

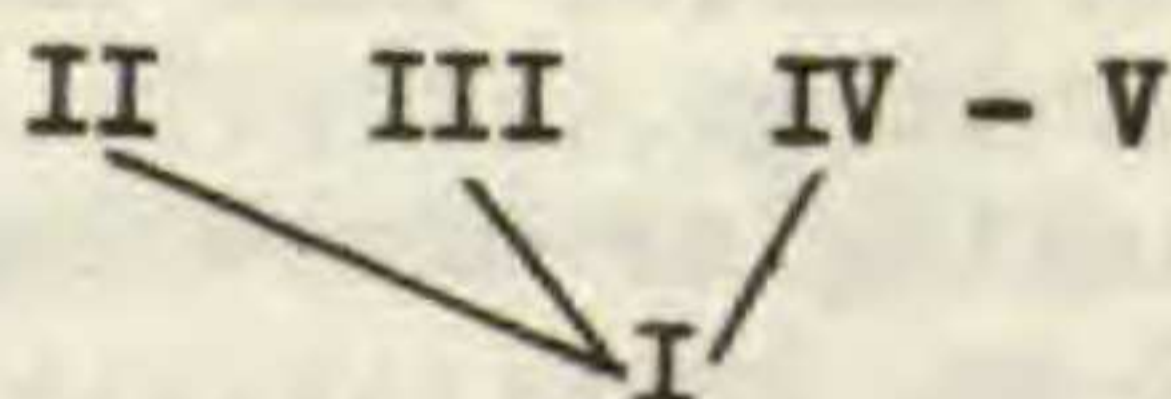
NOTES ON BROMELIACEAE, XVII

Lyman B. Smith

MEXICO and CENTRAL AMERICA

HECHTIA

In making keys there is usually the problem of whether to attempt a natural arrangement with the simple and presumably primitive species first or to make one that is frankly artificial. An artificial key separates the smaller groups first as a matter of clarity and convenience and these groups are usually composed of the more complex species that logically would be at the end of a natural key. In Hechtia it is not possible to say what is a natural sequence beyond the relation of the primary groups to each other. Consequently I am making an artificial key to the major groups but giving them a natural or, as it happens, reverse enumeration. The distinctions between groups are much the same as in my key in the North American Flora (19:84. 1938), except for the increased emphasis on an inferior ovary. This last has the advantage of bringing together the southernmost species, H. dichroantha and H. guatemalensis, as they obviously should be. The natural relationship of the groups is probably thus:



Group V is advanced because of the inferior ovary and its development has been mainly southward. Group III has developed greater protection for its flowers enabling it to spread north in cooler climates.

1. Ovary or its remnant almost or wholly inferior (the remnant appearing to be an apical swelling of the pedicel in the staminate flowers).....Subkey V
1. Ovary or its remnant largely or wholly superior, staminate pedicels when present not abruptly swollen at apex.
  2. Sepals and floral bracts drying uniformly roseate with no hyaline margin.....Subkey IV
  2. Sepals and floral bracts brown, stramineous or hyaline, or if roseate (H. elliptica, H. scariosa) then with hyaline margins.
    3. Floral bracts strongly convex, ample, always exceeding the pedicels and usually much of the sepals.....Subkey III
    3. Floral bracts flat, usually much shorter than the sepals, or if convex then shorter than the pedicels; flowers distinctly pedicellate in most species.
      4. Leaves densely serrulate with teeth not more than 0.5 mm. long; plant delicate, less than 1 m. high; inflorescence

- very lax.....Subkey II  
 4. Leaves laxly and coarsely serrulate or where not known the plant coarse and over 1 m. high.....Subkey I

## Subkey I

1. Inflorescence slenderly cylindrical; branches simple or 3-parted at base, not over 12 cm. long and usually much less.
2. Branches laxly flowered; pedicels slender, 3-8 mm. long; scape-bracts much exceeding the internodes.
  1. H. pedicellata
2. Branches densely flowered, or flowers subverticillate.
3. Rhachis much flattened; branches often 3-parted from the base.....2. H. podantha
3. Rhachis subterete; branches simple.
4. Pistillate sepals 3.5-4 mm. long, obtuse; rhachis stout, 9-10 cm. long.
5. Leaf-blades strongly repand; rhachis subalate.
  3. H. subalata
5. Leaf-blades with straight margins between the spines; rhachis nearly even.....4. H. melanocarpa
4. Pistillate sepals 1-2 mm. long.
6. Rhachis to 10 cm. long, ascending; lower primary bracts long-caudate from an ovate base; floral bracts shorter than to exceeding the pedicels.....5. H. caudata
6. Rhachis 2-5 cm. long.
7. Floral bracts much shorter than the pistillate pedicels; rhachis to 5 cm. long.....6. H. mooreana
7. Floral bracts equaling or exceeding the pistillate pedicels; rhachis 2 cm. long.....7. H. lanata
1. Inflorescence pyramidal or if subcylindric then broad with elongate branches.
8. Key to pistillate plants.
9. Floral bracts equaling or shorter than the pedicels; racemes evenly flowered in most species.
10. Pedicels continuous with the rhachis, not articulated.
11. The pedicels stoutly obconic, 3.5 mm. long; seeds with a thick blunt wing.....8. H. roseana
11. The pedicels slenderly cylindrical, 4-10 mm. long.
12. Leaf-spines to 5 mm. long; upper scape-bracts remote; pedicels 4-8 mm. long, slender.....9. H. montana
12. Leaf-spines 2 mm. long; scape-bracts all large and imbricate; pedicels 10 mm. long, almost filiform.
  10. H. matudae
10. Pedicels articulated with the rhachis.
13. Carpels even except for a median ridge; pedicels strongly triquetrous.....11. H. glabra
13. Carpels reticulate; pedicels sulcate, subterete.
  12. H. reticulata
9. Floral bracts much exceeding the very short pedicels at anthesis; racemes interrupted and more or less moniliform; flowers strict.

