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MISCELLANEOUS NEW TAXA OF BROMELIACEAE (VIII)

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ABSTRACT. Sixteen new species of Bromeliaceae are described: *Guzmania skotakii* from Costa Rica; *Guzmania dalstromii, Guzmania harlingii, Guzmania hirtzii, Guzmania jaramilloi, Guzmania regalis, Mezobromelia brownii, Pepinia alexanderi, Pepinia fulgens, Pepinia hooveri, Pitcairnia andreetae, Pitcairnia hirtzii, Streptocalyx kentii, Tillandsia raackii,* and *Vriesea diantha* from Ecuador; and *Tillandsia novakii* from Mexico. Miscellaneous New Taxa of Bromeliaceae (VII) appeared in the *Journal of the Bromeliad Society* Vol. 40: 206–209, 250–253 (1990).

COSTA RICA

Guzmania skotakii Luther, sp. nov. FIGURE 1.

A *G. devansayana* E. Morr., cui affinis, planta majore, foliis latioribus et bracteis florigeris flavovirentibus non rubris differt.

TYPE. Costa Rica: Cartago, 3 km N of entrance to Refugio Nacional Tapanti, near Rio Macho, 650–750 m. Originally collected in June 1990 and flowered in cultivation by Chester Skotak, July 1990, *Luther 2810* (SEL, holotype; CR, isotype).

Plant clustering, flowering 0.7–1 m tall. Leaves erect, stiff, coriaceous, ca. 20 in number, to 0.8 m long, densely brown punctate lepidote throughout. Leaf sheaths broadly elliptic, to 20 × 10 cm, dark castaneous abaxially, dark red striate toward the blades. Leaf blades linear to subtriangular, attenuate, pungent, to 4 cm wide, dull dark green with dark red striations. Scape erect, to 45 × 1 cm. Scape bracts erect, densely imbricate, the lowest subfoliaceous, the upper elliptic, attenuate, dark green with red striations. Inflorescence simple, cylindric, 15 × 4 cm, polystichously 30–40-flowered, mucilaginous. Floral bracts elliptic to oblanceolate, obtuse to subacute, 30–40 × 16–25 mm thick, coriaceous, somewhat nerved when dry, lime green. Flowers with a 2–3 mm stout pedicel, erect to slightly spreading, anthesis nocturnal. Sepals elliptic, acute, 15 mm long, connate 2–4 mm, pale green. Corolla lobes spreading. Petals ligulate, acute, 35 mm long, ⅔ connate, cream. Fruit a capsule, 22 mm long. Seed coma brown.

PARATYPE. Costa Rica: Prov. Cartago, 3 km N of entrance to Refugio Nacional Tapanti, near Rio Macho, 650–750 m, July 1990, *Luther, Skotak & Bak 2817* (SEL).

This new species can be distinguished from the Andean *G. devansayana* by its larger size, cylindric not ellipsoid inflorescence, and yellow-green, not brilliant red, floral bracts. From the related *G. coriostachya* (Grisebach) Mez, also from Costa Rica, *G. skotakii* may be easily separated by its larger floral bracts [30–40 mm vs. 12–20 mm] and red striate leaf blades. The name honors the collector, Chester Skotak of Alajuela, Costa Rica, who has added several new country records to the bromeliad Flora of Costa Rica.

ECUADOR

Guzmania dalstromii Luther, sp. nov. FIGURE 2.

A *G. candelabrum* Andre, cui affinis, spicis longioribus perdensisque, flores polystichis et bracteis florigeris majoribus differt.

TYPE. Ecuador: Prov. Tungurahua, Llanganates; N of Topo, 2,500 m, February 1990, *S. Dalstrom & L. Arnby 1409* (SEL, holotype).

Plant flowering to over 2 m tall. Leaves densely rosulate, erect to spreading, to ca. 90 cm long, coriaceous, brown punctate lepidote throughout. Leaf sheaths elliptic, to 15 × 8 cm, densely brown lepidote, somewhat castaneous toward the base. Leaf blades ligulate, acute to acuminate, pungent, to 5 cm wide, green spotted purple. Scape erect, to 1.2 m × 18 mm, glabrous, reddish. Scape bracts densely imbricate, the lowest subfoliaceous and much exceeding the internodes, the upper narrowly lanceolate and about equalling the internodes, green tinged or spotted red. Inflorescence amply and laxly tripinnate, to ca. 60 × 50 cm. Primary bracts like the upper scape bracts, the lowest much shorter than the sterile bases of the branches, the upper nearly equalling the branches, green or reddish. Branches spreading, the lowest with a 10 cm long 1-bracteate terete sterile base, the upper nearly sessile, the fertile portion of the lowest branches to 20 cm

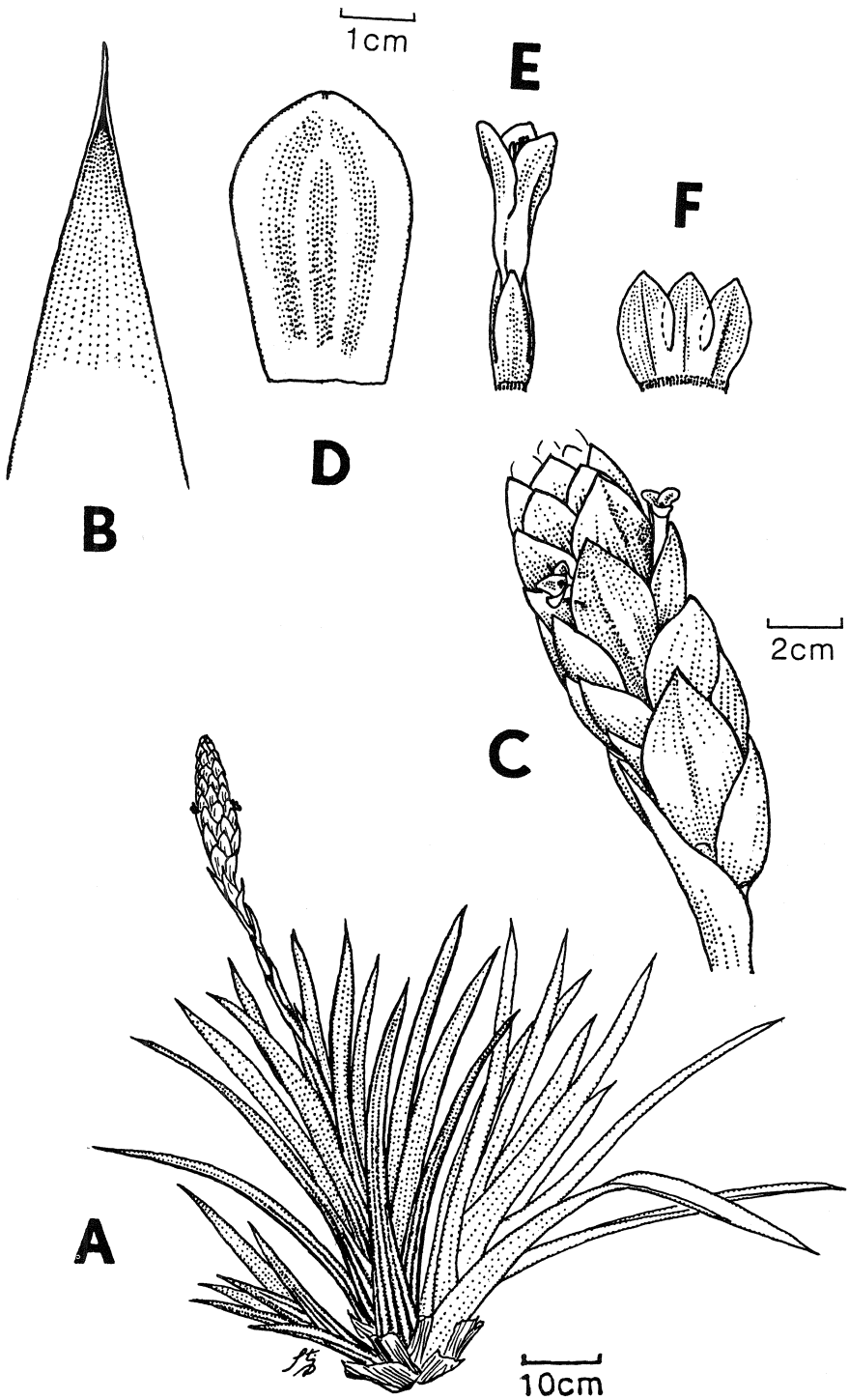

FIGURE 1. *Guzmania skotakii.* **A**, habit. **B**, leaf apex. **C**, inflorescence. **D**, floral bract. **E**, flower. **F**, sepals.

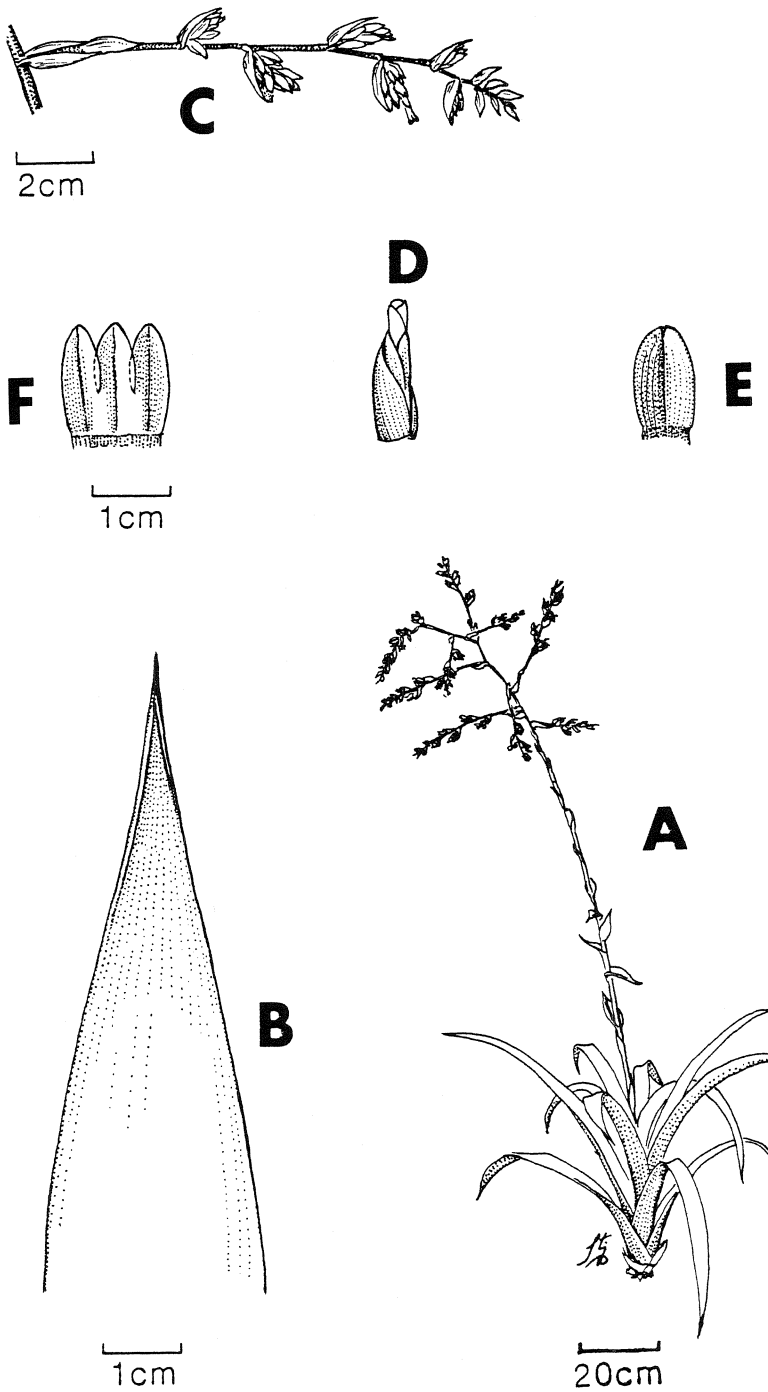

FIGURE 2. *Guzmania dalstromii.* **A**, habit. **B**, leaf apex. **C**, branch of inflorescence. **D**, flower and bract. **E**, floral bract. **F**, sepals.

long with 6–10 ultimate branches, the upper and ultimate branches to 3 cm long, densely and polystichously 3–8-flowered. Floral bracts elliptic, acute, 11–17 mm long, thin, nerved, somewhat incurved, erect and imbricate at anthesis, spreading in fruit, pale red. Flowers with a stout 2–5 mm long triquetrous pedicel, erect, not at all secund at anthesis, spreading in fruit. Sepals obovate, obtuse, 10–14 mm long, thin, nerved, carinate, ca. ½ connate, yellow-green. Corolla lobes erect. Petals at least 18 mm long, ca. ⅔ connate, bright yellow. Fruit a cylindric capsule to 15 mm long.

