This is a striking plant in the dense jungle about Córdoba. The numerous erect branches arise in clumplike masses from the thick repent stem and bear nearly equally spaced, distichous leaves, conspicuously marked above along the nerves with white lines. In the type specimen the larger leaves are ovate; in Triana's no. 888 elliptic-lanceolate.

Many of the Triana specimens of *Pilea* are labeled "Prov. de Barbacoas y Chocó." As many of the species represented by them are of a very local distribution, I believe it is an error to assume from Triana's records that the species occurs in both southwestern and northwestern Colombia.

35. *Pilea costata* Killip, Contr. U. S. Nat. Herb. 26: 382. 1936.

DISTRIBUTION: Known only from the type locality, eastern slopes of the Andes of Peru.

PERU.

JUNÍN: Eneñas, alt. 1,700 meters, *Killip & Smith* 25638 (US, type).

36. *Pilea pichisana* Killip, Contr. U. S. Nat. Herb. 26: 383. 1936.

DISTRIBUTION: Known only from the type locality, eastern slopes of the Andes of Peru.

PERU.

JUNÍN: Dos de Mayo, Pichis Trail, alt. 1,800 meters, *Killip & Smith* 25876 (F, US, type, Y).

36a. *Pilea scandens* Killip, sp. nov.

PLATE 35.

Suffrutescens, scandens, glaberrima, ramosissima, dioica; stipulae minimae, deciduae; folia serrata vel crenato-serrata, trinervia, cystolithis fusiformibus, in pagina superiore elevatis, laminis in eodem jugo inaequimagnis et dissimilibus, majore lanceolato-ovata, acuminata, cordulata, breviter petiolata, minore ovato-reniformi vel cordato-reniformi, sessili; cymae ♀ 3 vel 4-florae, breviter pedunculatae.

Plant scandent, suffrutescent, glabrous throughout, much-branched, the branches slender, elongate; stipules narrowly ovate, about 0.5 mm long, acute, soon deciduous; leaves thick, serrate or crenate-serrate (teeth usually incurved, mucronulate), trinerved, asperulous on both surfaces, dark green above, black-punctate and paler beneath, with the nerves and veins much darker than the leaf surface, the cystoliths short-fusiform, obscure, slightly elevated on the upper surface; leaves of a node unequal and dissimilar, the larger lance-ovate, 1.5 to 3 cm long, 8 to 13 mm wide, acuminate at apex, cordulate or rarely slightly narrowed at base, the petiole 1 to 2 mm long, the smaller leaf ovate-reniform or cordate-reniform, 4 to 5 mm long, 5 to 9 mm wide, sessile, subacute at apex; plants dioecious; pistillate cymes (undeveloped) very short, 3 or 4-flowered, the peduncles about 1 mm long, the perianth segments unequal.

Type in the herbarium of the Riksmuseum, Stockholm, collected in virgin forest, La Costa, near El Tambo, Department of El Cauca, Colombia, altitude 1,300 meters, July 28, 1936, by Kjell von Sneidern (no. 881). Duplicate at US.

DISTRIBUTION: Central and Western Cordilleras of Colombia, at 1,300 to 1,800 meters altitude.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA.

CALDAS: Río Santa Rita, near Salento, *Killip & Hazen* 10129 (G, Ph, US, Y).

EL CAUCA: La Gallera, Micay Valley, *Killip* 7678 (G, Ph, US).

This last specimen was cited (p. 384) as *P. rojasiana*; it was sterile, and I believed at the time that in all probability it represented an undescribed species. Better material collected by Sneidern permits a diagnosis. In general habit this species resembles *P. rojasiana*, but the larger leaves are of a different shape, the tothing of the leaves is more pronounced, and the cystoliths are dissimilar.

EXPLANATION OF PLATE 35.—*Pilea scandens*, the type specimen. One-half natural size.

37. *Pilea rojasiana* Killip, Contr. U. S. Nat. Herb. 26: 383. 1936.

DISTRIBUTION: Southwestern Colombia.

COLOMBIA.

EL CAUCA: San José, near San Antonio, Western Cordillera, west of Popayán, alt. 2,400 to 2,700 meters, *Pennell & Killip* 7373 (US, type); *Sneidern* 1396 (S).

Triana's no. 492, cited under this species on page 384, is better placed in *P. nutans*. *Killip's* no. 7678, which was also cited as *P. rojasiana*, is rather *P. scandens*, as noted above.

38. *Pilea crugeriana* Wedd. in DC. Prodr. 16¹: 122. 1869.

Succulent suffrutescent herb, glabrous throughout; stem densely covered with obscure linear cystoliths; stipules early deciduous; leaves of a node very unequal but rather similar in outline, coarsely crenate-serrate nearly to base, caudate-acuminate at apex, subrotund at base, 3-nerved (lateral nerves extending to base

of acumen), bearing on both surfaces numerous small stellate cystoliths with 3 slender rays, the larger leaves ovate-lanceolate, 3 to 12 cm long, 1 to 3 cm wide, with petioles up to 1.2 cm long, the smaller leaves ovate, 1 to 2.5 cm long, 6 to 15 mm wide, subsessile; plants monoecious (always?), the cymes unisexual or androgynous, subsessile, shorter than the adjacent petioles, the staminate flowers sessile, the pistillate (at most only a very few to a cyme) short-pedicel.

DISTRIBUTION: Venezuela.

VENEZUELA: *Crüger* 46 (K, type); *Gollmer* in 1852⁴ (B). Dos Aguados, *Ernst* 1706 (BM).

ARAGUA: Between El Castaño and summit, alt. 1,100 meters, *Pittier* 13898 (US).

Although not noted by Weddell, the foliar cystoliths of *P. crugeriana* are 3-rayed, similar to those of *P. marginata* and *P. triradiata*. Both of these species, however, have the leaves at a node equal and similar, and in the present treatment occupy a position remote from *P. crugeriana*.

39. *Pilea haenkei* Killip, Contr. U. S. Nat. Herb. 26: 384. 1936.

DISTRIBUTION: Known only from the type specimen.

PERU: "Montaña," *Haenke* 1870 (Pr, type).

40. *Pilea macrocystolithica* Killip, Contr. U. S. Nat. Herb. 26: 384. 1936.

Plant herbaceous, glabrous throughout, the stem simple, about 30 cm high, densely covered with longitudinal, linear cystoliths; stipules triangular-ovate, about 1.5 mm long, obtuse, deciduous; leaves of a node dissimilar and unequal, the larger ovate or ovate-lanceolate, 4 to 6 cm long, 2 to 3 cm wide, obtuse or obtusely acuminate at apex, rounded at base, short- (3-8 mm) petiolate, serrulate nearly to base (serrulations with filiform tips), trinerved, the smaller leaves suborbicular, 1.5 to 2 cm wide, subsessile; cystoliths of upper surface of the leaves very numerous, linear, elevated, 0.7 to 0.8 mm long, those of the lower surface shorter and obscure; plants apparently dioecious, the staminate cymes subglobose, the peduncles about 2 cm long.

DISTRIBUTION: Known only from the type specimen.

PERU: "Montaña," *Haenke* 1860 (Pr, type).

In the original account of this species a line in the description of the cystoliths on page 385 was omitted. A redescription is therefore here presented.

41. *Pilea hydrocotyliflora* Killip, Contr. U. S. Nat. Herb. 26: 385. 1936.

DISTRIBUTION: Known only from the type locality, in the northern part of the Eastern Cordillera of Colombia.

COLOMBIA.

NORTE DE SANTANDER: Ocaña, alt. 1,800 meters, *Kalbreyer* 691 (B, type, K).

42. *Pilea macrantha* Killip, Contr. U. S. Nat. Herb. 26: 385. 1936.

DISTRIBUTION: Known only from the type locality, in southwestern Colombia.

COLOMBIA.

NARIÑO: Alto del Tabano, Cordillera de Pasto, *André* K1670 in part (K, type).

43. *Pilea tetrapoda* Killip, Contr. U. S. Nat. Herb. 26: 386. 1936.

DISTRIBUTION: Known with certainty only from the type locality, in central Ecuador.

⁴ The words "Caracas, *Gollmer*" have been added to *Gollmer*'s original labels and are in another's writing. Most of the *Gollmer* specimens represent very rare species, not re-collected about Caracas during the course of intensive exploration subsequent to *Gollmer*'s time. I suspect that these plants were actually collected in some other part of Venezuela.

COLOMBIA.

NARIÑO: Alto del Tabano, Cordillera de Pasto, *André* K1670 in part (K).
 Tambo Savanilla, *André* K1671 (K).

ECUADOR.

TUNGURAHUA: Palmera, Rfo Pastaza, between Baños and Mera, alt. 1,200 meters, *Tate* 665 (US, type).

As noted on page 386, the Colombian specimens are doubtfully referred here.

VII. FLEXUOSAE

44. *Pilea flexuosa* Wedd. Ann. Sci. Nat. III. Bot. 18: 218. 1852.

Pilea hazeni Killip, Journ. Washington Acad. Sci. 13: 355. 1923.

Plant glabrous throughout, the stem repent or scandent, much branched, the younger portion stramineous; stipules ovate-orbicular, 4 to 6 mm long, persistent; leaves of a pair dissimilar and unequal, rarely similar and subequal, crenate-serrate, subcoriaceous, the cystoliths linear, numerous and conspicuous, the larger leaves ovate-lanceolate, rarely broadly ovate, 2 to 6 cm long, 1.5 to 4 cm wide, acuminate at apex, rounded or cordulate at base, the petioles 1 to 3 cm long, the smaller leaves suborbicular, 1 to 2 cm wide, abruptly acute, cordulate, the petioles 5 to 10 mm long; plants dioecious; pistillate cymes few-flowered, borne in the upper axils on filiform peduncles; achenes broadly ovate, nearly 2 mm long.

DISTRIBUTION: Central Cordillera of Colombia and northern Ecuador.

COLOMBIA.

CALDAS: Quindío mountains, *Goudot* (BM, P, type). Salento, alt. 1,600 to 1,800 meters, *Killip & Hazen* 9007 (US), 10121 (G, Ph, US, type of *P. hazeni*, Y).

ECUADOR.

PICHINCHA: Mount Pichincha, *Jameson* 789 (BM, Gen, K, US). Mount Corazón, *Sodirol* 153/26 (B). Lloa Valley, *Hall* 5 (K).

Weddell placed this among the species with similar and subequal leaves; in the type they are, however, rather strongly dissimilar, though less so than in the type of *P. hazeni* and in the other Killip and Hazen specimen. In the Ecuadorean material the leaves at a node are more nearly equal and more similar.

45. *Pilea cymbifolia* Rusby, Bull. Torrey Club 28: 311. 1901.

Pilea urerifolia Rusby, Bull. Torrey Club 28: 312. 1901.

Plant suffrutescent, erect, 30 cm high or more, glabrous throughout; stipules ovate, 4 to 8 mm long; larger leaf elliptic-lanceolate, 8 to 20 cm long, 2 to 7 cm wide, caudate-acuminate, crenate-serrate to base, often subfalcate, petiolate; smaller leaf ovate-lanceolate, 1.5 to 3.5 cm long, 0.5 to 1.2 cm wide; cystoliths on upper surface minute, punctiform, wanting beneath; plants dioecious or rarely monoecious; staminate flowers in dense globose heads 5 to 8 mm wide, on slender peduncles up to 1.5 cm long; pistillate flowers in once or twice-dichotomous cymes much shorter than the adjacent petioles; achenes ovate, about 1.5 mm long.

DISTRIBUTION: Western Bolivia, at 1,000 to 2,400 meters altitude.

BOLIVIA: Rfo Tocorani, *Herzog* 2305 (B, Gen, V).

LA PAZ: Yungas, *Rusby* 1482 (BM, G, K, Ph, US, Y, type). Sorata, *Rusby* 1480 (F, US, Y). Unduavi, *Rusby* 1481 (Y, type of *P. urerifolia*). Sacramento, *Bang* 2374 (A, B, BM, F, G, Gen, K, Mo, Ph, US, V, Y). Coroico, *Buchtien* 3751 (Gen, Y), 3752 (US, Y), 3753 (Y).

This species in many details is similar to *P. capitellata*, a plant apparently with the opposite leaves equal and similar. *Pilea urerifolia* appears to be only a form of *P. cymbifolia* with proportionately broader leaves.

VIII. DAUCIODORAE

46. *Pilea urticella* Wedd. in DC. Prodr. 16¹: 157. 1869.

Slender repent herb, with numerous erect or ascending, pilosulous branches up to 12 cm long, leafy throughout; leaves ovate, 3 to 10 mm long, 2 to 6 mm wide, subobtusate at apex, short-petiolate, incised-serrate, thin-membranous, bearing a few linear cystoliths, sparingly pilosulous above, hirsute on nerves beneath; plants monoecious, the inflorescences androgynous, few-flowered, subglobose, up to 5 mm wide, borne in the upper axils on slender peduncles 1.5 to 2 cm long; achenes ovate, about 1 mm long.

DISTRIBUTION: Known only from the type locality, in north-central Venezuela, at 1,200 meters altitude.

VENEZUELA.

ARAGUA: Colonia Tovar, *Fendler* 2429 (G, Gen, type, K, Mo, Ph).

The appearance of this plant, with incised leaves, suggests *Urtica urens*.

47. *Pilea lamioides* Wedd. Ann. Sci. Nat. III. Bot. 18: 213. 1852.

Plant glabrous throughout, the stem simple, slender, up to 12 cm high; leaves ovate, 1 to 3 cm long (lower as short as 0.3 cm), 0.6 to 2 cm wide, coarsely crenate-dentate, obtuse; cystoliths obscure, linear above, punctiform beneath; plants monoecious, the cymes at the summit of stem, the staminate flowers short-pedicelled in sessile clusters, the pistillate sessile in short-peduncled clusters; achenes less than 0.5 mm long.

DISTRIBUTION: Known positively only from the Department of Lima, Peru, at low elevations.

PERU: *Dombey* (P, type); *Pavón* (P).

LIMA: San Gerónimo, *Macbride* 5910 (F, K, US). Atocongo, *Pennell* 14751 (Ph, Y). Amancaes, near Lima, *Weberbauer* 1594 (B). Hupacá, *Raimondi* 285 (B).

This is an easily recognized species, resembling *Lamium purpureum*.

48. *Pilea dombeyana* Wedd. Ann. Sci. Nat. III. Bot. 18: 221. 1852.

Pilea orbiculata Killip, Journ. Washington Acad. Sci. 15: 53. 1925.

Low, succulent, glabrous herb; stipules broadly ovate, persistent; leaves borne mainly near end of branches, nearly orbicular, 0.7 to 2.5 cm long and wide, short-petiolate, often cartilaginous-thickened at margin; cystoliths fusiform, very faint; plants monoecious or dioecious, the heads unisexual; staminate flowers sessile in globose clusters in a few-branched panicle; pistillate flowers in small, densely-flowered, sessile or subsessile cymes.

DISTRIBUTION: Probably confined to the high mountains of central Peru.

PERU: "Andes," *Dombey* (P, type); *MacLean* (K); "Herb. Hooker 2031" (Y). Between Callcan and Pelechuco, alt. 3,600 meters, *Pearce* in 1864 (K).

HUÁNUCO: Chasqui, *Macbride* 3289 (B, F, type of *P. orbiculata*, Gen, K, US).

Pilea dombeyana was wrongly placed by Weddell in the group with long-peduncled pistillate cymes. In all the specimens here cited the pistillate cymes are sessile, or very nearly so, and much shorter than the petioles.

49. *Pilea serratifolia* Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 235. 1856-57.

Plant herbaceous, glabrous throughout, the stem erect or ascending, with several short alternate branches 10 to 15 cm long; stipules broadly ovate, 3 to 6 mm long, divaricate, persistent; leaves ovate, 1 to 3 cm long, 1 to 2.5 cm wide, acute at apex, rounded or subcuneate at base, sharply serrate to base, glaucescent beneath; staminate flowers in a dense globose head, solitary or in 2's, on slender peduncles borne in the upper axils; pistillate cymes sessile in the lower axils; achenes about 1 mm long.

DISTRIBUTION: Northern Ecuador.

ECUADOR.

PICHINCHA: Mount Pichincha, *Jameson* 834 (BM, Gen, K, type, US); *Sodi* 153/23c (B).

50. *Pilea strigosa* Wedd. Ann. Sci. Nat. III. Bot. 18: 225. 1852.

Pilea repens var. *strigosa* Wedd. in DC. Prodr. 16¹: 156. 1869.

Stem repent at base, with few or numerous lax, ferruginous-hirsutulous branches; stipules ovate, about 3 mm long, persistent; leaves suborbicular to broadly ovate, 0.8 to 2.5 cm long, 0.8 to 1.5 cm wide (extremes 4.5 cm long, 3 cm wide), rounded or subacute at apex, rounded or subtruncate at base, crenate-serrate, usually strigose-pilose above, ferruginous-hirsutulous on the nerves beneath; cystoliths punctiform or short-linear; plants usually monoecious; cymes unisexual, but often both kinds borne in the same axil; staminate flowers in compact, subglobose, usually long-peduncled cymes, the perianth up to 2 mm in diameter, the lobes with conspicuous foliaceous tips; pistillate inflorescence paniculate, pedunculate; achenes ovate, about 1 mm long.

DISTRIBUTION: Northern and central Peru and western Bolivia, up to 3,000 meters altitude.

PERU: *Mathews* 2031 (BM, G, K, P, type).

LORETO: Santa Rosa, Lower Río Huallaga, *Killip & Smith* 28835 (F, US, Y), 28843 (US, Y).

HUÁNUCO: Cochero, *Poeppig* 1552 in part (B, V).

JUNÍN: Dos de Mayo, Pichis Trail, *Killip & Smith* 25795 (US).

BOLIVIA.

LA PAZ: Yungas, *Bang* 687 (B, BM, F, G, K, Ph, US, V, Y). Unduavi, *Buchtien* 85 (B, BM, F, G, Gen, Y), 795 (US), 8938 (US), 8939 (US); *Julio* 462 (US); *Rusby* 1485 (Y).

Much of the Bolivian material was distributed as *P. dauciodora*, a species which *P. strigosa* resembles in general appearance. In addition to being densely pubescent, the cystolithic marking is quite dissimilar.

The range of altitude at which the plant grows is unusually great, the specimens from northern Peru having been collected at 135 meters and *Buchtien's* no. 85 at 3,300 meters.

Pilea repens, a West Indian plant with androgynous heads and linear fusiform cystoliths, is certainly a distinct species.

51. *Pilea pusilla* Krause, Bot. Jahrb. Engler 37: 530. 1906.

Plant slender, glabrous, up to 10 cm high, the stem filiform; stipules minute, soon deciduous; leaves suborbicular or subreniform, up to 1 cm long and 1.5 cm wide, obtuse at apex, subtruncate at base, sharply serrulate, the cystoliths all punctiform; plants monoecious, the flower clusters unisexual or androgynous, forming slender-peduncled panicles; achenes ovate, about 0.75 mm long.