14. Rhachis slender, even or faintly angled. 13. H. stenopetala
14. Rhachis stout, deeply sulcate.....14. H. galeottii
8. Key to staminate plants.
15. Sepals acute. 9. H. montana
16. Stamens included.....
16. Stamens exerted.
17. Sepals much thickened toward base; pedicels stout; racemes interrupted.....15. H. suaveolens
17. Sepals uniformly membranaceous; pedicels slender; racemes slightly or not at all interrupted.....16. H. reflexa
15. Sepals broadly obtuse, rarely apiculate.
18. Rhachis strongly compressed throughout.
19. Stamens included; floral bracts equaling or shorter than the pedicels.....11. H. glabra
19. Stamens exerted; floral bracts exceeding the pedicels. 17. H. konzattiana
18. Rhachis compressed only at base.
20. The rhachis slender, even or faintly angled.
21. Stamens included.....18. H. sphaeroblasta
21. Stamens exerted.....13. H. stenopetala
20. The rhachis stout, deeply sulcate.....14. H. galeottii

## Subkey II

1. Sepals ovate, broadest at about one-third of their length; flowers 3 mm. long.....19. H. lindmanioides
1. Sepals subtriangular, broadest at base; flowers 5 mm. long.
2. Pedicels 3 mm. long, more than twice as long as the floral bracts.....20. H. tillandsioides
2. Pedicels less than 1 mm. long, equaling or shorter than the floral bracts.....21. H. lundelliorum

## Subkey III

1. Flowers 8-10 mm. long; floral bracts stramineous or roseate with broad scarious margins.
2. Sepals at least as broad as long.
3. The sepals acute, 6 mm. long.....22. H. texensis
3. The sepals obtuse, 3.5 mm. long.....23. H. mexicana
2. Sepals much longer than broad.
4. The sepals elliptic, obtuse; leaves splashed with bright rose.....24. H. elliptica
4. The sepals acute; leaves green.
5. Floral bracts and sepals roseate with broad scarious margins.....25. H. scariosa
5. Floral bracts pale stramineous.....26. H. zacatecae
1. Flowers 4-7 mm. long.
6. Spikes elongate, lax or sublax except sometimes at extreme apex.
7. Inflorescence amply tripinnate with the branches pinnately divided.....27. H. schottii
7. Inflorescence bipinnate except at base where the branches are palmately 3-parted.....28. H. fosteriana

6. Spikes abbreviated, dense.  
 8. Sepals acute.  
 9. Leaves densely lepidote on both sides.....29. H. argentea  
 9. Leaves glabrous above.....30. H. capituligera  
 8. Sepals obtuse.  
 10. Primary bracts broadly ovate or suborbicular, narrowed abruptly to a long-acuminate apex.  
 11. Leaf-blades glabrous above; branches short, mostly exceeded by the 3 cm. long primary bracts..31. H. confusa  
 11. Leaf-blades densely pale-lepidote on both sides; staminate branches to 55 mm. long and pistillate to 40 mm., both mostly exceeding the primary bracts.  
 32. H. marnier-lapostollei  
 10. Primary bracts lanceolate or narrowly triangular, inconspicuous.  
 12. Leaves all coarsely serrate.....33. H. glomerata  
 12. Leaves (only the inner known) finely serrate.  
 34. H. gamopetala

## Subkey IV

1. Scape-bracts much exceeding the internodes, foliaceous.  
 35. H. desmetiana  
 1. Scape-bracts much shorter than the internodes, vaginiform.  
 2. Flowers subsessile.....36. H. rosea  
 2. Flowers distinctly pedicellate.  
 3. Floral bracts equaling or exceeding the pedicels.  
 37. H. mezziana  
 3. Floral bracts about half as long as the pedicels.  
 38. H. laxissima