This new species may be distinguished from *Guzmania candelabrum* by its much longer primary branches [to 30 cm vs. 9 cm], much more densely flowered ultimate branches, its evenly polystichous, not at all downwardly secund flowers and longer floral bracts [11–17 mm vs. 8–10 mm]. From *G. diffusa* L. B. Smith, *G. dalstromii* may be separated by its sterile bases of the primary branches much exceeding the primary bracts, much more densely flowered ultimate branches and longer floral bracts [11–17 mm vs. 6–8 mm]. The name honors the collector, Stig Dalstrom of Falun, Sweden, who collected and illustrated this new species.

Guzmania harlingii Luther, sp. nov. FIGURE 3.

A *G. dudleyi* L. B. Smith, cui affinis, inflorescentia tripinnata, sepalis minoribus et petalis permajoribus differt.

TYPE. Ecuador: Prov. Pichincha, Reserva Endesa, ca. 6 km WNW of Puerto Vicente Maldonado, ca. 800 m; March 1985, *G. Harling & L. Andersson 23278* (GB, holotype; QCA, isotype).

Plant flowering 1–2 m tall. Leaves densely rosulate, spreading, to at least 0.5 m long, coriaceous, appressed lipidote throughout, green. Leaf sheaths broadly elliptic, to 20 × 14 cm, dark castaneous toward the base. Leaf blades ligulate, acute, pungent, to at least 8 cm wide. Scape erect, stout, red. Scape bracts erect, densely imbricate. Inflorescence erect, conical, laxly tripinnate, to 1 × 0.6 m. Primary bracts narrowly elliptic, acute, shorter than the sterile bases of the branches. Branches with a flattened 3–10 cm long stipe, spreading to decurved, laxly many-flowered, the rachis red. Floral bracts obovate, acute, 10–15 mm long, thin, nerved, somewhat carinate, red. Flowers with a 10–14 mm long pedicel, spreading at ca. 90° from the rachis at anthesis. Sepals obovate, obtuse, 26–28 mm long, connate for 17–19 mm, thin, nerved, yellow. Corolla lobes spreading. Petals elliptic, obtuse, 40 mm long, connate for 27–30 mm, yellow to yellow-green. Stamens slightly exceeding the corolla tube, anthers ca. 4.5 mm long.

This massive new species is related to the Peruvian *G. dudleyi* but differs by its tripinnate inflorescence, shorter sepals [26–28 mm vs. 35 mm], and much longer, much exserted [not included] petals. The name honors the collector, Prof. Dr. Gunnar Harling, prodigious collector of the Ecuadorean flora.

In October 1989, I found this species to be common but uncollectable on old, relict trees in the vicinity of San Miguel de los Bancos in western Ecuador. It did not seem to be capable of colonizing young, secondary growth and its survival seems problematic if the remaining original rainforest giants are removed.

Guzmania hirtzii Luther, sp. nov. FIGURE 4.

A *G. candelabrum* (Andre) Andre ex Mez, cui similis affinisque, inflorescentia perlatiore, pedicellis gracilibus, sepalis brevissimis ½-connatisque, petalis brevissimis differt.

TYPE. Ecuador: Prov. Napo, Cosanga, km 112 Quito–Tena, 1,850 m; June 1983, *C. H. & P. M. Dodson, D. Benzing & A. Hirtz 14009* (SEL, holotype; MO, isotype).

Plant flowering 1–2 m tall, spreading by 0.3 m long, stout stolons. Leaves densely rosulate, erect to spreading, coriaceous, to 1 m long, densely appressed white lepidote especially abaxially, pale green to appearing silver. Leaf sheaths elliptic, to 20 cm long, 12 cm wide, castaneous toward the base. Leaf blades ligulate, acute to rounded and apiculate, pungent, 6–8 cm wide. Scape erect, to 1 cm in diameter. Scape bracts erect, imbricate, subfoliaceous, densely white lepidote especially abaxially, yellow-green to silver. Inflorescence lax, elongate, 3- to 4-pinnate, to 1 m tall, 0.3 m in diameter, many-flowered. Primary bracts ovate, acute, equalling to exceeding the naked, sterile bases of the branches, green to yellow-green. Primary branches stipitate, erect to spreading, to 20 cm long, polystichous-flowered. Floral bracts elliptic, obtuse, 6–8 mm long, thin, nerved, bright yellow. Flowers with 5–8 mm long slender pedicels, spreading to erect, not at all secund. Sepals obovate, acute, 8–9 mm long, ca. ½ connate, thin, nerved, bright yellow. Corolla lobes spreading. Petals ligulate, acute, 12–15 mm long, ca. ⅓ connate, white. Fruit a dry, slender, cylindric capsule, to 14 mm long. Seed coma brown.

PARATYPES. Ecuador: Prov. Tungurahua, 16 km W of Banos, 1,700 m, July 1979, *C. H. Dodson & R. Perry 8502* (SEL); Prov. Napo, Baeza–Tena

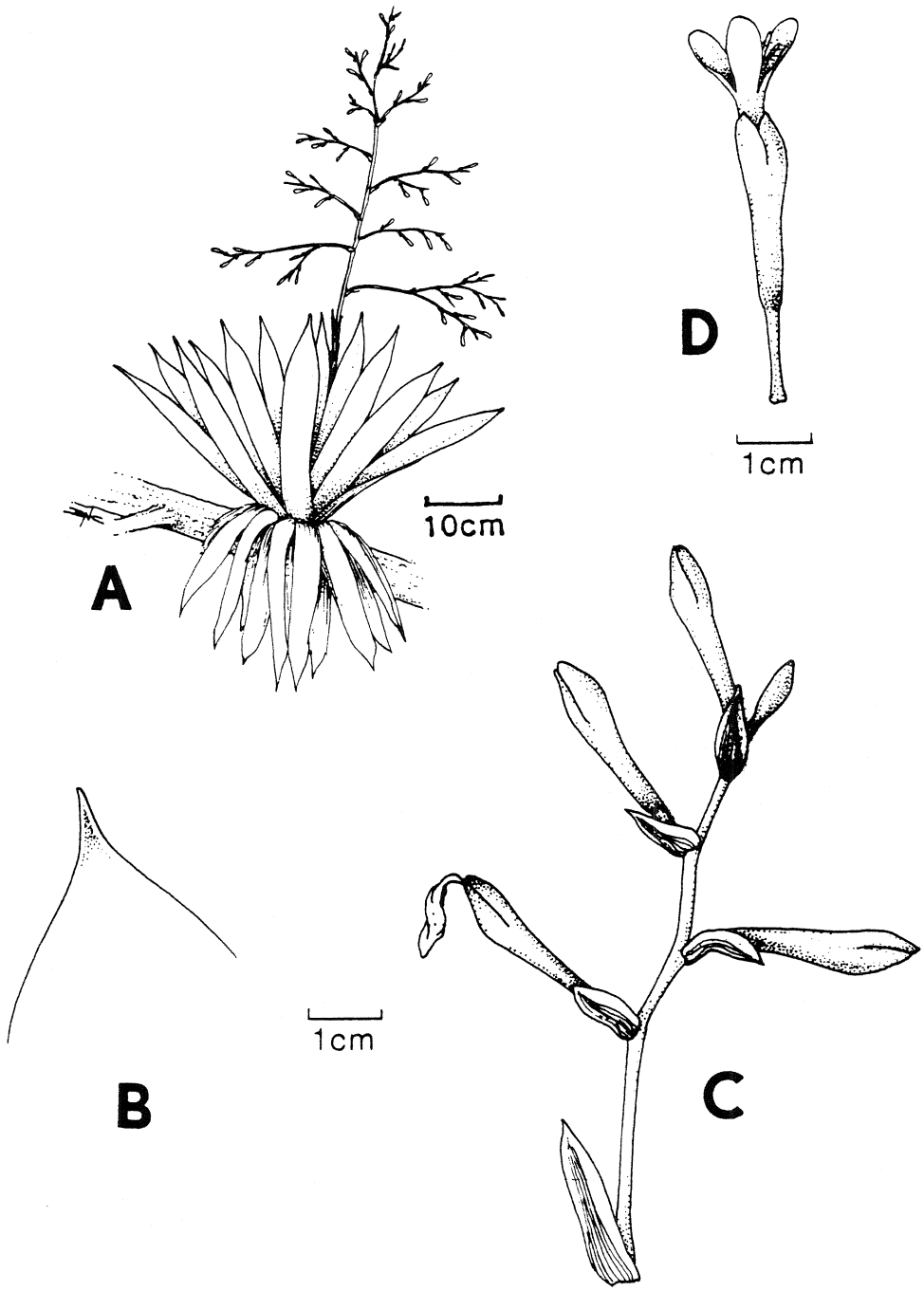

FIGURE 3. *Guzmania harlingii.* **A**, habit. **B**, leaf apex. **C**, branch of inflorescence. **D**, flower.

road, 2,100–2,500 m, February 1988, *Luther, Kress & Roesel 1260* (SEL).

This beautiful new *Guzmania* is dedicated to the collector, Alexander Hirtz of Quito, Ecuador. It differs from the related *G. candelabrum* by its broader inflorescence [20–30 cm vs. 10–12 cm], its very slender pedicels, and shorter sepals [8–9 mm vs. 12–18 mm] and petals [12–15 mm vs.

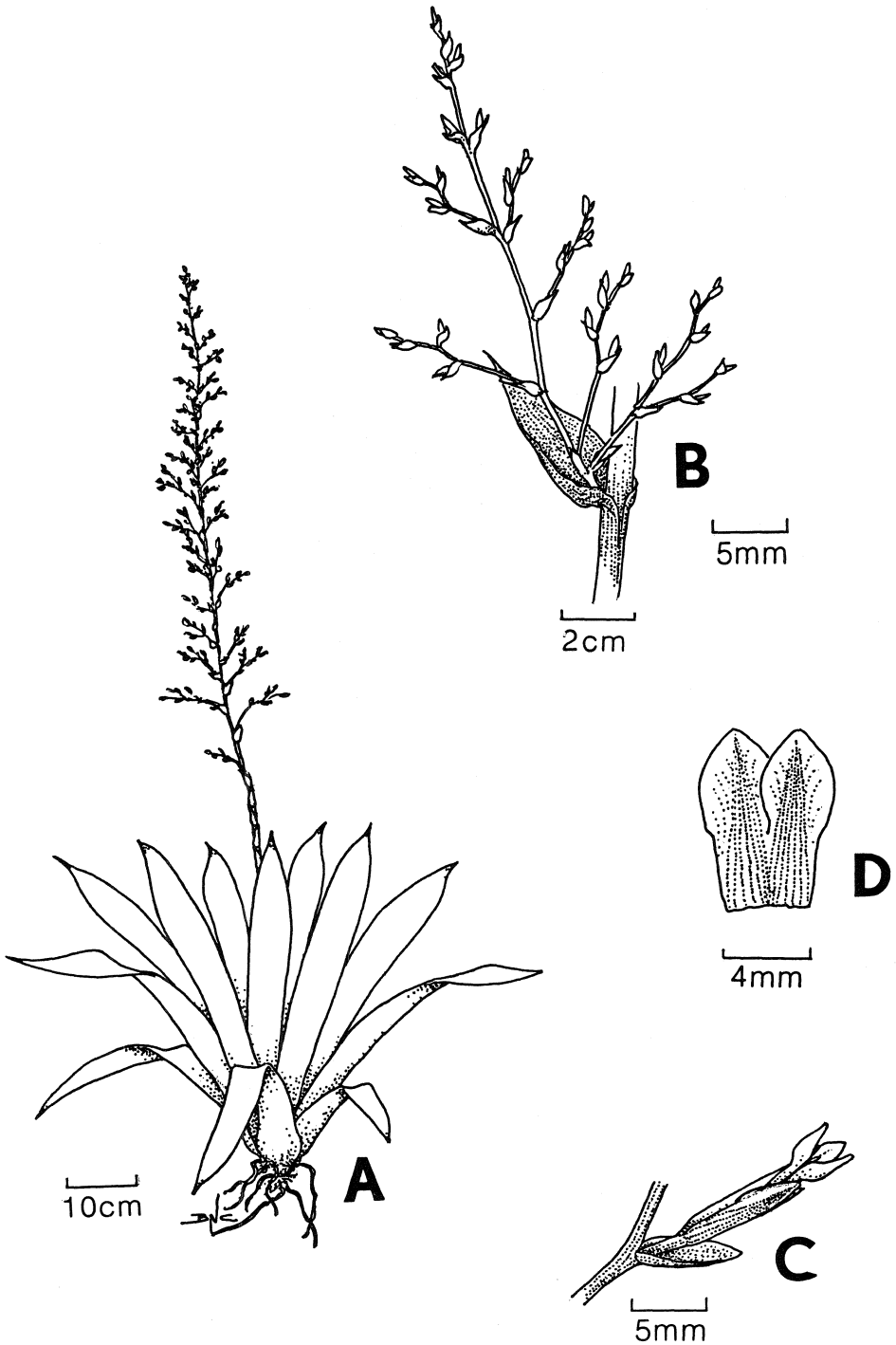

FIGURE 4. *Guzmania hirtzii.* **A**, habit. **B**, branch of inflorescence. **C**, flower and bract. **D**, adaxial sepals.

