

Atlas of Hairs for Neotropical Melastomataceae

John J. Wurdack



SMITHSONIAN INSTITUTION PRESS

City of Washington

1986

ABSTRACT

Wurdack, John J. Atlas of Hairs for Neotropical Melastomataceae. *Smithsonian Contributions to Botany*, number 63, 80 pages, 244 figures, 1986.—Hairs of 412 taxa representing 66 genera of New World Melastomataceae were examined by SEM. Representatives for each hair type are illustrated by SEM micrographs. Epicuticular waxes are illustrated. Unusual “stomatal” apertures on intersepal hairs in the genera *Pterolepis* and *Tibouchina* were found. Parallel evolution of hairs in different genera and subgeneric divisions has occurred frequently. Hair diversity probably is the result of evolution for protection against arthropod predators.

OFFICIAL PUBLICATION DATE is handstamped in a limited number of initial copies and is recorded in the Institution's annual report, *Smithsonian Year*. SERIES COVER DESIGN: Leaf clearing from the katsura tree *Cercidiphyllum japonicum* Siebold and Zuccarini.

Library of Congress Cataloging in Publication Data

Wurdack, J. J.

Atlas of hairs for neotropical Melastomataceae.

(Smithsonian contributions to botany ; no. 63)

Bibliography: p.

Supt. of Docs. no.: SI 1.29:63

1. Melastomataceae—Anatomy—Atlases. 2. Trichomes—Atlases. 3. Melastomataceae—Classification. 4. Botany—Latin America—Classification. 5. Ultrastructure (Biology)—Atlases. I. Title. II. Series.

QK1.S2747 no. 63 581 s [583'.42] 85-600296

[QK495.M514]

Contents

	<i>Page</i>
Introduction	1
Materials and Methods	1
Acknowledgments	1
General Considerations	2
Indument Types	2
Comments on Hair Categories	3
Appendix: Material Studied	8
References	18
Figures	20

Atlas of Hairs for Neotropical Melastomataceae

John J. Wurdack

Introduction

Melastomataceae, the seventh largest family of flowering plants, has the greatest diversity of vestiture in the angiosperms. Three classical studies of the leaves (Pflaum, 1897; Palézieux, 1899; Gottschall, 1900) gave descriptions, but few illustrations, of some hair types. Developmental stages of two hair types (smooth simple; smooth glandular) were illustrated by Weidt (1935). Metcalfe and Chalk (1950) covered the family gallimaufry in about a half page of text. Hummel and Staesche (1962) gave minimal discussion for the Melastomataceae. Feissly (1964) illustrated and discussed the "émergences" and "poils" found in several African genera. Winkler (1964) studied stellate hairs in two melastomes. As for other foliar appurtenances in the melastomes, Baas (1981) accumulated limited data on foliar stomata and crystals; certainly these would be fertile fields for extended studies.

None of the schemes of hair classification accommodates in detail the diversity of melastome hairs, particularly the "shaggy" ("poils massifs," "Zotten") spectrum. Recent vestiture literature in other flowering plants (Roe, 1971; Hardin, 1976; Seithe, 1980; Edmonds, 1982; Inamdar et al., 1983; Hardin and Stone, 1984; Rodriguez et al., 1984) has not been adequate for overall

classification, although Hardin's system for *Quercus* is helpful. The recent glossary by Payne (1978), if used with many qualifiers, perhaps could be adapted to melastomes. Generally, the arrangement here followed is after Theobald et al. (1979), although the grouping of all glandular hairs together certainly is artificial. However, the SEM sampling completed over a six-year period represents only about 11% of the New World species. The illustrations in this atlas perhaps will stimulate modern anatomical studies.

MATERIALS AND METHODS.—Leaf fragments and hypanthia were mounted on stubs, coated with gold/palladium, and examined with a Cambridge Stereoscan S4-10; about 4000 micrographs were taken. Almost all of the samples were taken from herbarium specimens (US), as referenced below (Appendix). A few experimental freeze-dryings from living material yielded no improvements in SEM images. The location sampled is indicated by UL (upper leaf surface), LL (lower leaf surface), and H (hypanthium); in a few instances, petioles, stems, and peduncles were examined. The sampling was not completely random, some perhaps critical species not being available. Extensive checking of flattened hairs in *Tibouchina*, "stomate"-bearing appendages in *Pterolepis*, and shaggy hairs in the Miconieae also skewed the coverage. All of the hairs illustrated are multicellular.

ACKNOWLEDGMENTS.—Sarah K. Eichhorn and (earlier) Judy Neuhauser were responsible for

John J. Wurdack, Department of Botany, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

the preparations and micrographs during the hair survey. The micrographs were taken by Susann Braden in the Scanning Electron Microscope Laboratory at the National Museum of Natural History. Sarah K. Eichhorn has been especially helpful and patient during the protracted selection, with much reprinting, of the published micrographs. Mary Sangrey assisted in darkroom work. Ellen R. Farr developed the computer programs for the listings in the Appendix. Harry Dewey, research information specialist for the Agency for International Development, facilitated literature searches.

General Considerations

Several types of foliar hairs in a species are common in the melastomes, sometimes one type on the upper surface and one or more different forms on the lower surface. Usually the hairs of the primary leaf veins beneath are of the same type as the cauline ones, but the indument of the lower leaf surface is often different. Some of the hair mixtures are reflected in Figures 1–20. The permutations in glandular hairs are covered in Figures 21–72, in smooth hairs without enations in Figures 73–104, in hairs with enations in Figures 105–196, in vermiform (lanate) hairs in Figures 197–200, in scale-like (flattened) hairs in Figures 201–212, in lepidote hairs in Figures 213–228, in pterolepoid appendages with “stomates” in Figures 229–242, and in epicuticular waxes in Figures 243, 244. In several of these categories, thin-walled and thick-walled groups (Hardin, 1976, 1979) have been segregated; critical-point drying studies of fresh or rehydrated thin-walled hairs are needed. Within the subcategories, the New World genera are ordered in an unpublished system.

INDUMENT TYPES.—The following indument types, seen in all the species sampled, are also listed in the Appendix, by numbers that also correspond with those used in “Comments on Hair Categories.”

1. Long-stalked glands with thin-walled heads.
2. Short-stalked glands with thin-walled elongate heads.

3. Short-stalked glands with thin-walled short heads.
4. Sessile glands with thin-walled heads.
5. Stalked glands with smooth (thick-walled?) heads.
6. Slightly furrowed more or less stalked glands.
7. Unfurrowed sessile glands.
8. Pebbled sessile glands.
9. Glands with basal pedestals.
10. Lateral glands.
11. Elongated smooth or fluted hairs.
12. Elongated alveolate eglandular hairs.
13. Elongated smooth thin-walled hairs.
14. Conic hairs without enations.
15. Bulla-based hairs without enations.
16. Elongated slightly roughened hairs.
17. Elongated moderately roughened hairs.
18. Conic slightly roughened hairs.
19. Conic densely roughened hairs.
20. Bulla-based roughened hairs.
21. Elongated hairs with greatly roughened (substellate) base.
22. Few(2–5)-armed hairs.
23. Sessile-stellate hairs.
24. Stipitate-stellate hairs.
25. Dendritic hairs with short axis and few–moderate number of terete arms.
26. Dendritic hairs with well-developed axis and moderate number of terete short to moderately long arms.
27. Dendritic hairs with well-developed axis and numerous short terete arms.
28. Dendritic hairs with well-developed axis and few long terete arms.
29. Dendritic hairs with well-developed axis and many long terete arms.
30. Dendritic hairs with short thin-walled arms.
31. Dendritic hairs with moderately long thin-walled arms.
32. Dendritic hairs with thin-walled arms and warty axis.
33. Dendritic hairs with long thin-walled arms.
34. Vermiform (lanate) hairs.
35. Leaf scales, proximally attached.
36. Hypanthial scales, proximally attached.
37. Leaf scales, with basal ear.
38. Lepidote hairs with only partially fused radii.
39. Several-tiered lepidote hairs, the radii nearly completely fused.
40. Single-tiered lepidote hairs, the radii nearly completely fused.
41. Single-tiered lepidote hairs with alveolate surface, the radii completely fused.
42. Pterolepoid hairs, essentially smooth, with gland-tipped branches.
43. Pterolepoid hairs, essentially smooth, eglandular.
44. Pterolepoid hairs, roughened, in part gland-tipped.
45. Pterolepoid hairs, roughened, eglandular.
46. Epicuticular waxes.

Much parallel evolution in hair types has occurred in the Melastomataceae. This is especially evident within the sections of *Miconia*. From field knowledge of many neotropical species, there is no adequate correlation with climate or edaphic factors. Probably the fall-back idea of protection from arthropod predators is the only general explanation for melastome hair diversity (Levin, 1973; Johnson, 1975; Juniper and Jeffree, 1983:37–43). Perhaps the glandular hairs are of importance in chemical or mechanical protection, as has been studied in other plant families (Rodriguez et al., 1984:187–241).

Comments on Hair Categories

In addition to those illustrated, species in the family sample showing the same hair type are listed below, with pertinent taxonomic comments.

1. Long-stalked glands with thin-walled heads (Figures 21–26): The occurrence of this type of gland runs the gamut of the subfamily Melastomoideae (except for Cyphostyleae?) in the Neotropics.

Macrocentrum brevipedicellatum (LL), *M. minus* (UL, LL), *M. vestitum* (LL), *Bertolonia maculata* (H), *Trembleya neopyrenaica* (UL, LL), *Lavoisiera glandulifera* (UL, LL), *L. ordinata* (UL, LL, H), *Microlicia macrophylla* (UL), *M. virgata* (LL, H), *Rhynchanthera dichotoma* (UL, H), *Siphanthera arenaria* (UL, LL, H), *S. villosa* (H), *S. sp. Calderon 2586* (H), *S. sp. Cid 523* (H), *Farringtonia fasciculata* (H), *Cambessedesia latevenosa* (LL, H), *C. salviaefolia* (LL), *Centradenia floribunda* (LL, H), *Marcetia lanuginosa* (UL), *M. macrophylla* (LL), *M. taxifolia* var. *glandulosa* (H), *Comolia sertularia* (LL, H), *Ernestia pullei* (LL), *E. tenella* (UL, LL), *Appendicularia thymifolia* (UL, LL, H), *Acisanthera alsinaefolia* (UL, LL, H), *Tibouchina chamissoana* (LL), *T. morii* (H), *Heterocentron glandulosum* (H), *Monochaetum polyneuron* (LL), *M. rotundifolium* (H), *M. venosum* (H), *Miconia avia* (H), *M. heterochaeta* (H), *M. multiglandulosa* (LL), *M. russea* (LL), *Heterotrichum umbellatum* (UL, LL, H), *Tococa aristata* (H), *T. caquetana* (LL), *T. obovata* subsp. *neblinensis* (UL, H), *Myrmidone macrosperma* (UL), *Clidemia bullosa* (UL), *C. fuertesii* (H), *C. globulifera* (UL), *C. hirta* (UL), *C. japurensis* (H), *C. pustulata* (LL, H), *C. rubra* (H), *C. simpsonii* (UL, H), *C. sprucei* (LL), *C. strigillosa* (LL, H), *C. urceolata* (UL, H),

Maieta guianensis (LL, H), *M. poeppigii* (UL, LL, H), *Leandra bergiana* (H), *L. cordifolia* (UL, H), *L. mexicana* (UL), and *Topobea aeruginosa* (UL).

2. Short-stalked glands with thin-walled elongate heads (Figures 27–32): All neotropical Melastomoideae, except the Microlicieae (sensu Cogniaux) and Cyphostyleae, probably show this type of glandular hair.

Marcetia lanuginosa (UL), *Tibouchina aegopogon* (UL), *T. oreophila* (H), *T. ornata* (LL), *Conostegia setosa* (H), *Miconia calvescens* (LL), *M. impetolaris* (LL), *M. plumifera* var. *bangii* (LL), *Calycogonium krugii* (LL), *Tococa caquetana* (H), *Clidemia conglomerata* (H), *C. densiflora* (LL), *C. hirta* var. *hirta* (LL, H), *C. petiolaris* (LL, H), *C. sessiliflora* (UL), *C. spectabilis* (UL, LL, H), *Mecranium puberulum* (LL), *Myriaspora egensis* (LL), *Loreya umbellata* (UL, LL), *Henriettea lasiostylis* (LL), *H. multiflora* (UL), *Henriettella fascicularis* (UL, LL), *H. ovata* (UL), *H. tuberculata* (LL), *Leandra amplexicaulis* (UL), *L. cordifolia* (UL, LL, H), *L. cornoides* (UL, LL), *L. dasytricha* (LL), *L. mexicana* (UL, LL), *Ossaea asperifolia* (UL), *Topobea castaneda* (UL), and *T. cutucuensis* (LL).

3. Short-stalked glands with thin-walled short heads (Figures 33–40): All New World tribes of the Melastomoideae are represented. The sorting of the small hairs with thin-walled glands into two categories based on head shape is perhaps artificial.

Meriania sclerophylla (LL), *Salpinga glandulosa* (UL, LL), *S. secunda* (UL, LL), *Bertolonia maculata* (H), *Triolena amazonica* (LL), *T. pileoides* (UL, LL), *T. stenophylla* (UL), *Tateanthus duidae* (LL), *Marcetia formosa* (UL), *M. viscida* (UL, LL), *Pterolepis cataphracta* (LL), *P. parnassifolia* (LL), *P. rotundifolia* (LL), *Conostegia bracteata* (LL), *Miconia dorsiloba* (LL), *M. gentryi* (UL, LL), *Calycogonium calycopteris* (H), *Tococa caquetana* (UL), *T. guianensis* (LL, H), *T. obovata* subsp. *neblinensis* (LL, H), *Myrmidone macrosperma* (UL, LL), *Clidemia petiolaris* (UL, LL), *C. pustulata* (LL), *C. radicans* (LL), *C. sprucei* (LL), *C. submontana* (UL, LL), *Maieta poeppigii* (UL, LL), *Myriaspora egensis* (LL), *Kirkbridea tetramera* (UL), *Henriettella ovata* (LL), *Leandra amplexicaulis* (LL), *L. bergiana* (LL), *L. caquetensis* (LL), *L. dasytricha* (UL), *L. melastomoides* (LL), *L. microphylla* (UL), *L. secunda* (LL), and *L. sublanata* (LL).

4. Sessile glands with thin-walled heads (Figures 41–44):

Siphanthera sp. Calderon 2586 (LL), *S. sp. Cid 523* (H), *Marcetia macrophylla* (UL), *Conostegia lindenii* (UL), *C.*

setosa (UL, H), *Miconia gentryi* (UL), *M. rufiramea* (LL), *Clidemia cuatrecasasi* (LL), *C. densiflora* (LL), *C. globulifera* (H), *Ossaea brenesii* (UL), *Topobea aeruginosa* (LL), *T. anisophylla* (LL), *T. castaneda* (LL), *T. pittieri* (LL), and *T. verrucosa* (LL).

5. Stalked glands with smooth (thick-walled?) heads (Figures 45–48):

Cambessedesia corymbosa (UL), *Marcetia latifolia* (UL, LL, H), *M. sincorensis* (UL, LL, H), and *M. taxifolia* var. *glandulosa* (UL, LL).

6. Slightly furrowed more or less stalked glands (Figures 49–56): The heads of some of these hairs are like the “brombeerartige Köpfchen” mentioned by Gottschall (1900:23).

Graffenrieda rotundifolia (LL), *Miconia anderssonii* (LL), *M. gentryi* (LL), *M. hylophila* (H), *Clidemia allardii* (H), *C. fuertesii* (UL, LL, H), *C. septuplinervia* (LL, H), *C. sessiliflora* (H), *C. sprucei* (UL), *Leandra bergiana* (H), *Ossaea cucullata* (LL), *O. quinquenervia* (LL, H), and *O. rufescens* (UL, LL).

7. Unfurrowed sessile glands (Figures 57–59):

Trembleya parviflora subsp. *heterostemon* (LL), *Lavoisiera ordinata* (UL, LL, H), *Microlicia albida* (UL, LL, H), *M. fulva* (H), and *Macairea albiflora* (LL).

8. Pebbled sessile glands (Figure 60):

Leandra bergiana (UL).

9. Glands with basal pedestals (Figures 61–64):

Conostegia lasiopoda (LL), *C. speciosa* (UL), *Clidemia allardii* (UL), *C. conglomerata* (LL), *C. dimorphica* (LL), *C. sessiliflora* (LL), *Maieta guianensis* (LL), *Leandra clidemioides* (LL), *L. nervosa* (LL), and *Blakea glandulosa* (UL).

10. Lateral glands (Figures 65–72): Hairs with lateral glands were illustrated by Gottschall (1900:25, pl. 2: figs. 12, 13, 16). These hairs seem to be restricted to the Miconieae and Blakeae.

Miconia glyptophylla (LL), *M. heterochaeta* (peduncle), *M. plumifera* var. *bangii* (LL), *Tococa caquetana* (H), *Clidemia allardii* (LL, H), *C. bullosa* (UL, LL), *C. hirta* (LL, H), *C. petiolaris* (UL), *C. strigillosa* (UL), *C. urceolata* (UL, LL, H), *Leandra crenata* (UL), *L. nervosa* (H), *Ossaea cucullata* (UL), and *O. rufescens* (UL).

11. Elongated smooth or fluted hairs (Figures 73–84): These elongate, smooth eglandular

hairs are the most widespread of all in neotropical melastomes.

Adelobotrys intonsa (UL, LL), *Macrocentrum vestitum* (UL), *Triolena amazonica* (H), *T. asplundii* (LL), *T. stenophylla* (UL), *Stenodon suberosus* (UL), *Microlicia vestita* (LL, H), *Siphanthera villosa* (UL, LL), *Marcetia macrophylla* (UL), *Macairea rufescens* (LL), *Tibouchina anderssonii* (UL), *T. bipenicillata* (UL), *T. catherinae* (UL), *T. chamaecistus* (UL, LL), *T. granulosa* (UL), *T. microphylla* (LL), *T. morii* (H), *T. stellipilis* (LL), *T. urvilleana* (UL, LL), *Pterolepis parnassifolia* (UL), *Monochaetum bonplandii* (H), *M. polyneuron* (UL), *Conostegia dentata* (LL, H), *C. speciosa* (UL), *Miconia cremadena* (LL), *M. gentryi* (UL), *M. guatemalensis* (UL), *M. obscura* (LL), *M. superba* (LL), *M. tschudyoides* (LL), *Heterotrichum angustifolium* (UL, LL, H), *Tetrazygia hispida* (LL), *Tococa caquetana* (UL), *T. guianensis* (LL), *T. obovata* subsp. *neblinensis* (UL), *T. spadiciflora* (UL), *Myrmidone macrosperma* (UL, LL), *Clidemia allardii* (UL, LL), *C. globulifera* (UL, LL), *C. hirta* (UL, LL, H), *C. japurensis* (UL), *C. petiolaris* (UL, LL), *C. rubra* (UL, LL, H), *C. spectabilis* (LL, H), *C. sprucei* (UL), *C. urceolata* (LL), *Maieta guianensis* (UL), *Myriasporea egensis* (UL), *Kirkbridea tetramera* (LL), *Henriettea lasiostylis* (UL, LL), *Leandra amplexicaulis* (H), *L. bergiana* (LL, H), *L. caquetensis* (UL, LL), *L. crenata* (LL), *L. dasytricha* (UL), *L. macropora* (UL, LL, H), *L. melastomoides* (LL, H), *L. mexicana* (UL, LL), *L. multuplinervis* (LL), *L. secunda* (UL, LL), *L. sublanata* (UL, LL), *L. subseriata* (UL), *Ossaea cucullata* (H), *O. pauciflora* (LL, H), and *O. verrucosa* (H).

12. Elongated alveolate eglandular hairs (Figures 85–88): The separation from the previous type is perhaps academic, as is that of the elongated very thin-walled hairs (indument type no. 13) seen in only two melastomes (Figures 89, 90).

Macrocentrum brevipedicellatum (UL), *Tibouchina bahiensis* (H), *T. ornata* (UL), *Brachyotum rugosum* (LL), and *Miconia superba* (LL).

14. Conic hairs without enations (Figures 91–96): The hair shapes are somewhat disparate, varying from short- to long-conic.

Microlicia fulva (H), *Macairea albiflora* (LL), *Tibouchina fissinervia* (UL), *T. lepidota* (UL), *Miconia alata* (UL), *M. luteynii* (UL, H), *Calycogonium krugii* (LL, H), *Leandra crenata* (UL), *L. secunda* (UL), and *L. sublanata* (UL).

15. Bulla-based hairs without enations (Figures 97–104): The degree of terminal setula development varies, the bullae in *Ossaea verrucosa* and *Topobea verrucosa* lacking protractions.

Triolena asplundii (UL), *Tibouchina calycina* var. *parvifolia* (UL), *T. crassiramis* (UL), *T. paleacea* (UL), *T. stellipilis* (UL), *Brachyotum lycopodioides* (UL), *B. multituberculatum* (UL), *Miconia obscura* (UL), *Clidemia strigillosa* (UL), *Ossaea scabrosa* (UL), *O. verrucosa* (UL), and *Topobea verrucosa* (UL).

16. Elongated slightly roughened hairs (Figures 105–112): Such hairs were illustrated by Pflaum (1897, fig. 13).

Boyania ayangananae (UL), *Triolena pluvialis* (H), *Centradenia floribunda* (UL, LL, H), *Tibouchina anderssonii* (LL), *T. catherinae* (H), *T. dimorphophylla* (UL), *T. guaraisensis* (LL), *T. irwinii* (UL), *T. paleacea* (LL), *Pterolepis rotundifolia* (LL), *Heterocentron glandulosum* (UL), *Brachyotum angustifolium* (LL), *B. confertum* (LL), *B. ledifolium* (LL), *Desmoscelis villosa* (UL, LL), *Monochaetum mariae* (UL, LL), *Conostegia bracteata* (UL, LL, H), *C. brenesii* (UL), *C. subcrustulata* (UL, LL), *Miconia barbinervis* (UL), *M. cleefii* (LL), *M. gentryi* (H), *M. tschudyoides* (LL), *Tococa spadiciflora* (LL, H), *Clidemia allardii* (H), *C. conglomerata* (LL), *C. densiflora* (H), *Loreya umbellata* (UL, LL), *Kirkbridea tetramera* (LL), *Henriettea multiflora* (LL), *Leandra erostrata* (UL), *Blakea wilburiana* (LL), and *Topobea aeruginosa* (LL).

17. Elongated moderately roughened hairs (Figures 113–120): Palézieux (1899, fig. 12) illustrated this hair type.

Tibouchina aegopogon (UL, LL), *T. calycina* var. *parvifolia* (LL), *T. dimorphophylla* (UL, LL), *T. estrellensis* (LL, H), *T. fissinervia* (H), *T. granulosa* (LL), *T. irwinii* (LL), *T. oreophila* (LL, H), *Brachyotum cogniauxii* (LL), *B. gleasonii* (LL), *B. ledifolium* (LL), *B. maximowiczii* (UL, LL), *B. quinquenerve* (LL), *B. radula* (LL), *Chaetolepis lindeniana* (LL), *Monochaetum lineatum* (LL, H), *M. mariae* (H), *M. pulchrum* (UL, LL, H), *Pachyanthus reticulatus* (H), *Tococa spadiciflora* (H), *Clidemia conglomerata* (LL), *C. globulifera* (LL), *C. submontana* (LL, H), *Henriettea ramiflora* (LL), *Leandra dasytricha* (LL, H), *L. erostrata* (LL), *L. sublanata* (LL), *Topobea aeruginosa* (UL), *T. ferruginea* (LL), and *T. verrucosa* (UL).