## Subkey V

1. Flowers distinctly pedicellate, the ovary remnant appearing to be a thickening of the upper part of the pedicel; petals rose.....39. H. epigyna  
 1. Flowers subsessile; petals white.  
 2. Floral bracts conspicuous, equaling the ovary of the pistillate flowers and nearly equaling the sepals of the staminate; flowers not more than spreading....40. H. dichroantha  
 2. Floral bracts inconspicuous; flowers mostly reflexed.  
 41. H. guatemalensis

1. HECHTIA PEDICELLATA S. Wats. Proc. Am. Acad. 26:155. 1891; Contr. Gray Herb. 117:16, pl. 1, figs. 30, 31. 1937; No. Am. Fl. 19:89. 1938.  
 MEXICO: Jalisco.  
 2. HECHTIA PODANTHA Mez in DC. Monogr. Phan. 9:549. 1896; Contr. Gray Herb. 117:15, pl. 1, figs. 27, 28. 1937; No. Am. Fl. 19:88. 1938.  
Hechtia liebmannii Mez, Bot. Jahrb. 30:Beibl. 67:6. 1901.  
Hechtia tehuacana B. L. Robinson, Proc. Boston Soc. Nat. Hist. 31:265. 1904.

MEXICO: Hidalgo, Morelos, Puebla.

3. *HECHTIA SUBALATA* L. B. Smith, Contr. Gray Herb. 117:15, pl. 1, fig. 29. 1937; No. Am. Fl. 19:88. 1938.

MEXICO: Durango, Zacatecas.

4. *HECHTIA MELANOCARPA* L. B. Smith, Contr. Gray Herb. 161:32, pl. 4, figs. 8, 9. 1946.

MEXICO: Guerrero.

5. *HECHTIA CAUDATA* L. B. Smith, sp. nov.

A *H. mooreana* L. B. Smith, cui affinis, foliis multo majoribus, ramis longioribus, floribus subverticillatis nullo modo secundis differt.

Flowering 12 dm. high (! Foster); leaves over 5 dm. long; sheaths suborbicular, to 9 cm. wide, except at apex entire, brown and lustrous; blades narrowly triangular, 55 mm. wide, red, succulent (! Foster), covered with coarse appressed cinereous scales on both sides, partially glabrous above with age, laxly serrate with antrorse curved spines 2 mm. long; scape (staminate only) flattened at base and presumably lateral, 5 mm. in diameter at apex, glabrous; scape-bracts densely imbricate, ovate with long linear subentire lepidote blades; inflorescence bipinnate, cylindrical, glabrous; lower primary bracts like the scape-bracts, the upper much reduced and bladeless; branches to 10 cm. long, slender, slightly compressed at base, rather dense with the flowers subverticillate; floral bracts ovate, apiculate, flat, 4 mm. long, exceeding the pedicels; pedicels slenderly obconic; staminate flowers (immature) 4 mm. long; sepals broadly ovate, obtuse, 2 mm. long; pistillate sepals (very old) broadly ovate; capsule ovoid, acute, 11 mm. long, yellow-brown. Pl. I, fig. 1: Section of staminate branch x 1; fig. 2: Staminate flower x 2; fig. 3: Staminate sepal x 2; fig. 4: Pistillate flower (fruit) x 1; fig. 5: Old pistillate sepal x 2.

Type in the U. S. National Herbarium, collected on rocks, between Tehuantepec and Tuxtla, State of Oaxaca, Mexico, altitude 300 meters, April 8, 1957, by Mulford B. Foster and O. C. Van Hynning (No. 2999).

6. *HECHTIA MOOREANA* L. B. Smith, Contr. U. S. Nat. Herb. 29:522, fig. 78. 1954.

MEXICO: Guerrero.

7. *HECHTIA LANATA* L. B. Smith, sp. nov.

A *H. mooreana* L. B. Smith, cui affinis, foliis multo majoribus, scapi bracteisque lanatis, inflorescentiae ramis brevioribus differt.

Flowering 45-60 cm. high (! Foster); leaves over 1 m. long, lanate at first (! Foster); sheaths reniform, 6 cm. high, densely lepidote at apex beneath, elsewhere glabrous, dark castaneous, lustrous; blades narrowly triangular, 7 cm. wide, covered beneath with appressed cinereous scales, with age glabrous and lustrous

above, densely serrate at base, laxly so elsewhere with antrorse curved spines 5 mm. long; scape central (! Foster), 5-6 mm. in diameter, lanate at first (! Foster); scape-bracts small, about equaling the internodes, ovate with a linear lanate blade; inflorescence slenderly cylindrical; primary bracts like the upper scape-bracts, about equaling the branches; branches 2 cm. long, densely flowered; floral bracts exceeding the pedicels but narrow and nearly flat, serrulate; pedicels narrowly obconic, the staminate 2 mm. long, the pistillate 2.5 mm.; sepals broadly ovate, obtuse, 1.5 mm. long, serrulate; staminate petals obtuse, 4 mm. long; stamens included; capsule ovoid, acute, 9 mm. long, castaneous, even, lustrous. Pl. I, fig. 6: Staminate flower x 2; fig. 7: Staminate sepal x 2; fig. 8: Pistillate branch x 1; fig. 9: Old pistillate sepal x 2.