DISTRIBUTION: Known only from the type locality, in central Peru.

PERU.

JUNÍN: Palca, alt. 1,900 to 2,000 meters, *Weberbauer* 2023 (B, type).

52. *Pilea delicatula* Killip, Journ. Washington Acad. Sci. 15: 51. 1925.

Plant up to 10 cm high, glabrous throughout; leaves ovate-lanceolate, 1 to 1.5 cm long, 0.5 to 1 cm wide, acute, rounded or subcuneate at base, sharply serrate, the teeth mucronate; cystoliths on upper surface few, linear, faint, punctiform on lower surface; plants dioecious (?); pistillate flowers in globose, about 6-flowered, short-pedunculate cymes, the flowers pendent; achenes broadly ovate, 1.5 mm long.

DISTRIBUTION: Known only from the type locality, in central Peru.

PERU.

HUÁNUCO: Tambo de Vaca, alt. 4,000 meters, *Macbride* 4400 (B, F, type, Gen, K, US).

53. *Pilea elliptica* Hook. f. Fl. Antarct. 344. 1847.

Pilea chilensis Wedd. Ann. Sci. Nat. III. Bot. 18: 221. 1852.

Pilea pedunculata Blume, Mus. Bot. Lugd. Bat. 2: 46. 1852.

Pilea uliginosa Phil. Linnaea 30: 199. 1859 or 1860.

Plant glabrous throughout, the stem radicant below, much-branched, the main branches ascending, bearing short axillary branchlets with small leaves; leaves rhombic or rhombic-ovate, 0.7 to 2.5 cm long, 0.4 to 2 cm wide, crenate-serrate nearly to base, obtuse or acutish at apex, acute at base, triplinerved (lateral nerves reaching scarcely to upper third), crenate-serrate, the cystoliths above linear, faint, few, beneath punctiform, numerous; plants monoecious (sometimes dioecious?), the cymes unisexual, slender-peduncled, globose; staminate perianth with very short tips; achenes orbicular-reniform, about 1 mm long, 1.5 mm wide.

DISTRIBUTION: Central and southern Chile, at low elevations, the type collected by Charles Darwin in the Chonos Archipelago.

CHILE: *Gay* (B, Y); *Née* (Ma); *D'Urville* (P); *Dombey* (P). Río Manso, *Reiche* in 1896 (B). *Burco*, *Claude Joseph* 3994 (US).

ATACAMA: *Freirina*, *Claude Joseph* 1862 (BM, US, Y).

CONCEPCIÓN: *Bridges* (B).

VALDIVIA: *Valdivia*, *Bridges* 741 (BM, V, Y); *Gay* 235 (Gen, P); *Philippi* 28 (B, P, US, V); *Buchtien* in 1897 (US), in 1899 (Gen, V), in 1905 (US).

Panguipulli, *Claude Joseph* 2352 (US); *Hollermeyer* 511 (B); *Werdermann* 1954 (B). *Valenzuela Island*, *Lechler* 409 (B, BM, Brux, P, V). *Corral*, *Gunckel* 68 (BM).

LLANQUIHUE: *Puerto Montt*, *Philippi* (type collection of *P. uliginosa*; B, BM, G). *Peulla*, *Pennell* 12653 (F, Ph, US, Y).

CHILOE: *Gay* 68 (P); *Cuming* 40 (BM). *Castro*, *Pennell* 12608 (Y).

Pilea uliginosa appears to be merely a depauperate form of *P. elliptica*.

54. *Pilea dauciodora* (R. & P.) Wedd. Ann. Sci. Nat. III. Bot. 18: 223. 1852.

Urtica dauciodora R. & P.; Wedd. Ann. Sci. Nat. III. Bot. 18: 223. 1852, as synonym.

Pilea uncidens Wedd. Ann. Sci. Nat. III. Bot. 18: 224. 1852.

Pilea dauciodora var. *uncidens* Wedd. in DC. Prodr. 16¹: 138. 1869.

Stem repent, at length suberect, reddish or purplish; stipules triangular, up to 1 mm long, soon deciduous; leaves broadly ovate, orbicular-ovate, or rarely ovate-lanceolate, averaging 1.5 cm long and 1 cm wide, obtuse or subacute at the apex, truncate, cordulate, or rarely subacute at the base, petiolate, crenate-serrate to base (teeth usually mucronulate, subimbricate), glabrous, dark green above, paler beneath, densely covered above with linear and fusiform cystoliths, those beneath fewer and fainter; plants monoecious or dioecious, the heads unisexual (both kinds often borne at same axil), rarely androgynous, slender-peduncled; staminate heads 2 to 6-flowered; pistillate inflorescence simple or decomposed, consisting of 2 to 6 (rarely 1) globose, 8 to 20-flowered clusters; achenes oblong-ovate, 1 to 1.2 mm long, strongly flattened.

DISTRIBUTION: Guatemala; Colombia and Venezuela to Peru and Bolivia, at 2,000 to 3,200 meters altitude or rarely at lower elevations. Replaced in Ecuador by *P. jamesoniana*, a closely related species.

VENEZUELA.

FEDERAL DISTRICT: *Caracas*, *Pittier* 11120 (US).

ARAGUA: Colonia Tovar, *Fendler* 1246 (G, Gen, K, Mo); *Allart* 484 (US, Y).

MÉRIDA: Mucurubá, *Gehriger* 329 (Gen, US).

COLOMBIA.

SANTANDER: Las Vegas, *Killip & Smith* 16093 (G, US, Y). La Baja, *Killip & Smith* 18830 (G, US, Y).

NORTE DE SANTANDER: Río Mesme, between Pamplona and Toledo, *Killip & Smith* 19847 (G, US, Y). Loso, *Killip & Smith* 20390 (G, US, Y).

Tapatá, *Killip & Smith* 20207 (G, US, Y). Páramo del Hatico, *Killip & Smith* 20669 (G, US, Y), 20693 (G, US, Y).

HUILA: Río Balsillas, *Rusby & Pennell* 794 (F, G, Mo, US, Y).

CUNDINAMARCA: Bogotá, *Holton* 262 (K, Ph, Y); *André* 1243 (K, Y). Páramo de Guasca, *Cuatrecasas* 2587 (US).

ANTIOQUIA: Medellín, *Archer* 1083 (US), 1084 (US); *Toro* 969 (Y), 1049 (Y).

CALDAS: Cerro Tatamá, *Pennell* 10379 (US).

PERU: "Andes," *Ruiz & Pavón* (Ma, P, type); *Spruce* (K).

HUÁNUCO: Muña, *Macbride* 4117 (F, US).

JUNÍN: Huacapistana, *Killip & Smith* 24160 (US), 24408 (US, Y). Acobamba, *Raimondi* 2800 (B).

AYACUCHO: Ccarrapa, *Killip & Smith* 22439 (F, US, Y).

PUNO: Sandía, *Weberbauer* 753 (B).

BOLIVIA: *Bang* 1787 (Mo), 1796 (B, BM, F, Mo, Y).

LA PAZ: Larecaja, *Weddell* 4561 (P, type of *P. uncidens*). Unduavi, *Rusby* 1483 (BM, G, Ph, Y); *Buchtien* 372 (US), 2813 (Y), 8937 (US). Sirupaya, *Buchtien* in 1906 (B). Sorata, *Mandon* 1103 in part (BM, P, V), 1124 (V).

COCHABAMBA: Incachaca, *Steinbach* 8974 (B), 9153 (B, Ph).

SANTA CRUZ: Santa Rosa, *Kuntze* in 1892 (K, Y).

This is a common plant of fairly wide range. By far the greater part of the specimens examined, from Central America and West Indies as well as from South America, have broadly ovate leaves and minute stipules, agreeing closest with the form described as *P. uncidens*.

55. *Pilea fendleri* Killip, Field Mus. Bot. 13²: 341. 1937.

Urtica dichroa Poepp.; Wedd. in DC. Prodr. 16¹: 61. 1869, as synonym.

Pilea dauciodora var. *crenata* Wedd. in DC. Prodr. 16¹: 139. 1869. Not *P. crenata* Britton & Wilson.

Pilea dauciodora var. *pilosula* Wedd. in DC. Prodr. 16¹: 139. 1869.

Pilea leptophylla Killip, Contr. U. S. Nat. Herb. 26: 387. 1936. Not *P. leptophylla* Urban, 1899.

Slender herb, with the stem repent at base, at length ascending and few- to several-branched, the branches up to 8 cm high; stipules triangular-ovate, 1 to 2 mm long, obtuse, subpersistent; leaves mainly rotund-spatulate (a few rhombic or suborbicular), 0.5 to 2 cm long, 0.5 to 1 cm wide (those of a node subequal and generally similar), obtuse or rounded at apex, cuneate at base, crenate or crenate-serrate above middle (teeth 3 to 5 to a side), triplinerved, very thin and lax, glabrous or sparsely pilosulous with hyaline hairs, conspicuously marked on upper surface with linear or fusiform cystoliths up to 0.8 mm long, the lower surface with numerous conspicuous cystoliths in longitudinal rows on the nerves, those elsewhere much fainter; plants monoecious, the heads unisexual or androgynous, borne in the axils of the upper leaves on slender peduncles 5 to 10 mm long; staminate flowers solitary, or 2 to 4, sessile in a few-branched cyme, or a few intermingled with the pistillate, the perianth about 2 mm wide when expanded, the lobes mucronulate; pistillate flowers sessile or subsessile, in small, usually densely-flowered cymes up to 5 mm wide, the perianth segments unequal, the middle segment about 0.5 mm long, the lateral half as long; achenes ovate, about 0.8 mm long.

DISTRIBUTION: Venezuela, Colombia, and Peru, up to 1,000 meters altitude.

VENEZUELA: *Gollmer* in 1854 (B).

ARAGUA: Colonia Tovar, *Fendler* 1247 (Bo, Brux, G, Gen, K, type, also type of *P. dauciodora* var. *crenata*, Ph, US); *Moritz* 790 (B, type of *P. dauciodora* var. *pilosula*, BM, Bo).

COLOMBIA.

MAGDALENA: Santa Marta Mountains, *H. H. Smith* 1223 (B, BM, Brux, F, G, Gen, P, Ph, US, Y).

PERU: *Poeppig* 1383 (B).

HUÁNUCO: Cochero, *Poeppig* 1552 in part (V).

This plant is distinguished from *P. dauciodora* by its thinner leaves, which are of a more definitely spatulate outline, with far more conspicuous cystoliths and with usually a few hyaline hairs, and by its persistent stipules.

In a list in the Prodrômus of species excluded from *Urtica* Weddell gives *U. dichroa* Peopp., apparently only an herbarium name, as equaling *Pilea nummularifolia*, and it is so cited in Index Kewensis. Weddell did not, however, include it in the formal synonymy of *P. nummularifolia*, and the specimen in the Vienna herbarium bearing *Poeppig's* name is surely not that species. This specimen, as well as the one in the Berlin herbarium, agrees well with material of *P. fendleri* from northern South America, although this extension of range is rather remarkable.

Unfortunately the name *crenata* was not available in raising the variety to specific rank, and I was disinclined to use the varietal name *pilosula*, as that plant may prove to be specifically distinct. The confusion already existing would become worse, were *Poeppig's* manuscript name transferred to *Pilea*.

56. *Pilea jamesoniana* Wedd. Ann. Sci. Nat. III. Bot. 18: 224. 1852.

Pilea dauciodora var. *jamesoniana* Wedd. in DC. Prodr. 16¹: 139. 1869.

Plant glabrous throughout; stem up to 25 cm long; stipules ovate, 4 to 5 mm long, persistent; leaves orbicular-ovate, 1 to 3.5 cm long, 1 to 2.5 cm wide, sub-acute at apex, truncate at base, crenate; plants monoecious, the cymes androgynous, the peduncles slender, 2 to 2.5 cm long; achenes ovate-oblong, 1.5 to 1.7 mm long.

DISTRIBUTION: Mountains of Ecuador, at about 3,000 meters altitude.

ECUADOR. "Andes, 3,000 meters," *Jameson* 745 (BM, Gen, K, type). "In Andibus," *Spruce* 6047 (K). *Sodi* 153/23 (B).

PICHINCHA: *Sodi* 153/23b (B). La Magdalena, *Firmin* 640 (F, US).

TUNGURAHUA: *Spruce* 6106 in part (V).

Pilea jamesoniana and *P. filipes* are distinguished from the common *P. dauciodora* by large persistent stipules. The leaves of both are usually larger and more pointed.

57. *Pilea filipes* Rusby, Bull. Torrey Club 28: 311. 1901.

Plant glabrous throughout, the stem ascending, 20 to 40 cm high; stipules oblong, 5 to 7 mm long, persistent; leaves ovate-elliptic, 2 to 6 cm long, 1.5 to 3 cm wide, acute or acuminate at apex, acute or rounded at base, crenate-serrate; plants monoecious, the peduncles filiform, 4 to 6 cm long, the inflorescences unisexual, or rarely one or two staminate flowers at base of pistillate, in globose clusters forming a panicle; achenes less than 1 mm long.

DISTRIBUTION: Western Bolivia, at 1,800 to 2,600 meters altitude.

BOLIVIA.

LA PAZ: *Bang* 1788 (B, BM, G, Ph, US, V, Y). Yungas, 1,800 meters, *Rusby* 1756 (Y, type). Unduavi, *Rusby* 1479 (Y). Sorata, *Mandon* 1103 in part (Gen, P).

IX. CAPITELLATAE

58. *Pilea discolor* Killip, Contr. U. S. Nat. Herb. 26: 387. 1936.

DISTRIBUTION: Known positively only from the Eastern Cordillera of Colombia. COLOMBIA: *Lehmann* BT1258 (K, type as to staminate inflorescence, Y).

CUNDINAMARCA: Chinququirá, alt. 2,500 meters, *Ariste Joseph* A890 (Bog, US, type).

59. *Pilea minutiflora* Krause, Bot. Jahrb. Engler 37: 529. 1906.

Plant glabrous throughout; stem erect, 30 to 40 cm high, few-branched; leaves ovate-lanceolate or ovate-elliptic, 3 to 8 cm long, 1.5 to 3 cm wide, acuminate at apex, rounded or cordulate at base, crenate-serrate to base, 3-nerved, the lateral nerves reaching only to upper third of blade; cystoliths few and very faint, linear; plants usually dioecious; staminate flowers in globose, few-flowered clusters about 4 mm in diameter, in a once-branched panicle, the perianth globose in bud, 2 mm in diameter, purplish distally, pale proximally, the lobes obtuse; pistillate flowers in small, subcontiguous clusters in subdichotomous cymes up to 7 cm long including a slender peduncle, the perianth scarcely 1 mm long; achenes about 1 mm long.

DISTRIBUTION: Central and southern Peru, at 1,900 to 3,000 meters altitude. PERU.

JUNÍN: Huacapistana, 1,900 to 2,000 meters, *Weberbauer* 2027 (B, type).

PUNO: Sandía, *Weberbauer* 575 (B).

The Indians are said to use this as a remedy for unrequited love.

60. *Pilea capitellata* Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 220. 1856-57.

Erect herb, 40 to 60 cm high, glabrous throughout, the internodes elongate; stipules cordate-ovate, subpersistent; leaves oblong, 8 to 15 cm long, 2 to 4 cm wide, acuminate at apex, acute or obtuse at base, serrate except at base, the cystoliths punctiform, obscure, more numerous beneath; plants dioecious; staminate heads globose, 5 to 8 mm in diameter, densely flowered, solitary, the peduncles filiform, 1 to 2 cm long.

DISTRIBUTION: Known only from the type locality, in western Bolivia.

BOLIVIA.

LA PAZ: Tipuani, *Weddell* (P, type).

The type specimen is in poor condition, all of the leaves having become detached from the stem. Weddell evidently did not consider that the leaves of a node were dissimilar or greatly unequal. Were it possible to show that they were, there would be little to distinguish this species from *P. cymbifolia*, as the single-headed, globose staminate inflorescence and the large persistent stipules are common to the two. The foliage is very similar, although in *P. cymbifolia* the leaves are somewhat falcate.

61. *Pilea cuprea* Krause, Bot. Jahrb. Engler 37: 530. 1906.

Pilea ornatifolia Killip, Journ. Washington Acad. Sci. 13: 356. 1923.

Plant about 60 cm high, glabrous throughout; stem succulent, geniculate at middle of internodes; leaves ovate-lanceolate, acuminate at apex, serrate to base, cordulate, those of a pair similar but somewhat unequal, the larger 3.5 to 5.5 cm long, 1.5 to 2.5 cm wide, with petioles up to 1.5 cm long, the smaller 2.5 to 3.5 cm long, 1 to 1.5 cm wide, with petioles up to 3 mm; cystoliths on upper surface punctiform, on lower surface linear and fusiform, conspicuous; plants dioecious; staminate cluster solitary on slender peduncles or in a few-branched panicle, globose, about 6 mm in diameter; pistillate heads 4 to 8-flowered, sessile or short-peduncled.

DISTRIBUTION: Known only from the northern part of the Western Cordillera of Colombia and the southern part of the Central Cordillera.

COLOMBIA.

ANTIOQUIA: *Triana* (HNC).

CALDAS: Cerro Tatamá, alt. 3,200 to 3,400 meters, *Pennell* 10476 (A, G, US, type of *P. ornatifolia*, Y).

EL CAUCA: Central Cordillera, near Popayán, alt. 2,200 to 2,700 meters, *Lehmann* 4475 (B, type, K, US).

62. *Pilea tungurahuae* Killip, Contr. U. S. Nat. Herb. 26: 387. 1936.

DISTRIBUTION: Known only from the type locality, in the mountains of central Ecuador.

ECUADOR.

TUNGURAHUA: Eastern slope of Volcán Tungurahua, alt. 2,000 meters, *Tate* 585 (US, type).

63. *Pilea rhombifolia* Killip, Journ. Washington Acad. Sci. 13: 357. 1923.

Plant 20 to 30 cm high, glabrous throughout; leaves rhombic-ovate, 2 to 4.5 cm long, 1.5 to 3 cm wide, cuneate or subrotund at base, crenate-serrate, subcoriaceous, dark green above, silvery white beneath, the cystoliths linear, conspicuous above; pistillate flowers in subsessile cymes up to 1 cm wide; achenes ovate, 1 mm long.

DISTRIBUTION: Known only from the type locality, in northeastern Colombia.

COLOMBIA.

MAGDALENA: Santa Marta, *H. H. Smith* 1446 (B, BM, F, G, Gen, K, Mo, Ph, US, type, Y).

64. *Pilea pennellii* Killip, Journ. Washington Acad. Sci. 13: 357. 1923.

Plant herbaceous, about 30 cm high, branched near base, glabrous throughout, drying light green; leaves narrowly ovate-oblong, 2 to 4 cm long, 0.8 to 1.5 cm wide, acuminate at apex, tapering to base, minutely serrulate, above copiously covered with punctiform and minute linear cystoliths, beneath punctate with dark ocellae but nearly destitute of cystoliths; plants monoecious; staminate heads solitary, the peduncles filiform, about 3 cm long; pistillate cymes subsessile; achenes barely 0.5 mm long.