25 mm]. In addition, the silvery foliage is quite distinctive.

Guzmania jaramilloi Luther, sp. nov. FIGURE 5.

A *G. melinonis* Regel, cui similis, foliis perangustioribus, bracteis floigeris ellipticis non ovatis et corolla patula non tubulari differt; a *G. angustifolia* (Baker) Wittmack, cui affinis, foliis latioribus, petalis perminoribus differt.

TYPE. Ecuador: Prov. Imbabura, Chacho road, 18 km E of Lita, 1,100 m; February 1988, *Luther, Kress & Roesel 1255* (SEL, holotype; QCNE, isotype).

Plant flowering to 25 cm tall, slightly caulescent. Leaves rosulate, laxly spreading, 0.1–0.3 m long, thin, inconspicuously pale appressed lepidote throughout, green or tinged reddish, often darker striate toward the base. Leaf sheaths broadly elliptic, 40–65 × 30–40 mm, more or less concolorous with the blades. Leaf blades ligulate, acute to attenuate, 12–20 mm wide. Scape erect, 3–15 cm × 3 mm red. Scape bracts erect, densely imbricate, the lowest foliaceous, the upper elliptic, acute to attenuate, green or orange-red. Inflorescence simple, cylindric, 40–45 × 15–20 mm, polystichously 5–10-flowered. Floral bracts broadly elliptic to subtriangular, acute to long attenuate, 28–38 × 15–17 mm, very thin, nerved, red or orange-red. Flowers with a stout 2–3 mm long pedicel, erect to slightly spreading. Sepals elliptic, obtuse, 13–15 mm long, connate 1.5–3 mm, thin coriaceous, pale yellow but becoming castaneous in fruit. Corolla with spreading lobes. Petals ligulate, acute, to 4 cm long, ca. ¾ connate, bright yellow. Fruit a capsule to 17 mm long. Seed coma brown.

PARATYPES. Ecuador: Prov. Imbabura, vic. Lita, ca. 1,300 m, January 1990, *A. Hirtz & J. Kent 4541* (SEL); Prov. Pichincha, Canton Quito, km 20 new road Calacali–Nanegalito, January 1989, *F. Hurtado, C. Ceron & J. Regalado 1410* (SEL); km 59 on old road Quito–Sto. Domingo, 3½ km NE of road, 1,800–2,200 m, December 1985, *J. Jaramillo 8305* (SEL, QCA).

This new *Guzmania* is very similar to the Amazonian *G. melinonis*. It differs by its more slender foliage and inflorescence, elliptic floral bracts and a corolla with spreading lobes. This latter character is taxonomically cryptic as the conformation in life of the fugacious flowers is rarely discernible on dried specimens. The specific name honors Jaime Jaramillo of the herbarium of the Pontificia Universidad Catolica del Ecuador (QCA) who has collected this and many other species of Ecuadorian Bromeliaceae.

Guzmania regalis Luther, sp. nov. FIGURE 6.

A *G. amplectens* L. B. Smith, cui affinis, foliis latioribus, bracteis florigeris sepalisque minoribus differt.

TYPE. Ecuador: Prov. Esmeraldas, Lita–Alto Tambo, 850 m; February 1988, *Luther, Kress & Roesel 1229* (SEL, holotype; QCA, isotype).

Plant flowering 1–2 m tall, often clustering. Leaves rosulate, spreading, to 85 cm long, densely appressed punctate lepidote especially abaxially. Leaf sheaths elliptic, to 8 cm long, 6 cm wide, densely brown punctate lepidote, somewhat castaneous toward the base. Leaf blades ligulate, acuminate and pungent, 5–6 cm wide, green or yellow-green. Scape erect 0.5–1 m long, 1 cm in diameter. Scape bracts erect, densely imbricate, elliptic, acute to acuminate, all exceeding the internodes, green or yellow-green. Inflorescence laxly bipinnate, 50–80 cm long. Primary bracts elliptic, acute, exceeding the short, naked bases of the branches, green or reddish. Branches spreading, 8–12 cm long, polystichously 10–20-flowered. Floral bracts elliptic, acute to acuminate, somewhat nerved, 30–40 mm long, orange, red or red-tipped yellow. Flowers very short pedicellate, erect to slightly spreading. Sepals elliptic, acute, 18–22 mm long, the adaxial pair carinate, 2–5 mm connate, orange. Corolla lobes slightly spreading. Petals ligulate, obtuse, 30 mm long, yellow.

PARATYPES. Ecuador: Prov. Imbabura, vic Lita, ca. 1,300 m, January 1990, *A. Hirtz & J. Kent 4445* (SEL). Prov. Esmeraldas, 11 km W of Lita, ca. 600 m, October 1989, *Luther, Kress, Brown & Roesel 2779* (SEL, US, RM, QCA); 30 km W of Lita, 300 m, October 1989, *Luther, Kress, Brown & Roesel 2781* (SEL, US, RM, QCA); vic Lita, 1,000 m, December 1988, *A. Hirtz 3948* (SEL). Prov. Carchi, trail above Tobar Donoso, 800–1,300 ft, February 1984, *W. S. Hoover 1237* (MO).

This regal *Guzmania* is related to *G. amplectens* but differs by its broader leaves, erect flowers that are not at all secund at anthesis, shorter floral bracts [30–40 mm vs. 48 mm], and shorter sepals [18–23 mm vs. 30 mm]. It is to be hoped that this attractive species will be introduced to horticulture.

Mezobromelia brownii Luther, sp. nov. FIGURES 7, 8.

A *M. fulgens* L. B. Smith, cui affinis, spicis percompactis, bracteis florigeris, sepalis petalisque permajioribus differt.

TYPE. Ecuador: Prov. Morona-Santiago, km 31

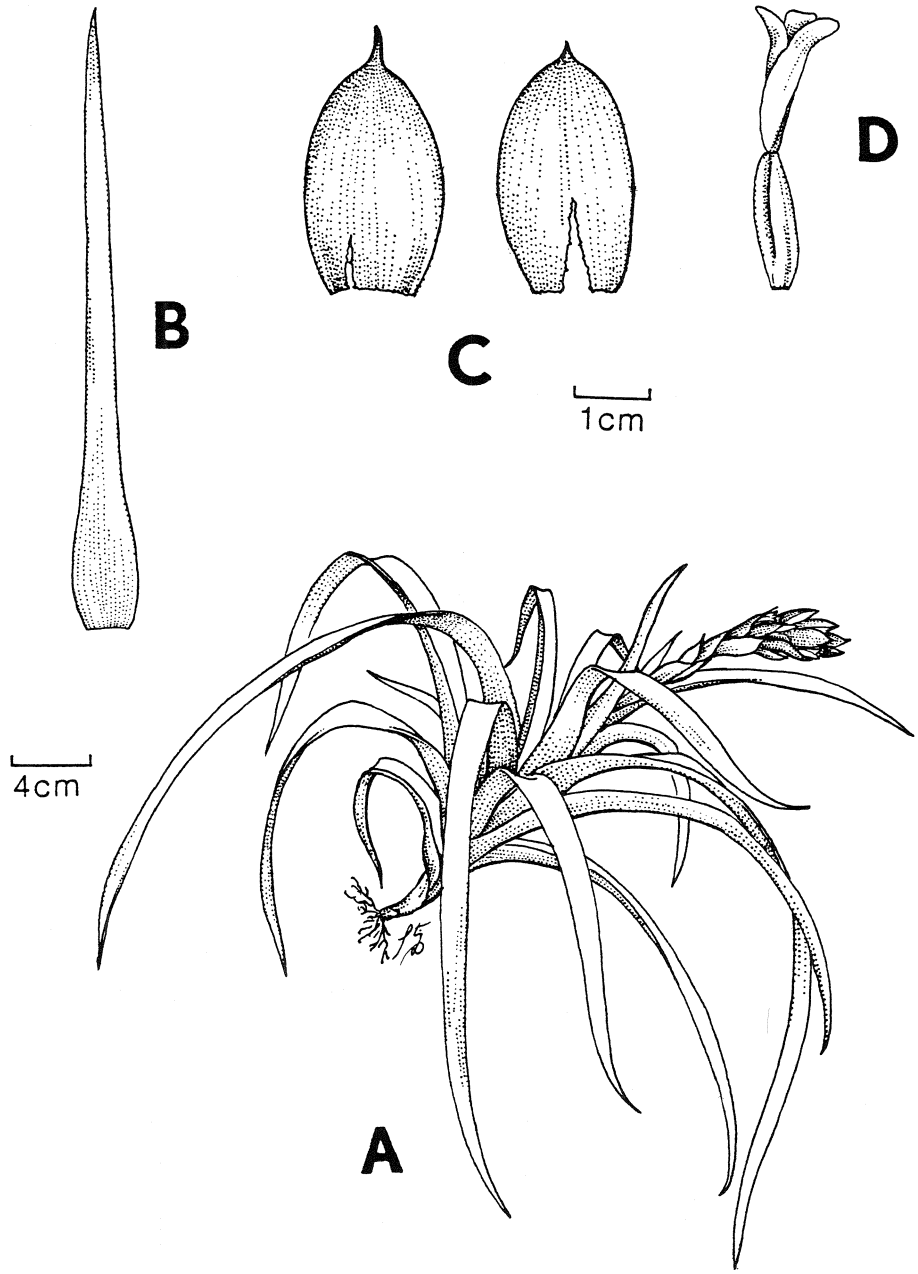

FIGURE 5. *Guzmania jaramilloi.* **A**, habit. **B**, leaf. **C**, floral bracts. **D**, flower.

Gualaceo–Limon, ca. 2,700 m; October 1989, *Luther, Kress, Brown & Roesel 2706* (SEL, holotype; QCA, QCNE, US, RM, isotypes).