18. Conic slightly roughened hairs (Figures 121–124):

Macairea albiflora (UL), *Pterolepis rotundifolia* (UL), *Calycogonium rhamnoides* (LL), *Maieta guianensis* (H), and *Leandra multuplinervia* (UL).

19. Conic densely roughened hairs (Figures 125–128):

Tibouchina oreophila (LL).

20. Bulla-based roughened hairs (Figures 129–132):

Tibouchina oreophila (UL; Wurdack, 1981), *Brachyotum gleasonii* (UL), *B. maximowiczii* (UL), *B. radula* (UL), *B. rostratum* (UL), *B. rugosum* (UL), and *Chaetolepis lindeniana* (UL).

21. Elongated hairs with densely roughened (substellate) base (Figures 133–136):

Meriania acida (LL, H), *Tibouchina calycina* var. *parvifolia* (LL), *T. fissinervia* (LL), *T. granulosa* (LL), *Monochaetum mariae* (LL), *Clidemia cuatrecasasii* (UL), *Henriettea lasiostylis* (UL, LL), *H. ramiflora* (LL, H), *Henriettea ovata* (LL, H), *Blakea hydraeformis* (LL), and *Topobea cutucuensis* (LL).

22. Few(2–5)-armed hairs (Figures 137–140): These examples mostly represent “depauperate” dendritic hairs, but in many species of *Adelobotrys*, hairs with only two arms are characteristic.

Adelobotrys boissieriana (H), *Siphanthera* sp. Calderon 2586 (LL, H), *S. sp. Cid 523* (LL), *Conostegia speciosa* (H), *Miconia alata* (LL), *M. barbinervis* (UL), *Tococa spadiciflora* (UL, LL), *Clidemia sessiliflora* (H), and *Blakea allotricha* (UL).

23. Sessile-stellate hairs (Figures 141–144): Many of these hairs show an erect central arm and were illustrated by Roe (1971) as “sessile porrectate-stellate.”

Miconia calvescens (LL), *M. hookeriana* (LL), *M. meridensis* (LL), *Clidemia bullosa* (LL), *C. radicans* (UL, LL), and *C. sprucei* (LL).

24. Stipitate-stellate hairs (Figures 145–148):

Tibouchina stellipilis (LL), *Conostegia brenesii* (LL, H), *C. caelestis* (LL), *Miconia avia* (LL, H), *M. barbinervis* (LL), *M. calvescens* (LL), *M. contrerasii* (LL), *M. cuspidatissima* (LL), *M. diaphanea* (LL), *M. heterochaeta* (LL), *M. hookeriana* (LL), *M. liebmannii* (LL), *M. penicillata* (petiole), *M. rubiginosa* (LL), *M. titanophylla* (LL), *Clidemia octona* (LL), *C. pustulata* (LL, H), *C. strigillosa* (LL), *Leandra subseriata* (LL), and *Necramium gigantophyllum* (H).

The hairs in all the foregoing species have terete arms. Species with more or less flattened (thin-walled) arms of the stipitate-stellate hairs also include

Conostegia speciosa (LL, H), *Clidemia octona* (UL), *C. pustulata* (UL), *C. strigillosa* (UL), *Leandra dasytricha* (LL), *L. sublanata* (LL), and *Topobea verrucosa* (LL).

25. Dendritic hairs with short axis and few-moderate number of terete arms (Figures 149–156):

Conostegia attenuata (LL), *C. centronioides* (LL, H), *C. dentata* (H), *C. lasiopoda* (UL, LL, H), *C. micrantha* (LL), *C. plumosa* (LL, H), *C. speciosa* (H), *C. subcrustulata* (H), *C. xalapensis* (H), *Miconia aspergillaris* (LL), *M. biglandulosa* (LL), *M. cleefii* (LL), *M. domingensis* (LL), *M. macrothyrsa* (LL), *M. mansfeldiana* (LL), *M. tomentosa* (LL), *Maieta poeppigii* (LL), *Leandra crenata* (LL), *L. erostrata* (UL, LL, H), *L. multuplinervis* (LL), *L. nervosa* (LL), and *Ossaea lomensis* (LL, H).

26. Dendritic hairs with well-developed axis and moderate number of terete short to moderately long arms (Figures 157–162):

Tibouchina praecox (LL), *Monochaetum venosum* (UL), *Leandra cornoides* (LL), *L. sublanata* (LL), and *Ossaea cucullata* (LL).

27. Dendritic hairs with well-developed axis and numerous short terete arms (Figures 163, 164):

Monochaetum mariae (LL).

28. Dendritic hairs with well-developed axis and few long terete arms (Figures 165–168): Six sections of the genus *Miconia* are represented in the species sampled.

Tibouchina bahiensis (LL), *T. morii* (UL, LL), *Conostegia lasiopoda* (UL), *C. subcrustulata* (LL), *Miconia aspergillaris* (LL), *M. astroplocama* (LL), *M. brevipes* (LL), *M. delicatula* (LL), *M. fasciculata* (UL, LL), *M. fulvostellata* (LL), *M. guatemalensis* (LL), *M. impetolaris* (LL), *M. longispicata* (LL), *M. macrothyrsa* (LL), *M. meridensis* (LL), *M. multispicata* (LL), *M. pustulata* (LL), *M. rugosa* (LL), *M. schlimii* (LL), *M. superba* (LL), *M. tabayensis* (LL), *M. titanophylla* (LL), *M. trinervia* (LL), *Heterotrichum angustifolium* (LL, H), *H. umbellatum* (UL, LL, H), *Clidemia hirta* (H), and *C. strigillosa* (H).

29. Dendritic hairs with well-developed axis and many long terete arms (Figures 169–176): The parallel evolution of this hair type in eight of the sections of *Miconia* is notable.

Centronia crassiramis (LL), *Axinaea sclerophylla* (LL), *Cambessedesia pityrophylla* (H), *C. salviaefolia* (UL), *Brachyotum maximowiczii* (LL), *Conostegia attenuata* (H), *C. xalapensis* (LL), *Miconia amazonica* (LL), *M. ancistrophora* (LL), *M. aplostachya* (LL), *M. argentea* (LL), *M. biglandulosa* (LL), *M. budlejoides* (LL), *M. burchellii* (LU), *M.*

cyathanthera (LL), *M. delicatula* (LL), *M. dipsacea* (LL), *M. dispar* (LL), *M. dodecandra* (LL), *M. fasciculata* (LL), *M. impetolaris* var. *pandurifolia* (LL), *M. inconspicua* (LL), *M. magdalenae* (LL), *M. multiglandulosa* (LL), *M. oligocephala* (LL), *M. penicillata* (LL), *M. sclerophylla* (LL), *M. serrulata* (LL), *M. sessilifolia* (LL), *M. superba* (LL), *M. tetrandra* (LL), *M. tomentosa* (LL), *M. versicolor* (LL), *Heterotrichum umbellatum* (LL), *Pachyanthus cubensis* (H), *P. reticulatus* (LL), *Tetrazygia angustifolia* (LL), and *Calycogonium domatiatum* (LL).

30. Dendritic hairs with short thin-walled (flattened) arms (Figures 177–180):

Graffenrieda rotundifolia (H), *Miconia gentryi* (LL), *M. ledifolia* (LL), *Tetrazygia tuerckheimii* (LL), *Blakea calycosa* (LL), *B. longipes* (LL), *B. nodosa* (LL), *Topobea castaneda* (LL), *T. longiloba* (UL, LL), and *T. parasitica* (LL).

31. Dendritic hairs with moderately long thin-walled arms (Figures 181–190): This hair type perhaps occurs in more species of Melastomataceae (including seven sections of *Miconia*) than any other category of roughened hairs.

Meriania macrophylla (LL), *M. radula* (LL), *Merianthera sipolisii* (LL), *Graffenrieda fruticosa* (H), *Conostegia cinnamomea* (LL, H), *C. dentata* (H), *Miconia alborufescens* (LL), *M. anderssonii* (UL), *M. cremadena* (LL), *M. delicatula* (LL), *M. elata* (LL), *M. heliotropoides* (LL), *M. hylophila* (UL, LL, H), *M. luteynii* (LL), *M. ochracea* (LL), *M. plethorica* (LL), *M. plumifera* var. *bangii* (LL), *M. pubipetalata* (UL, LL), *M. rufiramea* (LL), *M. tamana* (LL), *M. tiri* (LL), *Tetrazygia hispida* (LL), *T. longicollis* (LL), *T. tuerckheimii* (H), *Charianthus fadyenii* (LL, H), *C. purpureus* var. *brevisetosus* (LL), *Calycogonium domatiatum* (LL), *C. rhamnoides* (LL), *Tococa spadiciflora* (H), *Clidemia densiflora* (LL), *C. dimorphica* (H), *C. septuplinervia* (UL), *C. sessiliflora* (UL), *C. sprucei* (H), *Mecranium puberulum* (LL), *Leandra consimilis* (LL, H), *L. crenata* (LL, H), *L. macropora* (LL), *L. multuplinervis* (LL), *Ossaea pauciflora* (LL), *O. quinquenervia* (LL), *O. verrucosa* (UL), *Blakea argentea* (H), *B. calycosa* (UL), *B. jativae* (UL), *B. mexiae* (LL), *B. paludosa* (LL), *B. stellaris* (LL), *Topobea castaneda* (LL), *T. ferruginea* (UL, LL), *T. glabrescens* (UL), *T. parasitica* (UL, LL), and *T. pittieri* (UL).

32. Dendritic hairs with thin-walled arms and warty axis (Figures 191, 192):

Leandra subseriata (H).

33. Dendritic hairs with long thin-walled arms (Figures 193–196):

Meriania calophylla (LL, H), *Conostegia caelestis* (UL), *Miconia alata* (LL), *M. caudata* (LL), *M. eichleri* (LL), *M.*

guaiquinimae (LL), *M. holosericea* (LL), *M. irwinii* (LL), *M. jahnii* (LL), and *Tetrazygia crotonifolia* (LL).

34. Vermiform (lanate) hairs (Figures 197–200): In previous taxonomic descriptions, this pubescence (low-power magnification) generally has been termed “formless.”

Cambessedesia pityrophylla (LL), *Marcetia lanuginosa* (LL), *Mallophyton chimantense* (LL), *Tibouchina crassiramis* (LL), *Miconia cladonia* (LL), *M. crassifolia* (LL), *M. fuerstii* (LL), *M. hypoleuca* (LL), *M. lourteigiana* (LL), *M. lutescens* (LL), *M. salicifolia* (LL), and *M. stenostachya* (LL).

35. Flattened and proximally attached leaf hairs (scales) (Figures 201–204):

Tibouchina aegopogon (LL), *T. aspera* (UL), *T. catherinae* (LL), *T. dissitiflora* (LL), *T. duidae* (LL), *T. edmundoi* (LL), *T. fraterna* (UL), *T. karstenii* (UL), *T. mathaei* (UL), *T. melastomoides* (UL, LL), *T. papyrus* (UL), *T. praecox* (UL), *T. tamberlikii* (UL, LL), *T. sp.* Anderson 7364 (UL, LL), and *Pterolepis cataphracta* (LL).

36. Hypanthial scales, proximally attached (Figures 205–208):

Tibouchina barbigerata, *T. bipenicillata*, *T. edmundoi*, *T. guaraensis*, *T. irwinii*, *T. llanorum*, *T. karstenii*, *T. praecox*, *T. tamberlikii*, and *T. sp.* Anderson 7364.

37. Leaf scales, with basal ear (Figures 209–212): The scales with basal ears are especially prominent on young branchlets and along the primary leaf veins beneath. Flattened scales seem restricted to three sections of *Tibouchina*: *Tibouchina*, *Lepidoteae*, and *Barbigerae*. “Zotten” of *T. pogonantha* and *T. mathaei* were illustrated by Pflaum (1897, figs. 14, 15).

Tibouchina aegopogon (LL), *T. aspera* (LL), *T. aspera* var. *asperrima* (LL), *T. catherinae* (LL), *T. dissitiflora* (LL), *T. duidae* (LL), *T. fraterna* (LL, H), *T. gleasoniana* (LL, H), *T. guaraensis* (LL), *T. inopinata* (LL), *T. paleacea* (LL), *T. sipapoana* (LL), *T. spruceana* (LL), *T. striphnocalyx* (LL), and *T. sp.* Anderson 7364 (LL).

38. Lepidote hairs with radii fused one-third or less (Figures 213–216):

Miconia abbreviata (LL), *M. centronioides* (LL), *M. idroboi* (LL), *M. lepidota* (LL), *M. plukenetii* (LL), and *M. pseudoaplostachya* (LL).

39. Lepidote hairs with radii $\frac{2}{3}$ –completely fused (Figures 217–228): Hardin (1976) distinguished “fused-stellate” hairs (with radii fused up to $\frac{2}{3}$) and “squamate” hairs (radii fused more than $\frac{2}{3}$). Gottschall (1900, figs. 18a, 18b) illustrated a “Schildhaar” of *Miconia tiliaefolia*.

Miconia amnicola (LL, H), *M. urceolata* (LL), and *Tetrazygia bicolor* (LL).

42. Pterolepid hairs, essentially smooth, with gland-tipped branches (Figures 229–232):

Pterolepis cataphracta, *P. pumila*, and *P. riedeliana*.

43. Pterolepid hairs, eglandular and essentially smooth (Figures 233, 234):

Pterolepis glomerata, *P. maritima*, *P. paludosa*, and *P. rotundifolia*.

44. Pterolepid hairs, roughened and with branches in part gland-tipped (Figures 235, 236):

Pterolepis alpestris var. *imbricata*.

45. Pterolepid hairs, eglandular and roughened (Figures 237–242): Anatomical details of the “stomates” found on the trunks of intersepal hairs in many species of *Pterolepis* are being studied further by W.L. Stern. Reports of such apertures on hairs have not been found in older literature. Judy Neuhauser was the first to notice the apertures, during the beginning of the SEM survey of melastome hairs.

Tibouchina catherinae and *Pterolepis pauciflora* var. *hirsutissima*.

46. Epicuticular waxes (Figures 243, 244): No systematic search was made for epicuticular waxes (Baker, 1982), such excretions undoubtedly being of wider occurrence in the melastomes than here indicated.

Pterolepis rotundifolia (H), *Miconia luteynii* (UL), *Mommsenia apleura* (UL), *Tococa aristata* (UL), *Llewelynina williamsii* (LL), *Ossaea pauciflora* (UL), *O. rufescens* (UL), *Blakea hydraeformis* (UL), *B. mexiae* (LL), and *Topobea ferruginea* (LL).

Appendix

Material Studied

(Indument types listed are those that were micrographed and do not necessarily represent all types that may be found in any particular taxon.)

Name	Collector	Locality	Figures	Indument type(s)
<i>Acisanthera alsinaefolia</i> (DC.) Triana	Hatschbach 8502	Brazil		1
<i>Adelobotrys barbata</i> Triana	Maguire et al. 41474	Venezuela	137	22
<i>Adelobotrys boissieriana</i> Cogn.	H. Lugo 2	Ecuador		22
<i>Adelobotrys intonsa</i> (Gleason) Wurdack	Rimachi 1128	Peru	73	11
<i>Anaetocalyx bracteosa</i> Triana	Wurdack et al. 2714	Venezuela	81, 101	11, 15
<i>Appendicularia thymifolia</i> (Bonpl.) DC.	Cowan & Soderstrom 1942	Guyana		1
<i>Axinaea sclerophylla</i> Triana	Espinosa 1553	Ecuador	157	26, 29
<i>Bertonia maculata</i> DC.	Harley et al. 16139	Brazil	27, 105	1-3, 16
<i>Blakea allotricha</i> Uribe	Romero Castañeda 2872	Colombia	71	10, 22
<i>Blakea argentea</i> Gleason	Rivera et al. 761	Colombia		31
<i>Blakea calycosa</i> Gleason	Liesner 933	Panama		30, 31
<i>Blakea calyptrata</i> Gleason	Cuatrecasas 15535	Colombia	136, 163, 164, 189	21, 26, 27, 31
<i>Blakea glandulosa</i> Gleason	H. Lugo 5071	Ecuador	26	1, 9
<i>Blakea hydraeformis</i> Wurdack	Cuatrecasas 14032	Colombia		21, 46
<i>Blakea jativae</i> Wurdack	Jativa & Epling 1128	Ecuador		31
<i>Blakea longipes</i> Uribe	Llano & Ruiz 300	Colombia		30
<i>Blakea mexiae</i> Gleason	Asplund 12494	Peru		31, 46
<i>Blakea nodosa</i> Wurdack	van Rooden et al. 434	Colombia		30
<i>Blakea paludosa</i> Gleason	Woytkowski 5567	Peru		31
<i>Blakea stellaris</i> Gleason	Cuatrecasas 16129	Colombia		31
<i>Blakea trinervia</i> L.	Wurdack 2610	Jamaica	44	4
<i>Blakea wilburiana</i> Almeda	Luteyn 1202	Panama	83	11, 16
<i>Boyania ayangannae</i> Wurdack	Maguire & Fanshawe 32405	Guyana	225	16, 40
<i>Brachyotum angustifolium</i> Wurdack	Wurdack 1697	Peru	98	15, 16
<i>Brachyotum cogniauxii</i> Wurdack	Wurdack 1268	Peru		17, 20
<i>Brachyotum confertum</i> (Bonpl.) Triana	Haught 3329	Ecuador		16
<i>Brachyotum gleasonii</i> Wurdack	Oldeman 3413	Ecuador		17, 20
<i>Brachyotum ledifolium</i> (Desr.) Triana	Maguire & Maguire 44233	Ecuador		16, 17
<i>Brachyotum lycopodioides</i> Triana	Wurdack 1411	Peru		15
<i>Brachyotum maximowiczii</i> Cogn.	Wurdack 577	Peru		17, 20, 29
<i>Brachyotum multituberculatum</i> Wurdack	Wurdack 1606	Peru	130	15, 20
<i>Brachyotum quinquenerve</i> (R. & P.) Triana	Hutchinson & Wright 5915	Peru		17
<i>Brachyotum radula</i> Triana	Wurdack 1267	Peru		17, 20
<i>Brachyotum rostratum</i> (Naud.) Triana	Wurdack 1190	Peru		20
<i>Brachyotum rugosum</i> Wurdack	Maguire & Maguire 44361	Ecuador		12, 20
<i>Brachyotum weberbaueri</i> Cogn.	Wurdack 1635	Peru	131, 132	20
<i>Calycogonium calycopteris</i> (Rich.) Urb.	Leonard & Leonard 15216	Haiti	151	3, 25
<i>Calycogonium cocoense</i> Alain	Acuña 12640	Cuba	186	31

Name	Collector	Locality	Figures	Indument type(s)
<i>Calycogonium domatium</i> Urb. & Ekm.	Liogier 19499	Dominican Republic	78, 227	11, 29, 31, 41
<i>Calycogonium krugii</i> Cogn.	Stimson 1260	Puerto Rico	100	2, 14, 15
<i>Calycogonium rhamnoides</i> Naud.	Proctor 23864	Jamaica		18, 31
<i>Calycogonium squamulosum</i> Cogn.	Howard 16630	Puerto Rico	217	39
<i>Cambessedesia cambessedesoides</i> (Wurdack) A.B. Martins	Mori et al. 12576	Brazil	33, 158	3, 26
<i>Cambessedesia corymbosa</i> DC.	Irwin et al. 20164	Brazil		5
<i>Cambessedesia latevenosa</i> DC.	Anderson 8890	Brazil		1
<i>Cambessedesia pityrophylla</i> (DC.) A.B. Martins	Sellow 1150/1726	Brazil		29, 34
<i>Cambessedesia salviaefolia</i> (Cham.) A.B. Martins	Maguire et al. 49170	Brazil		1, 29
<i>Centradenia floribunda</i> Planchon	Heyde & Lux 3332	Guatemala		1, 16
<i>Centronia crassiramis</i> Triana	Steyermark 60253	Venezuela		29
<i>Chaetolepis lindeniana</i> (Naud.) Triana	Wurdack et al. 2769	Venezuela	126	17, 19, 20
<i>Chaetolepis microphylla</i> (Bonpl.) Miquel	Wurdack et al. 2773	Venezuela	114, 165	17, 28
<i>Charianthus fadyenii</i> (Hook.) Griseb.	Webster & Wilson 5071	Jamaica	185	30, 31
<i>Charianthus purpureus</i> Don var. <i>brevisetosus</i> Hodge	Proctor 17330	Grenada		31
<i>Clidemia allardii</i> Wurdack	Allard 21370	Peru		6, 9, 10, 11, 16
<i>Clidemia bullosa</i> DC.	Steyermark 106157	Venezuela	147	1, 10, 23, 24
<i>Clidemia ciliata</i> Don	Wurdack et al. 2750	Venezuela	69	10
<i>Clidemia conglomerata</i> DC.	Jansen-Jacobs 2572	Guyana		2, 9, 16, 17
<i>Clidemia cuatrecasasii</i> Wurdack	Cuatrecasas 16623	Colombia	12, 109, 116, 187	4, 16, 17, 21, 30
<i>Clidemia densiflora</i> (Standley) Gleason	Contreras 9959	Guatemala	178	2, 4, 16, 30, 31
<i>Clidemia dimorphica</i> Macbride	Asplund 19453	Ecuador	144	9, 23, 31
<i>Clidemia fuertesii</i> Cogn.	Liogier 15776	Dominican Republic	59	1, 6, 7
<i>Clidemia globulifera</i> (Triana) L. Wms.	Burger & Gentry 9028	Costa Rica	30, 200	1, 2, 4, 11, 17, 34
<i>Clidemia hirta</i> (L.) Don	Maguire & Politi 27365	Venezuela		1, 2, 10, 11, 28
<i>Clidemia japurensis</i> DC.	de la Cruz 3926	Guyana	51	1, 6, 11
<i>Clidemia octona</i> (Bonpl.) L. Wms.	Tún Ortiz 1361	Guatemala	25	1, 24
<i>Clidemia petiolaris</i> (S. & C.) Schl. ex Triana	Koch et al. 78218	Mexico		2, 3, 10, 11
<i>Clidemia pustulata</i> DC.	Maguire 33725	Venezuela		1, 3, 24
<i>Clidemia radicans</i> Cogn.	Dressler 5013	Panama		3, 23
<i>Clidemia rubra</i> (Aubl.) Mart.	de la Cruz 2470	Guyana	52	1, 6, 11
<i>Clidemia septuplinervia</i> Cogn.	McDaniel & Rimachi 18530	Peru	63	6, 9, 31
<i>Clidemia sessiliflora</i> (Naud.) Cogn.	Killip & A.C. Smith 25648	Peru		2, 6, 9, 22, 31
<i>Clidemia simpsonii</i> Wurdack	McDaniel & Rimachi 18887	Peru	68	1, 10
<i>Clidemia spectabilis</i> Gleason	Utley & Utley 5598	Costa Rica		2, 11
<i>Clidemia sprucei</i> Gleason	Wurdack 2521	Peru		1, 3, 6, 11, 23, 31
<i>Clidemia strigillosa</i> (Sw.) DC.	Anderson & Sternberg 3215	Jamaica		1, 10, 15, 24, 28
<i>Clidemia submontana</i> Rose ex Gleason	McVaugh 15993	Mexico	80	3, 11, 17
<i>Clidemia urceolata</i> DC.	Hatschbach 26246	Brazil		1, 10, 11