Type in the U. S. National Herbarium, collected on rocks in a very windy area, near Tequisistlan, State of Oaxaca, Mexico, altitude 2400 meters, April 1, 1957, by Mulford B. Foster and O. C. Van Hyning (No. 2934).

8. HECHTIA ROSEANA L. B. Smith, Contr. Gray Herb. 117:17, pl. 1, figs. 41, 42. 1937; No. Am. Fl. 19:90. 1938.  
MEXICO: Puebla.
9. HECHTIA MONTANA Brand. Erythea 7:9. 1899; Contr. Gray Herb. 117:16, pl. 1, figs. 38-40. 1937; No. Am. Fl. 19:90. 1938.  
Hechtia pedicellata sensu I. M. Johnston, Proc. Calif. Acad. IV. 12:995. 1924.  
MEXICO: Baja California, Sonora, Sinaloa.
10. HECHTIA MATUDAE L. B. Smith, Phytologia 5:395, pl. 1, figs. 1, 2. 1956.  
MEXICO: Morelos.
11. HECHTIA GLABRA Brand. Univ. Calif. Publ. Bot. 7:325. 1920; Contr. Gray Herb. 117:17, pl. 1, figs. 43-45. 1937; No. Am. Fl. 19:91. 1938.  
MEXICO: Vera Cruz.
12. HECHTIA RETICULATA L. B. Smith, Contr. Gray Herb. 117:17, pl. 1, fig. 46. 1937; No. Am. Fl. 19:91. 1938.  
MEXICO: Colima.
13. HECHTIA STENOPETALA Kl. Allg. Gart. 3:402. 1835; Contr. Gray Herb. 117:18, pl. 1, figs. 47-50. 1937; No. Am. Fl. 19:91. 1938.  
Hechtia cordylinoides Baker, Bot. Mag. 107: pl. 6554. 1881.  
Hechtia pringlei Robinson & Greenman, Am. Journ. Sci. III. 50: 167. 1895.  
MEXICO: Puebla, Oaxaca.
14. HECHTIA GALEOTTII Mez in Fedde Rep. Spec. Nov. 16:71. 1919; Contr. Gray Herb. 117:18, pl. 1, figs. 51, 52. 1937;

- Fl. 19:92. 1938.  
MEXICO: Oaxaca.
15. HECHTIA SUAVEOLENS E. Morr. ex Mez in DC. Monogr. Phan. 9: 550. 1896; Contr. Gray Herb. 117:18, pl. 1, fig. 53. 1937; No. Am. Fl. 19:92. 1938.  
MEXICO: Indefinite.
16. HECHTIA REFLEXA L. B. Smith, Contr. Gray Herb. 117:18, pl. 1, figs. 54, 55. 1937; No. Am. Fl. 19:92. 1938.  
MEXICO: Michoacán.
17. HECHTIA CONZATTIANA L. B. Smith, Contr. Gray Herb. 117:19, pl. 1, fig. 56. 1937; No. Am. Fl. 19:93. 1938.  
MEXICO: Oaxaca.
18. HECHTIA SPHAEROBLASTA B. L. Robinson, Proc. Am. Acad. 35:323. 1900; Contr. Gray Herb. 117:19, pl. 1, fig. 57. 1937; No. Am. Fl. 19:93. 1938.  
MEXICO: Guerrero.
19. HECHTIA LINDMANIOIDES L. B. Smith, Contr. Gray Herb. 117:14, pl. 1, figs. 24-26. 1937; No. Am. Fl. 19:88. 1938.  
MEXICO: Vera Cruz.
20. HECHTIA TILLANDSIOIDES (André) L. B. Smith, Contr. U. S. Nat. Herb. 29:431. 1951.  
Bakeria tillandsioides André, Rev. Hort. 61:84, pl. 1889.  
Hechtia purpusii Brand. Univ. California Publ. Bot. 7:325. 1920.  
Bakerantha tillandsioides L. B. Smith, Contr. Gray Herb. 104: 72. 1934.  
MEXICO: Vera Cruz.
21. HECHTIA LUNDELLIORUM L. B. Smith, No. Am. Fl. 19:97. 1938.  
MEXICO: San Luis Potosí.
22. HECHTIA TEXENSIS S. Wats. Proc. Am. Acad. 20:374. 1885; Contr. Gray Herb. 117:19, pl. 1, figs. 58, 59. 1937; No. Am. Fl. 19:93. 1938.  
UNITED STATES: Texas.
23. HECHTIA MEXICANA L. B. Smith, Contr. Gray Herb. 117:19, pl. 1, fig. 60. 1937; No. Am. Fl. 19:94. 1938.  
MEXICO: San Luis Potosí.
24. HECHTIA ELLIPTICA L. B. Smith, Contr. Gray Herb. 117:20, pl. 1, figs. 61, 62. 1937; No. Am. Fl. 19:94. 1938.  
MEXICO: Coahuila.
25. HECHTIA SCARIOSA L. B. Smith, Contr. Gray Herb. 117:20, pl. 1, figs. 63, 64. 1937; No. Am. Fl. 19:94. 1938.