Plant flowering to 1.8 m tall. Leaves spreading, rosulate, to 90 cm long, densely appressed lepidote throughout especially abaxially, green tinged red. Leaf sheaths elliptic, 15 cm long, 10 cm wide, dark castaneous abaxially. Leaf blades ligulate, acute to acuminate, pungent, 4–6 cm wide, coriaceous. Scape erect to arching, 85 cm × 18 mm, sulcate, reddish brown. Scape bracts dense-

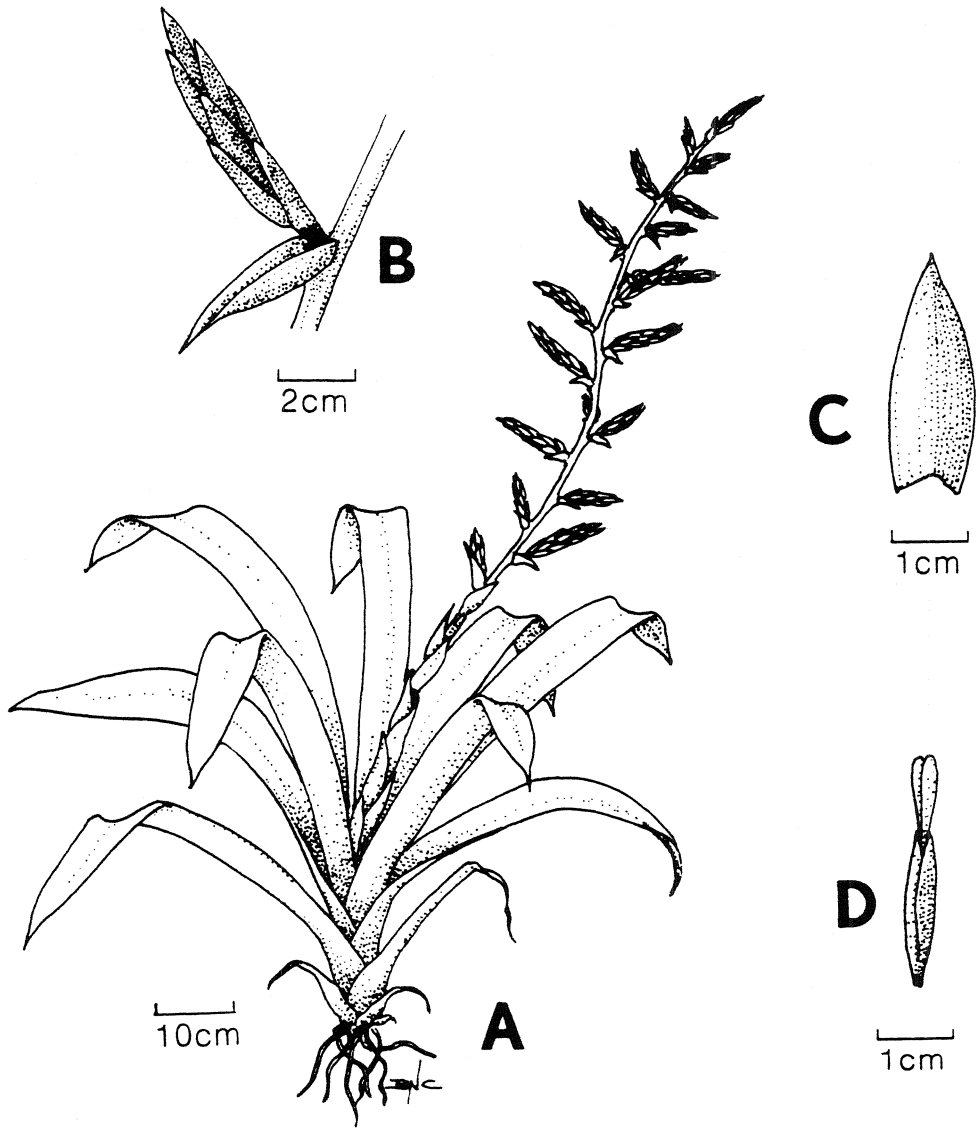

FIGURE 6. *Guzmania regalis.* **A**, habit. **B**, branch of inflorescence. **C**, floral bract. **D**, flower.

ly imbricate, much exceeding the internodes, the lowest foliaceous and green, the upper lanceolate and red, densely appressed lepidote, the sheaths abaxially dark castaneous. Inflorescence tripinnate, 80 cm long, the branches spreading to secund pendent. Primary bracts erect, lanceolate, acute, 5–12 cm long, carinate, punctate lepidote, red. Primary branches short stipitate, 6–15 cm long, the ultimate branches 4–6 cm long, polystichously 3–8-flowered. Floral bracts lanceolate, acute, 35–38 mm long, somewhat incurved at the apex, carinate, thin coriaceous, red to brown. Flowers sessile, erect. Sepals narrowly elliptic, acute, 33–35 mm long, carinate, connate ca. 5 mm, greenish-yellow tinged red. Corolla lobes spreading. Petals ligulate, acute, 60 mm long, ca. ½ connate, each appendaged with two 12 mm long basal scales, bright yellow.

From the related *M. fulgens,* this new species can be distinguished by its much more densely flowered ultimate branches and much longer floral bracts [35–38 mm vs. 25 mm], sepals [33–35 mm vs. 21 mm] and petals [60 mm vs. 40 mm]. The name honors Gregory Brown of the University of Wyoming who helped collect the type specimen.

FIGURE 7. *Mezobromelia brownii.* Branch of inflorescence.

Pepinia alexanderi Luther, sp. nov. FIGURE 9.

A *P. corallina* (Linden & Andre) Varadarajan & Gilmartin, cui similis, inflorescentia cylindriciore, bracteis florigeris imbricatis et sepalis minoribus differt.

TYPE. Ecuador: Prov. Morona-Santiago, Mendez–Cutucu, 700 m; January 1989, *A. Hirtz 4114* (SEL, holotype).

Plant to 1 m tall. Leaves essentially monomorphic, spreading, rosulate, to 0.6 m long, pseudopetiolate, more or less glabrous adaxially, with a membrane of coalescented brown scales abaxially, green. Leaf sheaths broadly elliptic, 4 × 3 cm, entire, nerved, castaneous, glabrous and lustrous at the base, densely brown lepidote toward the blade. Leaf blades with a 15–20 × 1–2 cm, conspicuously channeled, pseudopetiole, the upper portion of the blade lanceolate acute, 30 × 9 cm, densely and finely serrate toward the apex. Scape decurved, to 30 cm long, 5 mm in diameter, red. Scape bracts imbricate, elliptic, acute, 4–8 cm long, thin, nerved, entire, red. Inflorescence simple, cylindric, densely polystichous-flowered, to 25 cm long, apically sterile. Floral bracts densely imbricate, elliptic, acute, 2–7 cm × 7–22 mm, thin coriaceous, nerved, rose-red to red turning black after anthesis. Flowers 2–6 mm pedicellate, erect. Sepals lanceolate, obtuse, 23 mm long, carinate, thin, nerved, brownish-red. Corolla zygomorphic. Petals ligulate, obtuse, 7 cm long, each appendaged with a single 10 mm long basal scale, rose or red. Ovary ca. ½ inferior.

PARATYPE. Ecuador: Prov. Morona-Santiago, km 50 on new road Mendez–Morona, Cordillera Cutucu, ca. 720 m, October 1989, *Luther, Kress, Brown & Roesel 2729* (SEL).

Pepinia alexanderi may be separated from the related *P. corallina* by its cylindric inflorescences with densely imbricate erect floral bracts and shorter sepals [23 mm vs. 26–28 mm]. The specific name honors Alexander Hirtz of Quito, Ecuador who has provided the author with numerous interesting bromeliad collections.

Pepinia fulgens Luther, sp. nov. FIGURE 10.

A *P. carnosa-sepala* (Rauh & Gross) Luther, cui affinis, bracteis florigeris longioribus et pedicellis sepalisque brevioribus differt; a *P. cuatrecasana* (L. B. Smith) Varadarajan & Gilmartin scapo decurvato non erecto differt.

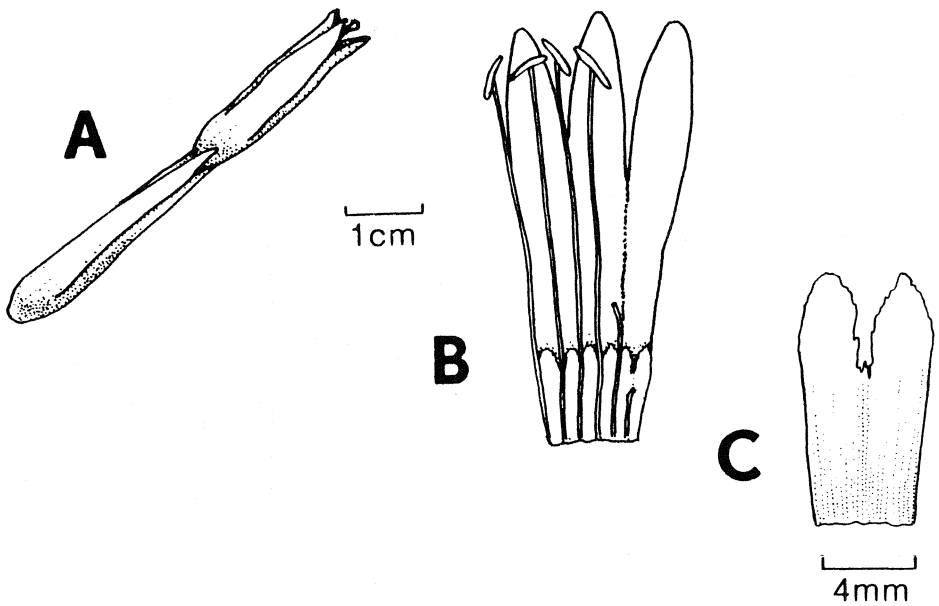

FIGURE 8. *Mezobromelia brownii.* **A**, flower. **B**, corolla and stamens. **C**, petal appendage.

TYPE. Ecuador: Prov. Morona-Santiago, vic Indanza, ca. 1,300 m; October 1989, *Luther, Kress, Brown & Roesel 2737* (SEL, holotype; QCA, isotype).

Plant flowering to 1 m tall, densely clustering. Leaves essentially monomorphic, rosulate, spreading, pseudopetiolate, to 1.75 m long, bright green. Leaf sheaths elliptic, to 55 × 30 mm, entire, nerved, ferruginous lepidote, castaneous. Leaf blades with a 30–60 × 2–3 cm, entire or minutely serrate, pale ferruginous lepidote, channeled pseudopetiole; the upper portion of the blade narrowly elliptic, long attenuate, 3–8 cm wide, channeled, abaxially pale ferruginous lepidote, minutely serrate toward the apex. Scape decurved, 30–40 cm × 5 mm, red. Scape bracts lanceolate, attenuate, thin, nerved, much shorter than the internodes, reddish or tan. Inflorescence erect, simple, cylindric, 25 × 17 cm, densely polystichously flowered, sparsely pale lepidote except for the petals. Floral bracts broadly elliptic to ovate, acute to attenuate, 3–7 × 2–3 cm, thin, nerved, erect to reflexed, reddish or tan. Flowers with a 5–10 mm pedicel, erect at anthesis, reflexed post-anthesis. Sepals narrowly subtriangular, acute, 3 cm long, carinate, coriaceous, nerved, red. Corolla curved, strongly zygomorphic. Petals ligulate, acute, 7–8 cm long, each appendaged with a single 13 mm long basal scale, bright red with a thin white margin. Anthers to 15 mm long. Ovary ¾ superior.

PARATYPE. Ecuador: Prov. Morona-Santiago, Cordillero Cutucu, Logrono–Yaupi, 1,100 m, November 1976, *Madison, Bush & Davis 3638* (SEL).

Pepinia fulgens resembles *P. carnosa-sepala,* but differs by having longer floral bracts [3–7 cm vs. 2–3 cm] and shorter pedicels [5–10 mm vs. 20 mm] and sepals [30 mm vs. 35–37 mm]. It may be distinguished from *P. cuatracasana* by its decurved scape.

Pepinia hooveri Luther, sp. nov. FIGURE 11.

A *P. costata* (L. B. Smith) Varadarajan & Gilmartin, cui affinis, foliis pseudopetiolatis latioribusque, inflorescentia lepidota, sepalis brevioribus et petalis rubris non albis differt.

TYPE. Ecuador: Prov. Carchi, along trail from Rafael Quindi's house to mountain finca, 1,890 m; November 1987, *W. S. Hoover & S. Wormley 1904* (MO, holotype; QCA, isotype).