Name	Collector	Locality	Figures	Indument type(s)
<i>Comolia lanceaeflora</i> (DC.) Triana	Irwin et al. 13566	Brazil	24, 48	1, 5
<i>Comolia sertularia</i> (DC.) Triana	Irwin et al. 22581	Brazil		1
<i>Conostegia attenuata</i> Triana	Mexia 8485	Ecuador		25, 29
<i>Conostegia bracteata</i> Triana	Shattuck 876	Panama		3, 16
<i>Conostegia brenesii</i> Standley	Tonduz 12580	Costa Rica		16, 24
<i>Conostegia caelestis</i> Standley	L. Williams & Molina 17778	Honduras	77	11, 24, 33
<i>Conostegia centronioides</i> Markgraf	Játiva & Epling 2090	Ecuador		25
<i>Conostegia cinnamomea</i> (Beurling) Wurdack	Duke 8717	Panama		31
<i>Conostegia dentata</i> Triana	Cuatrecasas 17280	Colombia		11, 25, 31
<i>Conostegia lasiopoda</i> Benth.	Holdridge 5167	Costa Rica	14	9, 25, 28
<i>Conostegia lindenii</i> Cogn.	Ekman 12273	Dominican Republic	149	4, 25
<i>Conostegia micrantha</i> Standley	Jiménez 734	Costa Rica		25
<i>Conostegia plumosa</i> L. Wms.	Roe et al. 1371	Mexico		25
<i>Conostegia setosa</i> Triana	Standley 37105	Costa Rica	43, 108	2, 4, 16
<i>Conostegia speciosa</i> Naud.	Standley 26530	Panama		9, 11, 22, 24, 25
<i>Conostegia subcrustulata</i> (Beurling) Triana	Skutch 2503	Costa Rica	62, 194	9, 16, 25, 28, 32
<i>Conostegia xalapensis</i> (Bonpl.) Don ex DC.	Reveal & Harley 4047	Mexico		25, 29
<i>Cyphostyla strigosa</i> Gleason	Jaramillo & Lozano 4994	Colombia	40, 84	3, 11
<i>Desmoscelis villosa</i> (Aubl.) Naud.	Maguire & Maguire 40216	Brazil		16
<i>Ernestia pullei</i> Gleason	Schulz & Donselaar 10543	Surinam	89	1, 13
<i>Ernestia tenella</i> (Bonpl.) DC.	Maguire et al. 36394	Venezuela		1
<i>Farringtonia fasciculata</i> Gleason	Wurdack & Adderley 42976	Venezuela	138	1, 22
<i>Graffenrieda cucullata</i> (Don) L. Wms.	H. Lugo 1121	Ecuador	41	4
<i>Graffenrieda fruticosa</i> Wurdack	Maguire et al. 37085	Venezuela	49	6, 31
<i>Graffenrieda rotundifolia</i> (Bonpl.) DC.	Wurdack & Monachino 41081	Venezuela		6, 30
<i>Graffenrieda scandens</i> (Gleason) Wurdack	Játiva & Epling 1142	Ecuador	177	29
<i>Henriettea lasiostylis</i> Pilger	Schunke 169	Peru	153	2, 11, 21, 25
<i>Henriettea multiflora</i> Naud.	Wurdack 333	Venezuela	135, 196	2, 16, 21, 33
<i>Henriettea ramiflora</i> (Sw.) DC.	Wurdack 2627	Jamaica		17, 21
<i>Henriettella fascicularis</i> (Sw.) Triana	Proctor 8454	Jamaica	117	2, 17
<i>Henriettella ovata</i> Cogn.	Prance & Silva 59405	Brazil		2, 3, 21
<i>Henriettella squamata</i> Alain	Clemente 4133	Cuba	220	38
<i>Henriettella tuberculosa</i> Donn. Smith	Skutch 2190	Costa Rica	82, 102	2, 11, 15
<i>Heterocentrum glandulosum</i> Schenk	Almeda et al. 15771	Costa Rica		1, 16
<i>Heterotrichum angustifolium</i> DC.	Ekman 11898	Dominican Republic	243	11, 28, 46
<i>Heterotrichum angustifolium</i> DC.	Howard 12179	Dominican Republic		11, 28, 46
<i>Heterotrichum umbellatum</i> (Mill.) Urb.	G.S. Miller 1242	Dominican Republic		1, 28, 29
<i>Kirkbridea tetramera</i> Wurdack	Kirkbride 2004	Colombia		3, 11, 16
<i>Lavoisiera glandulifera</i> Naud.	Heringer 6186	Brazil		1
<i>Lavoisiera mucorifera</i> DC.	Hatschbach 36469	Brazil	23	1
<i>Lavoisiera ordinata</i> Wurdack	Anderson 6381	Brazil	3	1, 7
<i>Leandra amplexicaulis</i> DC.	Klein & Bresolin 10820	Brazil	124	2, 3, 11, 18
<i>Leandra bergiana</i> Cogn.	Klein & Bresolin 9776	Brazil	60	1, 3, 6, 8, 11
<i>Leandra caquetensis</i> Gleason	Oldeman & Arevalo 81	Ecuador		3, 11

Name	Collector	Locality	Figures	Indument type(s)
<i>Leandra clidemioides</i> (Naud.) Wurdack	de Granville C127	French Guiana	110	9, 16
<i>Leandra consimilis</i> Gleason	Ebinger 111	Panama		31
<i>Leandra cordifolia</i> (Naud.) Cogn.	Hatschbach 35501	Brazil		1, 2
<i>Leandra cornoides</i> (S. & C.) Cogn.	Pringle 7787	Mexico		2, 26
<i>Leandra crenata</i> (Don) Cogn.	Wurdack 719	Peru		10, 11, 14, 25, 31
<i>Leandra dasytricha</i> (A. Gray) Cogn.	Duarte 991	Brazil		2, 3, 11, 17, 24
<i>Leandra erostrata</i> (DC.) Cogn.	Irwin et al. 29267	Brazil		16, 17, 25
<i>Leandra macropora</i> (Triana) Cogn.	Reitz & Klein 7812	Brazil	53, 70	6, 10, 11, 31
<i>Leandra melastomoides</i> Raddi	Atala 292	Brazil	103	3, 11, 15
<i>Leandra mexicana</i> (Naud.) Cogn.	Standley 24180	Guatemala		1, 2, 11
<i>Leandra microphylla</i> Cogn.	L.B. Smith et al. 14492	Brazil	118	3, 17
<i>Leandra multuplinervis</i> (Naud.) Cogn.	Molina 26152	Honduras	8	9, 11, 14, 18, 25, 31
<i>Leandra multuplinervis</i> (Naud.) Cogn.	Pabst et al. 9136	Brazil	64, 94	9, 11, 14, 18, 25, 31
<i>Leandra nervosa</i> (Naud.) Cogn.	Wurdack 1032	Peru	148, 192	9, 10, 24, 25, 32
<i>Leandra secunda</i> (Don) Cogn.	Killip & A.C. Smith 26557	Peru		3, 11
<i>Leandra sublanata</i> Cogn.	Dombrowski 2893	Brazil	168	3, 11, 14, 17, 24, 26, 28
<i>Leandra subseriata</i> (Naud.) Cogn.	Wurdack et al. 2720	Venezuela	188	11, 24, 31, 32
<i>Leandra sulfurea</i> (Naud.) Cogn.	Imaguire 504	Brazil	154, 175	25, 29
<i>Llewelynina williamsii</i> Pittier	Williams & Alston 151	Venezuela	96	14, 46
<i>Loreya umbellata</i> (Gleason) Wurdack	García-Barriga 14420	Colombia		2, 16
<i>Macairea albiflora</i> Cogn.	Maguire & Wurdack 34503	Venezuela	2, 159	7, 14, 18, 26
<i>Macairea parvifolia</i> Benth.	Maguire & Wurdack 33792	Venezuela	47	5
<i>Macairea rufescens</i> DC.	Maguire et al. 41709	Venezuela		11
<i>Macairea spruceana</i> Triana	Maguire & Wurdack 35611	Venezuela	42, 76	4, 11
<i>Macrocentrum brevipedicellatum</i> Wurdack	Wurdack et al. 2820	Venezuela		1, 12
<i>Macrocentrum minus</i> Gleason	Wurdack et al. 2828	Venezuela		1
<i>Macrocentrum vestitum</i> Sandwith	Cowan & Soderstrom 1730	Guyana	1, 34	1, 3, 11
<i>Maguireanthus ayangannae</i> Wurdack	Maguire et al. 40579	Guyana	22, 141	1, 23
<i>Maieta guianensis</i> Aubl.	Mexia 6357	Brazil	152	1, 9, 11, 18, 25
<i>Maieta poeppigii</i> Mart. ex Triana	Gillett & Sampson 16499	Colombia		1, 3, 25
<i>Mallophyton chimantense</i> Wurdack	Steyermark & Wurdack 766	Venezuela		34
<i>Marcetia formosa</i> Wurdack	Harley 15452	Brazil		3
<i>Marcetia harleyi</i> Wurdack	Harley 15094	Brazil		3, 9
<i>Marcetia harleyi</i> Wurdack	Harley 15841	Brazil	35, 61	3, 9
<i>Marcetia lanuginosa</i> Wurdack	Harley 15714	Brazil	92	1, 2, 14, 34
<i>Marcetia latifolia</i> Naud.	Irwin et al. 32616	Brazil		5
<i>Marcetia macrophylla</i> Wurdack	Harley 18667	Brazil		1, 4, 11
<i>Marcetia sincorensis</i> Wurdack	Mori et al. 12657	Brazil		5
<i>Marcetia taxifolia</i> (St. Hil.) DC. var. <i>glandulosa</i> (DC.) Cogn.	Irwin et al. 28096	Brazil		1, 5
<i>Marcetia viscida</i> Wurdack	Harley 15162	Brazil		3
<i>Mecranium puberulum</i> Cogn.	Ekman H2787	Haiti		2, 31
<i>Meriania acida</i> (Markgraf) Wurdack	Hutchison 6393	Peru		21
<i>Meriania calophylla</i> (Cham.) Triana	Eupunino 28	Brazil		33

Name	Collector	Locality	Figures	Indument type(s)
<i>Meriania macrophylla</i> (Benth.) Triana	Maguire & Maguire 60415	Costa Rica		31
<i>Meriania radula</i> (Benth.) Triana	Wurdack 658	Peru	91	14, 31
<i>Meriania sclerophylla</i> (Naud.) Triana	Wurdack et al. 2837	Venezuela	113, 181	3, 17, 31
<i>Meriania speciosa</i> (Bonpl.) Naud.	H. Lugo 4624	Ecuador	21	1
<i>Meriania steyermarkii</i> Gleason	Wurdack et al. 2736	Venezuela	133	21
<i>Meriania urceolata</i> Triana	Wurdack et al. 2845	Venezuela	169, 193	29, 33
<i>Merianthera sipolisii</i> (Glaz. & Cogn.) Wurdack	Irwin et al. 28276	Brazil		31
<i>Miconia abbreviata</i> Markgraf	Prance et al. 10483	Brazil		38
<i>Miconia adenocalyx</i> Urb. & Ekm.	Liogier 11503	Dominican Republic	150	25
<i>Miconia alata</i> (Aubl.) DC.	Maguire & Wurdack 33779	Venezuela	50	6, 14, 22, 33
<i>Miconia alata</i> (Aubl.) DC.	Sastre 1586	French Guiana		6, 14, 22, 33
<i>Miconia albicans</i> (Sw.) Triana	Maguire & Maguire 40259	Brazil	199	34
<i>Miconia alborufescens</i> Naud.	Duarte 1359	Brazil		31
<i>Miconia amazonica</i> Triana	McDaniel & Rimachi 18861	Peru		29
<i>Miconia amnicola</i> Wurdack	Schunke 158	Peru		40
<i>Miconia ancistrophora</i> (C. Wr. ex Sauv.) Triana	Shafer 12282	Cuba	99	15, 29
<i>Miconia anderssonii</i> Wurdack	Harling & Andersson 19235	Ecuador	90	6, 13, 31
<i>Miconia aplostachya</i> (Bonpl.) DC.	Breteler 4884	Venezuela		29
<i>Miconia argentea</i> (Sw.) DC.	Jiménez 3906	Costa Rica		29
<i>Miconia aspergillarlis</i> (Bonpl.) Naud.	Harling & Anderson 13173	Ecuador		25, 28
<i>Miconia astroplocama</i> Donn. Smith	Nee 9755	Panama		28
<i>Miconia aulocalyx</i> Mart. ex Triana	Harling et al. 7419	Ecuador	214	38
<i>Miconia avia</i> Wurdack	Wurdack et al. 2766	Venezuela		1, 24
<i>Miconia barbinervis</i> (Benth.) Triana	McDaniel 6844	Panama		16, 22, 24
<i>Miconia biglandulosa</i> Gleason	Wurdack 1839	Peru		25, 29
<i>Miconia brevipes</i> Benth.	A.C. Smith 2475	Guyana		28
<i>Miconia budlejoides</i> Triana	Reitz & Klein 5109	Brazil		29
<i>Miconia burchellii</i> Triana	Irwin et al. 9279	Brazil		29
<i>Miconia calvescens</i> DC.	Wurdack 2576	United States		2, 23, 24
<i>Miconia caudata</i> (Bonpl.) DC.	Sprague 267	Colombia		33
<i>Miconia centronioides</i> Gleason	Cabrera 464	Colombia		38
<i>Miconia chrysophylla</i> (Rich.) Urb.	Lindeman et al. 477	Surinam	221	40
<i>Miconia cladonia</i> Gleason	Pennell 7498	Colombia		34
<i>Miconia cleefii</i> Uribe	Cleef 7880	Colombia		16, 25
<i>Miconia contrerasii</i> Wurdack	Lundell & Contreras 20896	Guatemala		24
<i>Miconia crassifolia</i> Triana	Wurdack 516	Peru		34
<i>Miconia cremadena</i> Gleason	Schnell 619	Costa Rica	36	3, 11, 31
<i>Miconia cuspidatissima</i> Pittier	Wilbur et al. 15225	Panama		24
<i>Miconia cyathanthera</i> Triana	Irwin et al. 29199	Brazil		29
<i>Miconia delicatula</i> A. Rich.	Killip 42758	Cuba		28, 29, 31
<i>Miconia diaphanea</i> Gleason	Cowan 38245	Brazil		24
<i>Miconia dipsacea</i> Naud.	Woytkowski 660	Peru		29
<i>Miconia dispar</i> Benth.	Maguire & Politi 28401	Venezuela		29
<i>Miconia dodecandra</i> (Desr.) Cogn.	Tillett & Tillett 45555	Guyana		29
<i>Miconia domingensis</i> Cogn.	Liogier 21406	Haiti		25
<i>Miconia dorsiloba</i> Gleason	Opler 1885	Costa Rica	146	3, 24

Name	Collector	Locality	Figures	Indument type(s)
<i>Miconia eichleri</i> Cogn.	Hatschbach 31030	Brazil		33
<i>Miconia eichleri</i> Cogn.	Klein & Bresolin 10648	Brazil		33
<i>Miconia elaeagnoides</i> Cogn.	McDaniel 14093	Peru	222	40
<i>Miconia elata</i> (Sw.) DC.	Proctor 20651	Jamaica		31
<i>Miconia fasciculata</i> Gardner	Almeida et al. 1392	Brazil		28, 29
<i>Miconia fuertesii</i> Cogn.	Liogier 12822	Dominican Republic		34
<i>Miconia fulvostellata</i> L. Wms.	Gentle 7333	Belize		28
<i>Miconia gentryi</i> Wurdack	Gentry et al. 28624	Panama/ Colombia border		3, 4, 6, 11, 16, 30
<i>Miconia glyptophylla</i> Wurdack	Camp E-4565	Ecuador		10
<i>Miconia guaiquinimae</i> Wurdack	Maguire et al. 46901	Venezuela		33
<i>Miconia guatemalensis</i> Cogn.	Atwood & Neill AN249	Nicaragua		11, 28
<i>Miconia heliotropoides</i> Triana	Irwin et al. 19011	Brazil		31
<i>Miconia heterochaeta</i> Wurdack	H. Lugo 5508	Ecuador	142	1, 10, 23, 24
<i>Miconia holosericea</i> (L.) DC.	Irwin et al. 11761	Brazil		33
<i>Miconia hookeriana</i> Triana	Hutchinson & Wright 5984	Peru		23, 24
<i>Miconia hylophila</i> Wurdack	Brandbyge et al. 33746	Ecuador		6, 31
<i>Miconia hypoleuca</i> (Benth.) Triana	Tillett & Tillett 44967	Guyana		34
<i>Miconia idroboi</i> Wurdack	Idrobo & Schultes 837	Colombia		38
<i>Miconia impetiolearis</i> (Sw.) Don var. <i>impetiolearis</i>	Proctor 6553	Jamaica		2, 28
<i>Miconia impetiolearis</i> (Sw.) Don var. <i>pandurifolia</i> Naud.	Almillategui 37	Panama		29
<i>Miconia inconspicua</i> Miquel	Hatschbach 32626	Brazil		29
<i>Miconia incurva</i> Gleason	Schnell 246	Costa Rica	173	28
<i>Miconia irwinii</i> Wurdack	Irwin et al. 12781	Brazil		33
<i>Miconia jahnii</i> Pittier	Wurdack et al. 2772	Venezuela		33
<i>Miconia ledifolia</i> (DC.) Naud.	Asplund 17985	Ecuador		30
<i>Miconia lepidota</i> DC.	Prance et al. 10434	Brazil		38
<i>Miconia liebmannii</i> Cogn.	Nelson 774	Mexico		24
<i>Miconia longispicata</i> Triana	Wurdack & Adderley 43494	Venezuela		28
<i>Miconia lourteigiana</i> Wurdack	Killip & A.C. Smith 29857	Peru		34
<i>Miconia lutescens</i> (Bonpl.) DC.	Rose et al. 23275	Ecuador		34
<i>Miconia luteynii</i> Wurdack	Luteyn et al. 7512	Colombia	87, 123	12, 14, 18, 31, 46
<i>Miconia macrothyrsa</i> Benth.	Irwin et al. 25090	Brazil		25, 28
<i>Miconia magdalenae</i> Triana	Haught 6255	Colombia		29
<i>Miconia mansfieldiana</i> Urb. & Ekm.	Ekman 11737	Dominican Republic		25
<i>Miconia meridensis</i> Triana	Wurdack et al. 2718	Venezuela		23, 28
<i>Miconia mirabilis</i> (Aubl.) L. Wms.	A.C. Smith 10352	Guadeloupe	172	29
<i>Miconia multiglandulosa</i> Cogn.	Ekman H4347	Haiti		1, 29
<i>Miconia multispicata</i> Naud.	Prance et al. 9730	Brazil		28
<i>Miconia multispicata</i> Naud.	Proctor 30014	Jamaica		28
<i>Miconia nigricans</i> Cogn.	Wurdack 1261	Peru	182	31
<i>Miconia obscura</i> (Bonpl.) Naud.	Maguire & Maguire 44362	Ecuador		11, 15
<i>Miconia ochracea</i> Triana	Asplund 17014	Ecuador		31
<i>Miconia ochracea</i> Triana	Cuatrecasas 20794	Colombia		31
<i>Miconia oligocephala</i> Donn. Smith	Breedlove 14981	Mexico		29
<i>Miconia penicillata</i> Gleason	López Figueiras 8313	Colombia	93	14, 24, 29
<i>Miconia plethorica</i> Naud.	Uribe 5646	Colombia		31

Name	Collector	Locality	Figures	Indument type(s)
<i>Miconia plukenetii</i> Naud.	Cowan 1483	Trinidad		38
<i>Miconia plumifera</i> Triana var. <i>bangii</i> Cogn.	Bang 2283	Bolivia		2, 10, 31
<i>Miconia pseudoaplostachya</i> Cogn.	Holt & Gehrig 290	Venezuela		38
<i>Miconia pubipetala</i> Miquel	Wurdack & Adderley 43529	Venezuela		31
<i>Miconia pustulata</i> Naud.	Mexia 7707	Ecuador		28
<i>Miconia rubiginosa</i> (Bonpl.) DC.	Maguire 27257	Venezuela		24
<i>Miconia rufescens</i> (Aubl.) DC.	Maguire & Maguire 40218	Brazil	166	28
<i>Miconia rufiramea</i> Wurdack	Dudley 11143	Peru		4, 31
<i>Miconia rugosa</i> Triana	Prance et al. 2245	Brazil		28
<i>Miconia russea</i> Wurdack	Harling & Andersson 12812	Ecuador	65	1, 10
<i>Miconia salicifolia</i> (Bonpl.) Naud.	Asplund 18240	Ecuador		34
<i>Miconia schlimii</i> Triana	Schnell 520	Costa Rica		28
<i>Miconia sclerophylla</i> Triana	Irwin et al. 20156	Brazil		29
<i>Miconia serrulata</i> (DC.) Naud.	Tillett & Tillett 45325	Guyana		29
<i>Miconia sessilifolia</i> Naud.	Plowman & Davis 5169	Bolivia		29
<i>Miconia stenostachya</i> DC.	Hatschbach 38801	Brazil		34
<i>Miconia superba</i> Ule	Bunting 2936	Venezuela		11, 12, 28, 29
<i>Miconia superba</i> Ule	Wurdack 2818	United States		11, 12, 28, 29
<i>Miconia tabayensis</i> Wurdack	Wurdack et al. 2783	Venezuela		28
<i>Miconia tamana</i> Wurdack	Wurdack et al. 2803	Venezuela		31
<i>Miconia tetrandra</i> (Sw.) Don	Proctor 10092	Jamaica		29
<i>Miconia tiliaefolia</i> Naud.	Prance et al. 5429	Brazil	216	38
<i>Miconia tiri</i> Triana	Woytkowski 7998	Peru		31
<i>Miconia titanophylla</i> Gleason	Schultes & Cabrera 18939	Colombia	15, 143	23, 24, 28
<i>Miconia tomentosa</i> (Rich.) Don	Lindeman 1968	Surinam		25, 29
<i>Miconia trinervia</i> (Sw.) Don ex Loud.	Irwin et al. 48049	Brazil	213	28, 38
<i>Miconia tschudyoides</i> Cogn.	Donselaar 2404	Surinam		11, 16
<i>Miconia urceolata</i> Urb.	Ekman 15644	Cuba		39
<i>Miconia versicolor</i> Naud.	Cuatrecasas 19433	Colombia		29
<i>Microlepis oleaefolia</i> (DC.) Triana	Hatschbach et al. 13924	Brazil	170	29
<i>Microlicia albida</i> Pilger	Irwin et al. 25001	Brazil	75	7, 11
<i>Microlicia fulva</i> (Spreng.) Cham.	Irwin et al. 28796	Brazil		7, 14
<i>Microlicia macrophylla</i> Naud.	Anderson 8627	Brazil	45	1, 5
<i>Microlicia vestita</i> DC.	Hatschbach et al. 36356	Brazil		11
<i>Microlicia virgata</i> Cogn.	Duarte 8248	Brazil		1
<i>Mommsenia apleura</i> Urb. & Ekm.	Ekman 2366	Haiti	218, 219	39, 46
<i>Monochaetum bonplandii</i> (Kunth) Naud.	Wurdack et al. 2711	Venezuela		11
<i>Monochaetum discolor</i> Karst. ex Triana	Ruiz Terán 9211	Venezuela	115, 127	17, 19
<i>Monochaetum lineatum</i> (Don) Naud.	Wurdack et al. 2793	Venezuela		17
<i>Monochaetum mariae</i> Wurdack	Ruiz Terán et al. 8119	Venezuela	11	16, 17, 21, 27
<i>Monochaetum polyneuron</i> Triana	Pittier 12667	Venezuela		1, 11
<i>Monochaetum pulchrum</i> Decaisne	Bourgeau 3238	Mexico		17
<i>Monochaetum rotundifolium</i> Cogn. ex Gleason	Seifríz 92	Colombia	107	1, 16
<i>Monochaetum venosum</i> Gleason	Alston 7305	Colombia	171	1, 26, 29
<i>Myriaspora egensis</i> DC.	Pires 14874	Brazil		2, 3, 11
<i>Myrmidone macrosperma</i> (Mart.) Mart.	Maguire et al. 36395	Venezuela	67	1, 3, 10, 11
<i>Necramium gigantophyllum</i> Britton	Steyermark & Agostini 91096	Venezuela	56, 140	6, 22, 24
<i>Ossaea asperifolia</i> (Naud.) Triana	Proctor 10163	Jamaica	95, 104	2, 14, 15
<i>Ossaea boekei</i> Wurdack	Dodson 7390	Ecuador	38, 179	3, 30