DISTRIBUTION: Known only from the type locality, in the northern part of the Western Cordillera of Colombia.

COLOMBIA.

CALDAS: Cerro Tatamá, alt. 2,400 meters, *Pennell* 10326 (US, type).

65. *Pilea macbridei* Killip, Journ. Washington Acad. Sci. 15: 52. 1925.

Plant about 1 meter high, glabrous throughout, the stem woody, much branched above; leaves ovate or orbicular-ovate, 3 to 5 cm long, 1.5 to 2.5 cm wide, acuminate at apex, cordulate or subobtusate at base, serrate from base to apex; plants monoecious; staminate flowers in compact globose heads up to 6 mm wide, borne in the upper axils; pistillate flowers in small subsessile cymes in the lower axils; achenes punctulate.

DISTRIBUTION: Central Peru, at 2,800 to 3,000 meters altitude.

PERU.

HUANUCO: Río Chinchao, alt. 2,800 meters, *Macbride* 5179 (F, type, US).

JUNÍN: Carpapata, above Huacapistana, *Killip & Smith* 24457 (US, Y).

66. *Pilea elegans* Gay, Fl. Chil. 5: 364. 1849.

Pilea elliptica var. *gayana* Wedd. in DC. Prodr. 16¹: 140. 1869.

Plant glabrous throughout; stem erect or ascending, 30 cm or more long, stout; leaves oblong-lanceolate or elliptic-lanceolate, 5 to 10 cm long, 2 to 3 cm wide, acuminate at apex, acute at base, crenate-serrate, 3-nerved, the nerves extending to apex of blade; cystoliths obscure, linear or fusiform above, punctiform beneath; plants monoecious; staminate flowers in a subglobose slender-peduncled head or in

glomerules forming a once-branched panicle; pistillate flowers in short-peduncled cymes; achenes broadly ovate, about 0.7 mm long.

DISTRIBUTION: Central Chile.

CHILE: Coronel, *Ochsenius* in 1862 (B).

ARAUCO: Cañete, *Claude Joseph* 5607 (US). La Mocha, *Philippi* (B); *Reed* in 1872 (BM).

CAUTÍN: Temuco, *Claude Joseph* 4658 (US).

VALDIVIA: Valdivia, *Gay* 236 (B, P, type, V); *Bridges* 742 (BM); *Buchtien* in 1902 (US).

Weddell reduced *P. elegans* Gay to a variety of *P. elliptica* and used the specific name *elegans* for a wholly distinct West Indian species. *Pilea elegans* Gay is quite different from *P. elliptica*.

Local name: "Mellahuvilu."

X. MULTIFLORAE

67. *Pilea pteropodon* Wedd. in DC. Prodr. 16¹: 144. 1869.

Robust herb, glabrous throughout, the stem quadrangular, repent at the base, erect, unbranched, up to 25 cm high; stipules oblong or linear-oblong, 1.5 to 3 cm long, 3 to 8 mm wide, obtuse, persistent; leaves broadly ovate, ovate-oblong, elliptic, or rarely suborbicular, 12 to 25 cm long, 6 to 15 cm wide, abruptly acuminate or attenuate-acuminate, abruptly or subabruptly narrowed to a broadly winged petiole up to 10 cm long, triplinerved, crenate-serrate toward apex or subentire, the cystoliths filiform and punctiform, obscure on the under surface; plants dioecious; pistillate cymes dichotomous, up to 10 cm long including the peduncle and branches; achenes suborbicular, about 1 mm in diameter, apiculate.

DISTRIBUTION: Southwestern Colombia and northwestern Ecuador; subtropical zone, up to 1,500 meters altitude.

COLOMBIA.

EL CAUCA: La Gallera, Pacific slope, west of Popayán, *Killip* 7703 (G, US, Y). El Tambo, *Sneidern* 707 (S), 788 (S), 862 (S), 863 (S).

NARIÑO: Tuquerres, *Triana* (HNC, P, type), 892 (part of type?, B, BM, K, P). Armada, *André* 3510 (K).

ECUADOR.

ESMERALDAS: Playa Rica, Parroquia de Concepción, *Mexía* 8476 (US).

This species is readily recognized by the large, persistent stipules and the winged petioles. The shape of the blade, though fairly uniform in an individual plant, varies greatly in the different specimens cited above, ranging from elliptic (5:2) in the type to suborbicular (about 15 cm long and broad) in the Ecuador specimen.

LOCAL NAME: "Gusina."

68. *Pilea carnulosa* Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 208. 1856-57.

Plant glabrous throughout, about 50 cm high, suberect or subscandent, the stem diffusely branched, drying straw-colored; stipules suborbicular, persistent; leaves narrowly lanceolate, 0.8 to 4 cm long, 0.5 to 1.5 cm wide, caudate-acuminate at apex, coarsely serrate, carinose; cystoliths of upper surface mainly punctiform, a few linear ones in longitudinal rows near margin and between nerves; plants dioecious; staminate flowers in small sessile glomerules in short-peduncled cymes; pistillate flowers in sessile, few-flowered cymes.

DISTRIBUTION: Eastern and Central Cordilleras of Colombia, at about 3,000 meters altitude.

COLOMBIA.

SANTANDER: La Baja, *Killip & Smith* 18808 (G, US, Y).

CUNDINAMARCA: Viotá, *André* K1679 (K).

TOLIMA: La Ceja, Old Quindío Trail, *André* K2215 (K, Y).

ANTIOQUIA: *Triana* 345 (P, type).

CALDAS: Magaña, Old Quindío Trail, *Killip & Hazen* 9438 (G, Ph, US, Y).

The texture of the stem and the persistent stipules suggest a relationship between this species and *P. flexuosa*, though there are several differences other than the dimorphic leaves of *P. flexuosa*.

69. *Pilea smithii* Killip, Contr. U. S. Nat. Herb. 26: 388. 1936. PLATE 36.

DISTRIBUTION: Eastern Cordillera of Colombia, at 2,200 to 3,200 meters altitude; known only from the general vicinity of Bucaramanga.

COLOMBIA.

SANTANDER: La Baja, *Killip & Smith* 17188 (G, US, Y), 18284 (G, US, type, Y), 18797 (G, S, US, Y). California, *Killip & Smith* 16990 (G, US).

Two other specimens from the Department of Santander (*Killip & Smith* 16561 and 19021), both sterile, belong to an undescribed species of this relationship.

EXPLANATION OF PLATE 36.—*Pilea smithii*, the type specimen. One-half natural size.

70. *Pilea marginata* (Poepp.) Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 238. 1856-57.

Urtica marginata Poepp.; Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 238. 1856-57, as synonym.

Erect herb, 80 cm high or more, glabrous throughout; petioles 1 to 6 cm long; leaves oblong or oblanceolate, 10 to 20 cm long, 4 to 8 cm wide (lower slightly smaller), attenuate-acuminate, acute or subobtuse at base, undulate, sometimes minutely denticulate toward apex, coriaceous, the margin thickened, the cystoliths stellate, 3-rayed; plants apparently dioecious; staminate flowers in small subcontiguous glomerules in a narrow panicle, the perianth lobes subobtuse.

DISTRIBUTION: Northern and central Peru.

PERU: Río Amazonas, *Poeppig* D1088 (P, type, V), 2088 (BM).

SAN MARTÍN: Tarapoto, *Ule* 6508 (Go).

HUÁNUCO: Cochero, *Poeppig* 3045 (B, Gen, P, V). Pampayacu, alt. 1,100 meters, *Macbride* 5086 (F, K, US).

JUNÍN: San Nicolás, Pichis Trail, alt. 1,100 meters, *Killip & Smith* 26032 (F, US, Y).

This, the next following species, and *P. crugeriana* are characterized by stellate 3-rayed cystoliths on both surfaces of the leaves.

71. *Pilea triradiata* Killip, Contr. U. S. Nat. Herb. 26: 389. 1936. PLATE 37.

DISTRIBUTION: Known only from the type specimen.

VENEZUELA.

FEDERAL DISTRICT: Caracas, *Gollmer* in 1856 (B, type).

EXPLANATION OF PLATE 37.—*Pilea triradiata*, the type specimen. One-half natural size.

72. *Pilea rusbyi* (Britton) Killip, Journ. Washington Acad. Sci. 15: 293. 1925.

Urera rusbyi Britton, Bull. Torrey Club 28: 310. 1901.

Erect or ascending herb, 30 cm or more high, glabrous throughout; leaves broadly ovate, suboblique, 10 to 20 cm long, 4.5 to 9 cm wide, abruptly caudate-acuminate at apex, subcuneate at base, finely serrate (serrations 5 per cm), the nervation beneath very dark, the petioles up to 6 cm long, those of a pair unequal; cystoliths punctiform and obscure above, almost wanting beneath; plants dioecious, the inflorescences cymose-paniculate, up to 20 cm wide, on peduncles 4 to 8 cm long; achenes 8 to 10 mm long.

DISTRIBUTION: Northwestern Bolivia, at 1,000 to 1,800 meters altitude.

BOLIVIA.

LA PAZ: Yungas, alt. 1,800 meters, *Rusby* 1774 (F, Y, type). Coroico, *Buchtien* 3754 (US, Y).

73. *Pilea puracensis* Killip, Journ. Washington Acad. Sci. 13: 356. 1923.

Erect herb, 30 to 40 cm high, glabrous throughout; leaves elliptic or elliptic-lanceolate, 10 to 15 cm long, 3 to 6.5 cm wide, rounded or subauriculate at base, closely crenate-serrulate, the petioles unequal, 2.5 to 5 cm long; cystoliths punctiform and linear on both surfaces, faint; plants monoecious, the staminate inflorescence borne in the upper axils, the pistillate in the lower; staminate inflorescence subdichotomous, 3 to 6 cm long; pistillate inflorescence of paniculately branched, sessile cymes; achenes about 1 mm long, oblique.

DISTRIBUTION: Southern parts of the Central and Western Cordilleras of Colombia.

COLOMBIA.

EL CAUCA: Mount Puracé, alt. 3,200 meters, Central Cordillera, *Killip* 6673 (G, K, Ph, US, type, Y). El Tambo, alt. 2,800 meters, Western Cordillera, *Sneidern* 1210 (S).

74. *Pilea antioquiensis* Killip, Contr. U. S. Nat. Herb. 26: 389. 1936. PLATE 38*

DISTRIBUTION: Known only from the type locality, in northwestern Colombia.

COLOMBIA.

ANTIOQUIA: Angelopolis, *Toro* 885 (Y, type).

EXPLANATION OF PLATE 38.—*Pilea antioquiensis*, the type specimen. One-half natural size.

75. *Pilea buchtienii* Killip, Journ. Washington Acad. Sci. 15: 297. 1925.

Succulent herb, glabrous throughout, the stem at first repent, at length erect, simple, about 20 cm high; leaves broadly ovate, borne near end of stem, 8 to 12 cm long, 3 to 6 cm wide, acute or caudate-acuminate at apex, tapering to a petiole 1 to 2.5 cm long, doubly crenate-serrate, carnosose, the cystoliths of upper surface punctiform and fusiform, wanting beneath; plants monoecious, the staminate and pistillate flowers borne in separate few-branched panicles often at same node, the peduncles of both subequal, 1.5 to 2 cm long; achenes 1.5 mm long, strongly flattened.

DISTRIBUTION: Known only from the type locality, in central Bolivia.

BOLIVIA.

COCHABAMBA: Antahuacana, Espiritu Santo, alt. 750 meters, *Buchtien* 4526 (US, type).

76. *Pilea verrucosa* Killip, Journ. Washington Acad. Sci. 15: 53. 1925.

Shrub, about 1 meter high, glabrous throughout, the stem few-branched, strongly verrucose-roughened; leaves ovate or subrhombic, 2 to 3.5 cm long, 1 to 2.5 cm wide, acute at apex, rounded or cordulate at base, crenate-serrate, entire at base, the petioles 3 to 8 mm long, the cystoliths punctiform; plants monoecious, the inflorescences unisexual; staminate flowers in much-branched, densely flowered panicles 2.5 to 4 cm long, in the upper axils, the perianth barely 0.5 mm long; pistillate flowers in subsessile cymes in the lower axils.

DISTRIBUTION: Known only from the type locality, in central Peru.

PERU.

HUÁNUCO: Río Chinchao, alt. 2,800 meters, *Macbride* 5201 (B, F, type, K, US).

77. *Pilea apiculata* Killip, Contr. U. S. Nat. Herb. 26: 390. 1936.

DISTRIBUTION: Known only from northeastern Colombia.

COLOMBIA.

MAGDALENA: Río Piedras, near Santa Marta, *H. H. Smith* 1403 (distributed as *P. riparia*; B, BM, Brux, F, G, Gen, K, Mo, Ph, US, type, Y).

Another specimen of this species at the New York Botanical Garden bearing this same number was collected at "Cacagualito, 1,000 to 3,000 ft."

78. *Pilea subamplexicaulis* Killip, Contr. U. S. Nat. Herb. 26: 390. 1936.

DISTRIBUTION: Known only from northern Peru, at 1,100 to 1,400 meters altitude.

PERU.

SAN MARTÍN: Cerro de Escaler, near Tarapoto, *Ule* 6588 (B, Gen, Go, type, K). San Roque, *L. Williams* 7425 (US).

79. *Pilea punctata* (H. B. K.) Wedd. Ann. Sci. Nat. III. Bot. 18: 222. 1852.

Urtica punctata H. B. K. Nov. Gen. & Sp. 2: 38. 1817.

Plant 20 to 40 cm high, glabrous throughout, the stem erect or ascending, strongly sulcate when dry; leaves ovate or ovate-elliptic, 3 to 8 cm long, 1.5 to 3 cm wide, caudate-acuminate, cuneate at base, coarsely crenate-serrate, triplinerved well above the base (lateral nerves extending barely to upper third of blade), slender-petioled, black-punctate beneath, the cystoliths fusiform, conspicuous above, very faint beneath; plants monoecious or dioecious, the clusters androgynous or unisexual, the staminate flowers short-pedicel, the lobes ovate, concave.

DISTRIBUTION: Northern Peru, at 1,300 to 1,600 meters altitude.

PERU: *Ruiz & Pavón* (Gen).

CAJAMARCA: Zaulaca, "Province of Jaen de Bracamoras," *Humboldt & Bonpland* (P, type).

AMAZONAS: Chachapoyas, *Weberbauer* 4307 (B, Gen).

80. *Pilea attenuata* Killip, Contr. U. S. Nat. Herb. 26: 391. 1936. PLATE 39.

DISTRIBUTION: Known only from the type locality and its general vicinity.

ECUADOR.

PICHINCHA: Pilatón, *Sodi* 153/24 (B, type). San Nicolás, alt. 900 meters, *Sodi* 153/29 (B).

EXPLANATION OF PLATE 39.—*Pilea attenuata*, the type specimen. About one-half natural size.

81. *Pilea mutisiana* (Spreng.) Wedd. Ann. Sci. Nat. III. Bot. 18: 218. 1852.

Urtica melastomoides H. B. K. Nov. Gen. & Sp. 2: 38. 1817. Not *U. melastomoides* Poir. 1816, or *Pilea melastomoides* Wedd. 1854.

Urtica mutisiana Spreng. Syst. Vcg. 3: 840. 1826.

Pilea subserrata Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 207. 1856-57.

Pilea multiflora Wedd. in DC. Prodr. 16¹: 145. 1869, in part. Not *Urtica multiflora* Poir. 1816.

Coarse, erect, somewhat shrubby herb, simple or few-branched, up to 1 meter high, glabrous throughout; stipules less than 1 mm long, soon deciduous; petioles 5 to 15 mm (extremes up to 40 mm) long; leaves ovate, oblong, or elliptic, 5 to 12 cm long, 2 to 5 cm wide, acuminate or caudate-acuminate at apex, rounded or subacute at base, obscurely or prominently serrate above middle, the cystoliths linear, prominent and elevated above, obscure beneath, usually absent on the veins; plants monoecious or dioecious, the cymes unisexual; staminate inflorescence cymose-paniculate, up to 15 cm long, several times dichotomous, the flowers short-pedicel; pistillate flowers in sessile or subsessile cymes, shorter than the adjacent petiole; achenes orbicular-ovoid, about 1.5 mm long and 0.5 mm thick.

DISTRIBUTION: Eastern and Central Cordilleras of Colombia, at 2,000 to 3,200 meters altitude.

COLOMBIA.

CUNDINAMARCA: *Mutis* 1929 (B, type, Ma, US).

TOLIMA: Quindío, *Triana* 344 (HNC, P, type of *P. subserrata*); *London* 1206 (Brux); *Goudot* (P, V). Murillo, *Pennell* 3164 (US, Y), 3167 (G, US, Y). La Lora, Quindío Trail, *Killip* 9772 (G, US); *André* 879 (K, P). San Juan, *André* 2082 (K). Aguadita, *André* K1487 (K, P). La Suiza, *Cuatrecasas* 2589 (US).

ANTIOQUIA: *Jervise* (K).

CALDAS: Along Old Quindío Trail, *Killip & Hazen* 9475 (US), 9482 (G, Ph, US, Y), 11891 (G, Ph, US, Y). Salento, *Pennell* 8869 (G, US), 9299 (G, Ph, US, Y).

Weddell considered the Colombian plant (*Urtica melastomoides* H. B. K.) and the Peruvian one (*U. multiflora* Poir.) conspecific, using the specific name *Pilea mutisiana* in his first monograph and *P. multiflora* in the Prodrromus. *Pilea multiflora* is clearly distinct from the Colombian plant, the points of difference being discussed in connection with that species.

The earliest specific name for the Colombian plant, *melastomoides*, is invalidated by its use for a species of *Pilea* from Java. Sprengel, perhaps aware of the earlier *Urtica melastomoides* of Poiret, substituted the name *Urtica mutisiana* for *U. melastomoides* H. B. K., and clearly *Pilea mutisiana* (Spreng.) Wedd. becomes the name for this species.

Pilea subserrata was based upon *Triana* 344 in the Paris herbarium. There are two sheets of this there. Both bear the name *Pilea mutisiana* in Weddell's handwriting, but neither is annotated *P. subserrata*. They represent typical *P. mutisiana*.

Pilea mutisiana grows in abundance along the Quindío Trail, some of the plants being almost true shrubs a meter high or more.

82. *Pilea myriantha* Killip, Contr. U. S. Nat. Herb. 26: 391. 1936.

Urtica floribunda H. B. K. Nov. Gen. & Sp. 2: 38. 1817. Not *Pilea floribunda* Baker, 1897.

Pilea mutisiana Wedd. Ann. Sci. Nat. III. Bot. 18: 218. 1852, in part.

Pilea multiflora Wedd. in DC. Prodr. 16¹: 145. 1869, in part.