Plant flowering to 0.6 m tall, clustering, short caulescent. Leaves essentially monomorphic, rosulate(?), erect to spreading, pseudopetiolate, 35–95 cm long, glabrous adaxially, pale lepidote abaxially, dark green. Leaf sheaths elliptic, entire, 4–8 × 3–5 cm, nerved, punctate lepidote, somewhat castaneous. Leaf blades with a 10–50 × 1 cm, entire, channeled pseudopetiole, the upper portion of the blade narrowly lanceolate, acute

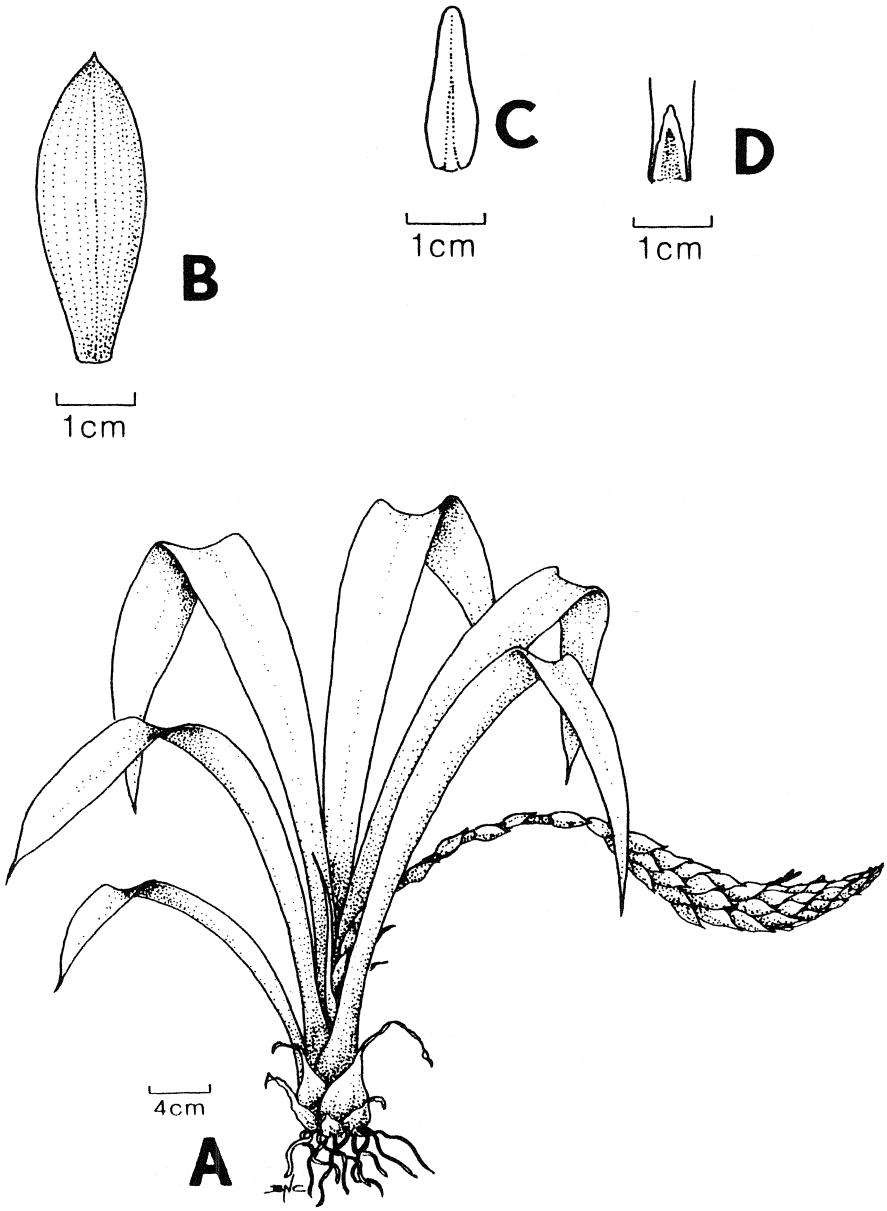

FIGURE 9. *Pepinia alexanderi.* **A**, habit. **B**, floral bract. **C**, sepal. **D**, base of petal.

to attenuate, 3–4 cm wide, entire, somewhat plicate. Scape erect to arching, 0.3–0.5 m long, 5 mm in diameter, pale lepidote. Scape bracts lanceolate to elliptic, acute to attenuate, shorter than the upper internodes, pale lepidote abaxially, green. Inflorescence simple, laxly polystichous-flowered, to 20 cm long. Floral bracts like the upper scape bracts, broadly elliptic, acute, 2–4 cm × 7–13 mm, equalling to exceeding the pedicels, sparsely brown lepidote, green. Flowers with a slender 2–4 cm long pedicel, erect prior to anthesis, spreading to reflexed post-anthesis. Sepals narrowly triangular, obtuse, 3 cm long, thick, nerved, obtusely carinate, sparsely brown lepidote, reddish. Corolla strongly zygomorphic. Petals acute, 6–7 cm long, each appendaged with

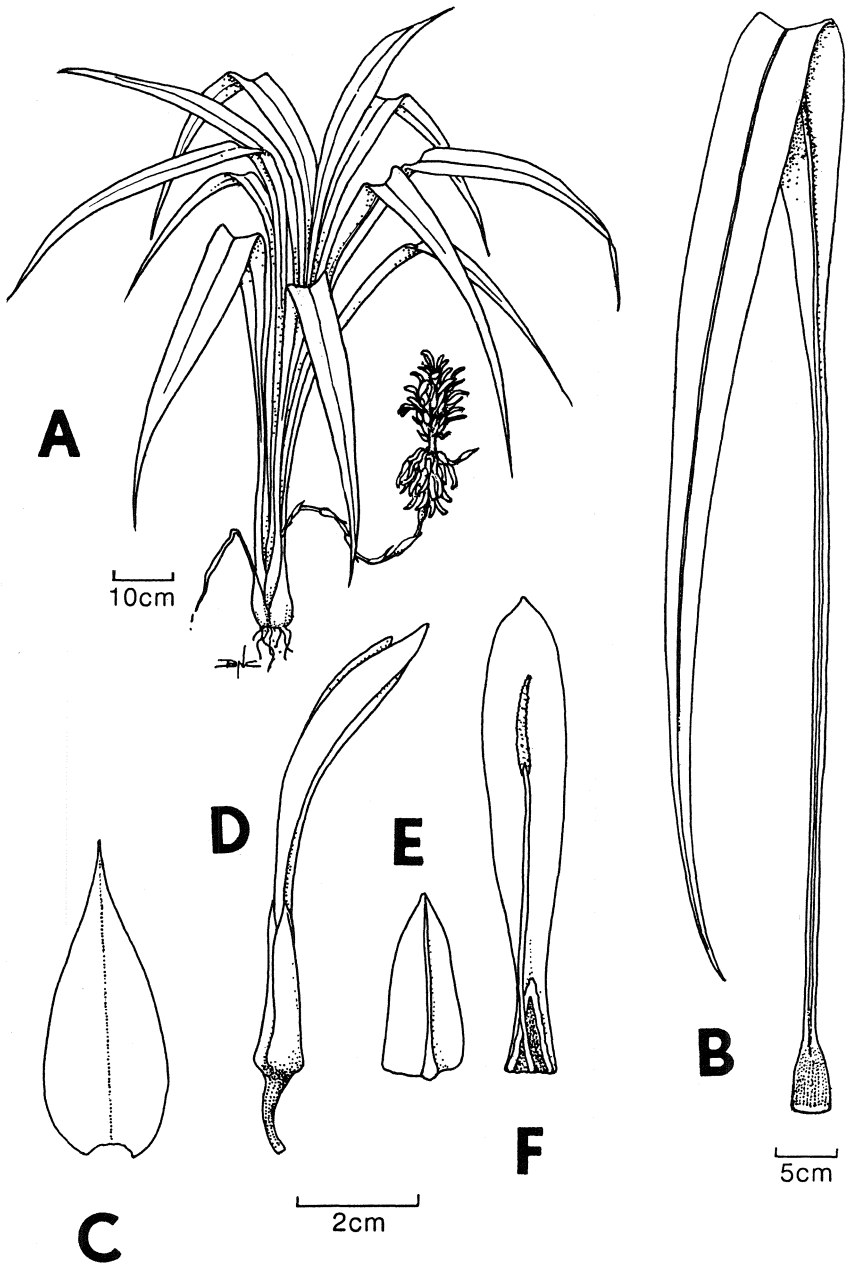

FIGURE 10. *Pepinia fulgens*. **A**, habit. **B**, leaf. **C**, floral bract. **D**, flower. **E**, sepal. **F**, petal and stamen.

a single, basal, bidentate scale, bright red. Ovary ca. ⅓ inferior. Fruit a capsule. Seeds flattened, winged.

PARATYPES. Ecuador: Prov. Carchi, trail from Rafael Quindi's mountain finca above Rio Verde, 1,600 m, November 1987, *W. S. Hoover & S. Wormley 1806* (MO, QCA); SW Rafael Quindi's finca along small stream, 1,930–2,100 m, November 1987, *Hoover & Wormley 1816* (MO, QCA); ridge to NE of R. Quindi finca, 2,000 m, November 1987, *W. S. Hoover 2008* (MO, QCA).

Pepinia hooveri may be distinguished from *P. costata* by its broader leaf blades [3–4 cm vs. 1–2 cm], shorter sepals [30 mm vs. 45 mm] and

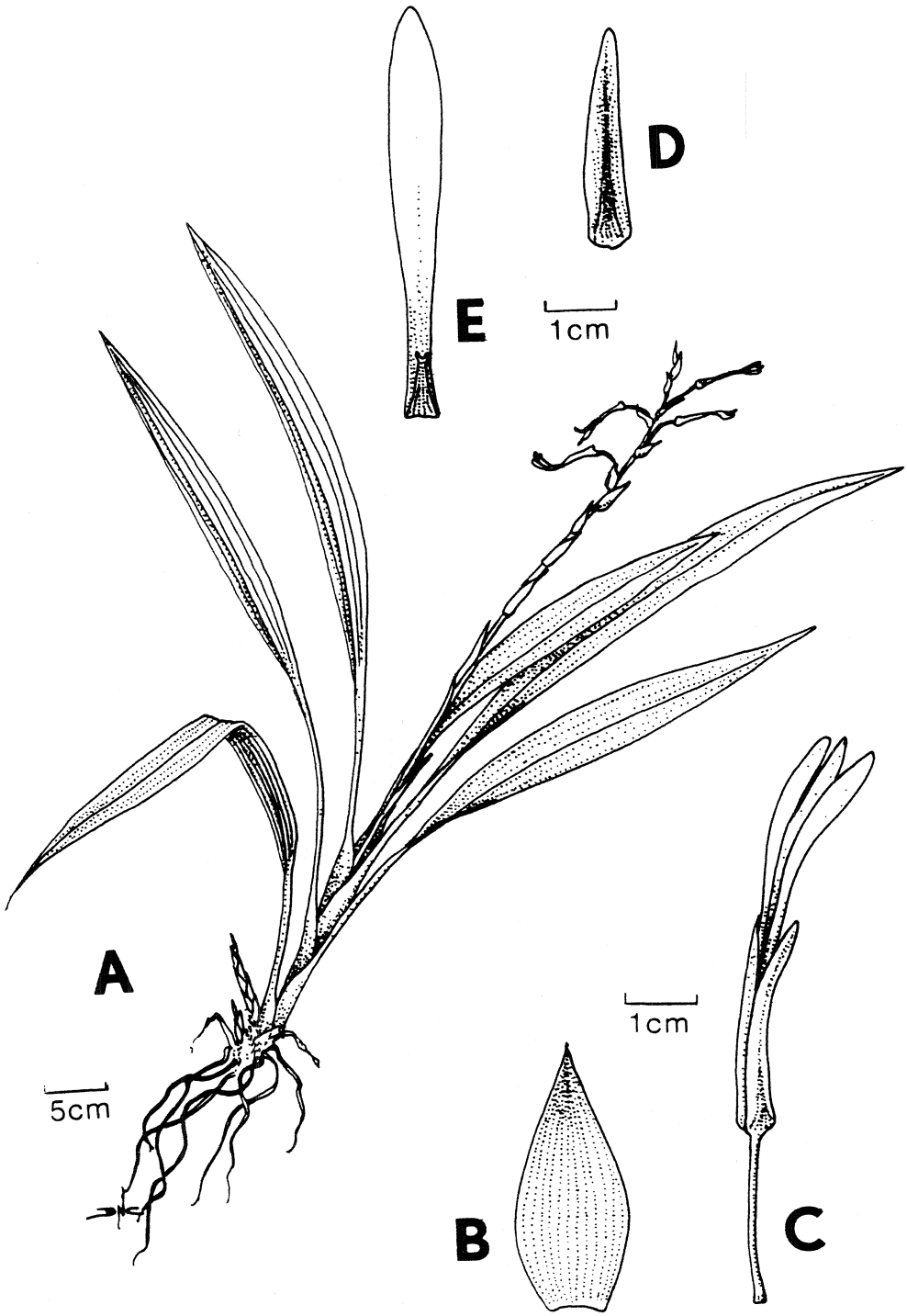

FIGURE 11. *Pepinia hooveri*. **A**, habit. **B**, floral bract. **C**, flower. **D**, sepal. **E**, petal.