Name	Collector	Locality	Figures	Indument type(s)
<i>Ossaea brenesii</i> Standley	Schnell 621	Costa Rica	223	4, 40
<i>Ossaea cucullata</i> Gleason	Croat 19037	Peru		6, 10, 11, 26
<i>Ossaea lomensis</i> Urb.	Howard 12234	Dominican Republic		25
<i>Ossaea pauciflora</i> (Naud.) Urb.	López Figueiras 285	Cuba	162	11, 26, 31, 46
<i>Ossaea quinquenervia</i> (Mill.) Cogn.	Pittier 4480	Panama	5, 111, 155	6, 16, 25, 31
<i>Ossaea rufescens</i> (Griseb.) C. Wr. ex Sauv.	Ekman 6843	Cuba		6, 10, 46
<i>Ossaea scabrosa</i> (L.) DC.	Proctor 7679	Jamaica	54, 55, 119	6, 15, 17
<i>Ossaea verrucosa</i> (Griseb.) Alain	Ekman 3109	Cuba		11, 15, 31
<i>Pachyanthus cubensis</i> A. Rich.	Killip 42755	Cuba	195	29, 33
<i>Pachyanthus discolor</i> Naud.	Clemente 4454	Cuba	183	31
<i>Pachyanthus reticulatus</i> Britton & Wilson	López Figueiras 227	Cuba	167	17, 28, 29
<i>Pleiochiton ebracteatum</i> Triana	Hatschbach 24190	Brazil	31	2
<i>Pterolepis alpestris</i> (DC.) Triana var. <i>alpestris</i>	Hatschbach 29925	Brazil	235, 236	44
<i>Pterolepis alpestris</i> (DC.) Triana var. <i>imbricata</i> Cogn.	Archer & Mello Barreto 4947	Brazil		44
<i>Pterolepis balansaei</i> Cogn.	Arbo et al. 1696	Paraguay	237-239	45
<i>Pterolepis cataphracta</i> (Cham.) Triana	Belém 1867	Brazil	122	3, 18, 35, 42
<i>Pterolepis glomerata</i> (Rottb.) Miquel	Sastre 192	French Guiana		43
<i>Pterolepis glomerata</i> (Rottb.) Miquel	Ernst 1231	Dominica		43
<i>Pterolepis glomerata</i> (Rottb.) Miquel	Santos 598	Brazil		43
<i>Pterolepis maritima</i> (St. Hil.) Cogn.	Rose & Russell 20694	Brazil		43
<i>Pterolepis paludosa</i> Cogn.	Mori 12350	Brazil		43
<i>Pterolepis parnassifolia</i> (DC.) Triana	Mori et al. 12637	Brazil	229-232	3, 11, 42
<i>Pterolepis pauciflora</i> (Naud.) Triana var. <i>hirsutissima</i> Cogn.	L.B. Smith 6946	Brazil		45
<i>Pterolepis pumila</i> (Bonpl.) Cogn.	Maguire et al. 36126	Venezuela		42
<i>Pterolepis riedeliana</i> Cogn.	Hatschbach 32437	Brazil		42
<i>Pterolepis rotundifolia</i> Wurdack	Harley 22550	Brazil		3, 16, 18, 43, 46
<i>Pterolepis salzmännii</i> (Naud.) Cogn.	Harley 17975	Brazil	233, 234	43
<i>Rhynchanthera dichotoma</i> (Desr.) DC.	Belém 3877	Brazil		1
<i>Salpinga glandulosa</i> (Gleason) Wurdack	Maguire et al. 42519	Venezuela		3
<i>Salpinga maguirei</i> Gleason	Steyermark & Bunting 103150	Venezuela	226	41
<i>Salpinga secunda</i> DC.	Schultes & Cabrera 16901	Colombia	85	3, 12
<i>Siphanthera arenaria</i> (DC.) Cogn.	Maguire et al. 49221	Brazil		1
<i>Siphanthera villosa</i> Cogn.	Irwin et al. 20893	Brazil		1, 11
<i>Siphanthera</i> sp.	Calderon et al. 2586	Brazil		1, 4, 22
<i>Siphanthera</i> sp.	Cid et al. 523	Brazil		1, 4, 22
<i>Stenodon suberosus</i> Naud.	Hatschbach 38804	Brazil	58	7, 11
<i>Svitramia pulchra</i> Cham.	Pereira 3133	Brazil	86	12
<i>Tateanthus duidae</i> Gleason	Maguire et al. 42227	Venezuela	46	3, 5
<i>Tessmanianthus calcaratus</i> (Gleason) Wurdack	Cuatrecasas 14191	Colombia	224	40
<i>Tetrazygia angustifolia</i> (Sw.) DC.	Little 26113	British Virgin Islands	191	29, 32
<i>Tetrazygia bicolor</i> (Mill.) Cogn.	Moldenke 774	United States		39

Name	Collector	Locality	Figures	Indument type(s)
<i>Tetrazygia crotonifolia</i> (Desr.) DC.	Jiménez 3601	Dominican Republic		33
<i>Tetrazygia discolor</i> (L.) DC.	Proctor 17233	Grenada	161, 174	26, 29
<i>Tetrazygia hispida</i> (Sw.) Macf.	Howard & Proctor 14190	Jamaica	6	11, 31
<i>Tetrazygia longicollis</i> Urb. & Cogn.	Ekman H4971	Haiti	215	31, 38
<i>Tetrazygia tuerckheimii</i> (Cogn.) Urb. & Cogn.	Liogier 12835	Dominican Republic		30, 31
<i>Tetrazygia urbanii</i> Cogn.	Howard 16649	Puerto Rico	184	31
<i>Tibouchina aegopogon</i> (Naud.) Cogn.	Heringer 7821-15	Brazil		2, 17, 35, 37
<i>Tibouchina anderssonii</i> Wurdack	Harling & Andersson 14174	Ecuador		11, 16
<i>Tibouchina aspera</i> Aubl. var. <i>aspera</i>	Maguire et al. 41465	Venezuela		35, 37
<i>Tibouchina aspera</i> Aubl. var. <i>asperrima</i> Cogn.	Maguire et al. 47000	Brazil	106	16, 37
<i>Tibouchina bahiensis</i> Wurdack	Santos 2716	Brazil	145	12, 24, 28
<i>Tibouchina barbigerata</i> (Naud.) Baill.	Ratter et al. R-1344	Brazil		36
<i>Tibouchina bipenicillata</i> (Naud.) Cogn.	Davidse 2798	Venezuela		11, 36
<i>Tibouchina calycina</i> Cogn. var. <i>parvifolia</i> Cogn.	Vargas 14722	Peru		15, 17, 21
<i>Tibouchina catharinae</i> Pittier	Maguire & Politi 28694	Venezuela		11, 16, 35, 37, 45
<i>Tibouchina catharinae</i> Pittier	Steyermark 105106	Venezuela		11, 16, 35, 37, 45
<i>Tibouchina chamaecistus</i> (Naud.) Cogn.	Webster et al. 9175	Martinique		11
<i>Tibouchina chamissoana</i> Cogn.	L.B. Smith et al. 14632	Brazil	198	1, 34
<i>Tibouchina crassiramis</i> Cogn.	Anderson 10016	Brazil		15, 34
<i>Tibouchina dimorphophylla</i> Gleason	Vargas 6258	Peru		16, 17
<i>Tibouchina dissitiflora</i> Wurdack	Maguire et al. 42453	Venezuela	206	35-37
<i>Tibouchina duidae</i> Gleason	Cowan & Wurdack 31169	Venezuela	16	35, 37
<i>Tibouchina edmundoi</i> Brade	Ribeiro 1359	Brazil		35, 36
<i>Tibouchina estrellensis</i> (Raddi) Cogn.	Pabst 7335	Brazil	129, 134	17, 20, 21
<i>Tibouchina fissinervia</i> (DC.) Cogn.	Harley 15823	Brazil		14, 17, 21
<i>Tibouchina fraterna</i> N.E. Brown	Wurdack et al. 2834	Venezuela		35, 37
<i>Tibouchina gleasoniana</i> Wurdack	Asplund 16227	Ecuador	20, 97	15, 37
<i>Tibouchina granulosa</i> (Desr.) Cogn.	Emygdio 419	Brazil	9, 10	11, 17, 21
<i>Tibouchina guaraensis</i> Wurdack in ed.	Irwin et al. 21306	Brazil		16, 36, 37
<i>Tibouchina inopinata</i> Wurdack	Wilbur & Stone 10491	Costa Rica	202	35, 37
<i>Tibouchina irwinii</i> Wurdack in ed.	Irwin et al. 11711	Brazil	28, 209	2, 16, 17, 36, 37
<i>Tibouchina karstenii</i> Cogn.	Cuatrecasas 7659	Colombia	210	35, 36, 37
<i>Tibouchina lepidota</i> (Bonpl.) Baill.	Wurdack et al. 2753	Venezuela	207, 211	14, 36, 37
<i>Tibouchina llanorum</i> Wurdack	Jaramillo et al. 333	Colombia	201	35, 36
<i>Tibouchina mathaei</i> Cogn.	Woytkowski 6053	Peru	205	35, 36
<i>Tibouchina melastomoides</i> (Naud.) Cogn.	Macedo 5358	Brazil		35
<i>Tibouchina microphylla</i> Cogn.	Irwin 2766	Brazil		11
<i>Tibouchina morii</i> Wurdack	Mori et al. 10726	Brazil		1, 11, 28
<i>Tibouchina oreophila</i> Wurdack	Mori & Benton 13592	Brazil	160	2, 17, 19, 20, 26
<i>Tibouchina ornata</i> (Sw.) Baill.	Sastre et al. 1917	Guadeloupe		2, 12
<i>Tibouchina paleacea</i> (Triana) Cogn.	von Sneidern 3086 bis	Colombia		15, 16, 37
<i>Tibouchina papyrus</i> (Pohl) Toledo	Macedo 3423	Brazil		35
<i>Tibouchina praecox</i> Wurdack in ed.	Irwin et al. 21208	Brazil	212	26, 35, 36, 37
<i>Tibouchina sipapoana</i> Gleason	Maguire & Politi 27658	Venezuela		37

Name	Collector	Locality	Figures	Indument type(s)
<i>Tibouchina spruceana</i> Cogn.	Bunting et al. 3548	Venezuela	17, 18, 125	19, 37
<i>Tibouchina stellipilis</i> Wurdack	Prance 4806	Brazil		11, 15, 24
<i>Tibouchina steyermarkii</i> Wurdack	Steyermark et al. 109325-A	Venezuela	203, 208	35, 36
<i>Tibouchina striphnocalyx</i> (DC.) Gleason	Schultes et al. 17998	Colombia	19, 204, 240-242	35, 37, 45
<i>Tibouchina tamberlikii</i> Wurdack in ed.	Hatschbach et al. 36046	Brazil		35, 36
<i>Tibouchina urvilleana</i> (DC.) Cogn.	Reitz & Klein 2794	Brazil		11
<i>Tibouchina</i> sp., sect. <i>Barbigerae</i>	Anderson 7364	Brazil		34, 35, 37
<i>Tococa aristata</i> Benth.	de la Cruz 1622	Guyana	37, 79	1, 3, 11, 46
<i>Tococa caquetana</i> Sprague	Mori et al. 9165	Brazil	4, 139	1, 2, 3, 10, 11, 22
<i>Tococa guianensis</i> Aubl.	Maguire et al. 41587	Venezuela	29	2, 3, 11
<i>Tococa obovata</i> Gleason subsp. <i>neblinensis</i> Wurdack	Maguire et al. 42270	Venezuela	66	1, 3, 10, 11
<i>Tococa spadiciiflora</i> Triana	Archer 1976	Colombia	7	11, 16, 17, 22, 31
<i>Topobea aeruginosa</i> (Standl.) L. Wms.	Yuncker et al. 6267	Honduras	72, 244	1, 4, 10, 16, 17, 46
<i>Topobea anisophylla</i> Triana	Cuatrecasas 23733	Colombia	32, 190	2, 4, 31
<i>Topobea castaneda</i> Wurdack	Killip & García 33212	Colombia	112	2, 4, 16, 30, 31
<i>Topobea cutucuensis</i> Wurdack	Madison 3424	Ecuador	228	2, 21, 41
<i>Topobea ferruginea</i> Gleason	Wurdack 34274	Venezuela		17, 31, 46
<i>Topobea glabrescens</i> Triana	Gentry & Fallen 17846	Colombia	88	12, 31
<i>Topobea longiloba</i> Wurdack	Bristol 378	Colombia		30
<i>Topobea parasitica</i> Aubl.	Oldeman B-3437	French Guiana	39	3, 30, 31
<i>Topobea pittieri</i> Cogn.	H. Lugo 2401	Ecuador		4, 31
<i>Topobea praecox</i> Gleason	Dressler & Williams 3958	Panama	180	30
<i>Topobea pubescens</i> Gleason	Forero et al. 4145	Colombia	156	25
<i>Topobea trianaei</i> Cogn.	Killip & Cuatrecasas 39088	Colombia	13, 120, 176	17, 29
<i>Topobea verrucosa</i> Wurdack	Madison 3566	Ecuador	128	4, 15, 17, 19, 24
<i>Trembleya laniflora</i> (Don) Cogn.	Hatschbach 29899	Brazil	197	34
<i>Trembleya neopyrenaica</i> Naud.	Anderson 9367	Brazil	57	1, 7
<i>Trembleya parviflora</i> (Don) Cogn. ssp. <i>heterostemon</i> (DC.) Cogn.	Occhioni 5041	Brazil		7
<i>Trembleya parviflora</i> (Don) Cogn. ssp. <i>heterostemon</i> (DC.) Cogn.	Roppa 615	Brazil		7
<i>Triolena amazonica</i> (Pilger) Wurdack	McDaniel & Rimachi 17377	Peru	121	3, 11, 18
<i>Triolena asplundii</i> Wurdack	H. Lugo 4902	Ecuador		11, 15
<i>Triolena pileoides</i> (Triana) Wurdack	Cuatrecasas 16696	Colombia	74	3, 11
<i>Triolena pluvialis</i> (Wurdack) Wurdack	Holm-Nielsen & Jeppesen 948	Ecuador		16
<i>Triolena stenophylla</i> Standl. & Steyerm.	Steyermark 45007	Guatemala		3, 11

References

- Baas, P.
1981. A Note on Stomatal Types and Crystals in the Leaves of Melastomataceae. *Blumea*, 27:475–479.
- Baker, E.A.
1982. Chemistry and Morphology of Plant Epicuticular Waxes. In D.F. Cutler, K.L. Alvin, and C.E. Price, editors, *The Plant Cuticle*, pages 139–165. London and New York: Academic Press.
- Edmonds, J.M.
1982. Epidermal Hair Morphology in *Solanum*, Sect. *Solanum*. *Journal of the Linnean Society, Botany*, 85:153–167.
- Feissly, Claude
1964. Sur l'ornementation du tube calicinal de quelques Osbeckiées africaines. *Bulletin de la Société Neuchâteloise des Sciences Naturelles*, 87:137–170.
- Franceschi, Vincent R., and H.T. Horner, Jr.
1980. Calcium Oxalate Crystals in Plants. *The Botanical Review*, 46:361–427.
- Gottschall, Michael
1900. Anatomisch systematische Untersuchung des Blattes der Melastomaceen aus der Tribus Miconieae. *Mémoires de l'Herbier Boissier*, 19:1–177, 3 plates.
- Hardin, J.W.
1976. Terminology and Classification of *Quercus* Trichomes. *Journal of the Elisha Mitchell Scientific Society*, 92:151–161.
1979. Atlas of Foliar Surface Features in Woody Plants, I: Vestiture and Trichome Types of Eastern North American *Quercus*. *Bulletin of the Torrey Botanical Club*, 106:313–325.
- Hardin, J.W., and D.E. Stone
1984. Atlas of Foliar Surface Features in Woody Plants, VI: *Carya* (Juglandaceae) of North America. *Brittonia*, 36:140–153.
- Hummel, Karl, and Karin Staesche
1962. Die Verbreitung der Haartypen in den natürlichen Verwandtschaftsgruppen. In J.C.Th. Uphof, Plant Hairs. In *Handbuch der Pflanzenanatomie*, Band 4, Teil 5, Abteilung: Histologie, pages 207–250. Berlin-Nikolassee: Gebrüder Borntraeger.
- Inamdar, J.A., R. Balakrishna Bhat, and T.V. Ramana Rao
1983. Structure, Ontogeny, Classification, and Taxonomic Significance of Trichomes in Malvales. *Korean Journal of Botany*, 26:151–160.
- Johnson, Hyrum B.
1975. Plant Pubescence: An Ecological Perspective. *The Botanical Review*, 41:233–258.
- Juniper, B.E., and C.E. Jeffree
1983. *Plant Surfaces*. vii + 93 pages. London: Edward Arnold Limited.
- Levin, D.A.
1973. Role of Trichomes in Plant Defense. *Quarterly Review of Biology*, 48:3–15.
- Metcalf, C.R., and L. Chalk
1950. Melastomaceae. In *Anatomy of the Dicotyledons*, 1:637–649. Oxford, England: Clarendon Press.
- Palézieux, Philippe de
1899. Anatomisch-systematische Untersuchung des Blattes der Melastomaceen mit Ausschluss der Triben Microlicieen, Tibouchineen, Miconieen. *Bulletin de l'Herbier Boissier*, 7(App. 5):1–86, 3 plates.
- Payne, Willard W.
1978. A Glossary of Plant Hair Terminology. *Brittonia*, 30:239–255.
- Pflaum, Fritz
1897. Anatomisch systematische Untersuchung des Blattes der Melastomaceen aus den Triben: Microlicieen und Tibouchineen. 91 pages, 2 plates. Dissertation, Munich.
- Rodriguez, Eloy, Patrick L. Healey, and Indira Mehta, editors
1984. *Biology and Chemistry of Plant Trichomes*. vii + 255 pages. New York and London: Plenum Press.
- Roe, K.E.
1971. Terminology of Hairs in the Genus *Solanum*. *Taxon*, 20:501–508.
- Seithe, Almut
1980. *Rhododendron* Hairs and Taxonomy. In J.L. Lutey and M.E. O'Brien, editors, *Contributions toward a Classification of Rhododendron*, pages 89–115. New York: The New York Botanical Garden.
- Theobald, William L., Joseph L. Krahulik, and Reed Rollins
1979. Trichome Description and Classification. In C.R. Metcalfe and L. Chalk, *Anatomy of the Dicotyledons*, second edition, 1:40–53. Oxford, England: Clarendon Press.
- Uphof, J.C.Th.
1962. Plant Hairs. In *Handbuch der Pflanzenanatomie*, Band 4, Teil 5, Abteilung: Histologie, pages 1–206, 251–292. Berlin-Nikolassee: Gebrüder Borntraeger.

Weidt, Edwin

1935. Die Entwicklung der Blätter der Melastomataceen *Heterotrichum macrodon* Planch. und *Clidemia hirta* Don. *Beiträge zur Biologie der Pflanzen*, 23:252–281.