UNITED STATES: Texas.

MEXICO: Coahuila, Tamaulipas.

26. *HECHTIA ZACATECAE* L. B. Smith, Contr. Gray Herb. 117:21, pl. 1, figs. 65, 66. 1937; No. Am. Fl. 19:95. 1938.

MEXICO: Zacatecas.

27. *HECHTIA SCHOTTII* Baker in Hemsl. Biol. Centr.-Am. Bot. 3:318. 1884; Contr. Gray Herb. 117:22, pl. 1, figs. 69, 70; No. Am. Fl. 19:96. 1938.

*Hechtia bracteata* Mez in DC. Monogr. Phan. 9:550. 1896.

*Hechtia myriantha* Mez, Bot. Jahrb. 30, Beibl. 67:6. 1901.

*Hechtia macrophylla* Greenman, Field Mus. Publ. Bot. 2:247. 1907.

MEXICO: Vera Cruz, Yucatan, Chiapas.

28. *HECHTIA FOSTERIANA* L. B. Smith, sp. nov.

A *H. schottii* Baker, cui affinis, inflorescentiae ramis simplicibus vel infimis basi 3-partitis differt.

Flowering 15 dm. high; leaves over 1 m. long; sheaths reniform, 10 cm. wide, glabrous except at apex, very dark castaneous and lustrous on both sides; blades narrowly triangular, 7 cm. wide, glabrous above, covered with appressed cinereous scales beneath, densely serrate at base, laxly so above with curved antrorse spines 6 mm. long; scape curved and flattened at base and presumably lateral, 11 mm. wide at apex; scape-bracts broadly triangular, exposing almost the whole scape but their linear mostly entire blades equaling or exceeding the internodes; inflorescence (pistillate only) bipinnate except at base, 9 dm. long (! Foster); primary bracts triangular, small and inconspicuous; branches simple except the basal which are 3-parted at base, to 14 cm. long, rather evenly and sublaxly flowered, sulcate, flattened at base; floral bracts broadly ovate, acute, 4 mm. long, much exceeding the stout obconic pedicel; sepals ovate-oblong, obtuse, 3 mm. long, hyaline with a thickened brown base; petals 4 mm. long, white; capsule ovoid, acute, 8 mm. long, sharply trigonous, brown, even, sublustrous. Pl. I, fig. 10: Section of pistillate branch x 1; fig. 11: Old pistillate sepal x 2.

Type in the U. S. National Herbarium, collected on rocks, near Tequisistlan, State of Oaxaca, Mexico, altitude 2100 meters, April 1, 1957, by Mulford B. Foster and O. C. Van Hyning (No. 2935).

29. *HECHTIA ARGENTEA* Baker ex Hemsl. Biol. Centr.-Am. Bot. 3:317. 1884; Bot. Mag. 122: pl. 7460. 1896; Contr. Gray Herb. 117:21. 1937; No. Am. Fl. 19:95. 1938.

*Hechtia argentea* K. Koch, Wochenschr. Gärtn. 7:176. 1864.

Nomen.

MEXICO: Indefinite.

30. *HECHTIA CAPITULIGERA* Mez in DC. Monogr. Phan. 9:546. 1896; Contr. Gray Herb. 117:21, pl. 1, figs. 67, 68. 1937; No. Am.