Erect suffrutescent herb, 50 to 60 cm high, glabrous throughout; stipules triangular, about 3 mm long, soon deciduous; petioles 3.5 to 4 cm long; leaves oblong or oblong-lanceolate, 7 to 12 cm long, 3 to 4.5 cm. wide, acuminate at apex, rounded at base, finely serrulate nearly to base, the cystoliths linear, conspicuous beneath; plants dioecious; staminate inflorescence paniculate, long-peduncled, much exceeding the petioles, profusely branched, the branches alternate, the flowers sessile in many-flowered clusters, the perianth broadly obovoid in bud, up to 1.2 mm in diameter.

DISTRIBUTION: Southwestern Colombia and northern Ecuador, at 2,000 to 2,500 meters altitude.

COLOMBIA.

EL CAUCA: Palacé, *Humboldt & Bonpland* (P, type). Coconuco, *Killip* 6832 (US, Y).

ECUADOR.

CARCHI: Near Pun, *Mexía* 7592 (US).

PICHINCHA: Mount Pichincha, *Sodirol* 153/27c (B).

This species, described as *Urtica floribunda* H. B. K., was merged with *P. mutisiana* by Weddell (*P. multiflora* in his last monographic treatment). The distinguishing characters noted by the original authors, i. e. longer petioles, a panicle with alternate, not dichotomous, branches, and smaller sessile flowers, hold good in the recently collected material, and seem of sufficient importance to justify

regarding the two species as distinct. In addition, the leaves are toothed nearly to the base in *P. myriantha*.

83. *Pilea goudotiana* Wedd. Ann. Sci. Nat. III. Bot. 18: 216. 1852.

Succulent herb, glabrous throughout, the stem repent, the branches erect, up to 1.5 meters high; stipules oblong-lanceolate, 1.5 to 2 mm long, soon deciduous; leaves oblong or ovate-oblong, 5 to 9 cm long, 2 to 4.5 cm wide, abruptly acuminate at apex, rounded or cordulate at base, serrate except near base, thick, the upper surface papillose with very numerous punctiform cystoliths (hence scabrid) and bearing numerous linear and fusiform cystoliths, the lower surface with more obscure punctiform cystoliths; plants dioecious; staminate inflorescences paniculiform, borne in the upper axils, longer than the adjacent petioles; pistillate inflorescence cymose, the cymes shorter than the adjacent petioles, compact; achenes about 1 mm long.

DISTRIBUTION: Eastern Cordillera of Colombia, at 2,300 to 3,000 meters altitude.

COLOMBIA: *Humboldt & Bonpland* (B).

SANTANDER: Las Vegas, *Killip & Smith* 16097 (G, US, Y). Mount San Vicente, *Killip & Smith* 18964 (G, US, Y). Mount San Martín, *Killip & Smith* 19138 (G, US, Y), 19164 (G, US, Y), 19201 (G, US, Y). Mount Peña Blanca, *Killip & Smith* 19270 (G, US, Y).

CUNDINAMARCA: Bogotá (cultivated), *Goudot* (K, P, type). Fusagasugá, *André* K1682 (K). Tequendama Falls, *Troll* 3738 (B).

This species is easily confused with *P. mutisiana*, the principal points of difference being the larger stipules of *P. goudotiana*, the cystolithic marking, which results in a noticeable roughness to the upper surface of the leaves, the extension of the serrations nearly to the base of the leaves, and the smaller achenes.

84. *Pilea losensis* Killip, Contr. U. S. Nat. Herb. 26: 391. 1936.

DISTRIBUTION: North-central Venezuela and northeastern part of the Eastern Cordillera of Colombia.

VENEZUELA.

ARAGUA: Rancho Grande, alt. 1,200 to 1,500 meters, *Pittier* 13984 (US).

COLOMBIA.

NORTE DE SANTANDER: Loso, north of Toledo, alt. 2,400 meters, *Killip & Smith* 20370 (G, US, type, Y). Between Pamplona and Toledo, *Killip & Smith* 19969 (G, US, Y).

85. *Pilea suffruticosa* Krause, Bot. Jahrb. Engler 37: 529. 1906.

Plant erect, suffruticose, about 2 meters high, glabrous throughout, the stem simple, terete below, quadrangular above; leaves narrowly elliptic to ovate-elliptic, 5 to 8 cm long, 2 to 3 cm wide, acute at apex, subcuneate at base, serrulate, trinerved (lateral nerves reaching only to upper quarter of blade), epunctate beneath, thick-carnose, the cystoliths all fusiform, more than 0.5 mm long, borne mainly between the nerves on upper surface, obscure beneath; plants apparently dioecious; staminate inflorescences cymose-paniculate, much longer than the adjacent petiole, the perianth globose in bud, about 2 mm in diameter, the lobes linear, obtuse.

DISTRIBUTION: Known only from the type locality, in northern Peru.

PERU.

AMAZONAS: Chachapoyas, alt. 2,500 meters, *Weberbauer* 4387 (B, type).

86. *Pilea citriodora* Wedd. Ann. Sci. Nat. III. Bot. 18: 216. 1852.

Urtica limoniodora Pavón; Wedd. Ann. Sci. Nat. III. Bot. 18: 216. 1852, as synonym.

Pilea tarmensis Killip, Journ. Washington Acad. Sci. 15: 51. 1925.

Erect herb, up to 60 cm high, glabrous throughout; stem simple; leaves ovate-lanceolate, 6 to 14 cm long, 2.5 to 6 cm wide, obtuse or short-acuminate at apex, cordulate, crenate-serrate from apex to base, bearing on both surfaces yellowish fusiform, linear, and punctiform cystoliths, the petioles up to 2 cm long, the lateral nerves extending to apex of blade; staminate flowers in dense clusters in diffuse long-peduncled panicles; pistillate inflorescence similar to the staminate, the segments unequal; achenes about 0.5 mm long.

DISTRIBUTION: Central Peru, at 1,700 to 2,400 meters altitude.

PERU: Ruiz & Pavón (B, Bo, P, type).

HUÁNUCO: Casapí, Poeppig 1260 (V).

JUNÍN: Huacapistana, Province of Tarma, Macbride 5822 (F, type of *P. tarmensis*, US); Weberbauer 1776a (B). Chanchamayo, Raimondi 2398 (B).

87. *Pilea poeppigiana* Wedd. Ann. Sci. Nat. III. Bot. 18: 225. 1852.

Plant herbaceous, glabrous throughout; stem repent, at length erect, 30 to 50 cm high, unbranched; stipules broadly ovate, 1 to 2 mm long, subpersistent; leaves ovate-lanceolate or oblong-lanceolate, rarely oblanceolate, 3.5 to 10 cm long, 2 to 5 cm wide (extremes to 15 cm long and 7 cm wide), acuminate, cuneate at base, serrulate or crenate-serrate nearly to base, triplinerved, the petioles up to 7 cm long, the cystoliths fusiform or filiform, with a few punctiform ones intermingled; plants dioecious; pistillate inflorescences cymose-paniculate, borne in the upper axils, the peduncles slender, up to 4.5 cm long, longer than the adjacent petioles; achenes ovate-oblong, about 0.8 mm long.

DISTRIBUTION: Eastern slopes of the northern part of the Peruvian Andes, up to 2,000 meters altitude.

PERU.

SAN MARTÍN: Tarapoto, Ule 6844 (B, Gen, Go).

HUÁNUCO: Cochero, Poeppig 1032 in part (V), 1539B (P,⁶ type, V). Yanano, Macbride 3770 (F, US).

JUNÍN: Dos de Mayo, Pichis Trail, Killip & Smith 25826 (F, US, Y). Porvenir, Killip & Smith 25902 (US, Y).

In the key (p. 375) and in the Flora of Peru I differentiated this species from *P. multiflora* on the basis of its larger stipules, having considered Klug's 1672, from southeastern Colombia, as belonging to *P. poeppigiana*. I have since had an opportunity of examining more carefully the type of *P. poeppigiana*, and find that the stipules, though subpersistent, actually are only 1 to 2 mm long. This, together with other differences, has led me to describe the Klug plant as new.

This revised interpretation of *P. poeppigiana*, together with other changes, makes necessary the following alteration to the latter part of the key to the species of Capitellatae (p. 375):

Achenes very small, less than 1 mm long (Peru).

Leaves obtuse or short-acuminate at apex, cordulate at base...86. *P. citriodora*.

Leaves long-acuminate at apex, cuneate at base.....87. *P. poeppigiana*.

Achenes larger, 1 to 1.5 mm long.

Stipules lanceolate, 8 to 10 mm long, persistent (Colombia)...87a. *P. umbriana*.

Stipules triangular, not more than 1 mm long, soon deciduous.

Leaves oblong-lanceolate to ovate-lanceolate, the petioles (at least the longer at a node) more than 1 cm long, the teeth subequal (Peru and Bolivia).

88. *P. multiflora*.

Leaves narrowly lanceolate, sessile or subsessile, the teeth larger toward apex (Bolivia).....89. *P. picta*.

⁶ The type is unnumbered and is labeled merely "Peruvia subandina." However, it is clearly a part of no. 1539B.

87a. *Pilea umbriana* Killip, sp. nov.

Herba dioica, glaberrima; stipulae magnae, lanceolatae, persistentes; folia jugi similia et subaequalia, rhombéo-lanceolata vel oblanceolata, acuminata, petiolata, serrata, cystolithis filiformibus, supra ad marginem fusiformibus, subtus paucis; cymae ♀ pedunculatae, pauciramosae, floribus pedicellatis.

Plant herbaceous, glabrous throughout; stem repent at base, at length erect, about 15 cm high, unbranched; stipules lanceolate, 8 to 10 mm long, 3 to 4 mm wide, obtuse, persistent; leaves of a pair similar and subequal, rhombic-lanceolate or slightly oblanceolate, 8 to 12 cm long, 2.5 to 4 cm wide, acuminate at apex, subcuneate at base, petiolate (petioles 1 to 1.5 cm long), serrate except in the lower part, subtriplinerved (lateral nerves extending to upper third of blade), the upper surface bearing numerous conspicuous, filiform cystoliths and, at the margin, larger fusiform ones, the under surface sparingly black-punctate, bearing a few faint filiform cystoliths; plants dioecious; pistillate cymes about 1.5 cm long including a slender peduncle, few-branched, the flowers pediceled, the perianth segments unequal, the achenes compressed, about 1 mm long.

Type in the U. S. National Herbarium, no. 1,456,455, collected in forest at Umbría, Comisaría del Putumayo, Colombia, altitude about 325 meters, October 22, 1930, by Guillermo Klug (no. 1672).

This species rather closely resembles *P. poeppigiana*, under which name duplicates of the type have been widely distributed. It differs from that, however, in the much larger, persistent stipules, the relatively few and inconspicuous cystoliths on the under surface of the leaves, and the larger achenes.

88. *Pilea multiflora* (Poir.) Wedd. Ann. Sci. Nat. III. Bot. 18: 218. 1852, in part.

Urtica multiflora Poir. in Lam. Encycl. Suppl. 4: 223. 1816.

Pilea anomala Wedd. Ann. Sci. Nat. III. Bot. 18: 217. 1852.

Erect herb, up to 1 meter high, glabrous throughout, the stem simple or few-branched; stipules triangular, not more than 1 mm long, soon deciduous; petioles 1 to 3 cm long; leaves oblong-lanceolate to ovate-lanceolate, rarely oblanceolate, suboblique, 4 to 15 cm long, 1.5 to 4 cm wide, long-acuminate at apex, rounded or subacute at base, sharply serrulate, trinerved, the cystoliths linear and punctiform, faint; plants monoecious or dioecious, the inflorescences unisexual, both kinds cymose-paniculate, diffuse; achenes ovate, 1 to 1.5 mm long, compressed, longitudinally elevated at center, slightly thickened at margin.

DISTRIBUTION: Central Peru to central Bolivia, at 600 to 2,200 meters altitude. PERU: *Jussieu* (P, type); *Dombey* (P).

HUÁNUCO: Pampayacu, *Weberbauer* 6812 (B).

JUNÍN: Along Pichis Trail, *Killip & Smith* 25775 (F, US, Y), 25801 (US, Y), 25913 (US), 25929 (US, Y).

PUNO: Sandía, *Weberbauer* 6521 (B).

CUZCO: Cerro de Cusilluyoc, *Pennell* 14013 (Ph).

BOLIVIA: Lambramani, *Cárdenas* 1316 (Y).

LA PAZ: Province of Inquisivi, *Weddell* 4184 (P, type of *P. anomala*). Yungas, *Rusby* 1478 (US, Y). Sorata, *Mandon* 1104 (BM, Gen, K, P, V). Songo, *Bang* 894 (B, BM, F, G, K, Ph, US, V, Y). Tipuani Valley, *Buchtien* 7262 (B, US), 7263 (B, US). Mapiri Region, *Buchtien* 657 (B, US). Unduavi, *Bang* 2490 (K, US, Y).

SANTA CRUZ: San Mateo, *Steinbach* 8542 (B).

COCHABAMBA: Incachaca, *Steinbach* 5709 (B, F), 5812 (B). Chimoré, *Cárdenas* 2074 (G).

This species has been confused with *P. mutisiana*, to which it bears a general resemblance. The pistillate inflorescence is diffuse, and the achenes are strongly flattened and thickened at the margin and have a longitudinal ridge at the center.

I have made direct comparison between the types of *P. anomala* and *P. multiflora* and can see no important differences.

89. *Pilea picta* Herzog, Med. Rijks Herb. Leiden no. 27, 76. 1916.

Pilea macrophylla Rusby, Descr. S. Amer. Pl. 10. 1920.

Plant herbaceous, glabrous throughout, the stem repent, at length erect, 20 to 30 cm high; stipules not more than 1 mm long, soon deciduous; leaves narrowly lanceolate or elliptic-lanceolate, 6 to 15 cm long, 1 to 4 cm wide, caudate-acuminate, narrowed at base, sessile or subsessile, trinerved, sharply serrate or serrulate to base, the teeth larger toward the apex, the cystoliths minute, filiform and sub-punctiform, inconspicuous beneath; plants dioecious, rarely monoecious; staminate inflorescence diffusely cymose, up to 12 cm wide, long-peduncled, the perianth about 1.5 mm wide, purplish; pistillate cymes barely 1 cm long (including peduncle), few-branched, the perianth segments subequal; achenes ovate, about 2 mm long, longitudinally ridged at center.

DISTRIBUTION: Western Bolivia, up to 3,300 meters altitude.

BOLIVIA: *Bang* (Y, type of *P. macrophylla*). Choquetanga Grande, alt. 3,300 meters, *Herzog* 2416 (Gen, type collection).

LA PAZ: Unduavi, *Buchtien* 3110 (K, US, Y), 4524 (US), 8940 (US), without number (G); *Julio* 332 (US), 357 (US), 466 (US).

XI. MOLLES

90. *Pilea mollis* Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 251. 1856-57.

Pilea succulenta Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 256. 1856-57. Not *P. succulenta* Hook. f. 1847.

Erect herb, 30 to 40 cm high, simple or few-branched, pilosulous above; leaves oblong to elliptic-lanceolate, 6 to 15 cm long, 2.5 to 5.5 cm wide, acuminate at apex, rounded or acutish at base, sharply but often shallowly serrulate, at least in upper half, glabrous above, softly pilosulous on nerves and veins beneath; cystoliths linear and fusiform, less conspicuous beneath; plants monoecious or dioecious; staminate flowers in globose umbels about 1.5 cm in diameter, the peduncles 3 to 8 cm long, the pedicels 3 to 4 mm long, slender, densely cano-pilosulous, the perianth lobed to middle, the lobes ovate; pistillate inflorescence cymose-paniculate, pedunculate, diffuse; achenes ovate, scarcely 1 mm long.

DISTRIBUTION: Northern Venezuela.

VENEZUELA.

FEDERAL DISTRICT: Caracas, *Pittier* 9585 (G, US, Y); *Kuntze* 1670 (K, US, Y); *Funck* 145 (Gen, P, type of *P. succulenta* Wedd.). Cerro de Galipán, *Eggers* 13178 (US). Caripe, *Moritz* (B). Sanchorquiz, *Ernst* 1705 (BM).

ARAGUA: Colonia Tovar, *Moritz* 366 (B, BM, type, K); *Fendler* 1241 (A, G, Gen, K).

Readily recognized by its large globose staminate heads and the dense indument on the under surface of the leaves.

Pilea succulenta Wedd. apparently is a form of this, with thicker, coarsely serrate leaves, the nerves and veins of which are deeply impressed above. The type specimen of *P. mollis* is a pistillate plant, the single flowering branch of which is a detached long-peduncled cyme well past maturity. The shape of the leaves of this is almost identical with that of the *Kuntze* specimen cited above, though the nerves in the latter are not conspicuously impressed. Only a single staminate head is present on the *Kuntze* specimen, but that is identical with typical material of *P. mollis*.

91. *Pilea forgeti* N. E. Brown, Bot. Mag. Curtis 143: pl. 8699. 1917.

Low herb, 10 to 15 cm high; stem branched at the base, appressed-pilose; stipules ovate-lanceolate, 1 to 2 cm long, 5 to 6 mm wide, persistent; leaves oblanceolate or elliptic-lanceolate, 2 to 10 cm long, 2 to 5 cm wide, abruptly acute or subobtuse at apex, subauricular at base, crenate-serrate, trinerved (nerves extending to apex of blade), the petioles up to 1.5 cm long, the cystoliths inconspicuous, the upper surface of the blade glabrous, reddish brown, green along the nerves, the under surface appressed-pubescent on the nerves, purple, with green nerves and veins; plants dioecious; staminate flowers short-pedicellate, in a large compact, or at length somewhat diffuse, dichotomous cyme, the peduncle 5 to 6 cm long; pistillate flowers in small, sessile or subsessile cymes.

DISTRIBUTION: Venezuela; apparently also in Panama.

VENEZUELA: *Forget* (K, type).

92. *Pilea pittieri* Killip, Journ. Washington Acad. Sci. 15: 298. 1925.

Plant herbaceous, decumbent or erect, up to 40 cm high, the stem simple or few-branched, glabrescent below, sparingly pubescent above, densely marked throughout with linear cystoliths; stipules linear-oblong, 5 to 6 mm long, deciduous; leaves ovate or ovate-lanceolate, 3 to 10 cm long, 1.5 to 7 cm wide, long-acuminate at apex, rounded or subcordate at base, 3- (or occasionally 5) nerved (inner lateral nerves three-fourths length of blade), reticulate, serrate or serrate-crenate nearly to base, the upper surface dark green, glabrous, bearing numerous minute linear cystoliths, especially along the nerves, the under surface paler, densely pubescent on nerves and veins, punctate on veins, bearing similar but less numerous cystoliths; plant monoecious; staminate cymes solitary in the axils of the lower leaves or at the leafless nodes of the rooting portion of the stem, subsessile (or on peduncles up to 3 cm long), pubescent, densely flowered; pistillate inflorescence solitary in the axils of the upper leaves, 4 to 5 cm long, the peduncles slender, glabrous, 2 to 4-forked, the flowers borne in subglobose clusters 3 to 4 mm wide; achenes ovate, 1 mm long, acute, flattened, unicostate at center of both faces.