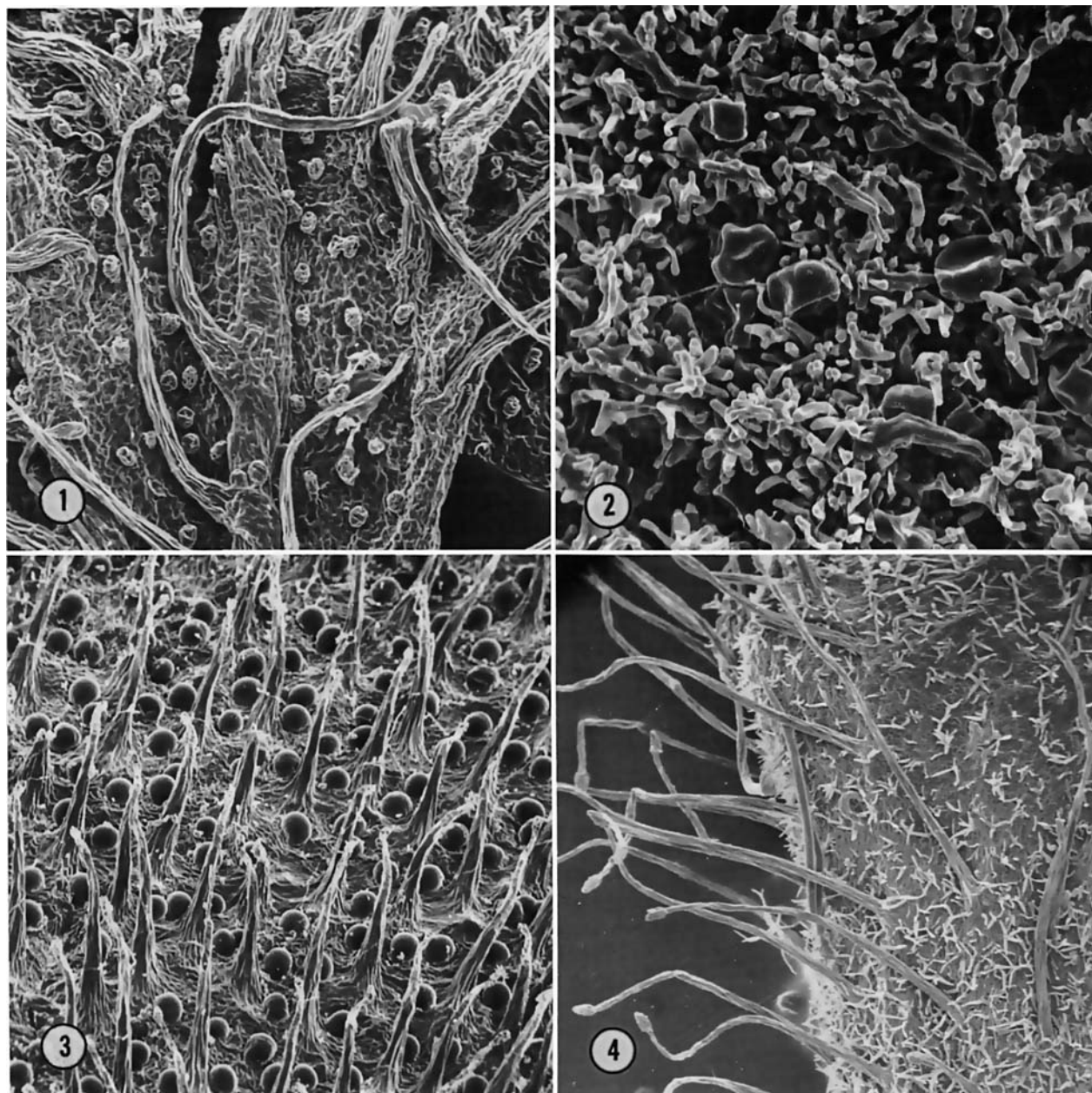
Winkler, S.

1964. Entwicklung und Funktion gewisser Sterntri-

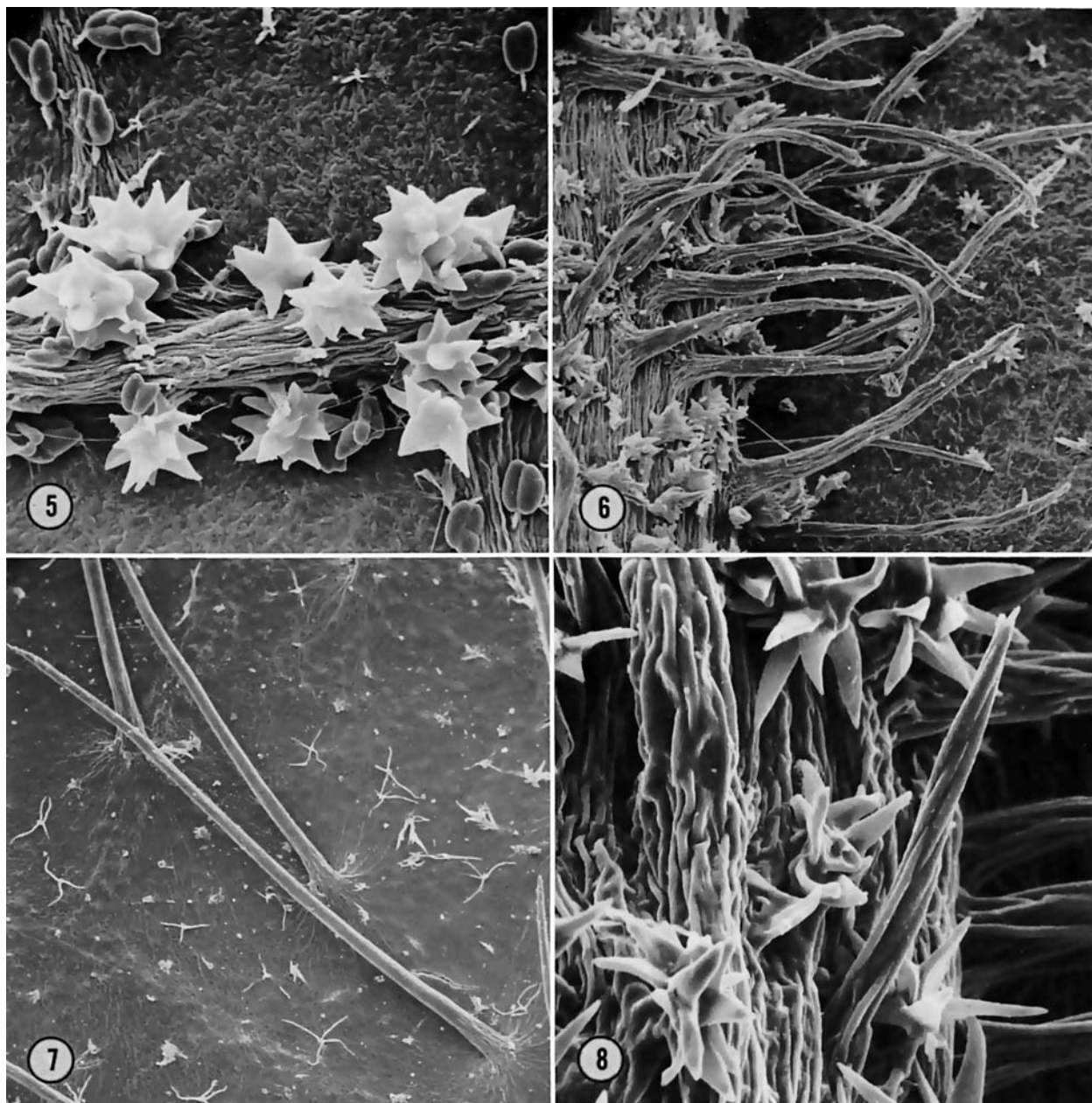
chome der Melastomataceen *Miconia magnifica* Tr. und *Medinilla venosa* Blume. *Oesterreichische Botanische Zeitschrift*, 111:372–392.

Wurdack, J.J.

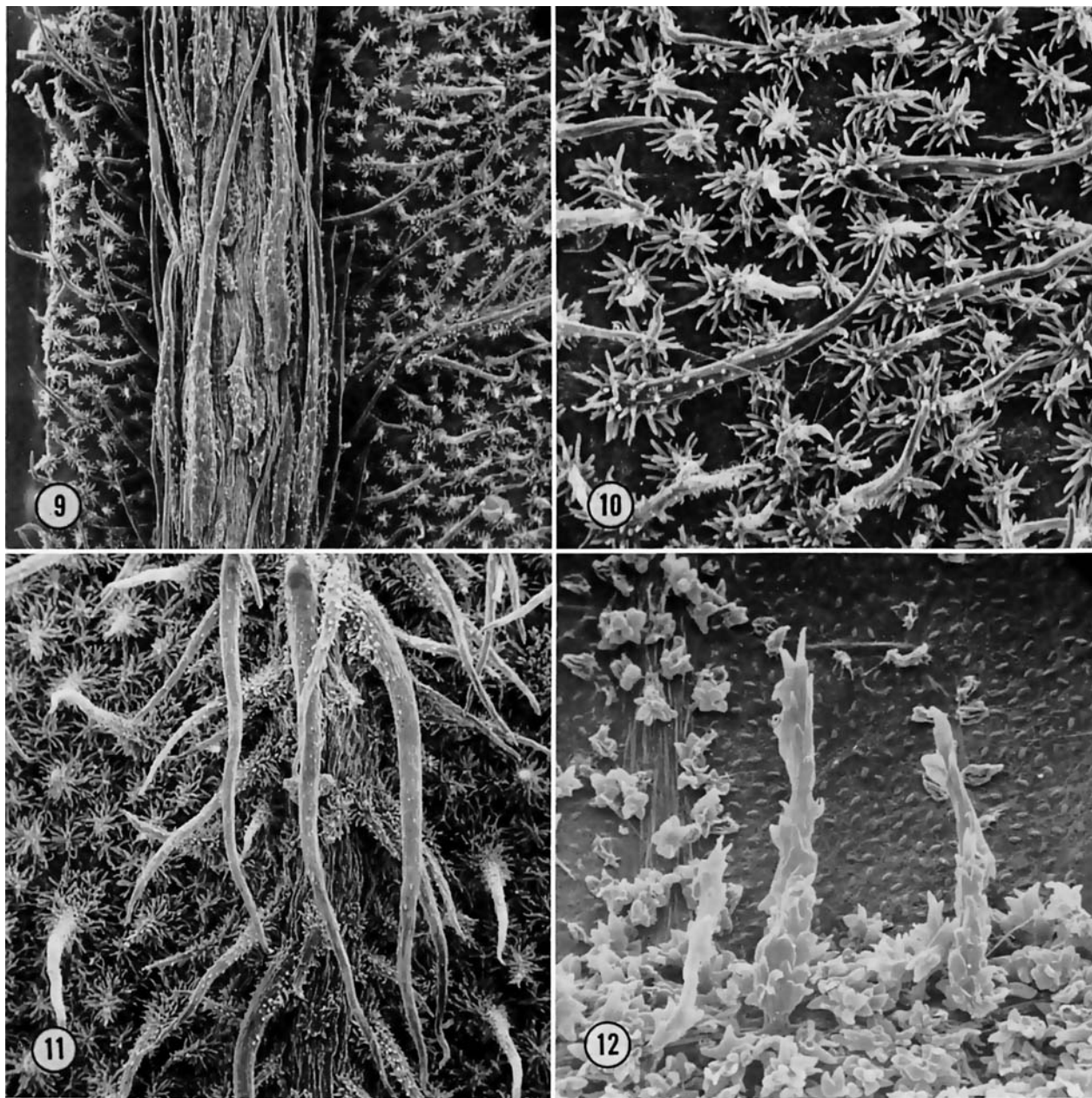
1981. Three Species of *Tibouchina* (Melastomataceae) from Bahia, Brazil. *Brittonia*, 33:304–308.



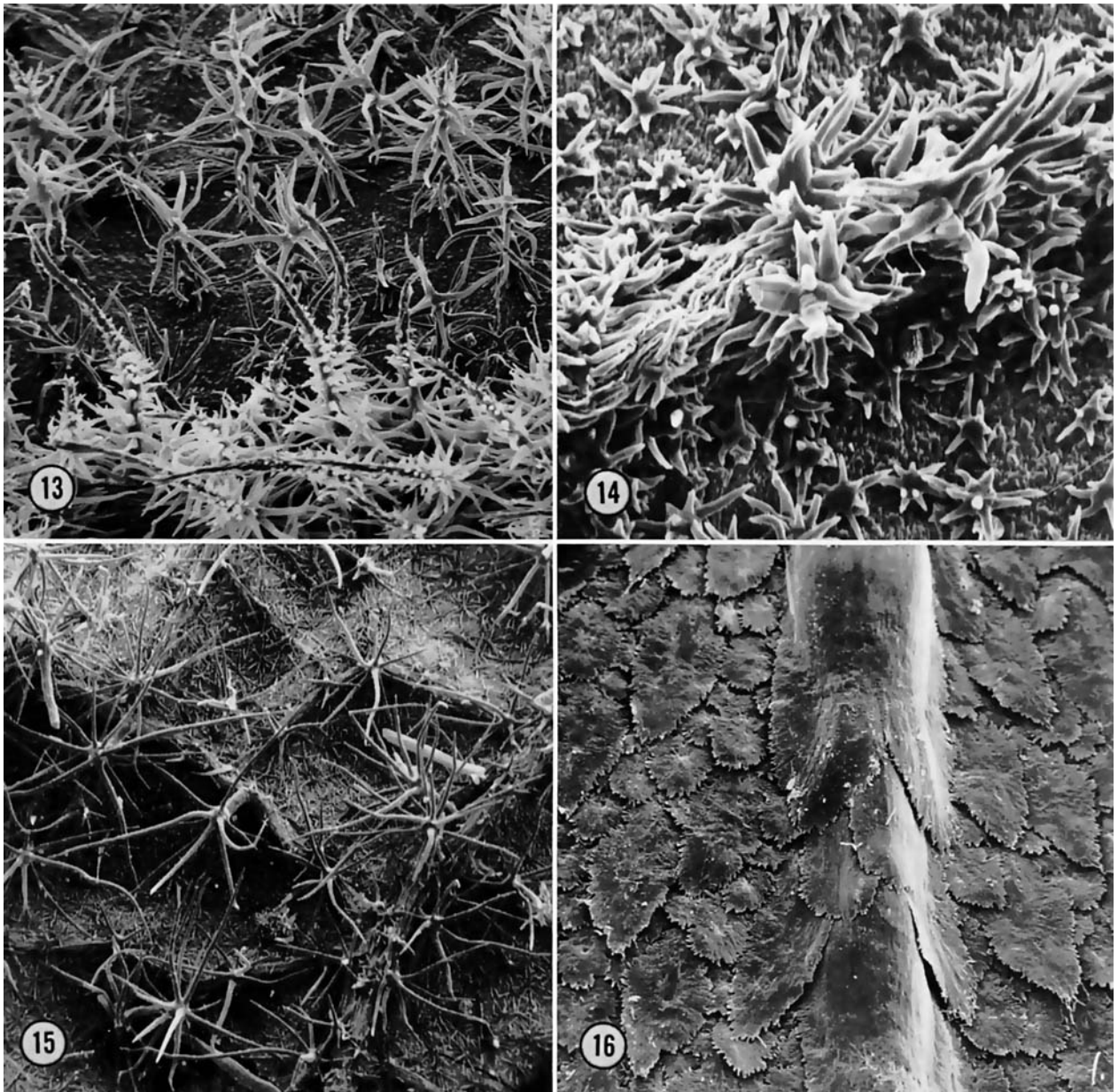
FIGURES 1-4.—Mixed hair types: 1, *Macrocentrum vestitum* (H, $\times 70$); 2, *Macairea albiflora* (LL, $\times 200$); 3, *Lavoisiera ordinata* (UL, $\times 55$); 4, *Tococa caquetana* (H, $\times 34$).



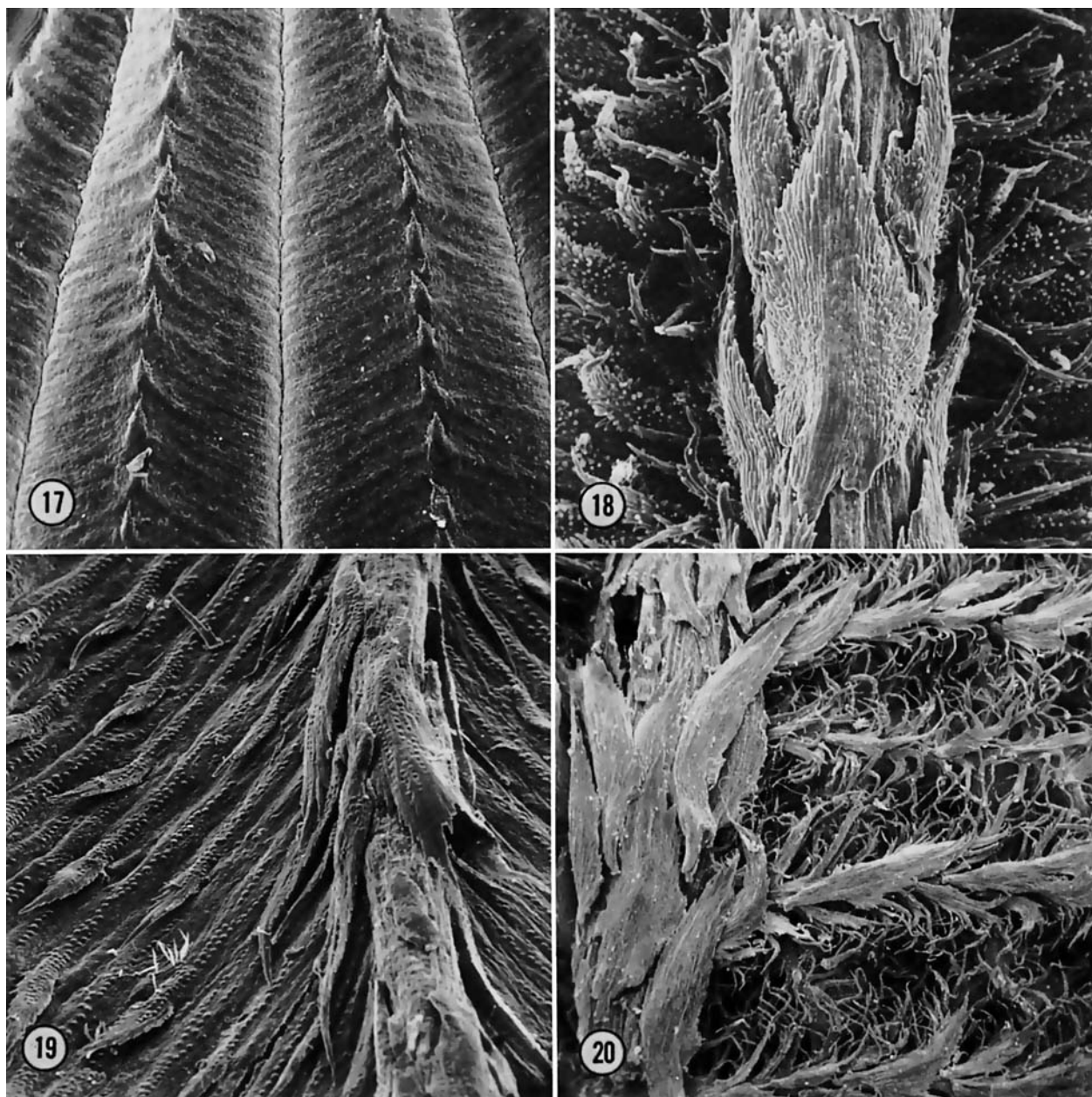
FIGURES 5-8.—Mixed hair types: 5, *Ossaea quinquenervia* (LL, $\times 150$); 6, *Tetrazygia hispida* (LL, $\times 75$); 7, *Tococa spadiceiflora* (UL, $\times 32$); 8, *Leandra multuplinervis* (LL, $\times 330$).



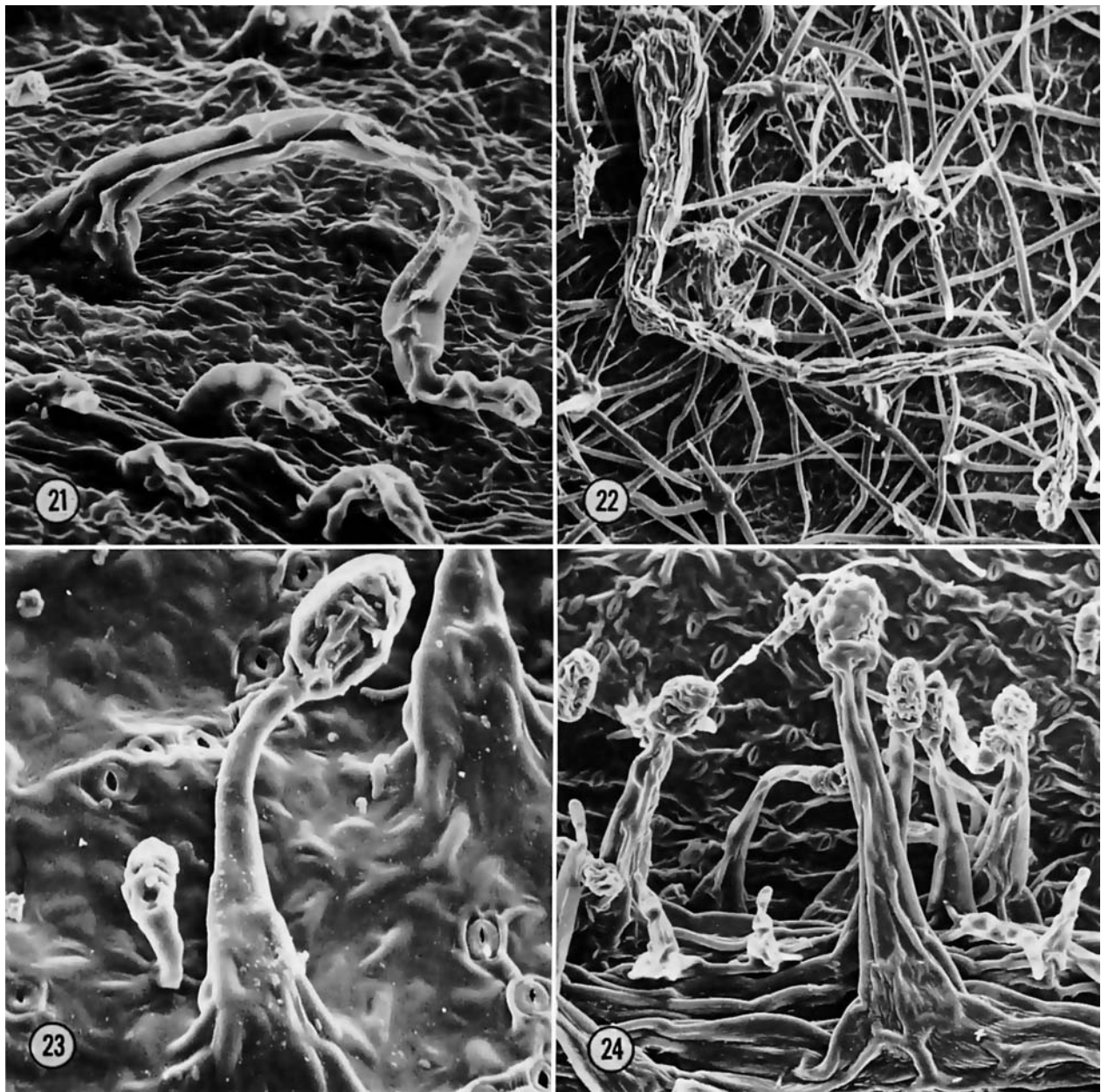
FIGURES 9-12.—Mixed hair types: 9, *Tibouchina granulosa* (LL, $\times 34$); 10, *Tibouchina granulosa* (LL, $\times 100$); 11, *Monochaetum mariae* (LL, $\times 55$); 12, *Clidemia cuatrecasii* (LL, $\times 100$).