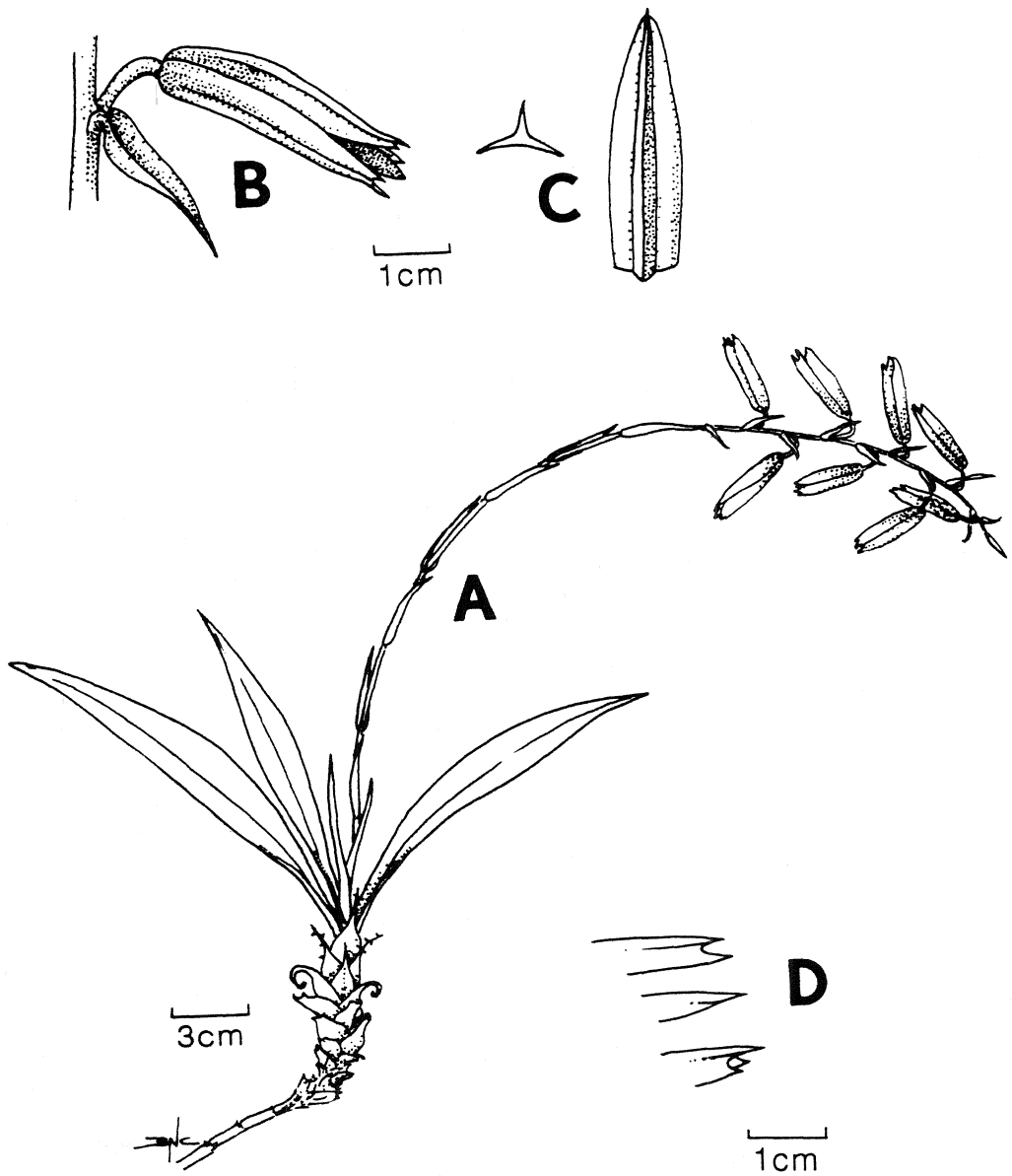

FIGURE 12. *Pitcairnia andreetae.* **A**, habit. **B**, flower and bract, pre-anthesis. **C**, sepal. **D**, apices of sepals.

red petals [not greenish white]. The epiphet honors the collector W. S. Hoover, begonia specialist.

Pitcairnia andreetae Luther, sp. nov.
FIGURE 12.

A *P. alata* L. B. Smith, cui affinis, foliis lanceolatis, pedicellis brevibus et petalis longioribus atroviolaceisque differt.

TYPE. Ecuador: Prov. Zamora-Chinchipe, S of pass on road Yangana–Valladolid; March 1985, *A. Hirtz 2326* (SEL, holotype; MO, isotype).

Plant flowering to 45 cm tall with the inflorescence extended, stemless, spreading by slender 15 cm long stolons. Leaves rosulate, spreading, polymorphic, some reduced and bladeless, some with a short spinose-serrate, pungent apex, others with a large deciduous blade. Leaf sheaths

narrowly elliptic, 2 cm × 12 mm, entire, dark castaneous, thin but persistent, curling when dry. Leaf blades lanceolate, attenuate, entire, 15–22 cm × 19–23 mm, thin, glabrous, dark green. Scape arching to decurved, 30 cm long, slender, sparsely pale floccose. Scape bracts narrowly lanceolate, erect, entire, about equalling to slightly exceeding the internodes. Inflorescence pendent, simple, 4–10-flowered, "totally black" (A. Hirtz!), sparsely white floccose but becoming glabrous and lustrous. Floral bracts erect, lanceolate, thin, attenuate, entire, to 25 mm long. Flowers polystichous, not at all secund, pendent to spreading, pedicellate, the pedicels 6–10 mm long, 1 mm in diameter. Sepals elliptic, acute to attenuate, 35–40 mm long, alate-carinate, each keel to 5 mm tall and often with an attenuate apex separate from the sepal blade. Corolla tubular, only slightly zygomorphic. Petals ligulate, acute, 65 mm long, unappendaged, very dark violet. Ovary ⅔ superior. Seeds bicaudate.

PARATYPES. Ecuador: Prov. Zamora-Chinchipe, near Zumba, 1,800 m, August 1989, *A. Hirtz 4427* (SEL); near Valladolid, ca. 1,650 m, June 1990, *B. Girko E90-001J* (SEL).

This striking new species is closely related to *P. alata* but can be distinguished from it by its broader leaf blades [23 mm vs. 13 mm], shorter pedicels [6–10 mm vs. 14 mm], and dark violet [not red] flowers. It is dedicated to Padre Angel Andreeta of Bomboiza, Ecuador, who, although an expert on Orchidaceae, has been known to take notice of bromeliads. Padre Andreeta was kind enough to provide a living plant of this beautiful *Pitcairnia* to the research collection of The Marie Selby Botanical Gardens.

Pitcairnia hirtzii Luther, sp. nov. FIGURE 13.

A *P. unilateralis* L. B. Smith, cui similis, foliis monomorphis, floribus polystichis non secundis, bracteis florigeris sepalisque minoribus differt.

TYPE. Ecuador: Prov. Morona-Santiago, Cordillera del Condor, 1,200 m; January 1989, *A. Hirtz 4202* (SEL, holotype).

Plant flowering to 60 cm tall, clustering. Leaves apparently distichous, erect to spreading, monomorphic, 1–1.5 m long, entire, inconspicuously appressed lepidote, paler lepidote abaxially, green to yellow-green. Leaf sheaths triangular, 4 × 2.5 cm, nerved, brown. Leaf blades linear, attenuate, slightly narrowed toward the base, slightly channeled, 15–20 mm wide. Scape erect, slender, 30 cm long, densely pale brown floccose, the individual trichomes stellate. Scape bracts foliaceous, attenuate, laxly imbricate, green. Inflorescence simple, 8–15 cm long, polystichously 10- to 25-flowered. Floral bracts triangular, acute, 2–8 mm long, pale brown floccose, yellow. Flowers with a 9–11 mm long slender pedicel, erect prior to anthesis, reflexed after, not at all secund, sparsely pale brown floccose. Sepals narrowly triangular, acute, 14–16 mm long, slightly nerved, yellow with green tips or reddish. Corolla lobes slightly spreading, probably zygomorphic. Petals ligulate, acute, to 5 cm long, each with a single 2.5 mm long basal appendage, light yellow with purple tips or pink. Ovary ca. ⅔ inferior, somewhat 3-angled, reddish. Seeds bicaudate.

PARATYPES. Ecuador: Prov. Zamora-Chinchipe, above Valladolid on road to Yangana, 2,300 m, February 1985, *G. Harling & L. Andersson 21392* (GB). Prov. Azuay, road Limon–Cuenca, 2,000 m, March 1985, *C. & J. Luer 2411* (MO).

Pitcairnia hirtzii differs from the similar *P. unilateralis* by its apparently monomorphic foliage, polystichous-flowered inflorescence and smaller floral bracts [2–8 mm vs. 15–35 mm] and sepals [14–16 mm vs. 18–23 mm]. The name honors the collector Alexander Hirtz, mining engineer, orchid specialist and naturalist.

Streptocalyx kentii Luther, sp. nov. FIGURE 14.

A *S. pallidus* Luther, cui affinis, inflorescentia lepidota perdensiore, ramis inflorescentiae stipitatis longioribus et bracteis primaris florigerisque serratis differt.

TYPE. Ecuador: Morona-Santiago, Cordillera de Cutucu, elev. ca. 400 m; collected in Jan. 1989, *J. Kent legit,* fl. in cultivation Aug. 1990, *J. Kent s.n.* (SEL, holotype; QCA, isotype).

Plant flowering 15 cm tall. Leaves densely rosulate, ca. 50 in number, laxly spreading, 0.7–1 m long. Leaf sheaths elliptic, 7 × 4 cm, entire except toward the base of the blade, somewhat ferruginous, appressed brown punctate lepidote throughout. Leaf blades linear, acute to long attenuate, pungent, 8–18 mm wide, laxly serrate with 1–2 mm dark antrorse spines, appressed pale lepidote throughout, especially abaxially, bright green but the inner red when flowering. Scape bracts densely imbricate, the lowest subfoliaceous and red, the upper narrowly elliptic and attenuate, reddish. Inflorescence ovoid to ellipsoid, 8 × 6 cm, densely flowered. Primary bracts lance ovate to elliptic, acute to long attenuate, 3–8 cm long, laxly serrate with 0.5–1 mm long spines, thin coriaceous, tan, densely pale lepidote, appearing white. Branches with a flattened 6–18 mm long stipe, distichously 3–6-flowered, densely white floccose except the petals. Floral bracts ovate to broadly elliptic, acute,

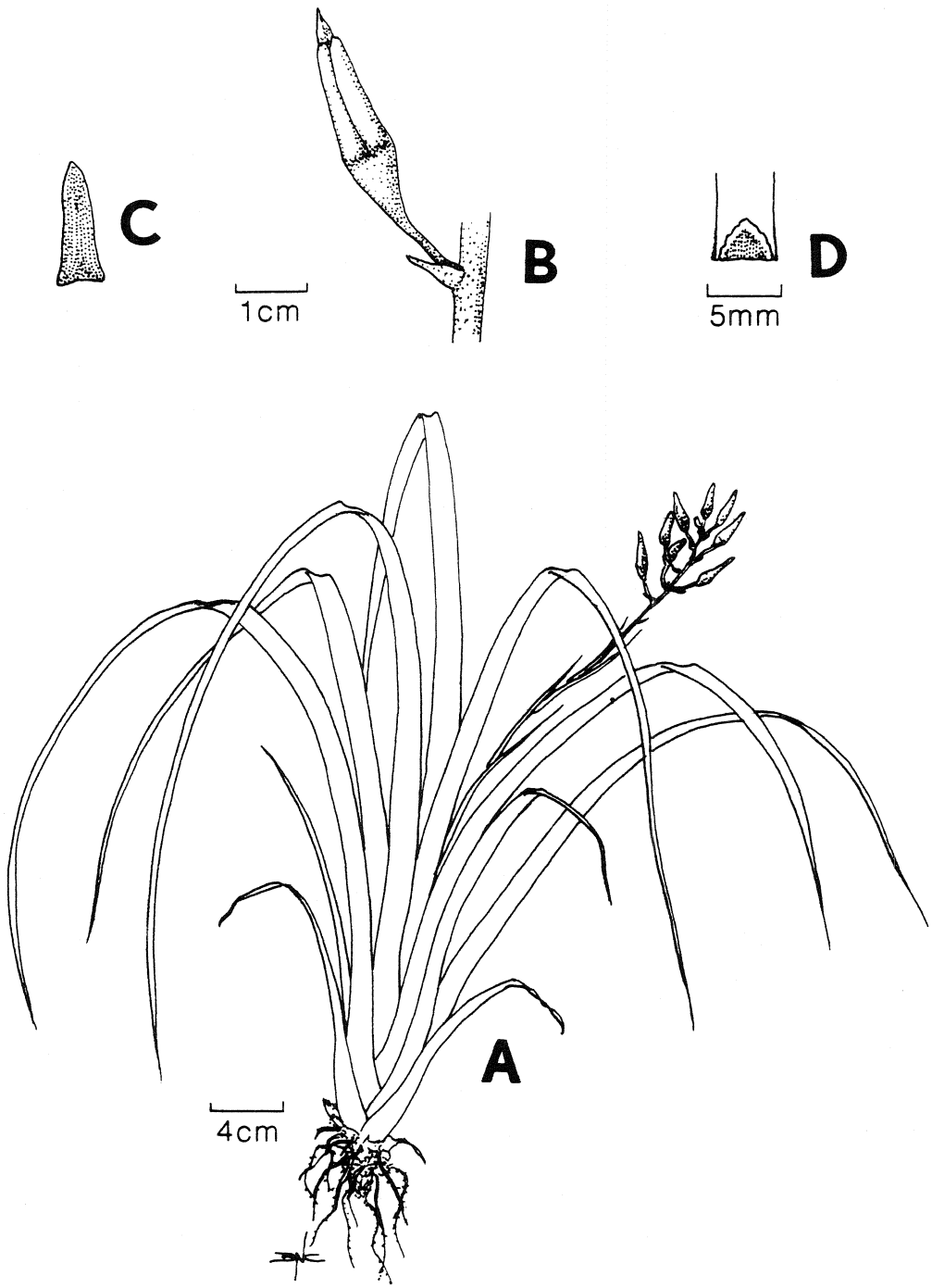

FIGURE 13. *Pitcairnia hirtzii*. **A**, habit. **B**, flower and bract, pre-anthesis. **C**, sepal. **D**, base of petal.