DISTRIBUTION: Costa Rica and northern Colombia, the type collected in Costa Rica by H. Pittier (Herb. Inst. Phys. Geog. Costaricensis 14149).

COLOMBIA.

BOLÍVAR: Antizales, alt. 1,700 to 2,000 meters, *Pennell* 4416 (Y).

93. *Pilea tatamensis* Killip, Journ. Washington Acad. Sci. 13: 358. 1923.

Stem repent, at length erect, coarse, up to 35 cm high, simple or branched toward summit, hirsute throughout; leaves ovate or elliptic-ovate, 2 to 6 cm long, sharply serrate nearly to base, glabrescent above, appressed-hirsute on nerves beneath, 3-nerved, the lateral nerves reaching about to middle of blade, the cystoliths linear, minute, faint; staminate heads globose, about 1 cm wide, densely flowered, the peduncles up to 1.5 cm long, the perianth lobes filiform, about 2 mm long; pistillate heads cymose, up to 1.5 cm wide; achenes ovate, 1 mm long.

DISTRIBUTION: Northern parts of Central and Western Cordilleras of Colombia, at 2,500 to 2,700 meters altitude.

COLOMBIA.

ANTIOQUIA: Medellín, *Toro* 949 (Y).

CALDAS: Cerro Tatamá, alt. 2,700 meters, *Pennell* 10325 (G, US), 10378 (US, type).

This species has a general resemblance to *P. fallax*, but is at once distinguished by the 3-nerved leaves.

94. *Pilea submissa* Wedd. in DC. Prodr. 16¹: 151. 1869.

Plant terrestrial or repent on tree trunks, the erect or ascending portion of the stem less than 10 cm long, pubescent; leaves rhombic-elliptic, 4 to 9 cm long, 1.5

to 3.5 cm wide (extremes up to 15 cm long and 7 cm wide), acuminate at the apex, acute at the base, short-petioled, crenate-serrulate, glabrous above, hispidulous on the nerves and principal veins beneath, the cystoliths minute, fusiform, very numerous; plants monoecious or dioecious, the cymes unisexual; staminate flowers in compact or at length subdivaricate cymes with slender peduncles 4 to 8 cm long, borne at the rooting, leafless nodes, the lobes ovate, 2 mm long, including a tip 0.8 to 1 mm long; pistillate cymes borne at the upper axils, similar to the staminate, the peduncles slender, 2.5 to 3 cm long; achenes about 2 mm long, flattened.

DISTRIBUTION: Amazon basin of Ecuador and Peru, at low elevations.

ECUADOR.

NAPO-PASTAZA: Archidona, *Mexia* 7307 (US).

PERU.

SAN MARTÍN: Tarapoto, *Spruce* 4155 (K, type).

LORETO: Pongo de Manseriche, *Mexia* 6359 (US). Pumuyacu, *Klug* 3186 (US).

JUNÍN: San Nicolás, Pichis Trail, alt. 1,100 meters, *Killip & Smith* 26023 (US, Y).

95. *Pilea latifolia* Wedd. Arch. Mus. Hist. Nat. (Paris) 9: 249. 1856-57.

Plant suffrutescent, the branches cano-pilosulous above; leaves broadly ovate or elliptic-obovate, 6 to 12 cm long, 5 to 8 cm wide, short-acuminate at apex, rounded or cordulate at base, irregularly and doubly crenate-serrate, triplinerved or quintuplinerved, glabrous above, pilosulous on the nerves beneath, the cystoliths linear; plants dioecious; staminate inflorescence compactly and narrowly paniculate, the peduncle more than twice as long as the adjacent petiole, the perianth segments with subulate tips; pistillate flowers in smaller cymes, with shorter peduncles.

DISTRIBUTION: Eastern Cordillera of Colombia, at 2,000 to 2,300 meters altitude; also in Venezuela.

VENEZUELA: *Crüger* (K).

COLOMBIA.

NORTE DE SANTANDER: Ocaña, *Schlim* 701 (Bo, Gen, HNC, K, P, type).

SANTANDER: *André* 1053 (Y). Suratá, *Killip & Smith* 16560 (G, US, Y).

Charta, *Killip & Smith* 19032 (US).

96. *Pilea gallowayana* Killip, Contr. U. S. Nat. Herb. 26: 392. 1936.

Pilea grandis var.? *triplinervia* Wedd. in DC. Prodr. 16¹: 143. 1869.

Plant herbaceous, the stem repent at base, at length erect, 20 to 35 cm high, leafy, at least toward the apex, glabrescent below, glabrescent or usually rufo-hirsute above the middle; stipules broadly ovate-lanceolate, 9 to 10 mm long, obtuse, glabrous, persistent; leaves rhombic-ovate or ovate-elliptic, 3 to 12 cm long, 2 to 7 cm wide, acute or acuminate at apex, rounded or emarginate at base (petioles up to 1.5 cm long), unequally and often doubly crenate-serrate, triplinerved or quintuplinerved, the lateral nerves extending to the upper third of the blade, the upper surface glabrous, or sparingly pilosulous with hyaline hairs, and copiously covered with fusiform and punctiform cystoliths, the under surface hirsute on the nerves, sparingly pilosulous elsewhere, bearing numerous punctiform and a few linear cystoliths; plants dioecious, the staminate and the pistillate inflorescences each in compact cymes up to 1.5 cm wide, similar in shape, the peduncles slender, up to 2 cm long, often hirtellous; staminate perianth glabrous or pilosulous, densely covered with fusiform cystoliths without; pistillate perianth with unequal segments; achenes broadly ovate, 1 to 1.2 mm long.

DISTRIBUTION: Western Cordillera of Colombia, up to 2,000 meters altitude. COLOMBIA: "Prov. de Barbacoas y Chocó, alt. 200 m.," *Triana* 891 (B, HNC, K, type of *P. grandis* var.? *triplinervia*).

EL CHOCÓ: Between La Oveja and Quibdó, *Archer* 1701 (US). Headwaters of the Río Tutunendo, east of Quibdó, *Archer* 2184 (US), 2189 (US).

EL VALLE: La Cumbre, alt. 2,000 meters, *Pennell & Killip* 5878 (G, US, type, Ph, Y). Mountains west of Buenaventura, *Lehmann* in 1878 (V).

EL CAUCA: El Tambo, *Sneidern* 413 (S), 773 (S), 975 (S), 993 (S).

NARIÑO: Tuquerres, alt. 150 meters, *Triana* in 1853 (HNC). Armada, *André* K1680 (K).

Pilea grandis var. *triplinervia*, type material of which I have seen since describing *P. gallowayana*, seems to be only a more robust form of this. In the recent *Sneidern* specimens the indument on the stem is much denser than in the typical form. In view of this additional material an amplified description of the species is given.

XII. PUBESCENTES

97. *Pilea nummularifolia* (Swartz) Wedd. Ann. Sci. Nat. III. Bot. 18: 255. 1852.

Urtica nummularifolia Swartz, Svensk. Vet. Akad. 8: 63. pl. 1, f. 2. 1787.

Stem slender, villosulous, repent or trailing, rooting at most of the nodes, with short, lax branches sometimes arising at the nodes; stipules broadly ovate, 2 to 3 mm long, membranous, persistent; leaves orbicular, 5 to 12 mm in diameter, crenate, trinerved, usually strigillose with stiff, hyaline hairs on both surfaces, the cystoliths minute, linear, very faint on the under surface; plants dioecious or occasionally monoecious, a few pistillate flowers being borne at the base of the staminate; staminate flowers densely clustered in the uppermost axils, with densely white-villous pedicels 3 to 5 mm long; pistillate flowers in densely flowered, short-peduncled cymes; achenes barely 0.4 mm long.

DISTRIBUTION: West Indies, Panama, Venezuela, and Amazonian Peru, at low elevations; introduced into eastern Brazil.

VENEZUELA.

FEDERAL DISTRICT: Caracas, *Rose* 21946 (US); *Pittier* 7145 (US).

PERU.

LORETO: Pebas, on Río Amazon, *L. Williams* 1917 (F, US).

The indument of these specimens is rather denser than in most West Indian material of *P. nummularifolia*. The only one in flower, *Pittier* 7145, a staminate plant, has long-pedicel flowers in a cluster at one of the upper nodes of a short branch, this inflorescence agreeing well with the few staminate specimens from the West Indies at hand. Klug has collected abundant material of a plant which, at first glance, bears only slight resemblance to the quite uniform specimens of *P. nummularifolia*. In most of the Klug plants the lower portion of the stem is repent and leafless, and the upper part is erect, with leaves densely massed near the apex, its habit thus being that of *P. involucrata*, *P. spruceana*, and their allies. These leaves are much larger than in typical *P. nummularifolia*, attaining a maximum length and width of 3.5 cm, and averaging about 3 cm long and 2.5 cm wide. Many of them are broadly ovate, rather than strictly orbicular. The staminate inflorescence, the only one seen, is long-peduncled, though otherwise it is characteristic of *P. nummularifolia*. Some of these plants, however, have sterile branches rooting at all the nodes and bearing small orbicular leaves, apparently differing in no way from those of *P. nummularifolia*. This collection may represent a distinct species, but I prefer for the present to treat it as a variety.

***Pilea nummularifolia* var. *klugii* Killip, var. nov.**

Caulis basi repens, demum erectus, ramis sterilibus nodis omnibus radicanibus; folia orbiculata vel late ovata, ea ramorum sterilium minora; inflorescentia ♂ pedunculata.

Plant densely hirsute throughout; stem repent at base, at length erect, 4 to 5 cm high, simple or with a few sterile repent branches rooting at all the nodes; leaves of the fertile part densely massed toward the apex, orbicular or broadly ovate, 1.5 to 3.5 cm long and broad, those of the sterile shoots orbicular, up to 1 cm long and broad; staminate inflorescence borne in the upper axils, peduncled, the peduncle slender, 1.5 to 2 cm long.

Type in the U. S. National Herbarium, no. 1,458,571, collected on river bank, Juan Jui, Alto Río Huallaga, Department of San Martín, Peru, altitude 400 to 800 meters, January 1936, by Guillermo Klug (no. 4235).

98. *Pilea acuminata* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 302. 1851.

Plant herbaceous, 15 to 40 cm high; petioles up to 4 cm long; leaves ovate, elliptic-ovate, or elliptic-lanceolate, up to 15 cm long, 7 cm wide, acute or acuminate at apex, rounded or subcuneate at base, coarsely and sharply dentate, sparsely strigillose with long hyaline hairs above, appressed-hirsute or hirsutulous on the nerves beneath; plants dioecious or monoecious, the cymes diffusely branched, with peduncles 3 to 6 cm long, unisexual or sometimes a sessile cluster of staminate flowers borne on the pistillate cymes; staminate perianth elongate, with filiform teeth; achenes minute.

DISTRIBUTION: Mexico and Costa Rica; Colombia, at 1,000 to 1,500 meters altitude, the type from Mirador, State of Veracruz, Mexico, collected by F. M. Liebmann.

COLOMBIA.

SANTANDER: El Roble, *Killip & Smith* 19370 (G, US, Y).

NORTE DE SANTANDER: Between Ocaña and Pamplona, *Kalbreyer* 1039 (B, K).

BOYACÁ: Labranzgrande, *Guevara* 344 (US).

CUNDINAMARCA: Upín, *André* K1677 (K). Susumuco, *André* K1678 (K).

EL CAUCA: La Gallera, Micay Valley, *Killip* 7672 (B, G, Ph, US, Y).

99. *Pilea involucrata* (Sims) Urban, Symb. Antill. 1: 298. 1899.

Urtica involucrata Sims, Bot. Mag. Curtis 51: pl. 248 1.1824.

Pilea chrysosplenioides Wedd. Ann. Sci. Nat. III. Bot. 18: 231. 1852.

Pilea pubescens var. *involucrata* Wedd. in DC. Prodr. 16¹: 153. 1869.

Stem and branches usually hirsute, densely covered with linear cystoliths; leaves ovate to obovate, or the lower often suborbicular, 0.8 to 4 cm long, 0.8 to 2 cm wide, rounded at apex, rounded or subauriculate at base, finely crenate, ciliate, strigillose with hyaline hairs, or rarely glabrous above, the cystoliths linear or fusiform, covering the lower surface, usually confined to margin on upper surface; plants monoecious or dioecious, the cymes unisexual, occasionally androgynous, sessile or subsessile, the staminate few-flowered, at base of branched, many-flowered pistillate cymes; achenes minute, less than 0.5 mm long.

DISTRIBUTION: Panama and West Indies to Colombia and Venezuela, up to 1,500 meters altitude.

VENEZUELA.

SUCRE: Cristóbal Colón, *Broadway* 42 (US, Y), 646 (US, Y).

FEDERAL DISTRICT: Caracas, *Bailey & Bailey* 906 (US); *Pittier* 12417 (US).

ARAGUA: Between Ocumare and Maracay, *Pittier* 11863 (K, US). Colonia Tovar, *Fendler* 1244 (Brux, G, Gen, K, Mo).

COLOMBIA: *Mutis* 1922 (Ma). Río Simanche *André* 4674 (K). Palanda, *André* K1666 (K).

MAGDALENA: Santa Marta, *H. H. Smith* 1445 (F, K, US, Y).

NORTE DE SANTANDER: Chinácota, *Killip & Smith* 20800 (US).

CUNDINAMARCA: Fusagasugá, *Goudot* (P, type of *P. chrysosplenoides*);
Pennell 2731 (F, G, Mo, US, Y). Bogotá, *Stübel* 90e (B). Albán,
Pérez 2374 (US).

PUTUMAYO: Sibundoy, *García* 4578 (US).

TOLIMA: La Plata, *Lehmann* K333 (K).

ANTIOQUIA: Medellín, *Toro* 624 (Y).

EL VALLE: Zarzal, *Pennell, Killip, & Hazen* 11887 (US). La Cumbre, cultivated, *Killip* 5845 (US). La Paila, *Holton* 256 (K, Ph).

Weddell treated *Urtica involucrata*, the earliest name of this group of *Pilea*, as a variety of *P. pubescens*, but, as pointed out by Urban, it can scarcely be associated with that species. The original description of *Urtica involucrata* is unsatisfactory, but the illustration closely resembles the plant that has generally passed as *P. chrysosplenoides*.

100. *Pilea ceratocalyx* Wedd. in DC. Prodr. 16¹: 148. 1869.

Plant densely grayish hirsute throughout; stem repent at base, at length erect, up to 15 cm high; stipules ovate or subreniform, about 6 mm long; leaves oblong or elliptic-ovate, 3 to 7 cm long, 1 to 3 cm wide, acuminate at apex, attenuate at base, sharply serrate except toward base, the cystoliths punctiform and fusiform; plants monoecious, the cymes apparently unisexual, the staminate compact, subsessile, about as long as the adjacent petioles, the pistillate divaricate, pedunculate, much longer than the petioles; achenes about 0.6 mm long.

DISTRIBUTION: Probably northern Peru.

PERU: *Poeppig* 3046 (B, Bo, Gen, type).

HUÁNUCO: Cochero, *Poeppig* 1032 in part (BM, V).

These specimens are variously labeled "Peru" and "Brazil" in herbaria.

101. *Pilea spruceana* Wedd. in DC. Prodr. 16¹: 161. 1869.

Stem repent, at length erect, sparsely villous; leaves oblong or ovate-oblong, 2 to 8 cm long, 1.5 to 4 cm wide (the lower smaller), obtuse or subacute at apex and base, crenate-serrate, sparingly ciliate, the petioles 0.5 to 3.5 cm long, the cystoliths punctiform and fusiform, the fusiform more numerous at margin, yellowish, much elevated; plants monoecious or dioecious, the pistillate flowers in densely flowered, short-peduncled, usually much-branched cymes, the staminate flowers subsessile at base of pistillate cymes; achenes about 0.5 mm long.

DISTRIBUTION: Subandean part of northern Peru and northwestern Bolivia.

PERU.

SAN MARTÍN: Tarapoto, *Spruce* 4376 (B, BM, Brux, Gen, K, type, V, Y).

LORETO: Cumbaso, *Ule* 6843 (B, Gen).

HUÁNUCO: Posuso, *Pearce* 284 (BM).

BOLIVIA.

LA PAZ: Río Cocos, *R. S. Williams* 199 (BM, US, Y).

102. *Pilea pubescens* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 302. 1851.

Pilea montana Wedd. Ann. Sci. Nat. III. Bot. 18: 228. 1852.

Pilea pubescens var. *montana* Wedd. in DC. Prodr. 16¹: 153. 1869.

Stem repent, at length erect and usually with several erect or ascending branches, strigillose; leaves massed at the end of the stem or branches, wanting or much reduced below, broadly ovate to elliptic-ovate, up to 7 cm long and 6 cm wide, rounded or subacute at apex, rounded at base, finely to coarsely crenate-serrate, often ciliate, thin, sparingly strigillose or nearly glabrous above, hirsutulous

beneath on the nerves and veins, the cystoliths linear and fusiform above, obscure beneath; plants monoecious or dioecious; staminate flowers in a few-flowered sessile cluster at base of pistillate cymes or a few scattered among pistillate flowers; pistillate inflorescence cymose-paniculate, up to 5 cm long, densely flowered, the branches slender; achenes less than 0.5 mm long.

DISTRIBUTION: Mexico, Central America, and West Indies to Peru and Venezuela, and perhaps to eastern Brazil; in South America at low elevations.

VENEZUELA.

FEDERAL DISTRICT: Caracas, *Gollmer* in 1853 (B).

LARA: Palmasola, *Pittier* 6379 (B, US).

MÉRIDA: La Asulita, *Reed* 706 (US).

COLOMBIA.

EL VALLE: Cisneros, *Killip* 11440 (G, Ph, US, Y). Buenaventura, *Triana* 876 (HNC, K, P).

EL CAUCA: El Tambo, *Sneidern* 995 (S).

NARIÑO: La Cruz, *André* K1672 (K, Y).

ECUADOR.

MANABI: El Recreo, *Eggers* 15022 (B, F, K, P, Y).

GUAYAS: Terecita, *Stevens* 59 (US). Balao, *Eggers* 14120 (B, US). Naranjal, *André* 2508 (K).

PICHINCHA: Santo Domingo, *Sodiño* 153/36 (B).

NAPO-PASTAZA: Tena, *Mexía* 7215 (US).

PERU.

SAN MARTÍN: Tarapoto, *Spruce* 4455 (B, BM, Brux, Gen, K, P, V, Y). San Roque, *L. Williams* 6957 (F, US), 7695 (F, US).

The species of this immediate relationship, *P. acuminata*, *P. involucrata*, *P. spruceana*, and *P. pubescens*, are not separable by well-defined characters. *Pilea acuminata* has long-petioled, acuminate, sharply toothed leaves; in *P. involucrata* the leaves are obovate and shallowly toothed; in *P. spruceana* oblong and shallowly toothed; and in *P. pubescens* predominantly broad-ovate. The foliar cystoliths of *P. acuminata* and *P. pubescens* are similar; in *P. involucrata* they usually are wanting from the upper surface except at the margin; in *P. spruceana* they are much smaller and much more numerous than in the three other species.