- Fl. 19:95. 1938.  
MEXICO: San Luis Potosí.
31. HECHTIA CONFUSA L. B. Smith, Contr. Gray Herb. 117:22, pl. 1, figs. 71, 72. 1937; No. Am. Fl. 19:96. 1938.  
MEXICO: Puebla.
32. HECHTIA MARNIER-LAPOSTOLLEI L. B. Smith, Bromel. Soc. Bull. 11:58, figs. 1961.  
MEXICO: Indefinite.
33. HECHTIA GLOMERATA Zucc. Abh. Akad. Münch. 3:240, pl. 6. 1840; Contr. Gray Herb. 117:23, pl. 1, figs. 73, 74. 1937; No. Am. Fl. 19:96. 1938.  
Dasyilirion pitcairniaefolium Karw. & Zucc. ex Zucc. Allg. Gart. 6:258. 1838, not Hechtia pitcairniaefolia Verlot. 1868.  
Hechtia ghiesbreghtii Lemaire, Ill. Hort. 10: pl. 378. 1863.  
Hechtia morreniana Mez in DC. Monogr. Phan. 9:547. 1896.  
UNITED STATES: Texas.  
MEXICO: Tamaulipas, San Luis Potosí.  
GUATEMALA: Quiché, Huehuetenango.
34. HECHTIA GAMOPETALA Mez in DC. Monogr. Phan. 9:549. 1896; Contr. Gray Herb. 117:23, pl. 2, figs. 1-3. 1937; No. Am. Fl. 19:97. 1938.  
MEXICO: Indefinite.
35. HECHTIA DESMETIANA (Baker) Mez in DC. Monogr. Phan. 9:551. 1896; Contr. Gray Herb. 117:14. 1937; No. Am. Fl. 19:86. 1938.  
Dyckia desmetiana Baker, Bot. Mag. 120: pl. 7340. 1894.  
Bromelia desmetiana Baker, Bot. Mag. 120: under pl. 7340. 1894, in synonymy.  
MEXICO (?).
36. HECHTIA ROSEA E. Morr. ex Baker, Handb. Bromel. 140. 1889; Contr. Gray Herb. 117:14. 1937; No. Am. Fl. 19:87. 1938.  
Hechtia roezlii Baker, Handb. Bromel. 140. 1889, in synonymy.  
MEXICO: Indefinite.
37. HECHTIA MEZIANA L. B. Smith, Proc. Am. Acad. 70:149, pl. 1, figs. 2, 3. 1935; Contr. Gray Herb. 117:14. 1937; No. Am. Fl. 19:87. 1938.  
MEXICO: Oaxaca, Chiapas.
38. HECHTIA LAXISSIMA L. B. Smith, Contr. U. S. Nat. Herb. 29: 521, fig. 77. 1954.  
MEXICO: Michoacan.
39. HECHTIA EPIGYNA Harms, Notizblatt 12:531. 1935; Contr. Gray Herb. 117:16, pl. 1, figs. 34-37. 1937; No. Am. Fl. 19:89. 1938.  
MEXICO: Tamaulipas.

40. *HECHTIA DICHROANTHA* Donn. Smith, Bot. Gaz. 42:299. 1906; Contr. Gray Herb. 117:14, pl. 1, figs. 19, 20. 1937; No. Am. Fl. 19:86. 1938.

GUATEMALA: Baja Verapaz, Chiquimula (?).

HONDURAS: Morazán.

41. *HECHTIA GUATEMALENSIS* Mez in Fedde Rep. Nov. Spec. 3:14. 1906; Contr. Gray Herb. 117:16, pl. 1, figs. 32, 33. 1937; No. Am. Fl. 19:89. 1938.

GUATEMALA: El Progreso, Zacapa, Chiquimula, Guatemala.

SALVADOR: Achuapán, Salvador.

HONDURAS: Comayagua, Olancho.

NICARAGUA: Jinotega.

Note: Standley and Williams have labelled material of *H. dichroantha* and *H. guatemalensis* with three different unpublished names, and at first glance there appears to be considerable justification although there are no notes to indicate distinguishing characters. There is great variation in the size of the branches, density of the flowers, and size and shape of the capsules. However, intergradation is so complete that I hesitate to make even varieties.

- TILLANDSIA REMOTA* Wittm. in Engler, Bot. Jahrb. 14, Beibl. 32:6. 1891; Mez in DC. Monogr. Phan. 9:637, 673. 1896.

*Tillandsia tenuifolia* sensu L. B. Smith, No. Am. Fl. 19:133. 1938, in part, as to *Tillandsia remota* Wittm.

In describing *Tillandsia remota*, Wittmack did not see complete stamens and did not commit himself as to their length, although he surmised that they about equaled the petals. Mez made the rather natural assumption that, like the majority of species in Mexico and Central America, it had exserted stamens. Furthermore the habit of *T. remota* is so close to that of *T. tenuifolia* that it is difficult to distinguish them without good flowers, Mez's key character of spike position being worthless. Actually the spikes, bracts and flowers of *T. remota* are even smaller than those of *T. tenuifolia*, and the axes still more slender. Also *T. remota* has distinctly nerved floral bracts and posterior sepals more than half connate, but the spreading petals and included stamens are the most distinctive characters, placing the species in the subgenus *Allardtia* instead of in subgenus *Tillandsia* with *T. tenuifolia*. To date *T. remota* is known from Mexico, Guatemala and Salvador. Pl. I, fig. 12: Inflorescence (Bernoulli 1193) x 1/2; fig. 13: Inflorescence (Foster & Van Hyning 2986) x 1; fig. 14: Petal and stamen x 2.

#### COSTA RICA

- TILLANDSIA ABDITA* L. B. Smith, sp. nov.

A *T. brachycaulos* Schlecht., cui affinis, foliorum vaginis haud distinctis, laminis latioribus, bracteis florigeris sepalisque lepidotis differt.