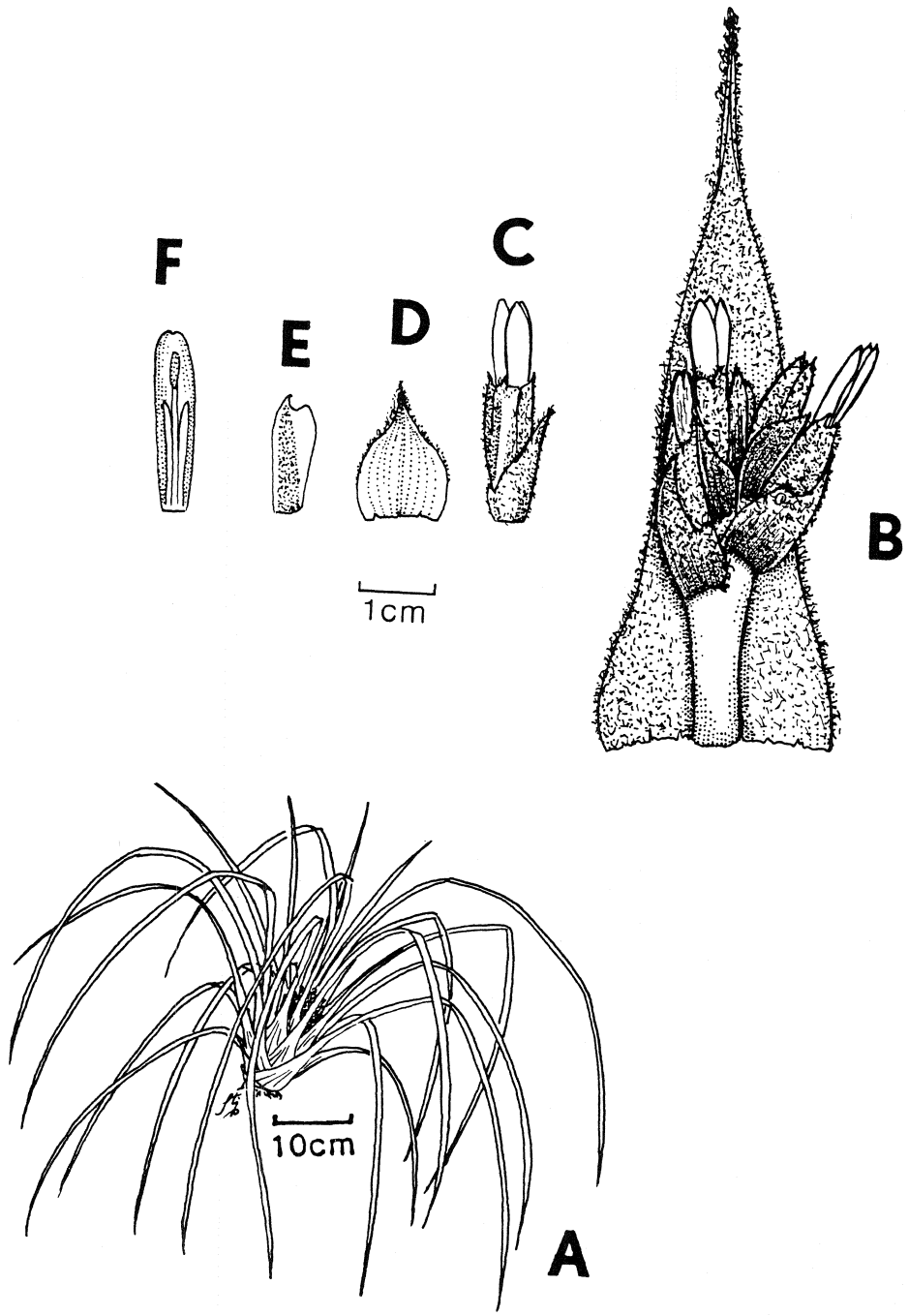

FIGURE 14. *Streptocalyx kentii.* **A**, habit. **B**, lower branch of inflorescence and primary bract. **C**, flower and bract. **D**, floral bract. **E**, sepal. **F**, petal and stamen.

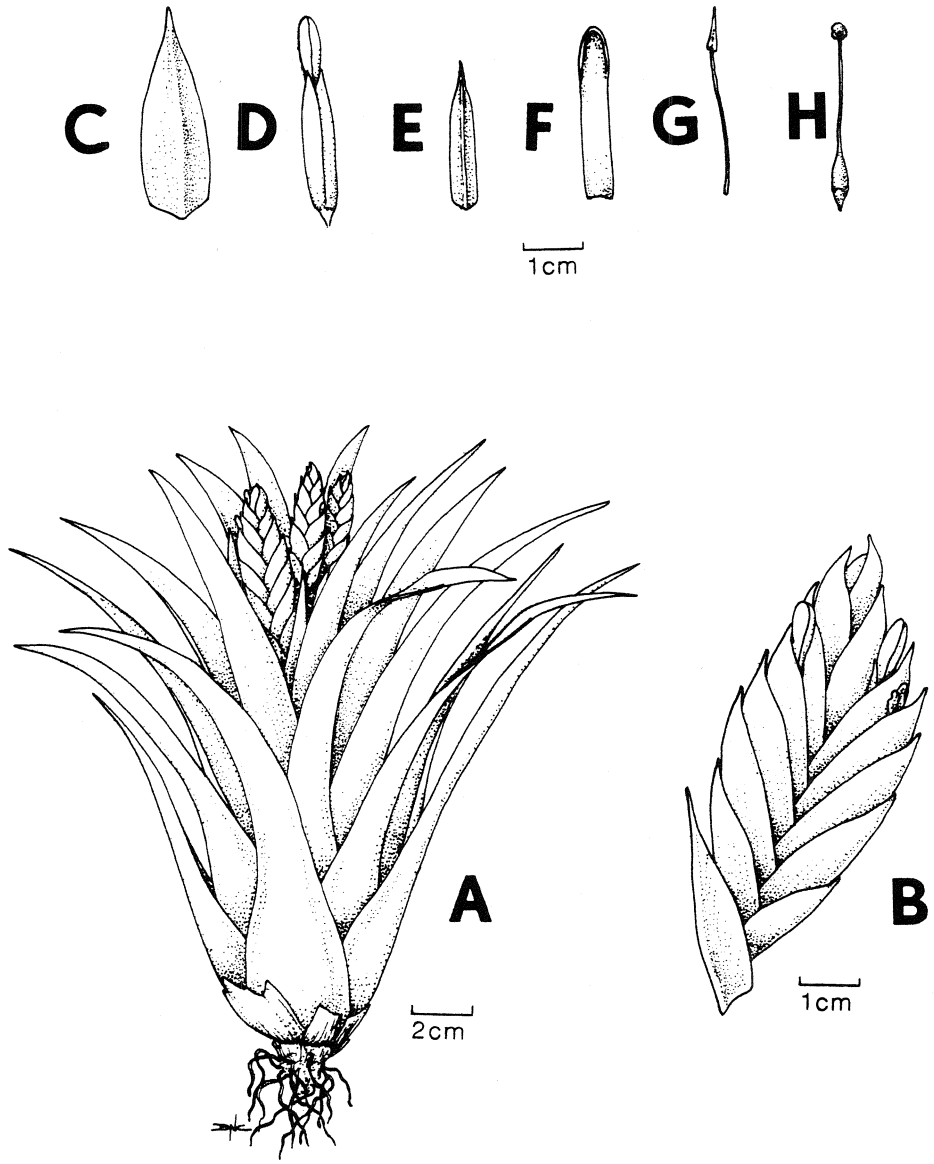

FIGURE 15. *Tillandsia raackii.* **A**, habit. **B**, branch of inflorescence. **C**, floral bract. **D**, flower. **E**, sepal. **F**, petal. **G**, stamen. **H**, pistil.

12–22 × 7–15 mm, laxly and minutely serrate, apically carinate, thin, somewhat nerved, pale green. Flowers sessile, erect to slightly spreading. Sepals free, very asymmetrical, oblanceolate, mucronate, 19–21 mm long, the adaxial pair carinate at the base, pale green. Corolla tubular. Petals ligulate, obtuse, 23–26 mm long, naked but with a pair of basal obtuse keels, purple.

This new species closely resembles the related *Streptocalyx pallidus* but differs by its densely lepidote inflorescence, longer stipes [6–18 mm vs. 2–4 mm] and serrate primary and floral bracts. *Streptocalyx kentii* is named for the collector, Jeffrey Kent of Vista, California, who has introduced many Ecuadorean bromeliads to horticulture.

Tillandsia raackii Luther, sp. nov. FIGURE 15.

A *T. stenoura* Harms, cui affinis, planta perminore, scapo inflorescentiaque abbreviata et petalis albis differt; a *T. abbreviata* Luther, cui

similis, foliis attenuatis et bracteis florigeris permajoribus differt.

TYPE. Ecuador: Prov. Zamora-Chinchipe, S of Yangana, 59 km S of Villacabamba on road to Zumba, 1,900 m; January 1990, *J. Raack & J. Kent 22* (SEL, holotype).

Plant flowering to 20 cm tall. Leaves densely rosulate, erect, to slightly spreading, to 24 cm long, appressed punctate lepidote throughout, especially abaxially. Leaf sheaths broadly elliptic, 7–9 × 4–5 cm, abaxially pale, adaxially pale proximally, dark reddish purple distally. Leaf blades ligulate, attenuate, 12–16 mm wide, light green heavily suffused with reddish purple with occasional darker spots, the color apparently intensifying upon flowering. Scape erect, 6–8 cm × 2–3 mm, about equalling the leaf sheaths. Scape bracts erect, densely imbricate, subfoliaceous, colored like the leaves. Inflorescence densely digitate, 3-branched (rarely simple), to 8 × 5 cm. Primary bracts elliptic, attenuate, much shorter than the branches, colored like the leaves. Branches with a 2–4 mm long sterile base, erect to slightly spreading, complanate, distichously 13–18-flowered. Floral bracts elliptic, acuminate, slightly incurved apically, 30–35 mm long, carinate, thin coriaceous, lustrous, pale green, glaucous, appearing white in life. Flowers with a 1–2 mm long pedicel, slightly spreading, opening during the morning. Sepals linear, acute, 26 mm long, the adaxial pair carinate and 1–2 mm connate, pale green. Corolla tubular. Petals ligulate, obtuse, cucullate, 30–32 mm long, white.

Tillandsia raackii is related to *T. stenoura* but differs by being much smaller [20 cm vs. 50–150 cm tall] with a very short scape and inflorescence. From the superficially similar Colombian *T. abbreviata,* this new species may be distinguished by its attenuate leaf blades and larger floral bracts [30–35 mm vs. 19–23 mm]. The name honors the collector, Jerry Raack of Pataskala, Ohio, who first brought this interesting species to my attention.

Vriesea diantha Luther, sp. nov. FIGURE 16.

A *V. triflora* L. B. Smith & Pittendrigh, cui affinis, foliis viridibus latioribusque et bracteis florigeris sepalisque minoribus differt.