Pilea pubescens as here considered is perhaps an aggregate species, the specimens cited showing considerable variation. As the species is common outside of the Andean area, final treatment of the complex should await a broader study. The Andean material seems to represent three forms, of which typical *P. pubescens* is best shown by Spruce's no. 4455. The Venezuelan specimens have very broad leaves, which are essentially glabrous above. The Ecuadorean specimens have smaller leaves and are more densely pubescent in all parts.

103. *Pilea hyalina* Fenzl, Denkschr. Akad. Wiss. Math. Naturw. (Wien) 1: 256. 1850.

Urtica arvensis Poepp.: Fenzl, Denkschr. Akad. Wiss. Math. Naturw. (Wien) 1: 256. 1850, as synonym.

Pilea hyalina var. *longipes* (Mart.) Miquel in Mart. Fl. Bras. 4¹: 201. 1853.

Slender erect annual, 10 to 30 cm high, with a short rootstock and numerous fibrous rootlets, the stem pellucid; leaves rhombic-elliptic or ovate, 1 to 6 cm long, 0.8 to 4.5 cm wide, acute at apex, cuneate at base, coarsely serrate, thin-membranous, glabrous or sparsely hyaline-strigillose above, the petiole slender, usually with a few hyaline hairs, the cystoliths linear, faint; plants monoecious, the inflorescences androgynous, cymose-paniculate; achenes suborbicular, less than 0.5 mm long.

DISTRIBUTION: Mexico and Central America to Chile, Brazil, and Argentina, up to 1,500 meters altitude, the type from Rio de Janeiro, collected by Schüch.

VENEZUELA.

FEDERAL DISTRICT: Caracas, *Gollmer* in 1853 (B).

ARAGUA: Colonia Tovar, *Fendler* 1245 (K), 1826 (K). Ocumare Valley, *Pittier* 12166 (B, Gen, US).

COLOMBIA.

MAGDALENA: Santa Marta, *H. H. Smith* 1447 (B, F, Gen, Ph, US, Y), 1448 (B, F, Ph, US, Y).

NORTE DE SANTANDER: Chinácota, *Killip & Smith* 20804 (G, US).

TOLIMA: Quindío Trail, *Triana* 878 (HNC, P).

ANTIOQUIA: Medellín, *Archer* 895 (US). Fredonia, *Toro* 1077 (Y).

EL VALLE: Cisneros, *Killip* 11457 (US).

ECUADOR.

GUAYAS: Bucay, *Hitchcock* 20404 (US).

CHIMBORAZO: Pallatanga, *Sodirol* 153/31 (B).

PERU: *Mathews* 2032 (K); *Gay* (P); *Ruiz & Pavón* (Ma).

AMAZONAS: Moyobamba, *Mathews* 1555 (K).

SAN MARTÍN: San Roque, *L. Williams* 7149 (F, US).

HUÁNUCO: Cochero, *Poeppig* 1539 ("*Urtica arvensis* Poepp.," Gen).

JUNÍN: La Merced, *Killip & Smith* 23593 (US). San Ramón, *Killip & Smith* 24676 (US, Y). Yapas, Pichis Trail, *Killip & Smith* 25580 (US).

AYACUCHO: Aina, *Killip & Smith* 22746 (F, US, Y).

BOLIVIA.

LA PAZ: Yungas, *Bang* 2126 (B, BM, US, Y); *Rusby* 2561 (Y). Tipuani, *Buchtien* 5390 (B, US, Y), 7261 (B, US).

CHILE: Cordillera de San Fernando, *Meyen* (B).

This is a well-marked species, the numerous specimens examined showing little variation. In a few specimens the characteristic hyaline hairs are lacking.

104. *Pilea arguta* (H. B. K.) Wedd. Ann. Sci. Nat. III. Bot. 18: 218. 1852.

Urtica arguta H. B. K. Nov. Gen. & Sp. 2: 39. 1817.

Straggling, somewhat shrubby herb, the stem much branched, the branches hirsute or nearly glabrous, densely leafy; leaves narrowly lanceolate to ovate-lanceolate, 1.5 to 5 cm long, 0.5 to 2 cm wide, acuminate at apex, glabrous above, sparsely pilosulous on nerves beneath, rarely glabrous throughout, often alternate on branches, the cystoliths punctiform above, with usually a few linear ones between nerves, all linear and conspicuous beneath; plants dioecious, the staminate and pistillate flowers in similar, few-flowered, sessile or subsessile clusters scarcely 5 mm long; achenes ovate, about 0.7 mm long.

DISTRIBUTION: Venezuela (?); southern Colombia and northern Ecuador, at 2,800 to 3,000 meters altitude, the type said to have been collected at Nueva Valencia, Carabobo, Venezuela.

VENEZUELA OR COLOMBIA: *Humboldt & Bonpland* (B, BW, P, type).

COLOMBIA.

EL CAUCA: Paletará, *Pennell* 7011 (US). Mount Puracé, *Killip* 6772 (G, US).

NARIÑO: Pasto, *André* 2997 (K). Tabano, *André* K1681 (K). Tuquerres, *Karsten* (V).

ECUADOR: "Andes Quitenses," *Hall* in 1833 (B).

CARCHI: Ibarra, *Hitchcock* 20790 (G, US), 20803 (G, US).

PICHINCHA: Mount Pichincha, *Jameson* 838 (BM, US); *Sodirol* 153/52 (B), 153/52b (B); *Benoist* 3257 (P).

The plant which I collected on Mount Puracé was a dense mass of intertwined stems, with numerous short, very leafy branches, the whole about 1 meter high.

The specimens from southwestern Colombia and northern Ecuador cited above agree excellently with the type material at Paris and Berlin, which is without locality data but which the authors, in describing the species, say came from Nueva Valencia, "alt. 235 hex." [State of Carabobo, Venezuela]. I doubt very much that this plant of the highest mountains of southwestern Colombia and Ecuador occurs also in the coastal region of Venezuela at an altitude of only 570 meters, and am confident that there is an error in the Humboldt-Bonpland data.

105. *Pilea fasciata* Wedd. in DC. Prodr. 16¹: 149. 1869.

Plant erect, robust, the stem densely and softly hirsute-tomentose with light-brown hairs; stipules ovate, 1.5 to 2 cm long, persistent; leaves ovate, 6 to 12 cm long, 4 to 7 cm wide, acuminate at apex, rounded at base, sharply and closely dentate-serrate nearly to base, triplinerved (lateral nerves reaching to upper third of the blade), pilosulous and strongly asperate-bullate above, appressed-hirsute on the nerves beneath, white-fasciate above, the cystoliths linear, radiate from the center of the areoles; plants dioecious; pistillate inflorescence subcorymbose, dichotomous, the peduncle 5 to 6 cm long slender; achenes ovate, about 1.5 mm long.

DISTRIBUTION: Known positively only from the type locality, in northwestern Colombia.

COLOMBIA.

EL CHOCÓ: Novita, alt. 170 meters, *Triana* 886 (BM, type, HNC).

The dense indument on the stem and the strongly asperate-bullate leaves at once distinguish this species from near relatives. André's 3816 probably belongs here, though the stem is much less densely pubescent. This specimen is intermediate between *P. fasciata* and *P. ophioderma*, but as the leaves are sharply dentate-serrate rather than crenate-serrate, it is probably better placed in *P. fasciata*. The locality given on the label is Mindo, which is in the Province of Pichincha, Ecuador.

105a. *Pilea ophioderma* Killip, sp. nov.

Herba dioica, caule crasso, quadrangulari; stipulae magnae, ovatae, subpersistentes; folia ovato-lanceolata, attenuato-acuminata, conferte crenato-serrata, trinervia, valde fasciato-reticulata, supra sparse hirsutula vel glabrescentia, subtus in nervis dense hirsutula, cystolithis obscuris; flores ♂ in panicula compacta subsessili, ♀ in panicula laxa dichotoma pedunculata.

Erect perennial herb. 50 cm high, or more; stem stout, quadrangular, about 6 mm thick, glabrous, deep purple when dry, smooth, without cystoliths; stipules ovate, 2.2 to 3 cm long, 1 to 1.5 cm wide, rounded at apex, narrowed at base, flabellate-nerved, reddish brown, subpersistent; leaves ovate-lanceolate, 12 to 20 cm long, 6 to 10 cm wide, attenuate-acuminate at apex, rounded and subemarginate at base, closely crenate-serrate to base, trinerved (lateral nerves extending to the apex of the blade), reticulate-veined (veins impressed above, the leaf surface slightly darker along the veins than in the areoles, hence the reticulation very prominent), smooth, sparingly hirsutulous or glabrescent above, densely subappressed-hirsutulous on the nerves beneath, the cystoliths faint, fusiform above, punctiform beneath; plants dioecious; staminate flowers short-pedicel in few-flowered clusters borne in a subsessile, compact panicle in the upper axils, the perianth subglobose, about 1.5 mm wide, the lobes not mucronulate; pistillate flowers in sessile clusters, forming a loose dichotomous panicle up to 6 cm long (including a peduncle half as long), the bractlets ovate-lanceolate, about 5 mm long and 2.5 mm wide, subpersistent, the perianth segments ovate, nearly 1 mm long, subequal.

Type in the U. S. National Herbarium, no. 1,140,932, collected in mossy forest, on a spur of Cerro Tatamá, Department of Caldas, Colombia, altitude 2,800 to

3,300 meters (Western Cordillera), September 8-10, 1922, by F. W. Pennell (no. 10450).

This species differs from *P. fasciata* in having crenate-serrate rather than sharply dentate-serrate leaves, which, moreover, are smooth rather than strongly asperate-bullate. The stem is glabrous, whereas in typical *P. fasciata* it is densely hirsute.

The specific name is suggested by the mottling on the upper surface of the leaves.

106. *Pilea pavonii* Wedd. Ann. Sci. Nat. III. Bot. 18: 219. 1852.

Urtica cymosa Pavón; Wedd. Ann. Sci. Nat. III. Bot. 18: 219. 1852, as synonym.

Erect herb, 40 to 60 cm high, the stem stout, quadrangular, rufo-villosulous; leaves broadly ovate, 6 to 10 cm long, 4 to 6 cm wide, short-acuminate at apex, subrotund at base, crenate-serrate to base, triplinerved, subcoriaceous, finely appressed-pilosulous above, densely ferruginous-hirsute beneath, the petioles 1.5 to 3 cm long, the cystoliths minute, fusiform above, fusiform and punctiform beneath; plants monoecious, the inflorescences unisexual; staminate inflorescence borne in the uppermost axils on stout peduncles much longer than the petioles, compact, densely flowered, scorpioid, globose when young, subsecund, the pistillate inflorescence borne in the middle axils, cymose-paniculate, sessile or short-peduncled.

DISTRIBUTION: Central Peru.

PERU: Pavón (B, BM, Bo, Ma, P, type).

HUÁNUCO: Muña, alt. 2,000 meters, *Macbride* 4075 (F, US).

This is a striking species, the young plants easily recognized by the dense globose heads of flowers.

107. *Pilea hirsuta* (Pavón) Wedd. Ann. Sci. Nat. III. Bot. 18: 220. 1852, in part.

Urtica hirsuta Pavón; Wedd. Ann. Sci. Nat. III. Bot. 18: 220. 1852, as synonym.

Erect robust herb, the stem stout, ferruginous-villous; leaves ovate-elliptic, 7 to 15 cm long, 3 to 7 cm wide, coarsely serrate to base, triplinerved well above base, rugulose, ferruginous-hirsute on the nerves above and on the nerves and veins beneath, otherwise glabrous, the petioles about 2 cm long, densely ferruginous-hirsute, the cystoliths fusiform; plants dioecious, the staminate and pistillate inflorescence similar, paniculate, shorter than or slightly exceeding the adjacent petiole.

DISTRIBUTION: Probably central Peru.

PERU: Ruiz (B, Bo, type, US).

There is some confusion in regard to this species, partly because of Weddell's varying treatments. At the original place of publication of *Pilea hirsuta*, Weddell cites as synonyms "*Urtica hirsuta* et *U. punctata* Pav. mss." Following the description of the plant there appear these lines:

"Var α , foliis oblongo-ovatis triplinerviis supra glabratis.

Var β , foliis rotundato-ovatis trinerviis utrinque pubescentibus.

Crescit in Peruvia (Pavón).—v. s. in Herb. Webb. ex Herb. Pavón.

Toute la plante prend, en séchant, une teinte ferrugineuse."

In the Monographie des Urticées this is repeated, the manuscript name *U. punctata* Pavón not, however, being included. In the Prodrômus the species is treated thus:

"*P. hirsuta* (Wedd. in Ann. Sc. Nat. 3^e sér. 18. p. 220. exclus. var. β ; Monogr. p. 251).....In Nova Granata (Pavón). *Urtica hirsuta* Pav. mscr.....

Varietas β in Monographia mea notata atque olim in herb. Webb. visa,

foliis minoribus rotundato-ovatis trinerviis (nec triplinerviis) et utrinque pubescentibus insignita, forsan huc non pertinet et denuo examinanda est."

The specimens at the Boissier and Berlin herbaria bearing the name *Urtica hirsuta* in either Ruiz's or Pavón's handwriting, which are matched by an unnamed one in the U. S. National Herbarium, agree with Weddell's description of var. α . The β element can not be definitely identified without examining the specimen in the Webb herbarium. There is a Ruiz and Pavón specimen at Berlin, labeled apparently in the writing of one of the collectors "*Urtica punctata* Ruiz." This does not answer well Weddell's description of β , for the leaves are triplinerved and not "utrinque pubescentibus." This seems to be *Pilea punctata* (H. B. K.) Wedd., though, it should be observed, the use of the name "*Urtica punctata*" by both "H. B. K." and Ruiz and Pavón was merely a coincidence.

The locality "Nova Granata," i. e. Colombia, given in the Prodrromus was clearly an error, for there is no evidence that Weddell saw any Colombian specimens that he took to be this species. Perhaps this error is partly responsible for the reference⁶ of Mayor's specimens from northwestern Colombia to *P. hirsuta*. I have not seen these specimens, but I suspect they belong to the related species *P. purpurea*.

108. *Pilea purpurea* Killip, Journ. Washington Acad. Sci. 13: 357. 1923.

Erect herb, 40 to 60 cm high, the stem angulate, glabrous below, slightly pubescent above; leaves ovate or oblong, 8 to 12 cm long, 4 to 5 cm wide, short-acuminate at apex, rounded at base, finely serrate, 3-nerved (lateral nerves close to margin, extending to apex of blade), above dark green and glabrous, beneath paler, punctate, densely tomentulous on nerves and veins, the cystoliths linear and faint above, wanting beneath, the petioles 1.5 to 3 cm long, ferruginous-tomentose; plants monoecious; staminate cymes profusely dichotomous, densely tomentulous, borne in upper axils; pistillate cymes subsessile in lower axils, compact, barely 1 cm wide; achenes broadly ovate, 2 mm long.

DISTRIBUTION: Known only from the type locality, in northwestern Colombia.
COLOMBIA.

CALDAS: Cerro Tatamá, 2,700 meters, Pennell 10380 (US, type).

The foliage bears a general similarity to that of *P. mutisiana*, but the conspicuous white bracts subtending the purple staminate flowers are not evident in *P. mutisiana* nor has that species an indument.

As already noted in discussing *P. hirsuta*, possibly Mayor's specimens from northwestern Colombia belong here.

109. *Pilea glaucophylla* Killip, Contr. U. S. Nat. Herb. 26: 392. 1936. PLATE 40.

DISTRIBUTION: Central Colombia.
COLOMBIA.

TOLIMA: Quebrada Honda, André K1669 (K, type). Tambo de Savanilla, André K1668 (K).

EXPLANATION OF PLATE 40—*Pilea glaucophylla*, the type specimen. One-half natural size.

110. *Pilea salentana* Killip, Contr. U. S. Nat. Herb. 26: 393. 1936.

DISTRIBUTION: Known positively only from the Central Cordillera of Colombia, between 2,700 and 3,300 meters altitude.

COLOMBIA: "Andes Granadin., alt. 2,500 m.," Triana 890 (HNC, K, P). Quindío Trail, Holton in 1853 (Y).

TOLIMA: Between Ibagué and Mount Tolima, Cuatrecasas 2538 (Ma), 2590 (Ma).

CALDAS: Pinares, above Salento, Pennell 9354 (G, US, type). Magaña, Quindío Trail, Killip & Hazen 9447 (Ph, US).

⁶ Mém. Soc. Sci. Neuchâtel 5: 360. 1914.

The Triana specimen in the Herbario Nacional Colombiano bears the locality data given above. The other specimens of this collection are labeled "Barbacoas," perhaps in error.

111. *Pilea castronis* Killip, Contr. U. S. Nat. Herb. 26: 394. 1936.

DISTRIBUTION: Known only from the type locality, in the Eastern Cordillera of Colombia, between 2,600 and 2,900 meters altitude.

COLOMBIA.

SANTANDER: Las Vegas, *Killip & Smith* 15949 (G, US, Y), 16019 (G, US, type, Y), 16126 (G, US, Y).

111a. *Pilea cushiensis* Killip, Field Mus. Bot. 13²: 340. 1937.

Succulent herb, 1 to 1.5 meters high; stem sparsely rufo-hirsutulous toward the apex; stipules ovate, about 3 mm long, soon deciduous; leaves elliptic-ovate, 7 to 15 cm long, 3.5 to 6 cm wide, acuminate at apex, narrowed to a cordulate base, coarsely crenate-serrate, triplinerved, the lateral nerves extending to the upper quarter of the blade, the cystoliths linear, dense, faint beneath, the petioles up to 12 cm long; plants dioecious, the staminate inflorescences borne in most of the axils, paniculiform, about 3 cm long (not fully developed), rufo-hirsutulous, the perianth segments suborbicular.

DISTRIBUTION: Known only from the type locality, in central Peru.

PERU.

HUÁNUCO: Cushi, alt. 1,500 meters, *Macbride* 4826 (F, type, US).

In the key this species would come next to the Colombian *P. castronis*, being differentiated by the shape of the leaves and the cystolithic marking, and by having a more diffuse inflorescence.

LIST OF NEW SPECIES AND A NEW VARIETY

	Page
<i>Pilea nummularifolia</i> var. <i>klugii</i> Killip	513
<i>Pilea ophioderma</i> Killip	517
<i>Pilea scandens</i> Killip	491
<i>Pilea umbriana</i> Killip	508
	521

INDEX TO NUMBERED SPECIMENS OF PILEA

The following list includes the numbered specimens studied:

ALLART, A.

- 185. *microphylla*.
- 484. *dauciodora*.

ANDRÉ, E.