Stemless; leaves numerous, suberect, 16 cm. long, covered with

appressed cinereous scales, reddish; sheaths merging with the blades; blades narrowly triangular, acuminate, ca. 2 cm. wide, slightly recurving; scape very short, wholly concealed by the leaves; inflorescence depauperate-compound, few-flowered, capitate, much exceeded by the leaves; primary bracts foliaceous but reduced, much exceeding the spikes; spikes densely 2-flowered, complanate; floral bracts oblong, acute, 17 mm. long, exceeding the sepals, carinate, membranaceous, subdensely lepidote with pale brown appressed scales; flowers sessile; sepals free, exactly like the floral bracts; petals and stamens unknown. Pl. I, fig. 15: Leaf x 1/2; fig. 16: Spike x 1; fig. 17: Sepal x 1.

Type in the Chicago Natural History Museum, collected on the Cerro de Escasú, Province of San José, Costa Rica, August 1935, by Fernando Solís (No. 314).

#### ECUADOR

PITCAIRNIA HARLINGII L. B. Smith, sp. nov.

A P. cuatrecasana L. B. Smith, cui affinis, inflorescentiae indumento ferrugineo, sepalis acuminatis differt.

Known only from one leaf and an inflorescence but flowering shoot probably over 1 m. long; leaf linear-lanceolate, acuminate at both ends, subpetiolate, 15 dm. long, 5 cm. wide, laxly serrulate throughout, glabrous above, covered with pale ferruginous appressed scales beneath, channeled toward base; scape over 5 dm. long, apparently decurved, densely and finely ferruginous-lanate, red (! Harling); scape-bracts ovate, exceeding the internodes, entire, ferruginous-lanate, the lower ones with long caudate blades; inflorescence simple, 4 dm. long, lax, ferruginous-lepidote except the petals; floral bracts triangular-ovate, acuminate, to 55 mm. long, exceeding the lower pedicels; flowers spreading at anthesis, then decurved; pedicels to 25 mm. long, rather slender; sepals triangular-ovate, acuminate, 35 mm. long, slightly carinate toward base, brick red (! Harling); petals linear, curved at anthesis, 7 cm. long, appendaged, orange (! Harling); ovary 2/3 inferior; ovules alate. Pl. I, fig. 18: Flower x 1/2; fig. 19: Sepal x 1; fig. 20: Base of petal x 1.

Type in the Naturhistoriska Riksmuseum, Stockholm, collected in thicket at river, El Topo, Province of Napo-Pastaza, Ecuador, altitude 1250 meters, November, 28, 1958, by Gunnar Harling (No. 3426).

PITCAIRNIA UNILATERALIS L. B. Smith, sp. nov.

Ab omnibus speciebus adhuc cognitis, foliorum laminis linearibus integerrimis, inflorescentia simplici dense secundiflora, petalis flavis appendiculatis, ovulis caudatis differt.

Pendent in clumps (! Harling); leaf-blades linear, acuminate at base and apex, over 2 m. long, 19 mm. wide, entire, glabrous above, covered beneath with a whitish membrane of coalesced scales, bearing a broad white median band that becomes the full width of the blade at base; scape unknown; inflorescence evidently simple, 38 cm. long, densely secund-flowered, except for the

petals densely and finely white-arachnoid; axis 7 mm. in diameter; floral bracts triangular, to 15 mm. long; pedicels slender, 12 mm. long; flowers spreading; sepals narrowly triangular, acute, 18 mm. long, carinate toward base; petals linear, 6 cm. long, pale yellow, bearing a suborbicular crenate scale at base; ovary more than 1/2 inferior; ovules caudate. Pl. I, fig. 21: Flower x 1/2; fig. 22: Sepal x 1; fig. 23: Base of petal x 1.

Type in the Naturhistoriska Riksmuseum, Stockholm, collected from steep rocks by river, Rio Daule below Pichincha, Hacienda Santa Barbarita, Province of Guayas, Ecuador, April 18-26, 1959, by Gunnar Harling (No. 4785).

#### BRAZIL

*AECHMEA MURICATA* (Arr. Cam.) L. B. Smith, comb. nov.

*Bromelia muricata* Arr. Cam. Diss. Pl. Brasil. 21. 1810.

*Ananas muricatus* (Arr. Cam.) Roem. & Schult. Syst. 7, pt. 2: 1287. 1830; J. L. Collins, The Pineapple 31. 1960.

*Aechmea stephanophora* E. Morr. ex Baker, Handb. Bromel. 67. 1889.

*Chevalieria stephanophora* (E. Morr. ex Baker) Mez in DC. Monogr. Phan. 9:154. 1896.

Collins indicated quite correctly, I believe, that *Ananas muricatus* and *Chevalieria stephanophora* are identical. This situation necessitates a new combination in *Aechmea* to which genus *Chevalieria* has been reduced.