TYPE. Ecuador: Prov. Carchi, trail from Untal to Rafael Quindi's finca, S of Cerro Golondrinas, 1,700 m; November 1987, *W. S. Hoover & S. Wormsley 1469* (MO, holotype; QCA, isotype).

Plant flowering to 70 cm tall. Leaves rosulate, spreading, to 25 cm long, punctate lepidote, especially abaxially, thin, green. Leaf sheaths broadly elliptic, 10–15 cm long, 7 cm wide, pale, more or less concolorous with the blades, densely brown punctate lepidote especially abaxially. Leaf blades ligulate, rounded and apiculate, to 55 mm wide. Scape erect, to 35 cm long, 4 mm in diameter, brown papillose. Scape bracts erect, 20–35 mm long, from about equalling to much shorter than the internodes, green. Inflorescence laxly bipinnate, 28 cm long, ca. 15 cm in diameter. Primary bracts like the scape bracts, much shorter than the naked, slender sterile base of branches, punctate lepidote. Branches erect to spreading, 5–12 cm long, with a slender, flattened dark papillose 3–9 cm long sterile base, all but the lowermost two-flowered. Floral bracts broadly elliptic, acute, 6–9 mm long, thin, brown punctate lepidote. Flowers with a dark papillose, stout, 4–5 mm long pedicel, erect to spreading. Sepals obovate, obtuse, 8–9 mm long, thin coriaceous, castaneous. Corolla unknown. Fruit a cylindric capsule to 26 mm long. Seed coma white.

This species is similar to the Costa Rican *V. triflora* L. B. Smith & Pittendrigh but differs by the broader, rounded and apiculate [not acute], bright green, concolorous [not maroon tesselated] foliage, 2-flowered (rarely 1-) [not 3- (rarely 2-, 4-, 5-) flowered] branches, and smaller floral bracts [6–9 mm vs. 9–12 mm] and sepals [8–9 mm vs. 9–12 mm]. This new species may be easily distinguished from *V. diffusa* L. B. Smith & Pittendrigh by its pale, concolorous leaf sheaths and much longer lateral branches [5–12 vs. 2–4 cm].

MEXICO

Tillandsia novakii Luther, sp. nov. FIGURE 17.

A *T. albida* Mez & Purpus, cui similis, inflorescentia bipinnata perlepidotaque, petalis violaceis differt; a *T. socialis* L. B. Smith, cui affinis, caule et petalis perlongiore differt.

TYPE. Mexico: Vera Cruz, south of Cerro Azul; 65 m elev., epiphytic in small, sparse trees, collected in 1979, *A. J. Novak legit,* flowered in cultivation June 1990, *A. J. Novak s.n.* (SEL, holotype).

Plant long caulescent, flowering 0.5–1.0 m tall. Leaves densely imbricate along the stem, somewhat succulent, stiffly spreading, 15–40 cm long, reddish-silver. Leaf sheaths ovate, 3–5 × 3–4 cm, castaneous, densely pale brown punctate lepidote, the trichomes with an erect, crispate wing. Leaf blades narrowly triangular, acute to attenuate, 12–20 mm wide, densely cinereous lepidote, obscurely banded abaxially. Scape erect, ca. 20 cm × 5 mm, pale lepidote, red or rose. Scape bracts erect, laxly imbricate, exceeding but exposing the upper internodes, the lowest subfolia-

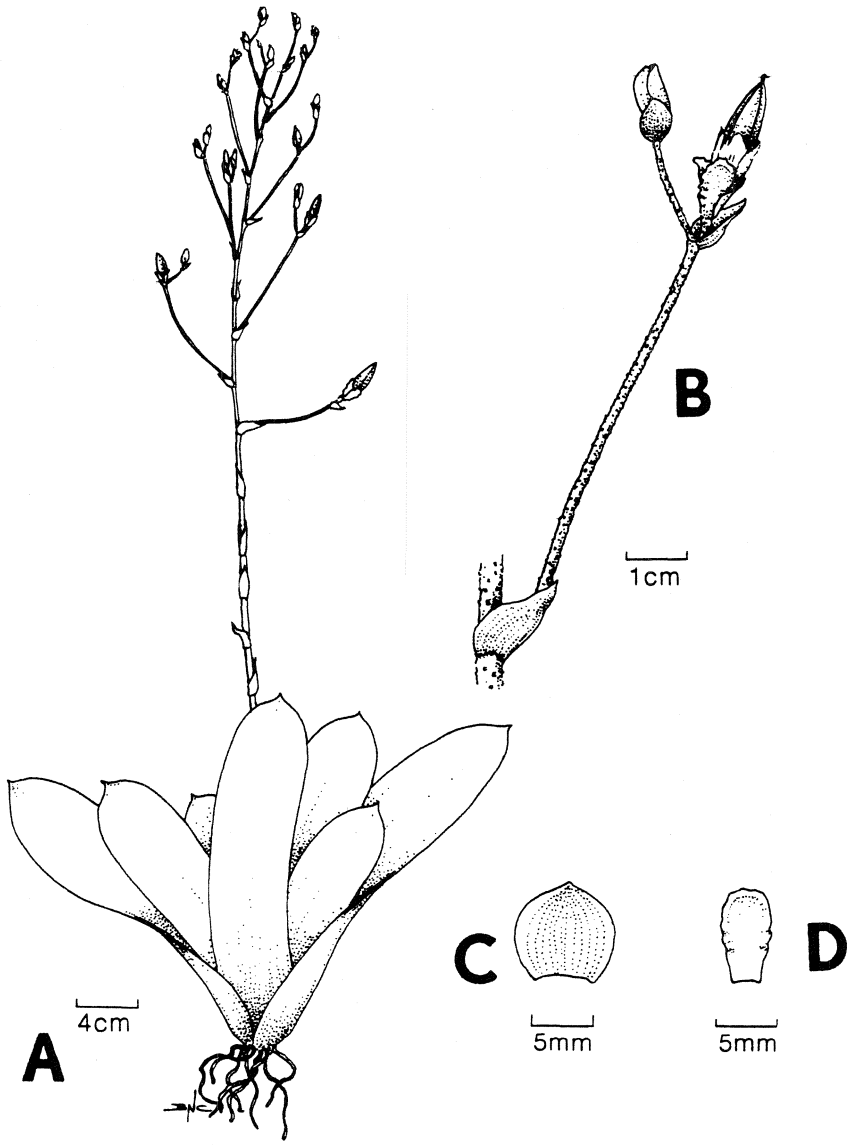

FIGURE 16. *Vriesea diantha.* **A**, habit. **B**, branch of inflorescence. **C**, floral bract. **D**, sepal.

ceous, the upper elliptic, acute, reddish-silver to rose. Inflorescence laxly bipinnate with 3–6 erect to spreading branches, to 30 × 20 cm. Primary bracts like the upper scape bracts, 3–6 cm long, red to rose. Branches with a 2–4 cm, naked or 1-bracteate sterile base exceeding the primary bracts, each branch 15–18 cm × 6–10 mm, distichously 6–13-flowered, thick but not terete. Floral bracts laxly imbricate, elliptic, acute, 25–32 mm long, thin, nerved, ecarinate, green, densely white lepidote. Flowers sessile, erect, anthesis diurnal. Sepals elliptic, acute, 16–18 mm long, the adaxial pair carinate and ½ connate, thin, nerved, densely pale lepidote, green. Petals oblanceolate, acute, 36–40 mm long, dark blue-violet. Stamens in two unequal series of three, exserted, dilated distally, blue-violet like the petals. Style blue. Stigma white.

PARATYPES. Without locality but undoubtedly Mexico, flowered in cultivation 16 May 1989, *L. Del Favero s.n.* (SEL); without locality, flowered in cultivation Nov. 1990, *R. Ehlers s.n.* (SEL).

This unusual species superficially resembles

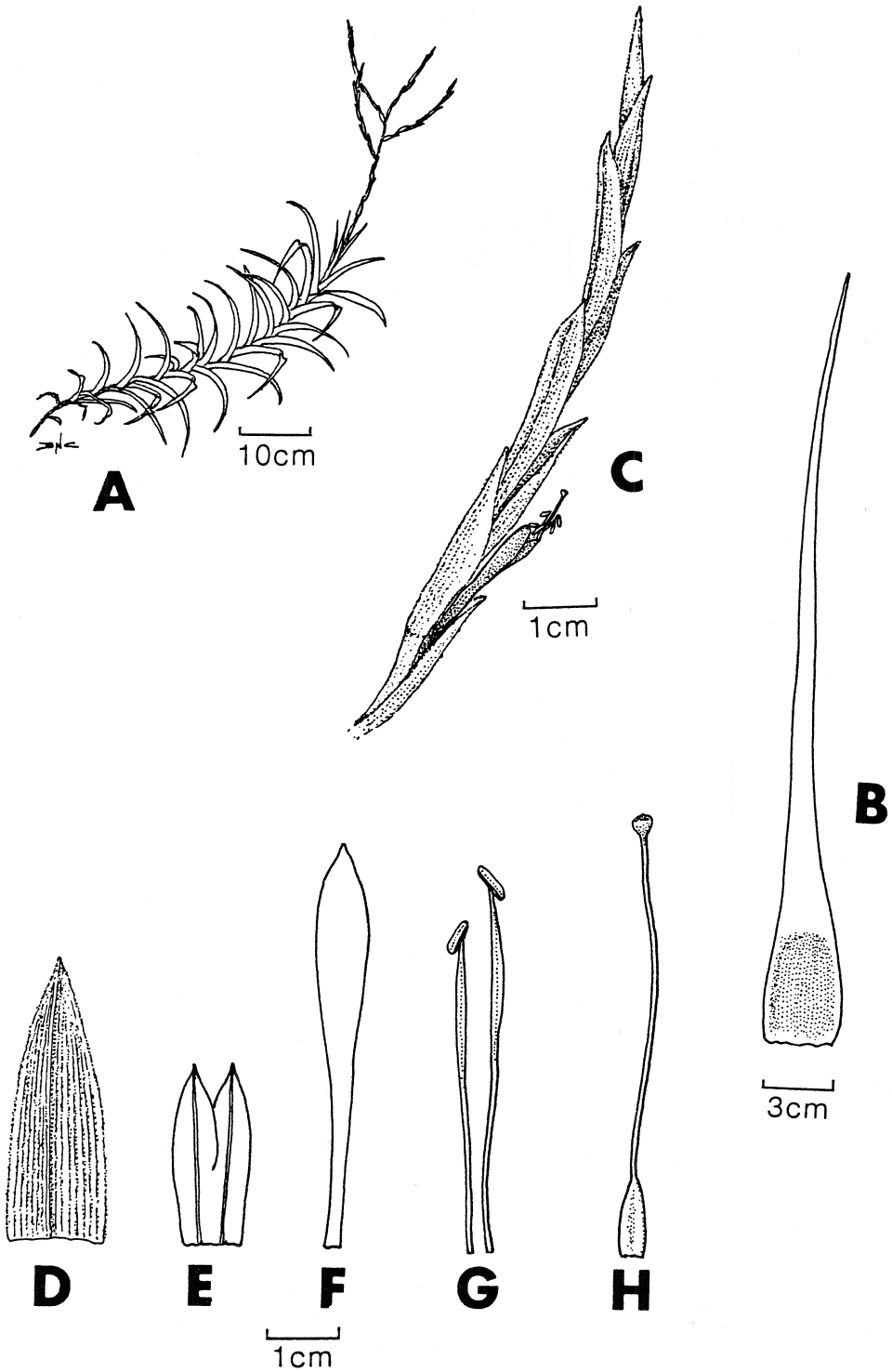

FIGURE 17. *Tillandsia novakii*. **A**, habit. **B**, leaf, adaxial view. **C**, branch of inflorescence. **D**, floral bract. **E**, posterior sepals. **F**, petals. **G**, stamens. **H**, pistil.

Tillandsia albida because of its elongate stem, but can easily be distinguished due to its compound inflorescence with densely lepidote bracts and sepals, and violet [not white] petals. From *T. socialis* it can be recognized by its long caulescent habit [not stemless and densely clustering], carinate, more highly connate adaxial sepals [connate 8–9 mm vs. 3–4 mm] and longer petals [36–40 mm vs. 30 mm]. *Tillandsia novakii* fits Gardner's group I (Gardner, 1986) but has characteristics of both her subgroups I and II. It is sparingly cultivated in the USA and Germany. The name honors A. J. Novak of Austin, Texas, who first provided a specimen with collection locality data.

Literature Cited

Gardner, C. S. 1986. Preliminary classification of *Tillandsia* based on floral characteristics. Selbyana 9: 130–146.