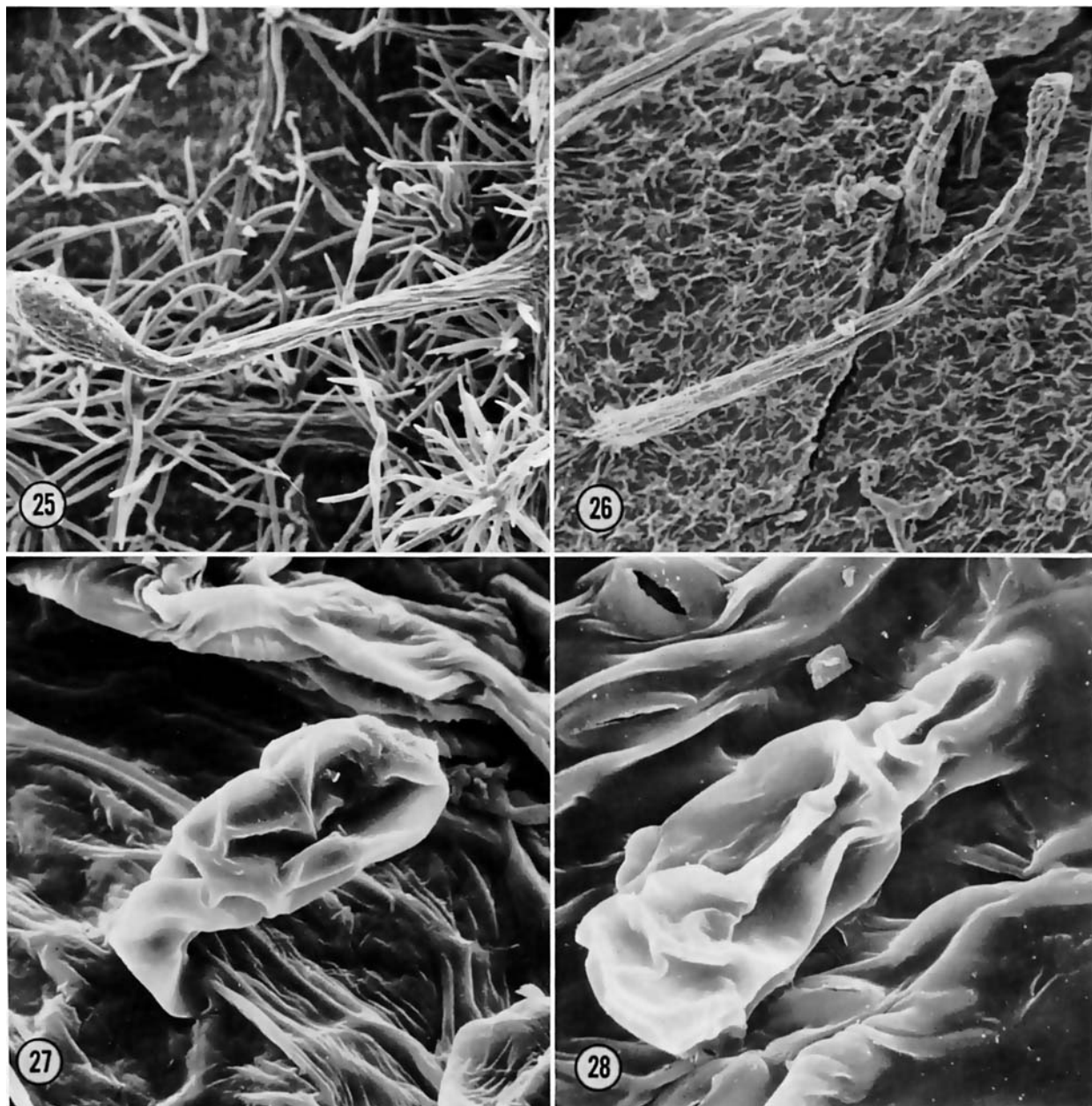
FIGURES 13-16.—Mixed hair types: 13, *Topobea trianaei* (LL, $\times 42$); 14, *Conostegia lasiopoda* (LL, $\times 200$); 15, *Miconia titanophylla* (LL, $\times 30$); 16, *Tibouchina duidae* (LL, $\times 30$).



FIGURES 17-20.—Mixed hair types: 17, *Tibouchina spruceana* (UL, $\times 30$); 18, *Tibouchina spruceana* (LL, $\times 90$); 19, *Tibouchina striphnocalyx* (LL, $\times 50$); 20, *Tibouchina gleasoniana* (LL, $\times 21$).

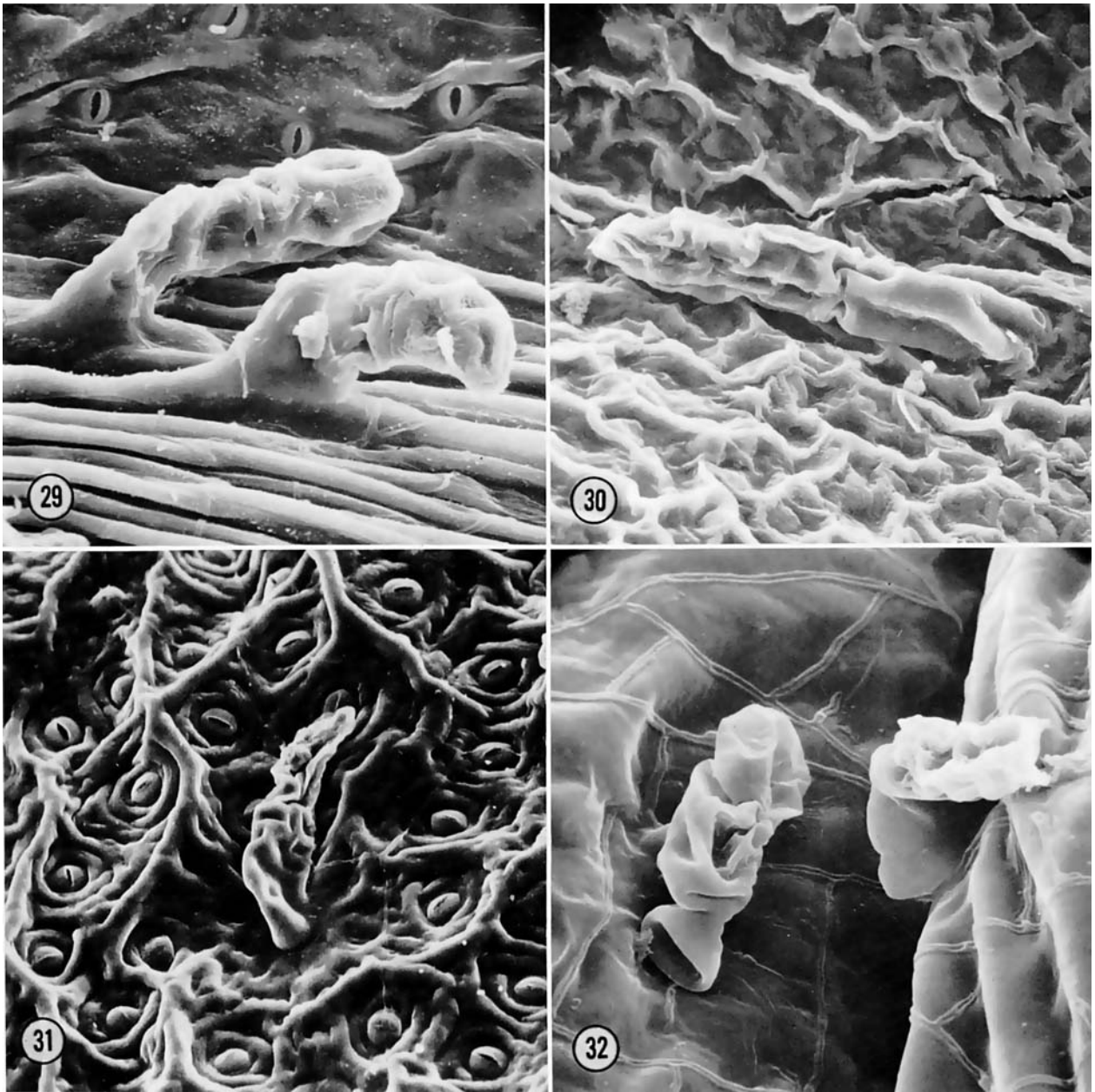


FIGURES 21-24.—Long-stalked glands with thin-walled heads: 21, *Meriania speciosa* (LL, $\times 340$); 22, *Maguireanthus ayangannae* (UL, $\times 100$); 23, *Lavoisiera mucorifera* (LL, $\times 375$); 24, *Comolia lanceaeflora* (LL, $\times 220$).

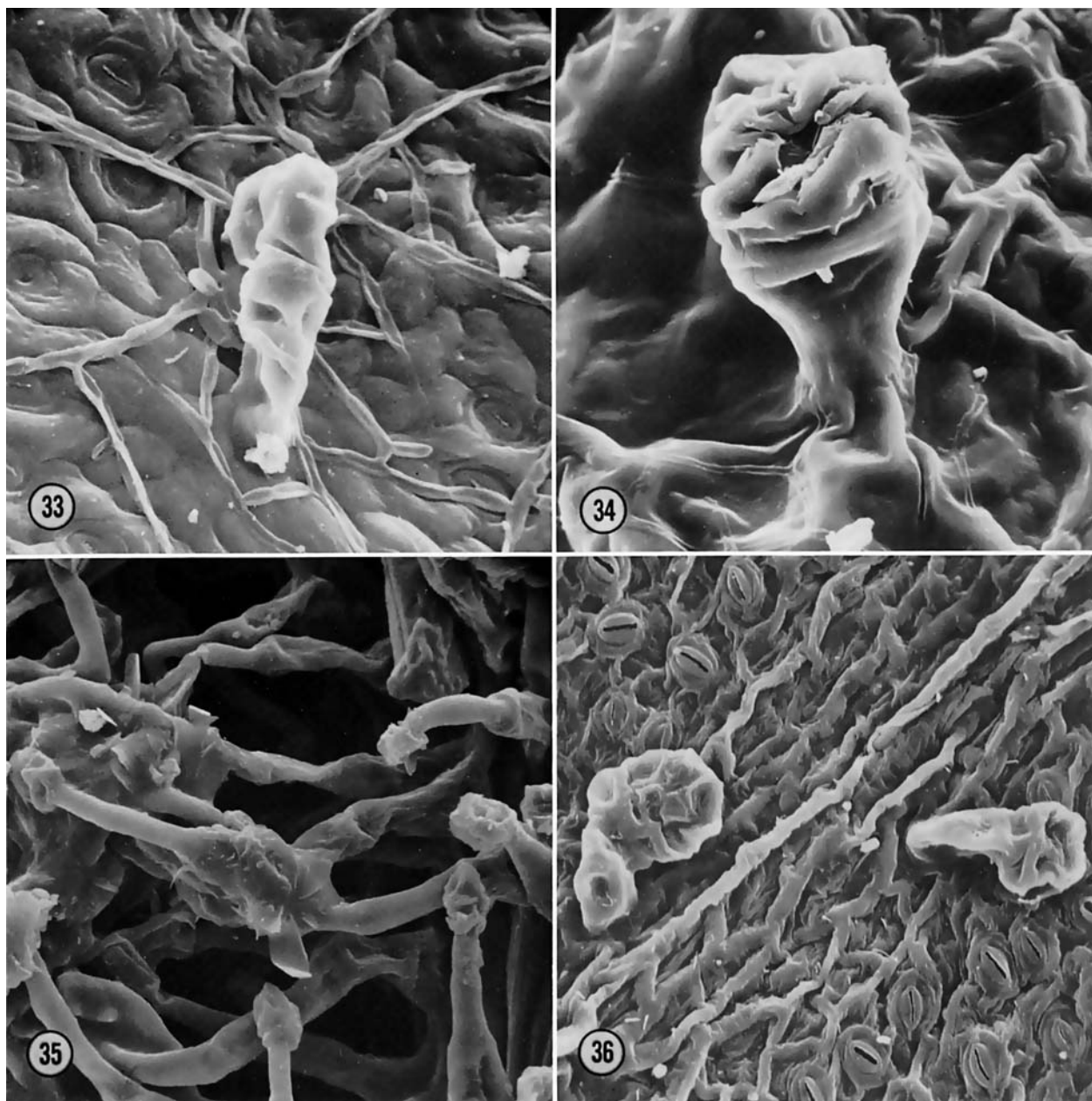


FIGURES 25, 26.—Long-stalked glands with thin-walled heads: 25, *Clidemia octona* (LL, $\times 100$); 26, *Blakea glandulosa* (UL, $\times 120$).

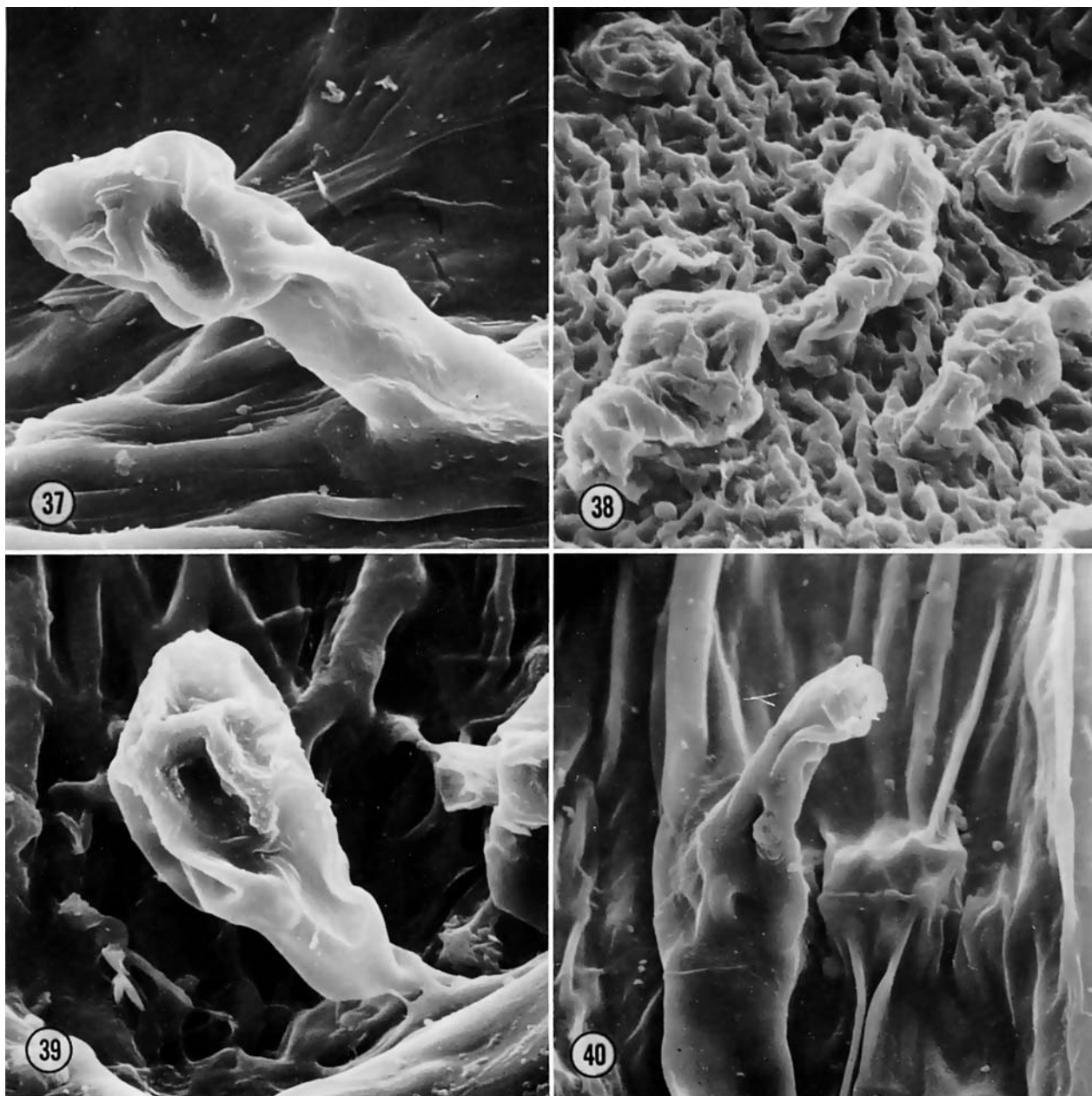
FIGURES 27–28.—Short-stalked glands with thin-walled elongate heads: 27, *Bertolonia maculata* (H, $\times 1000$); 28, *Tibouchina irwinii* (LL, $\times 1300$).



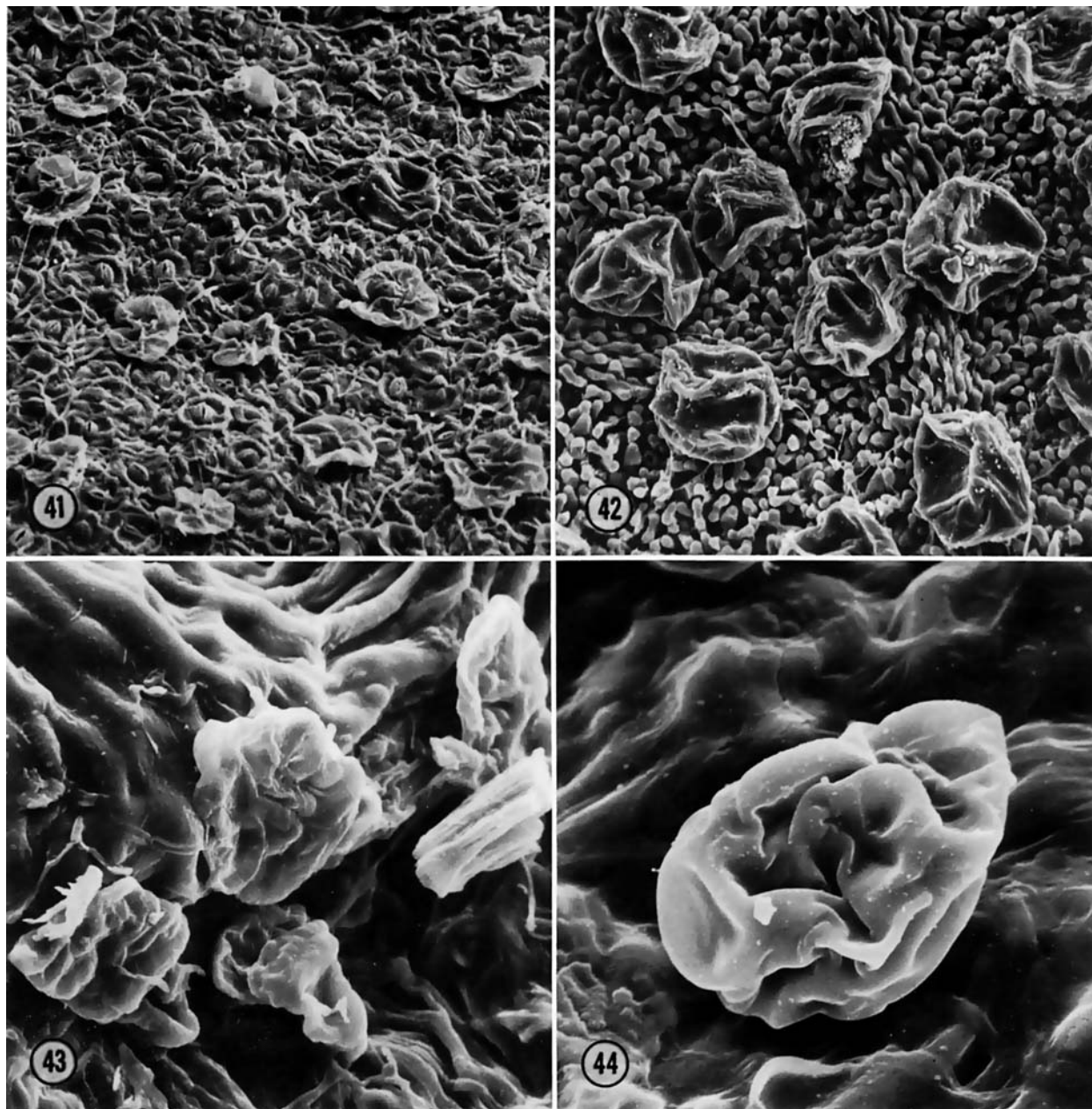
FIGURES 29–32.—Short-stalked glands with thin-walled elongate heads: 29, *Tococa guianensis* (LL, $\times 750$); 30, *Clidemia globulifera* (UL, $\times 600$); 31, *Pleiochiton ebracteatum* (LL, $\times 375$); 32, *Topobea anisophylla* (UL, $\times 950$).



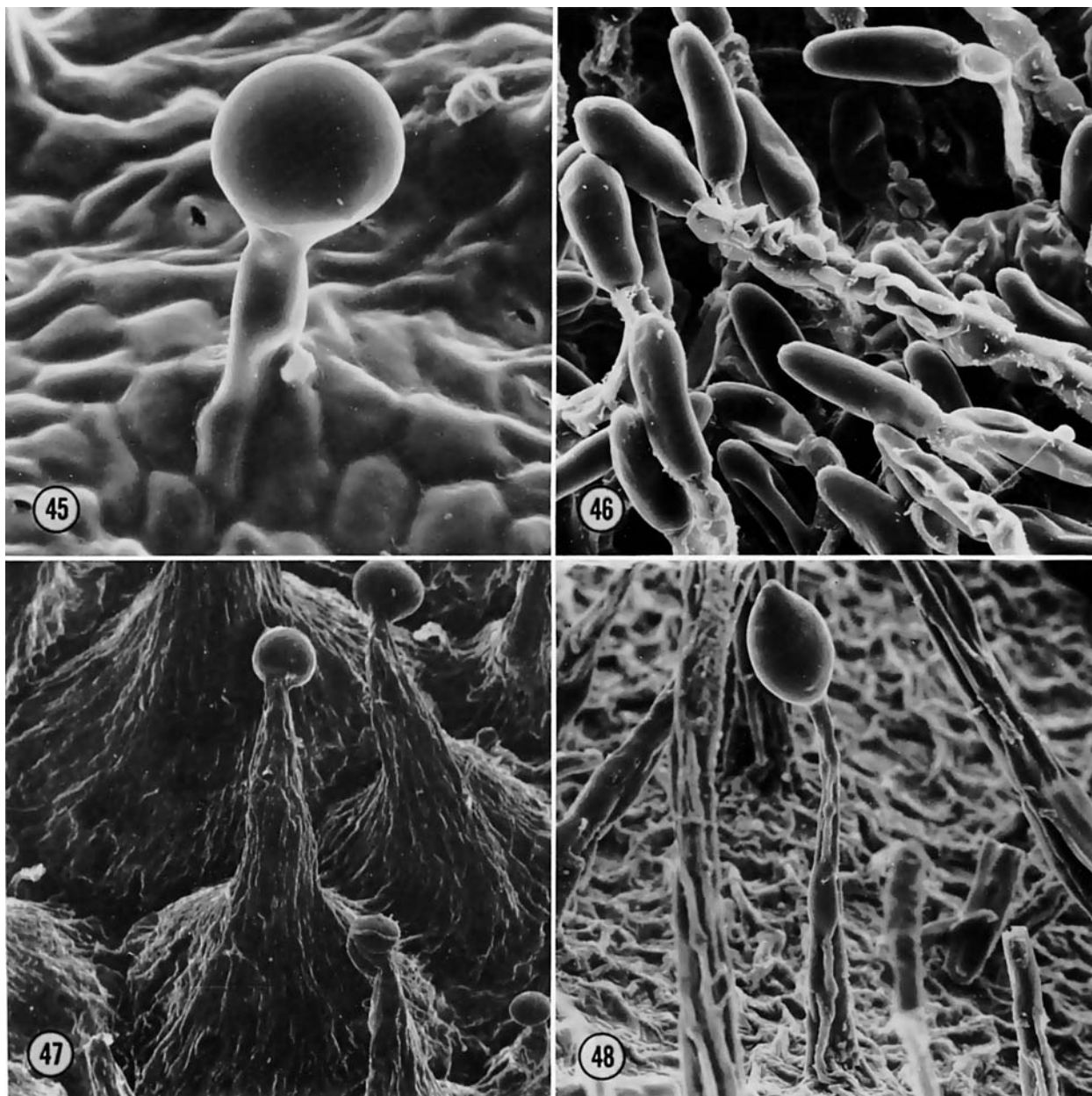
FIGURES 33-36.—Short-stalked glands with thin-walled short heads: 33, *Cambessedesia cambessedesioides* (LL, $\times 750$); 34, *Macrocentrum vestitum* (H, $\times 1000$); 35, *Marcetia harleyi* (LL, $\times 500$); 36, *Miconia cremadena* (LL, $\times 660$).