*ANANAS MONSTROSUS* (Carr.) L. B. Smith, comb. nov.

*Ananassa monstrosa* Carr. Rev. Hort. 42:288, fig. 45. 1870.

*Ananas lyman-smithii* Camargo, Arquiv. Jard. Bot. Rio de Janeiro 14:281. 1956, without Latin diagnosis.

As demonstrated by Camargo, *Ananas monstrosa* is a perfectly typical pineapple except that it completely lacks the foliaceous apical coma on the inflorescence. This lack of a coma would indicate that *A. monstrosa* is probably the most primitive species in the genus.

## Plate I

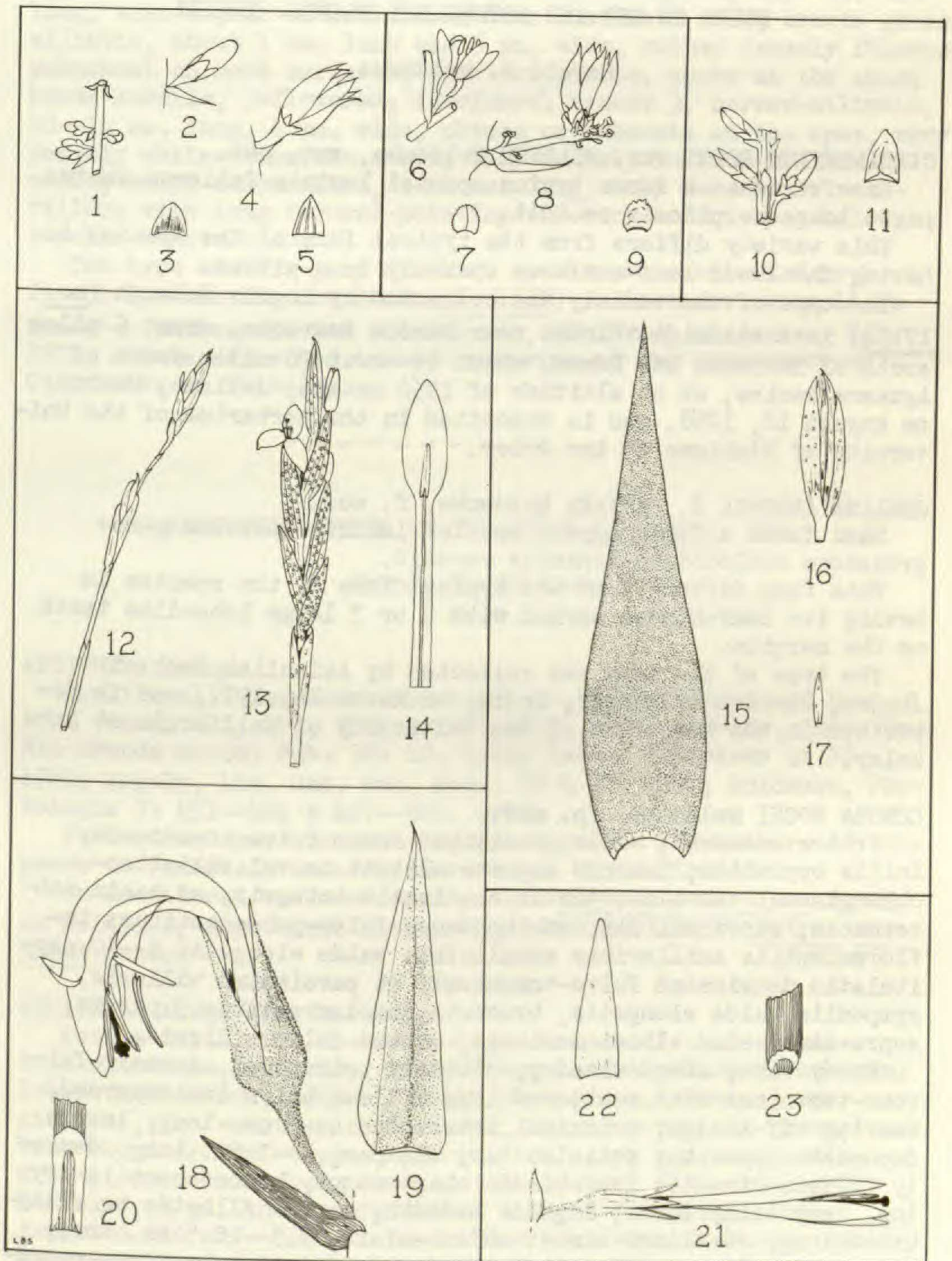


Fig. 1-5: *Hechtia caudata*; fig. 6-9: *Hechtia lanata*; fig. 10, 11: *Hechtia fosteriana*; fig. 12-14: *Tillandsia remota*; fig. 15-17: *Tillandsia abdita*; fig. 18-20: *Pitcairnia harlingii*; fig. 21-23: *Pitcairnia unilateralis*.