- 442. *microphylla*.
- 879. *mutisiana*.
- 1053. *latifolia*.
- 1243. *dauciodora*.
- 1302. *rhombea*.
- 1895. *argentea*.
- 2082. *mutisiana*.
- 2453. *serpyllacea*.
- 2508. *pubescens*.
- 2517. *microphylla*.
- 2823. *microphylla*.
- 2890. *microphylla*.
- 2987. *fallax*.
- 2997. *arguta*.
- 3035. *fallax*.
- 3510. *pteropodon*.
- 3692. *microphylla*.
- 3816. *fasciata?*
- 4440. *serpyllacea*.
- 4674. *involucrata*.
- K722. *microphylla*.
- K723. *microphylla*.
- K724. *fallax*.
- K725. *fallax*.
- K1487. *mutisiana*.
- K1666. *involucrata*.
- K1667. *myriophylla*.
- K1668. *glaucophylla*.
- K1669. *glaucophylla*.
- K1670 in part. *macrantha*.
- K1670 in part. *tetrapoda*.
- K1671. *tetrapoda*.
- K1672. *pubescens*.
- K1673. *alsinifolia*.
- K1674. *fallax*.
- K1675. *fallax*.
- K1676. *fallax*.
- K1677. *acuminata*.
- K1678. *acuminata*.

- K1679. *carnulosa*.
- K1680. *gallowayana*.
- K1681. *arguta*.
- K1682. *goudotiana*.
- K2215. *carnulosa*.

ANTHONY, H. E., and TATE, G. H. H.

- 338. *serpyllacea*.
- 425. *serpyllacea*.

ARCHER, W. A.

- 1. *microphylla*.
- 2. *microphylla*.
- 690. *microphylla*.
- 770. *microphylla*.
- 895. *hyalina*.
- 1083. *dauciodora*.
- 1084. *dauciodora*.
- 1701. *gallowayana*.
- 1793. *microphylla*.
- 1977. *trianaeana*.
- 2081. *imparifolia*.
- 2129. *daguensis*.
- 2172. *daguensis*.
- 2184. *gallowayana*.
- 2189. *gallowayana*.
- 2190. *imparifolia*.

ARISTE JOSEPH, Brother

- A322. *lindeniana*.
- A329. *rhombea*.
- A888. *lindeniana*.
- A890. *discolor*.
- A927. *filicina*.
- B80. *lindeniana*.

BAILEY, L. H., and BAILEY, E. Z.

- 313. *microphylla*.
- 906. *involucrata*.

BANG, M.

- 687. *strigosa*.
- 894. *multiflora*.
- 1787. *dauciodora*.

1788. filipes.
1796. dauciodora.
2126. hyalina.
2374. cymbifolia.
2490. multiflora.

BENOIST, R.

2292. serpyllacea.
3257. arguta.
3583. serpyllacea.

BOLDINGH, I.

5648. microphylla.

BRIDGES, T.

741. elliptica.
742. elegans.

BROADWAY, W. E.

9. microphylla.
42. involucrata.
646. involucrata.

BUCHTIEN, O.

85. strigosa.
372. dauciodora.
383. sublobata.
657. multiflora.
794. sublobata.
795. strigosa.
2811. pauciserrata.
2813. dauciodora.
3110. picta.
3751. cymbifolia.
3752. cymbifolia.
3753. cymbifolia.
3754. rusbyi.
4524. picta.
4526. buchtienii.
5390. hyalina.
7261. hyalina.
7262. multiflora.
7263. multiflora.
8935. pauciserrata.
8937. dauciodora.
8938. strigosa.
8939. strigosa.
8940. picta.

CÁRDENAS, M.

1316. multiflora.
2074. multiflora.

CHARETIER, C.

65. microphylla.

CLAUDE JOSEPH, Brother

1862. elliptica.
2352. elliptica.
3994. elliptica.
4658. elegans.
5607. elegans.

COOK, O. F., and GILBERT, G. B.

262. serpyllacea.
1035. serpyllacea.
1095. nutans.

CORNELIO, Father

132. microphylla.

CRÜGER, H.

46. crugeriana.

CUATRECASAS, J.

2586. lindeniana.
2587. dauciodora.
2588. salentana.
2589. mutisiana.
2590. salentana.
3087. lindeniana.
3092. rhombea.
3093. lindeniana.

CUMING, H.

40. elliptica.

CURRAN, H. M., and HAMAN, M.

3. herniarioides.

DAWE, M. T.

265. lindeniana.
772. imparifolia.

DRYANDER, E.

94. microphylla.

EGGERS, H. F. A.

13178. mollis.
13445. rhombea.
14120. pubescens.
15022. pubescens.

ELIAS, Brother

564. microphylla.

- | | |
|--------------------------|------------------------|
| ERNST, A. | HALL |
| 458. rhombea. | 5. flexuosa. |
| 1164. rhombea. | 28. serpyllacea. |
| 1705. mollis. | HAUGHT, O |
| 1706. crugeriana. | 1274. centradenioides. |
| FENDLER, A. | 1305. centradenioides. |
| 1240. microphylla. | 1592. centradenioides. |
| 1241. mollis. | HEINRICHS |
| 1244. involucrata. | 32. serpyllacea. |
| 1245. hyalina. | HERIBERTO, Brother |
| 1246. dauciodora. | 342. microphylla. |
| 1247. fendleri. | HERRERA, F. L. |
| 1826. hyalina. | 6. nutans. |
| 2429. urticella. | 51. serpyllacea. |
| FIRMIN, G. | 2288. serpyllacea. |
| 271. serpyllacea. | 3065. serpyllacea. |
| 369. serpyllacea. | HERZOG, T. |
| 640. jamesoniana. | 2305. cymbifolia. |
| FUNCK, N. | 2416. picta. |
| 145. mollis. | HITCHCOCK, A. S. |
| GARCÍA B., H. | 20404. hyalina. |
| 4578. involucrata. | 20790. arguta. |
| 4652. serpyllacea. | 20803. arguta. |
| GAY, C. | 21445. serpyllacea. |
| 68. elliptica. | 21825. hitchcockii. |
| 235. elliptica. | HOLLERMEYER |
| 236. elegans. | 511. elliptica. |
| GERRIGER, W. | HOLTON, I. F. |
| 203. rhombea. | 256. involucrata. |
| 248. rhombea. | 262. dauciodora. |
| 258. serpyllacea. | HUBER, J. |
| 329. dauciodora. | 1519. imparifolia. |
| 592. fallax. | JAHN, A. |
| GUEVARA A., B. | 595. rhombea. |
| 218. serpyllacea. | JAMESON, W. |
| 252. rhombea. | 481. serpyllacea. |
| 344. acuminata. | 734. imparifolia. |
| F.1. fallax. | 745. jamesoniana. |
| GÜNCKEL, H. | 789. flexuosa. |
| 68. elliptica. | 834. serratifolia. |
| HAENKE, T. | 838. arguta. |
| 1731. nutans. | |
| 1860. macrocystolithica. | |
| 1870. haenkei. | |

JULIO, Brother

332. *picta*.
357. *picta*.
462. *strigosa*.
466. *picta*.

KALBREYER, G.

531. *lippioides*.
691. *hydrocotyliflora*.
1023. *alsinifolia*.
1039. *acuminata*.

KILLIP, E. P.

5117. *seemannii*.
5439. *microphylla*.
5698. *imparifolia*.
5845. *involucrata*.
6673. *puracensis*.
6772. *arguta*.
6777. *fallax*.
6832. *myriantha*.
6888. *serpyllacea*.
7672. *acuminata*.
7678. *scandens*.
7703. *pteropodon*.
9772. *mutisiana*.
11440. *pubescens*.
11457. *hyalina*.
11550. *daguensis*.

KILLIP, E. P., and HAZEN, T. E.

8786. *imparifolia*.
9007. *flexuosa*.
9438. *carnulosa*.
9447. *salentana*.
9475. *mutisiana*.
9482. *mutisiana*.
10121. *flexuosa*.
10129. *scandens*.
11891. *mutisiana*.

KILLIP, E. P., and SMITH, A. C.

14353. *microphylla*.
14470. *microphylla*.
14690. *herniarioides*.
15541. *rhombea*.
15559. *lippioides*.
15949. *castronis*.
16019. *castronis*.
16020. *vegasana*.
16025. *vegasana*.
16043. *vegasana*.

16054. *lippioides*.
16082. *vegasana*.
16093. *dauciodora*.
16097. *goudotiana*.
16126. *castronis*.
16200. *microphylla*.
16258. *microphylla*.
16421. *rhombea*.
16560. *latifolia*.
16561. *aff. smithii*.
16584. *rhombea*.
16989. *rhombea*.
16990. *smithii*.
17014. *alsinifolia*.
17025. *rhombea*.
17090. *rhombea*.
17188. *smithii*.
18023. *rhombea*.
18284. *smithii*.
18797. *smithii*.
18808. *carnulosa*.
18830. *dauciodora*.
18849. *rhombea*.
18964. *goudotiana*.
18968. *vegasana*.
19021. *aff. smithii*.
19032. *latifolia*.
19097. *alsinifolia*.
19119. *alsinifolia*.
19138. *goudotiana*.
19164. *goudotiana*.
19201. *goudotiana*.
19370. *acuminata*.
19405. *alsinifolia*.
19457. *alsinifolia*.
19464. *alsinifolia*.
19847. *dauciodora*.
19969. *losensis*.
20188. *alsinifolia*.
20202. *rhombea*.
20207. *dauciodora*.
20370. *losensis*.
20390. *dauciodora*.
20403. *rhombea*.
20669. *dauciodora*.
20693. *dauciodora*.
20800. *involucrata*.
20804. *hyalina*.
21601. *serpyllacea*.
22357. *diversifolia*.
22439. *dauciodora*.
22746. *hyalina*.
23593. *hyalina*.

24073. microphylla.
 24160. dauciodora.
 24274. nutans.
 24281. foliosa.
 24334. serpyllacea.
 24400. foliosa.
 24408. dauciodora.
 24457. macbridei.
 24676. hyalina.
 25329. microphylla.
 25580. hyalina.
 25638. costata.
 25775. multiflora.
 25789. nutans.
 25795. strigosa.
 25801. multiflora.
 25826. poeppigiana.
 25876. pichisana.
 25885. diversifolia.
 25895. nutans.
 25902. poeppigiana.
 25913. multiflora.
 25929. multiflora.
 26023. submissa.
 26032. marginata.
 26038. imparifolia.
 27500. microphylla.
 28429. bassleriana.
 28467. bassleriana.
 28471. bassleriana.
 28835. strigosa.
 28843. strigosa.
 28993. bassleriana.
 29145. bassleriana.
 29196. bassleriana.
 29308. imparifolia.
 29515. imparifolia.
 29572. imparifolia.

KLUG, G.

1672. umbriana.
 1931. imparifolia.
 2870. bassleriana.
 3186. submissa.
 3719. microphylla.

KUNTZE, O.

1328. microphylla.
 1670. mollis.

LAWRANCE, A. E.

652. centradenioides.

LECHLER, W.

409. elliptica.

LEHMANN, F. C.

4475. cuprea.
 5411. serpyllacea.
 BT1258. discolor.
 K332. fallax.
 K333. involucrata.

LINDEN, J. J.

799. lindeniana.
 1206. mutisiana.

MACBRIDE, J. F.

3126. minutiflora.
 3289. dombeyana.
 3512. serpyllacea.
 3650. ramosissima.
 3690. microphylla.
 3770. poeppigiana.
 3868. serpyllacea.
 3984. diversifolia.
 4075. pavonii.
 4087. serpyllacea.
 4117. dauciodora.
 4395. nerteroides.
 4400. delicatula.
 5086. marginata.
 5179. macbridei.
 5201. verrucosa.
 5822. citriodora.
 5910. lamioides.

MACBRIDE, J. F., and
 FEATHERSTONE, W.

447. serpyllacea

MANDON, G.

1005. serpyllacea.
 1103 in part. dauciodora.
 1103 in part. filipes.
 1104 multiflora.
 1124. dauciodora.

MATHEWS, A.

1555. hyalina.
 2032. hyalina.
 3101. microphylla.

MEXIA, Y.

6355. *bassleriana*
 6359. *submissa*.
 6360. *bassleriana*.
 6365. *imparifolia*.
 6881. *trichosanthos*.
 7177. *hitchcockii*.
 7178. *trichosanthos*.
 7211. *trichosanthos*.
 7215. *pubescens*.
 7307. *submissa*.
 7592. *myriantha*.
 8476. *pteropodon*.

MILLE, L.

20. *microphylla*.
 93. *microphylla*.

MORITZ, J.

366. *mollis*.
 790. *fendleri*.
 1293. *lindeniana*.
 1294. *rhombea*.

MUTIS, J. C.

1900. *lindeniana*.
 1908. *aenea*.
 1922. *involucrata*.
 1929. *mutisiana*.

PACHANO, A.

3. *serpyllacea*.

PEARCE, R.

118. *serpyllacea*.
 284. *spruceana*.

PENNELL, F. W.

1738. *herniarioides*.
 1863. *lindeniana*.
 2278. *lindeniana*.
 2731. *involucrata*.
 3164. *mutisiana*.
 3167. *mutisiana*.
 4416. *pittieri*.
 4502. *trianaeana*.
 4541. *imparifolia*.
 6944. *fallax*.
 7011. *arguta*.
 7559. *fallax*.

8869. *mutisiana*.
 9299. *mutisiana*.
 9336. *fallax*.
 9354. *salentana*.
 9401. *fallax*.
 10325. *tatamensis*.
 10326. *pennellii*.
 10374. *obetiaefolia*.
 10376. *fallax*.
 10377. *fallax*.
 10378. *tatamensis*.
 10379. *dauciodora*.
 10380. *purpurea*.
 10450. *ophioderma*.
 10476. *cuprea*.
 12608. *elliptica*.
 12653. *elliptica*.
 13657. *serpyllacea*.
 14013. *multiflora*.
 14049. *nutans*.
 14751. *lamioides*.

PENNELL, F. W., and KILLIP, E. P.

5878. *gallowayana*.
 7336. *fallax*.
 7373. *rojasiana*.
 7375. *fallax*.

PENNELL, F. W., KILLIP, E. P., and
HAZEN, T. E.

11887. *involucrata*.

PÉREZ A., E.

351. *microphylla*.
 2374. *involucrata*.

PHILIPPI, R. A.

28. *elliptica*.

PITTIER, H.

1216. *lippoides*.
 6379. *pubescens*.
 7145. *nummularifolia*.
 9551. *microphylla*.
 9585. *mollis*.
 10448. *rhombea*.
 11120. *dauciodora*.
 11127. *rhombea*.
 11863. *involucrata*.
 11972. *microphylla*.
 12166. *hyalina*.

12417. involucrata.
13898. crugeriana.
13984. losensis.

POEPPIG, E. F.

1032 in part. ceratocalyx.
1032 in part. poeppigiana.
1058. marginata.
1383. fendleri.
1539. hyalina.
1539B. poeppigiana.
1552 in part. fendleri.
1552 in part. strigosa.
1565. nutans.
2088. marginata.
3045. marginata.
3046. ceratocalyx.

RAIMONDI, A.

285. lamioides.
2209. serpyllacea.
2398. citriodora.
2800. dauciodora.
5639. serpyllacea.
7092. ramosissima.
9290. nutans.
9649. nutans.

REED, E. C.

185. microphylla.
706. pubescens.
780. lindeniana.
792. lindeniana.
796. lindeniana.

RIMBACH, A.

136. serpyllacea.

RODRIGUEZ, S.

36. lindeniana.

ROSE, J. N.

21946. nummularifolia.

RUIZ H.

4677. diversifolia.

RUSBY, H. H.

1478. multiflora.
1479. filipes.

1480. cymbifolia.
1481. cymbifolia.
1482. cymbifolia.
1483. dauciodora.
1484. sublobata.
1485. strigosa.
1756. filipes.
1774. rusbyi.
2561. hyalina.

RUSBY, H. H., and PENNELL, F. W.

458. microphylla.
553. rhombea.
654. argentea.
794. dauciodora.
938. argentea.

SCHLIM, L.

701. latifolia.
1134. nutans.

SCHUNKE, C.

498. foliosa.
678. foliosa.
992. foliosa.

SEEMANN, B. C.

1099. centradenioides.

SEIFRIZ, W.

317. microphylla.
541a. microphylla.

SMITH, H. H.

1223. fendleri.
1430. apiculata.
1445. involucrata.
1446. rhombifolia.
1447. hyalina.
1448. hyalina.
1460. microphylla.

SNEIDERN, K.

413. gallowayana.
414. fallax.
707. pteropodon.
772. daguensis.
773. gallowayana.
788. pteropodon.
862. pteropodon.

863. pteropodon.
 881. scandens.
 964. fallax.
 965. fallax.
 968. rhombea.
 975. gallowayana.
 993. gallowayana.
 1025. bassleriana.
 1210. puracensis.
 1396. rojasiana.
 1614. bassleriana.

SODIRO, A.

153/17. microphylla.
 153/18. serpyllacea.
 153/19. serpyllacea.
 153/20. serpyllacea.
 153/23. jamesoniana.
 153/23b. jamesoniana.
 153/23c. serratifolia.
 153/24. attenuata.
 153/26. flexuosa.
 153/27c. myriantha.
 153/29. attenuata.
 153/31. hyalina.
 153/36. pubescens.
 153/52. arguta.
 153/52b. arguta.

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 4155. submissa.
 4376. spruceana.
 4434. imparifolia.
 4455. pubescens.
 6047. jamesoniana.
 6106 in part. fallax.
 6106 in part. jamesoniana.
 6107. fallax.

STEINBACH, J.

5028. nutans.
 5709. multiflora.
 5812. multiflora.
 8542. multiflora.
 8890. nutans.
 8974. dauciodora.
 9153. dauciodora.

STEVENS, F. L.

59. pubescens.

STÜBEL, A.

90e. involucrata.
 362b. fallax.
 432. serpyllacea.

TATE, G. H. H.

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 665. tetrapoda.

TESSMANN, G.

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 4603. bassleriana.
 4667. bassleriana.
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TORO, R. A.

624. involucrata.
 885. antioquiensis.
 949. tatamensis.
 969. dauciodora.
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 1077. hyalina.

TRIANA, J.

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 344. mutisiana.
 345. carnulosa.
 492. nutans.
 876. pubescens.
 877. lindeniana.
 878. hyalina.
 886. fasciata.
 887. centradenioides.
 888. seemannii.
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ULE, E.

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6844. poeppigiana.

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575. minutiflora.
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5244. nitida.
6812. multiflora.

WEDDELL, H. A.

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4561. dauciodora.

WERDERMANN, E.

1954. elliptica.

WEST, J.

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6071. microphylla.
6662. microphylla.
6957. pubescens.
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7233. microphylla.
7425. subamplexicaulis.
7695. pubescens.

WILLIAMS, R. S.

199. spruceana.