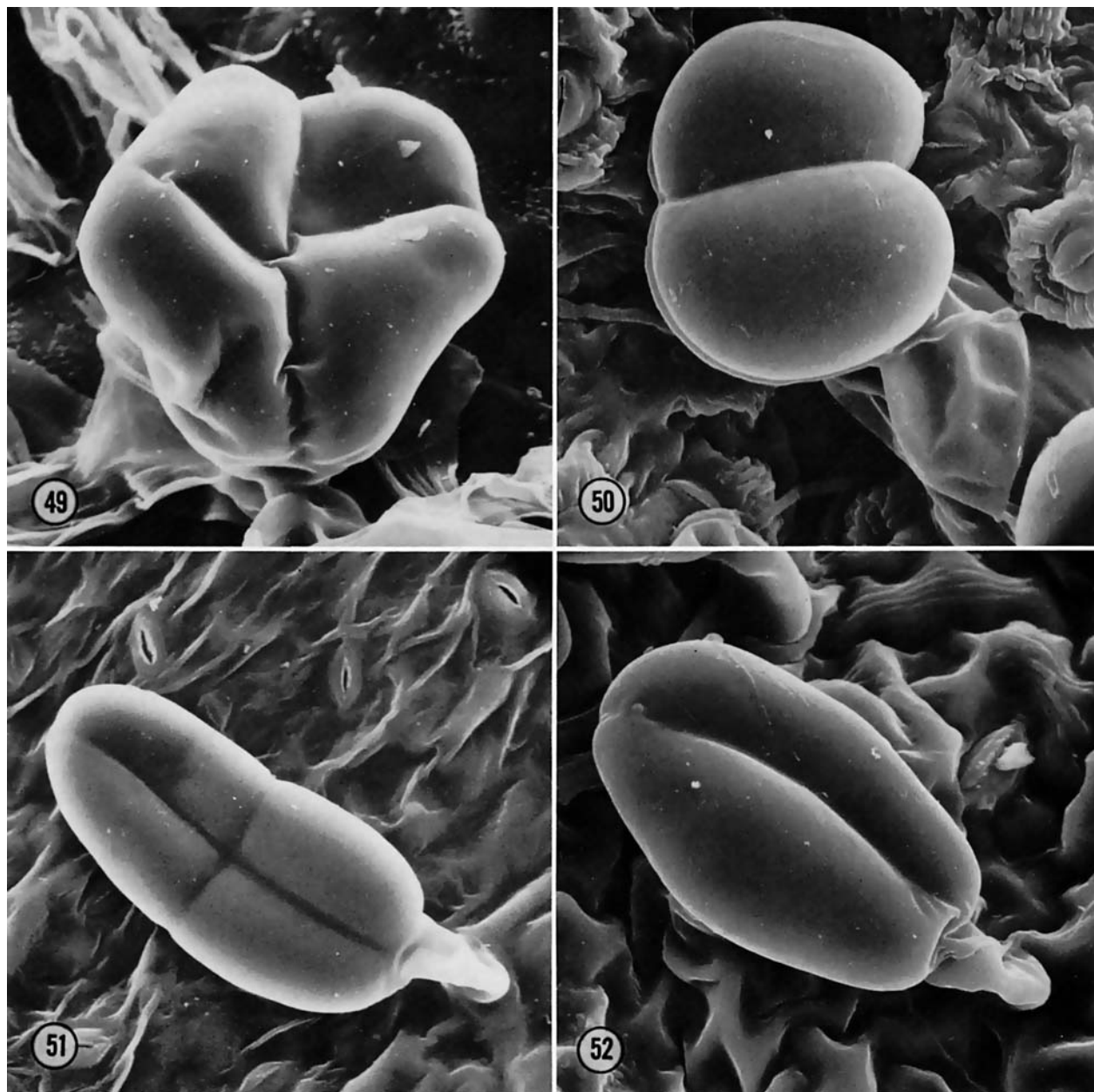
FIGURES 37-40.—Short-stalked glands with thin-walled short heads: 37, *Tococa aristata* (LL, $\times 1500$); 38, *Ossaea boekei* (UL, $\times 900$); 39, *Topobea parasitica* (UL, $\times 800$); 40, *Cyphostyla strigosa* (UL, $\times 2000$).



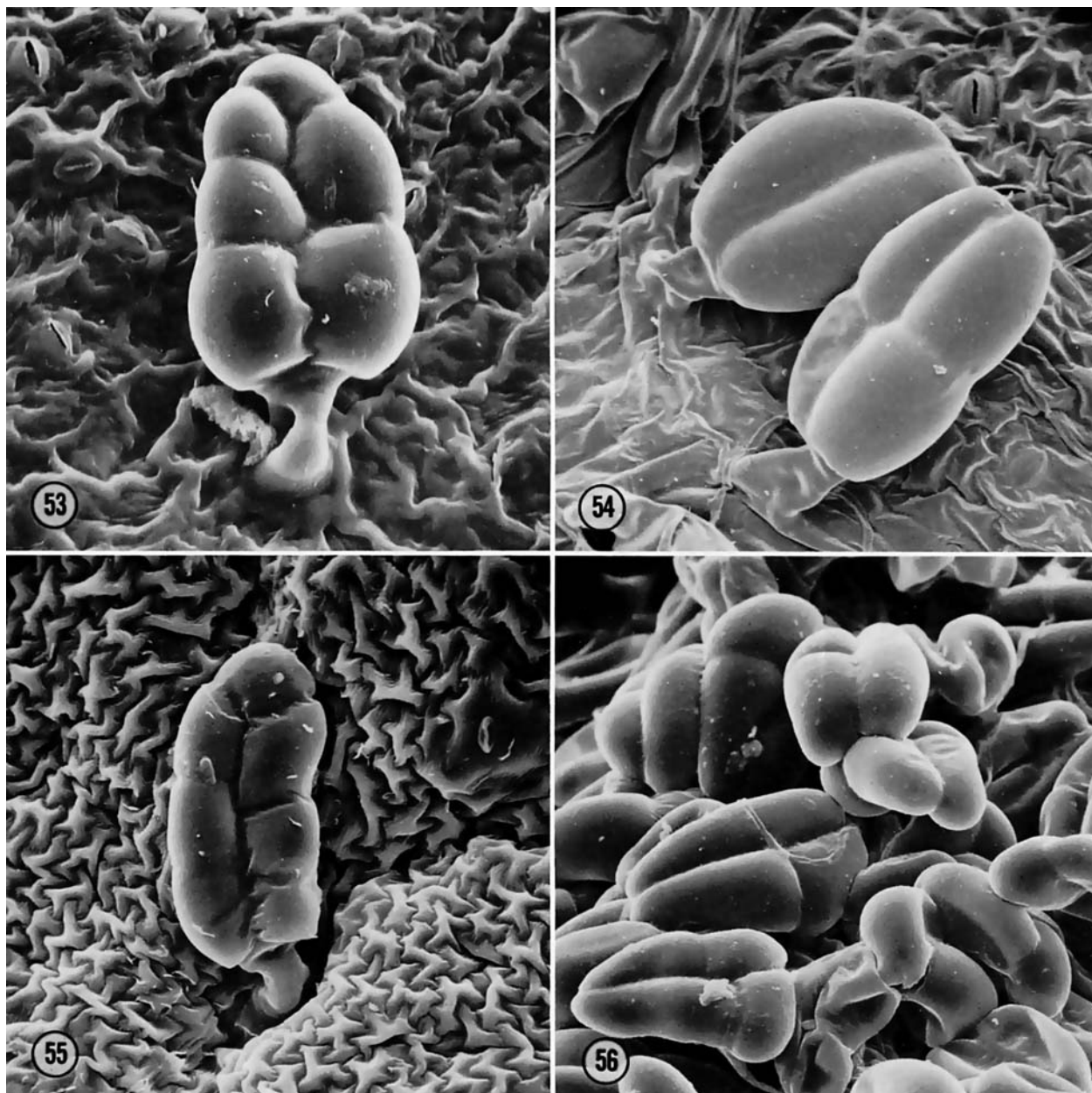
FIGURES 41-44.—Sessile glands with thin-walled heads: 41, *Graffenrieda cucullata* (LL, $\times 250$); 42, *Macairea spruceana* (LL, $\times 235$); 43, *Conostegia setosa* (LL, $\times 750$); 44, *Blakea trinervia* (LL, $\times 1500$).



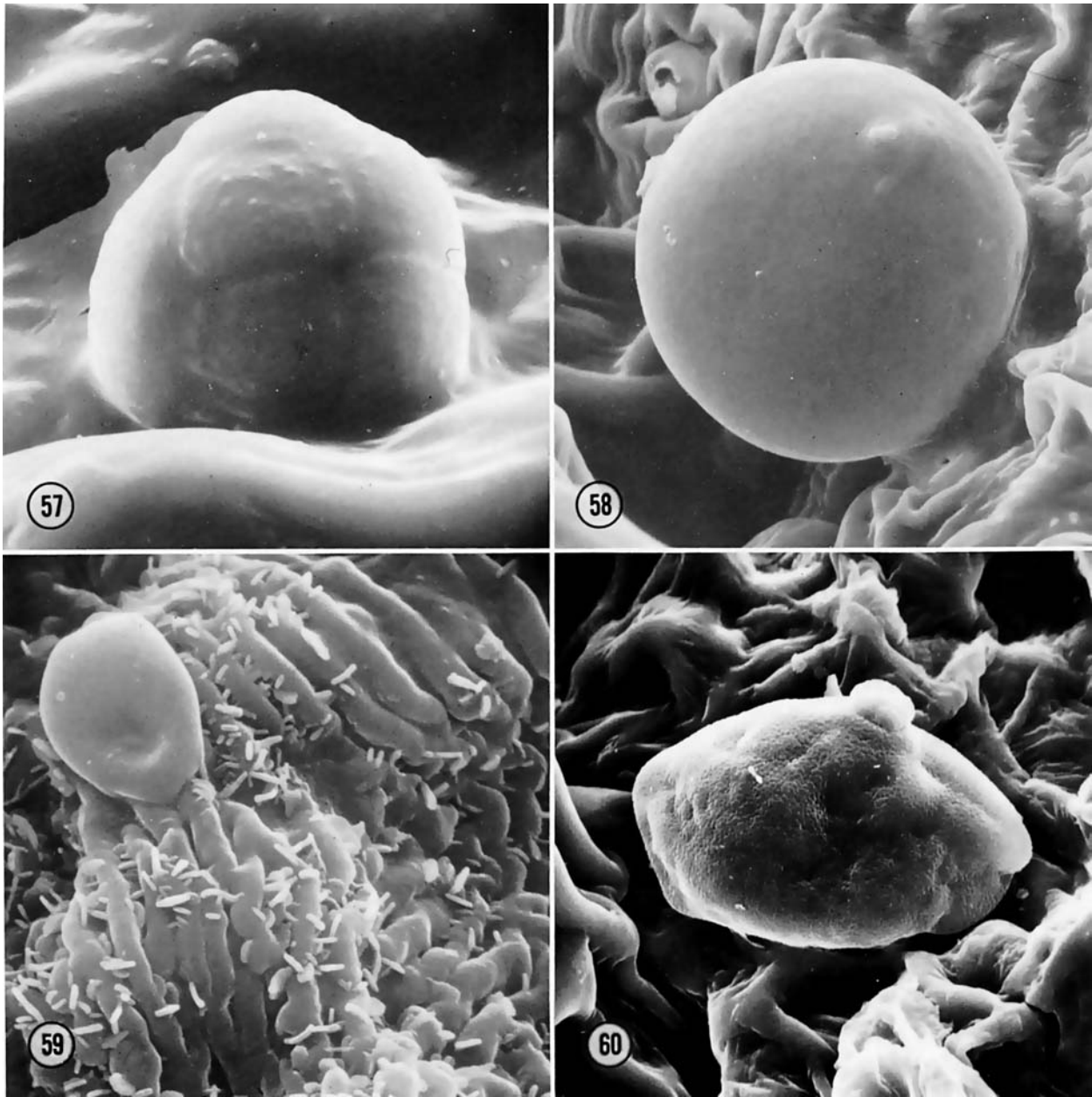
FIGURES 45-48.—Stalked glands with smooth (thick-walled?) heads: 45, *Microlicia macrophylla* (UL, $\times 550$); 46, *Tateanthus duidae* (LL, $\times 400$); 47, *Macairea parvifolia* (UL, $\times 125$); 48, *Comolia lanceaeflora* (UL, $\times 200$).



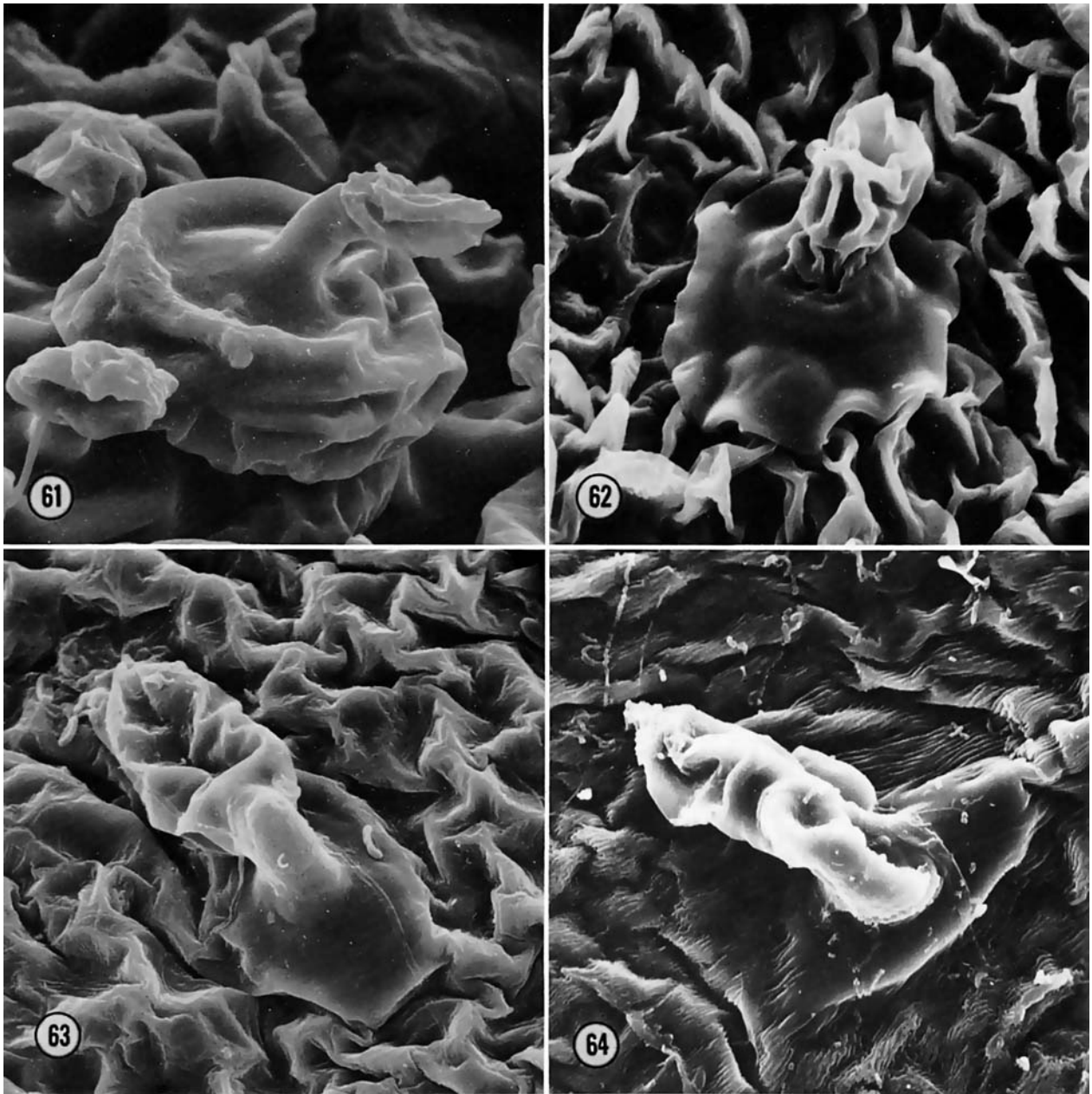
FIGURES 49-52.—Slightly furrowed more or less stalked glands: 49, *Graffenrieda fruticosa* (UL, $\times 1000$); 50, *Miconia alata* (LL, $\times 1060$); 51, *Clidemia japurensis* (LL, $\times 1000$); 52, *Clidemia rubra* (LL, $\times 1260$).



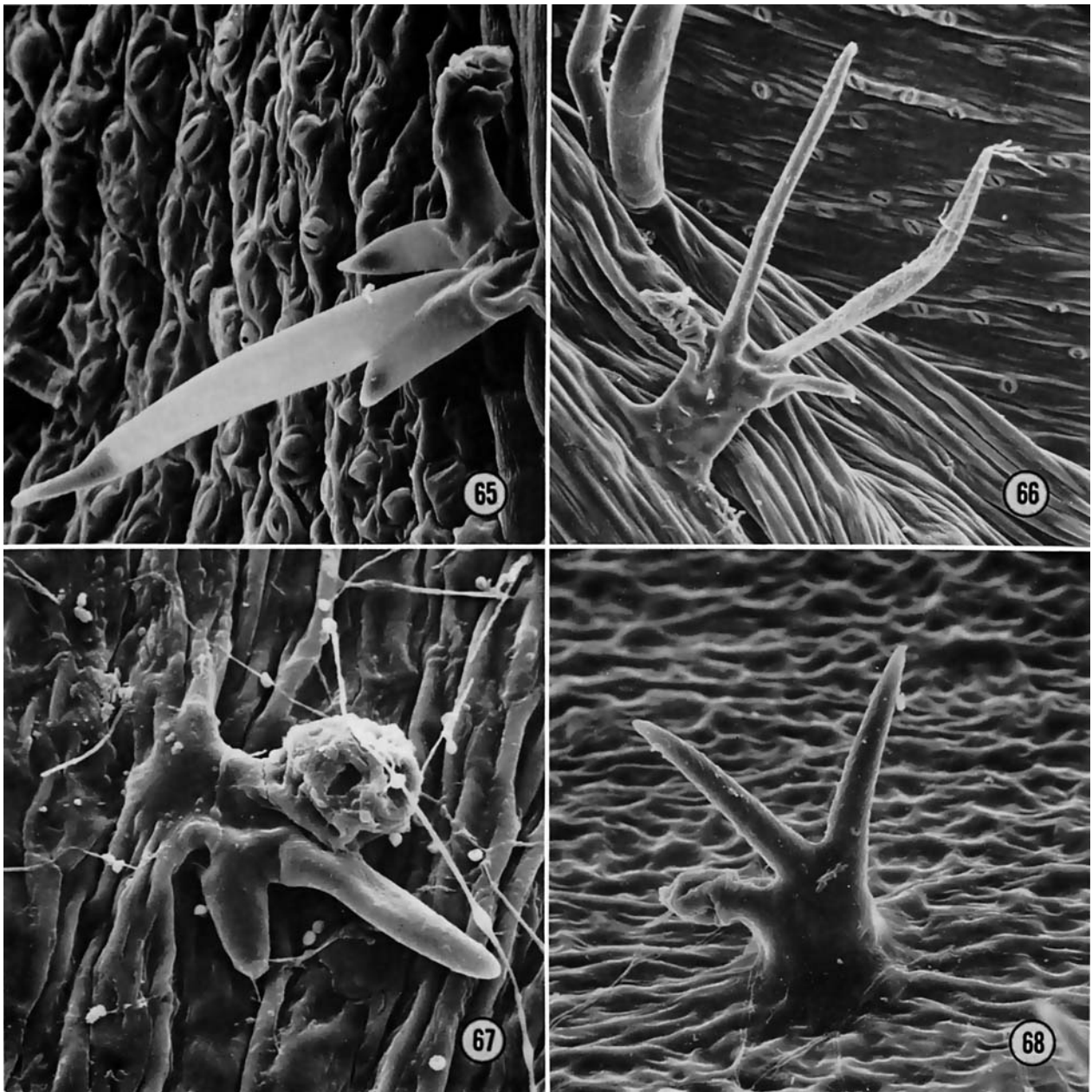
FIGURES 53-56.—Slightly furrowed more or less stalked glands: 53, *Leandra macrophora* (LL, $\times 800$); 54, *Ossaea scabrosa* (LL, $\times 765$); 55, *Ossaea scabrosa* (UL, $\times 700$); 56, *Necramium gigantophyllum* (LL, $\times 580$).