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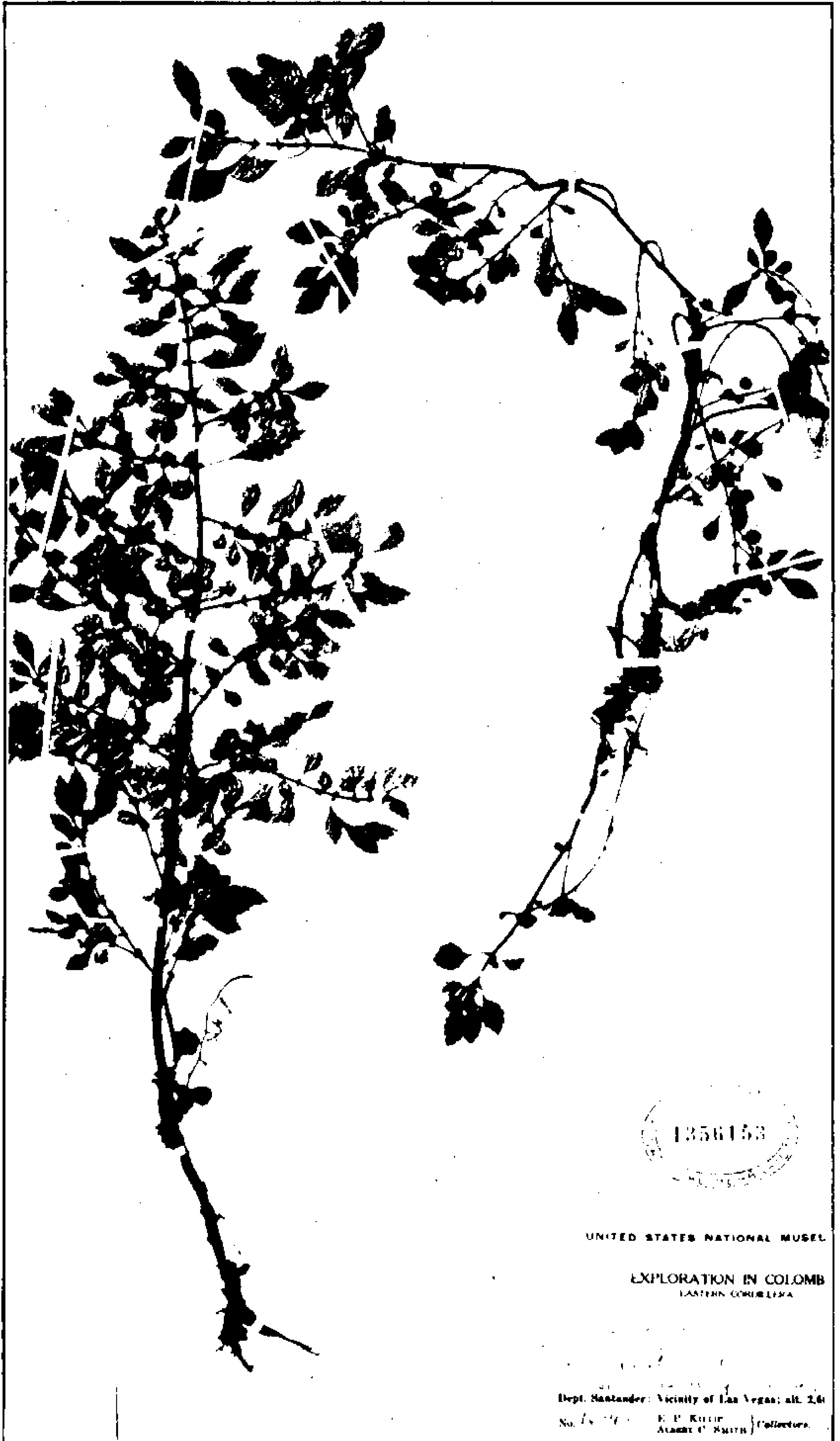
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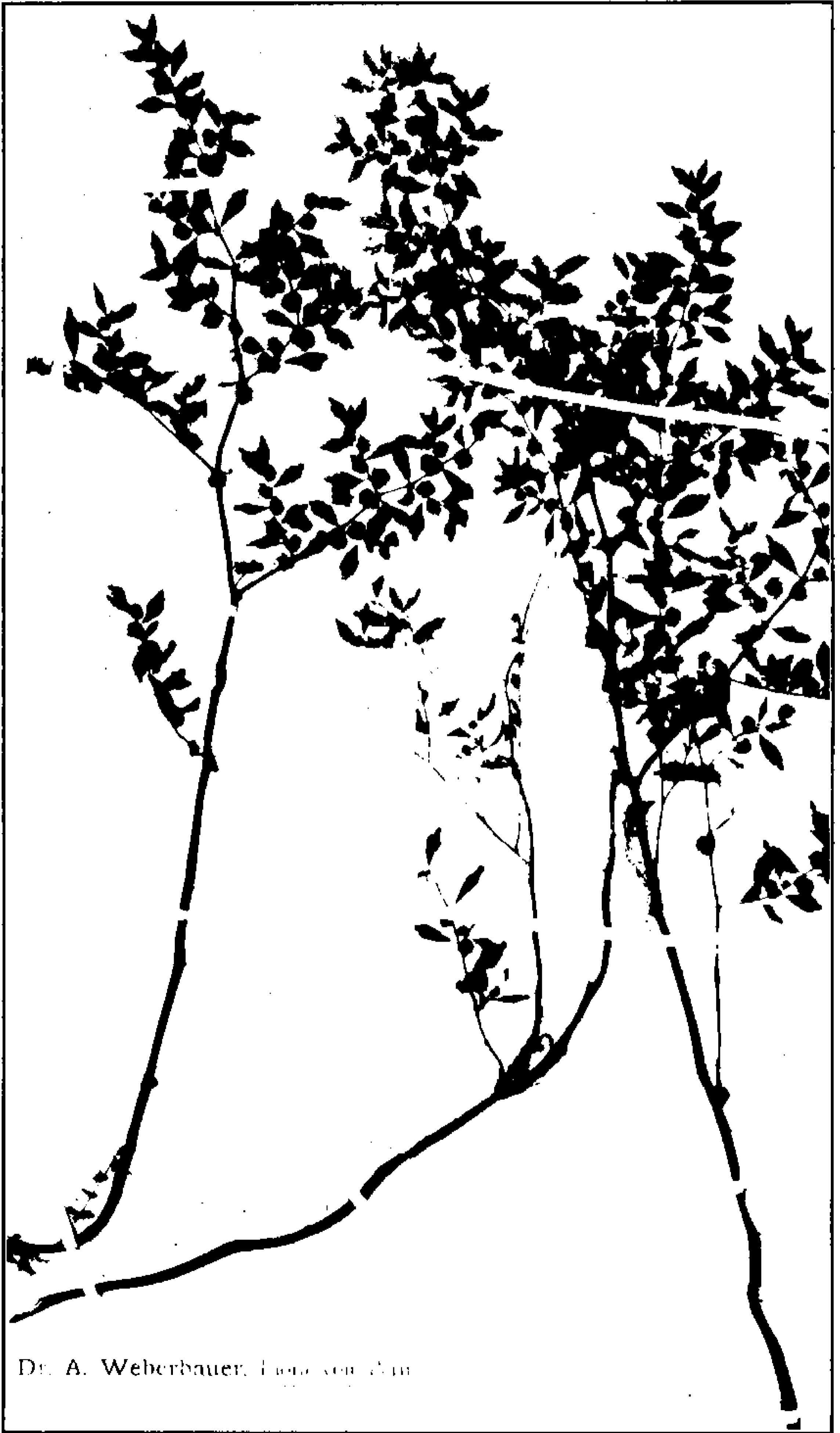
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PILEA VEGASANA KILLIP.



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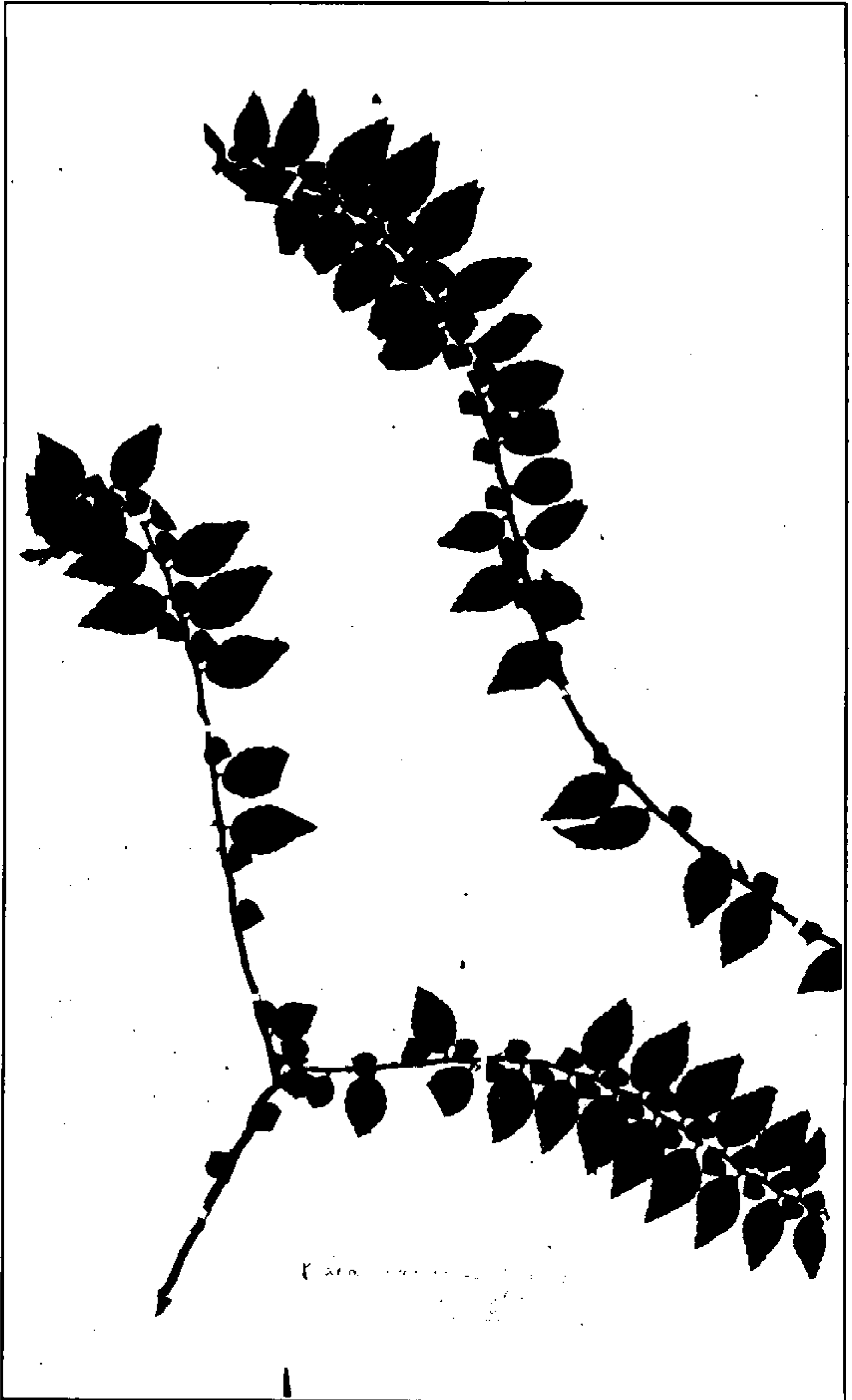


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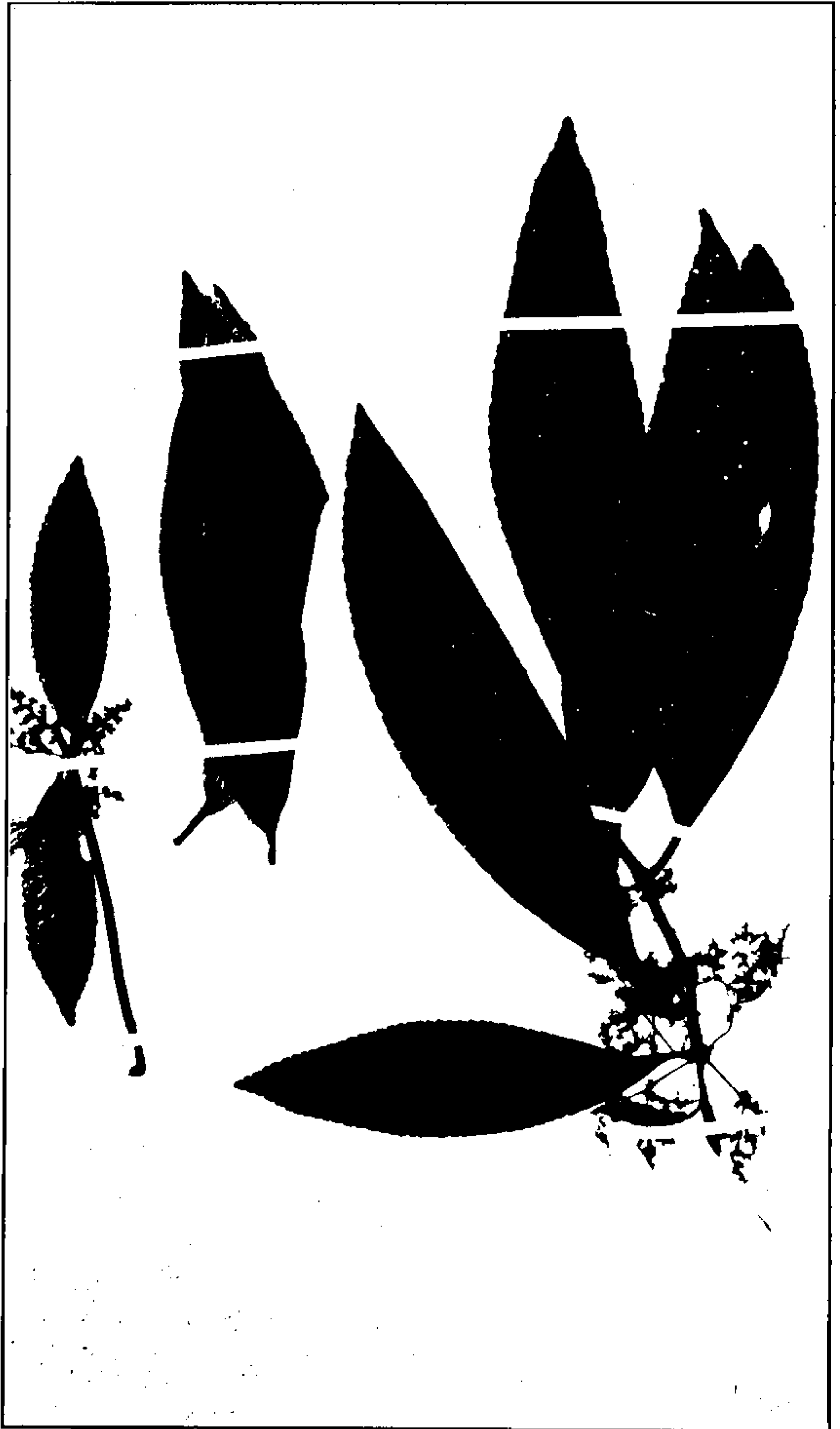
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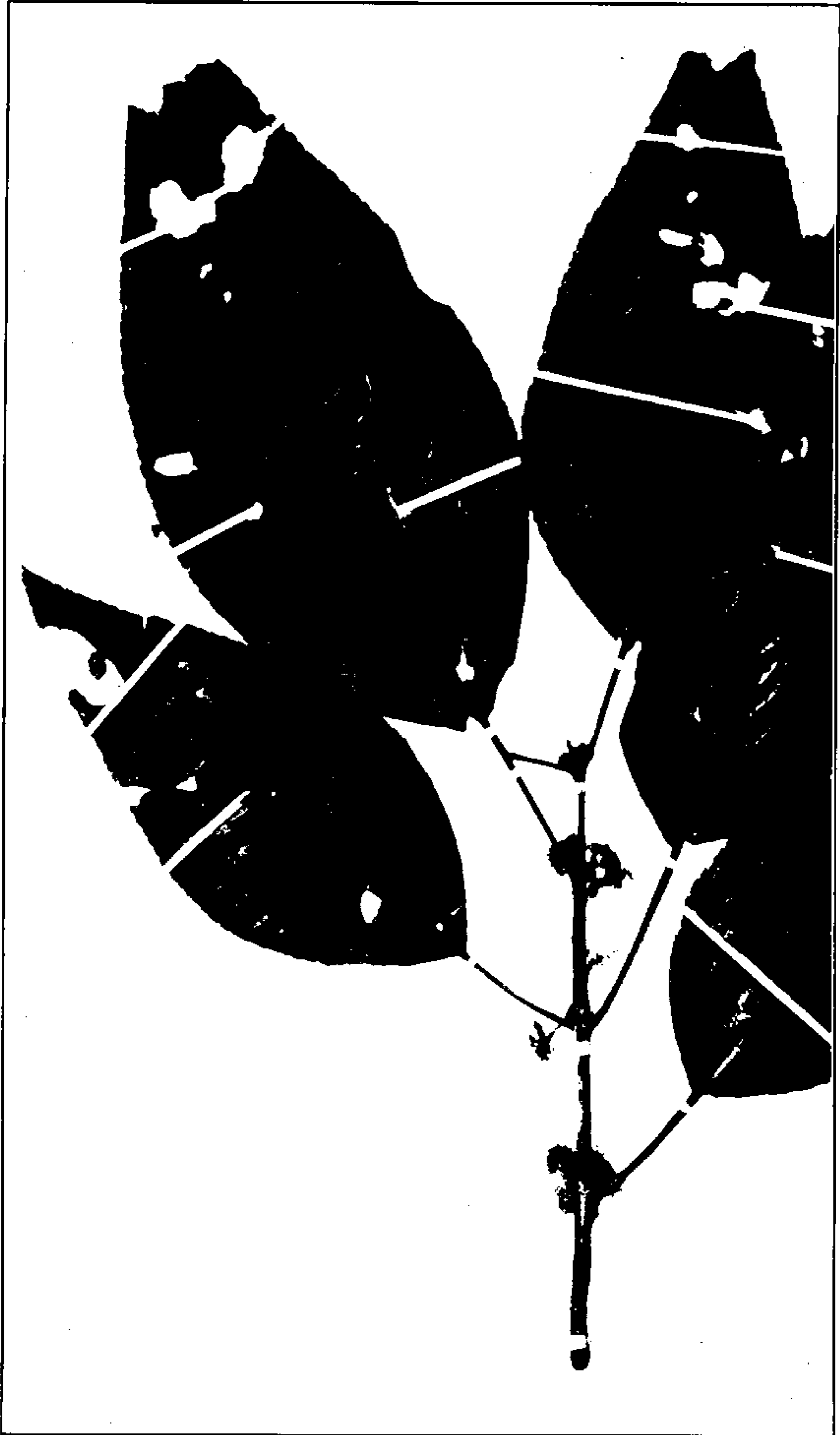
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1937



PILEA SMITHII KILLIP.



PILEA TRIRADIATA KILLIP.



PILEA ANTIOQUIENSIS KILLIP.



PILEA ATTENUATA KILLIP.



near anomala Hedd.

Scientifique de ED. ANDRÉ
AMERICÆ EQUINOCTIALIS

K 1669 PILEA

PILEA GLAUCOPHYLLA KILLIP.

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