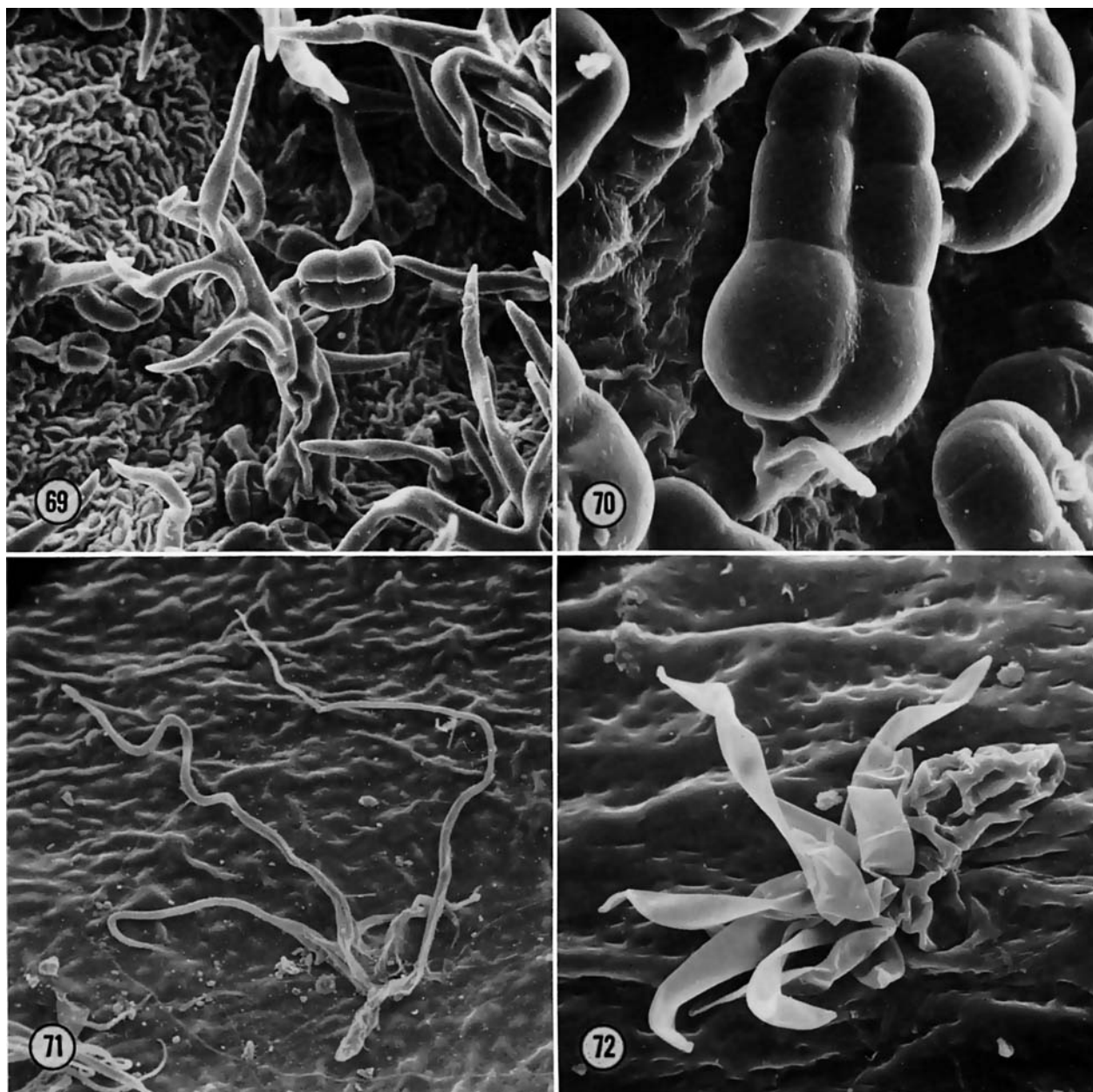
FIGURES 57-59.—Unfurrowed sessile glands: 57, *Trembleya neopyrenaica* (UL, $\times 3500?$); 58, *Stenodon suberosus* (UL, $\times 1000$); 59, *Clidemia fuertesii* (UL, $\times 5000$).
 FIGURE 60.—Pebbled sessile gland, *Leandra bergiana* (H, $\times 1500$).



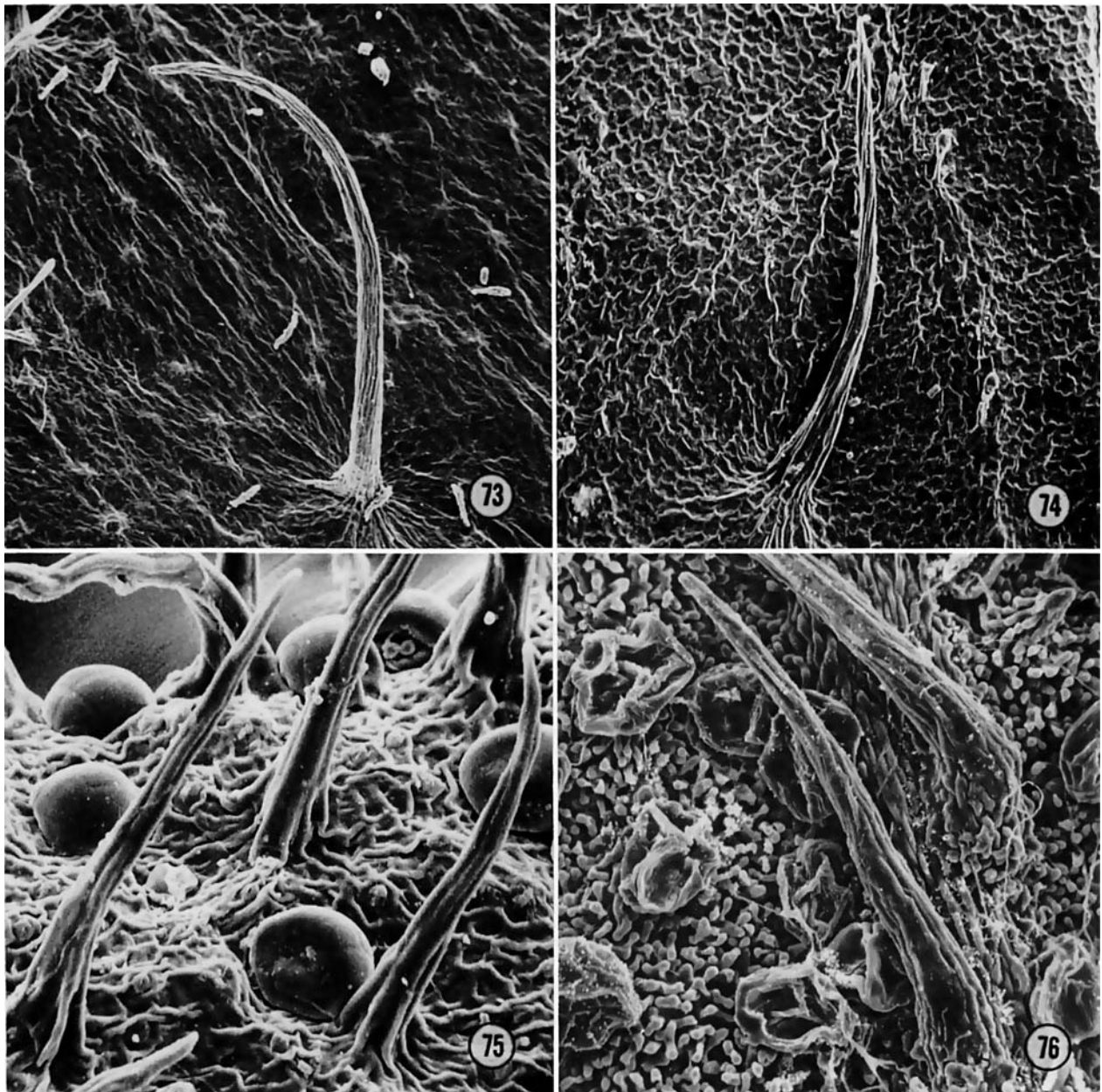
FIGURES 61-64.—Glands with basal pedestals: 61, *Marcetia harleyi* (H, $\times 1000$); 62, *Conostegia subcrustulata* (UL, $\times 1500$); 63, *Clidemia septuplinervis* (UL, $\times 1000$); 64, *Leandra multuplinervis* (UL, $\times 1000$).



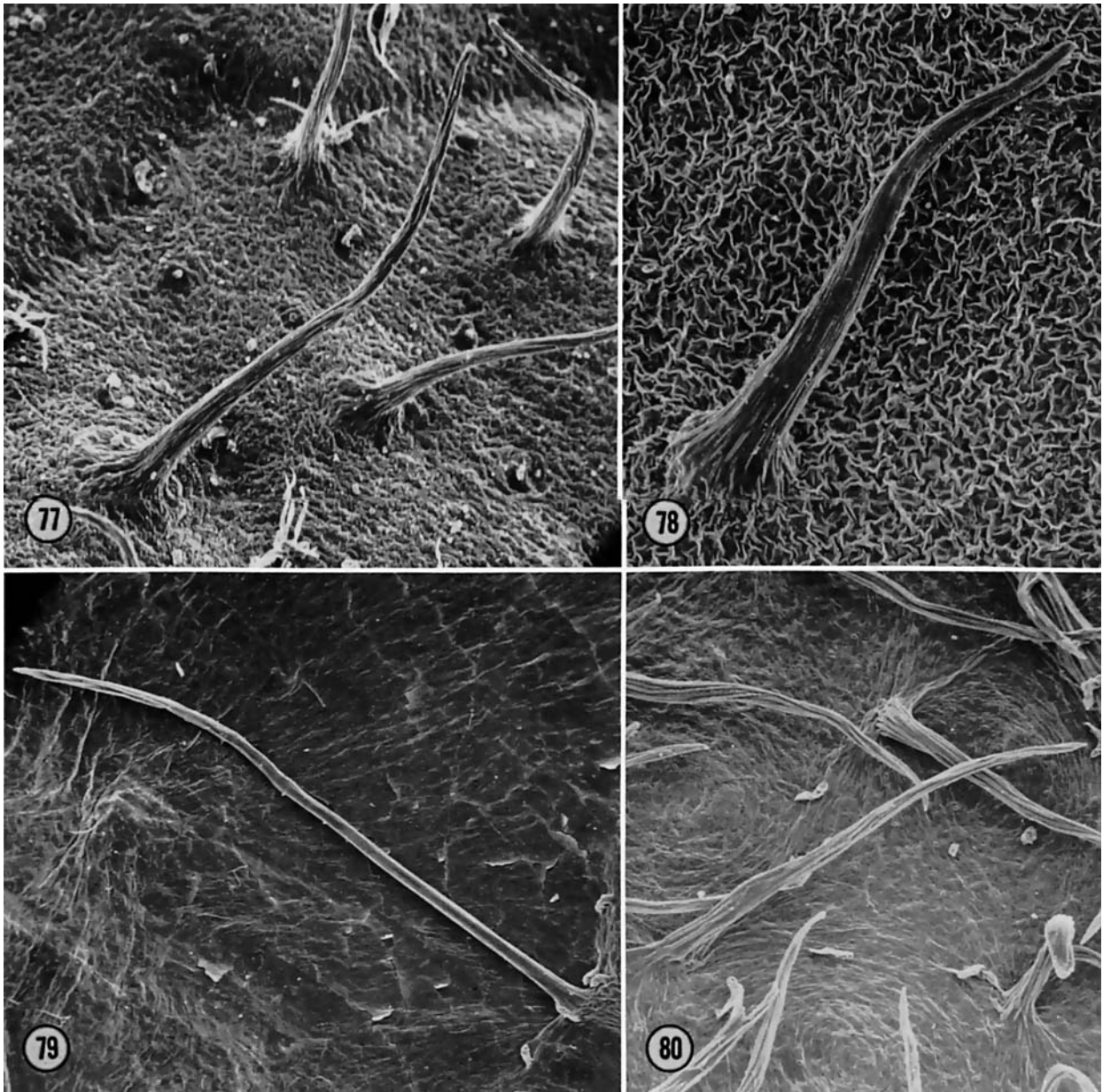
FIGURES 65-68.—Lateral glands: 65, *Miconia russea* (LL, $\times 465$); 66, *Tococa obovata* subsp. *neblinensis* (LL, $\times 180$); 67, *Myrmidone macrosperma* (H, $\times 600$); 68, *Clidemia simpsonii* (UL, $\times 500$).



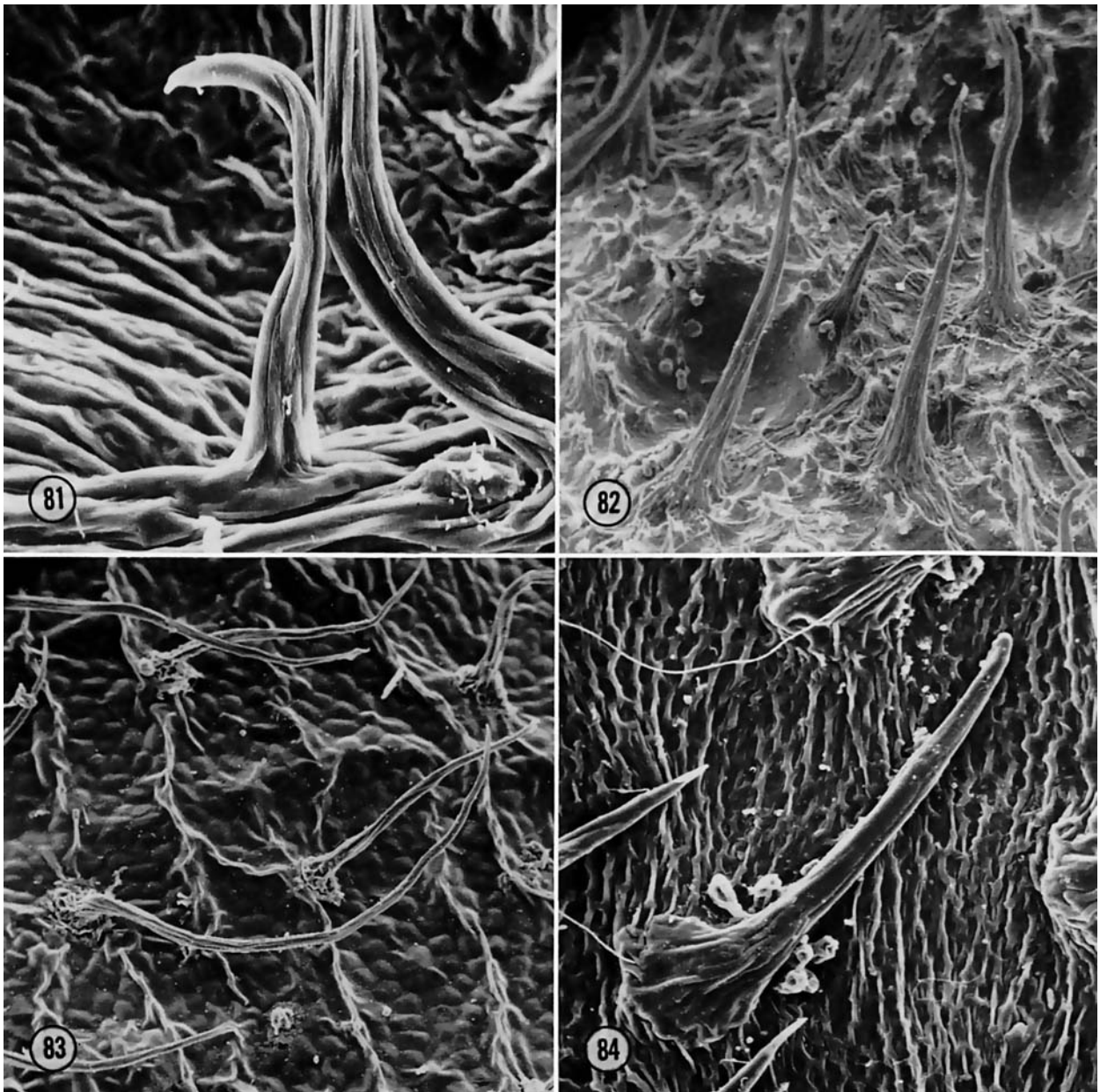
FIGURES 69–72.—Lateral glands: 69, *Clidemia ciliata* (LL, ×270); 70, *Leandra macropora* (H, ×750); 71, *Blakea allotracha* (UL, ×180); 72, *Topobea aeruginosa* (UL, ×500).



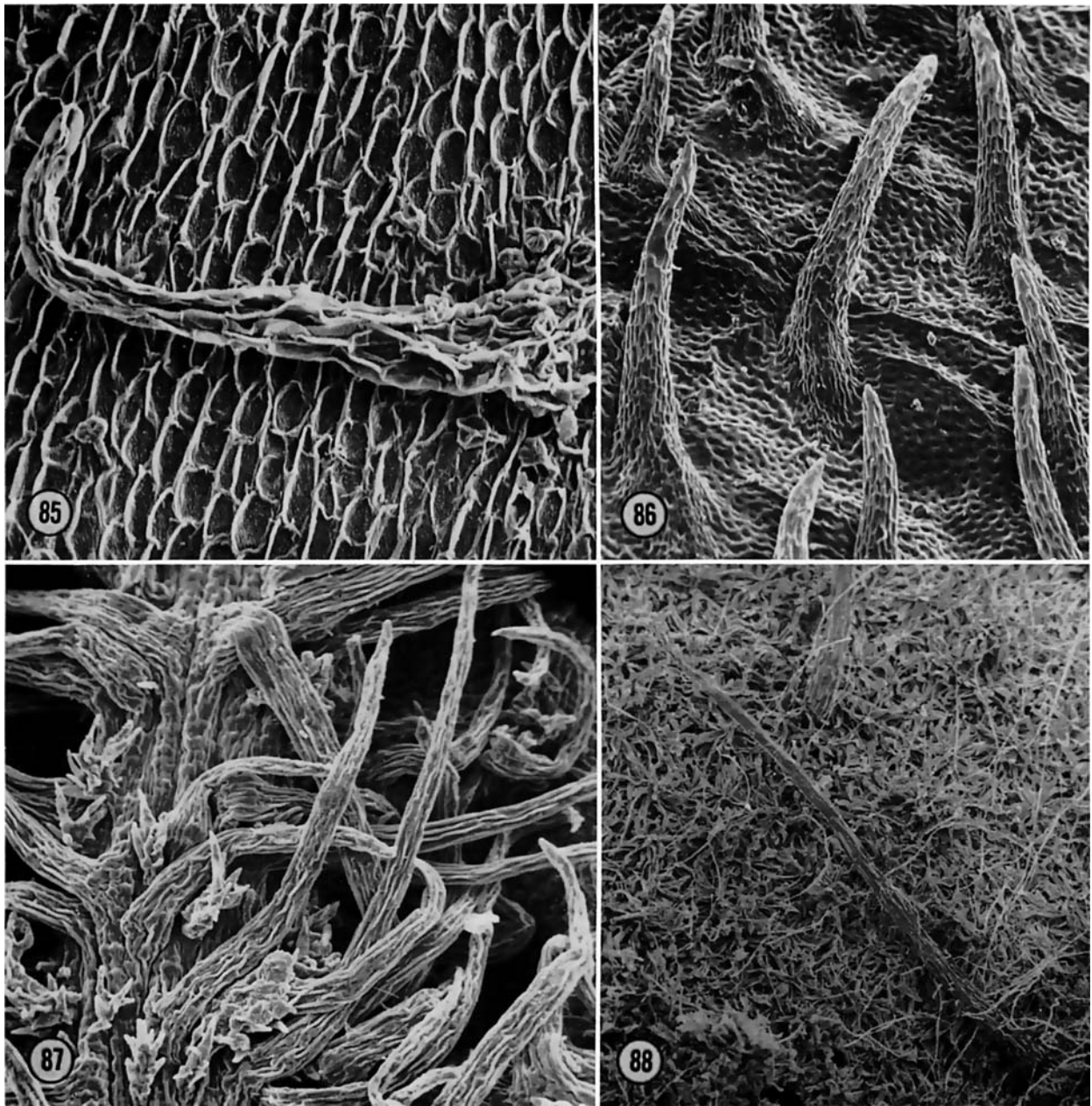
FIGURES 73-76.—Elongated smooth or fluted hairs: 73, *Adelobotrys intonsa* (LL, $\times 80$); 74, *Triolena pileoides* (UL, $\times 75$); 75, *Microlicia albida* (UL, $\times 230$); 76, *Macairea spruceana* (LL, $\times 210$).



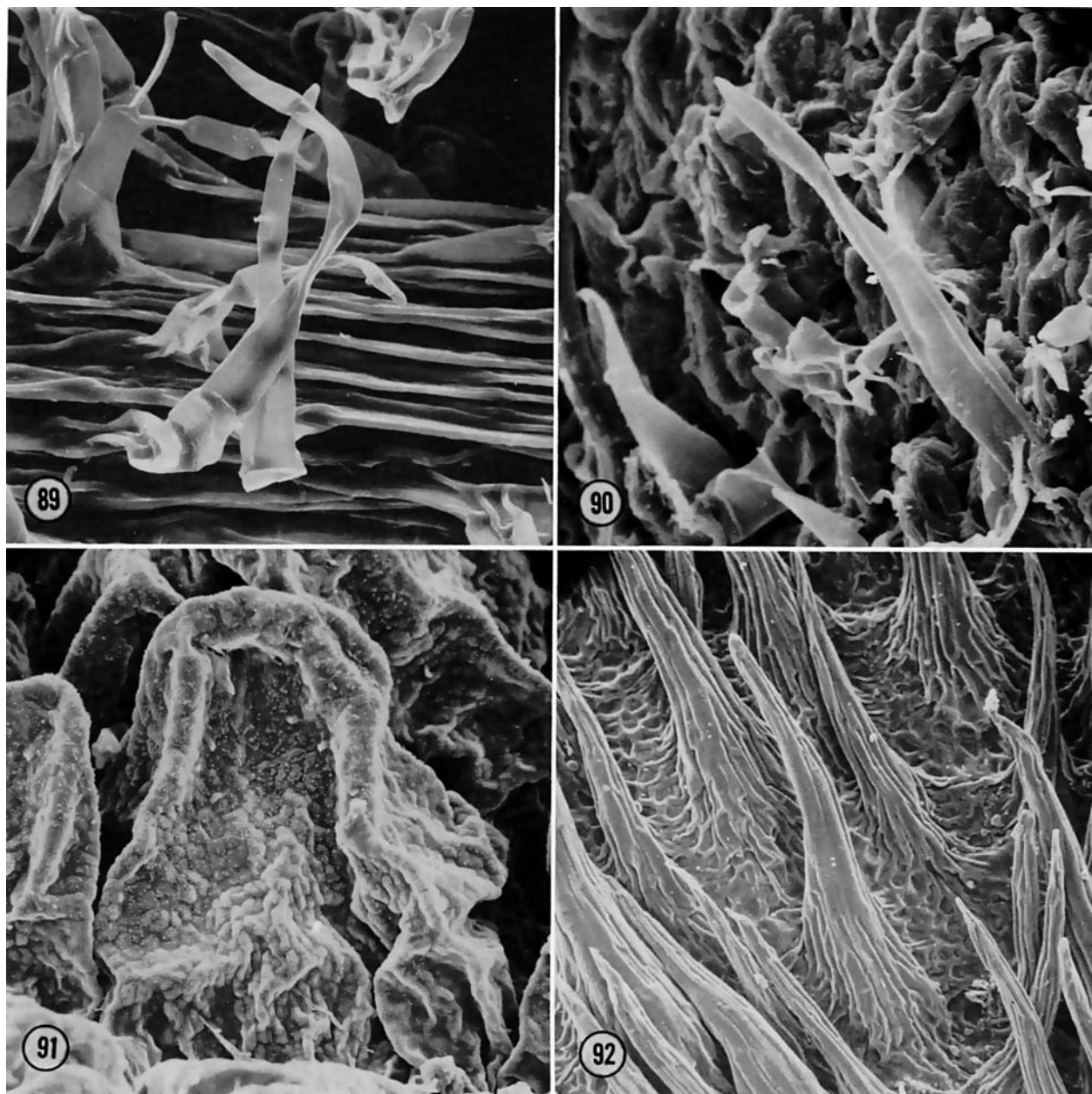
FIGURES 77-80.—Elongated smooth or fluted hairs: 77, *Conostegia caelestis* (UL, $\times 80$); 78, *Calycogonium domatiatum* (UL, $\times 120$); 79, *Tococa aristata* (LL, $\times 65$); 80, *Clidemia submontana* (LL, $\times 90$).



FIGURES 81-84.—Elongated smooth or fluted hairs: 81, *Anaetocalyx bracteosa* (LL, $\times 500$); 82, *Henriettella tuberculosa* (LL, $\times 90$); 83, *Blakea wilburiana* (UL, $\times 100$); 84, *Cyphostyla strigosa* (UL, $\times 240$).

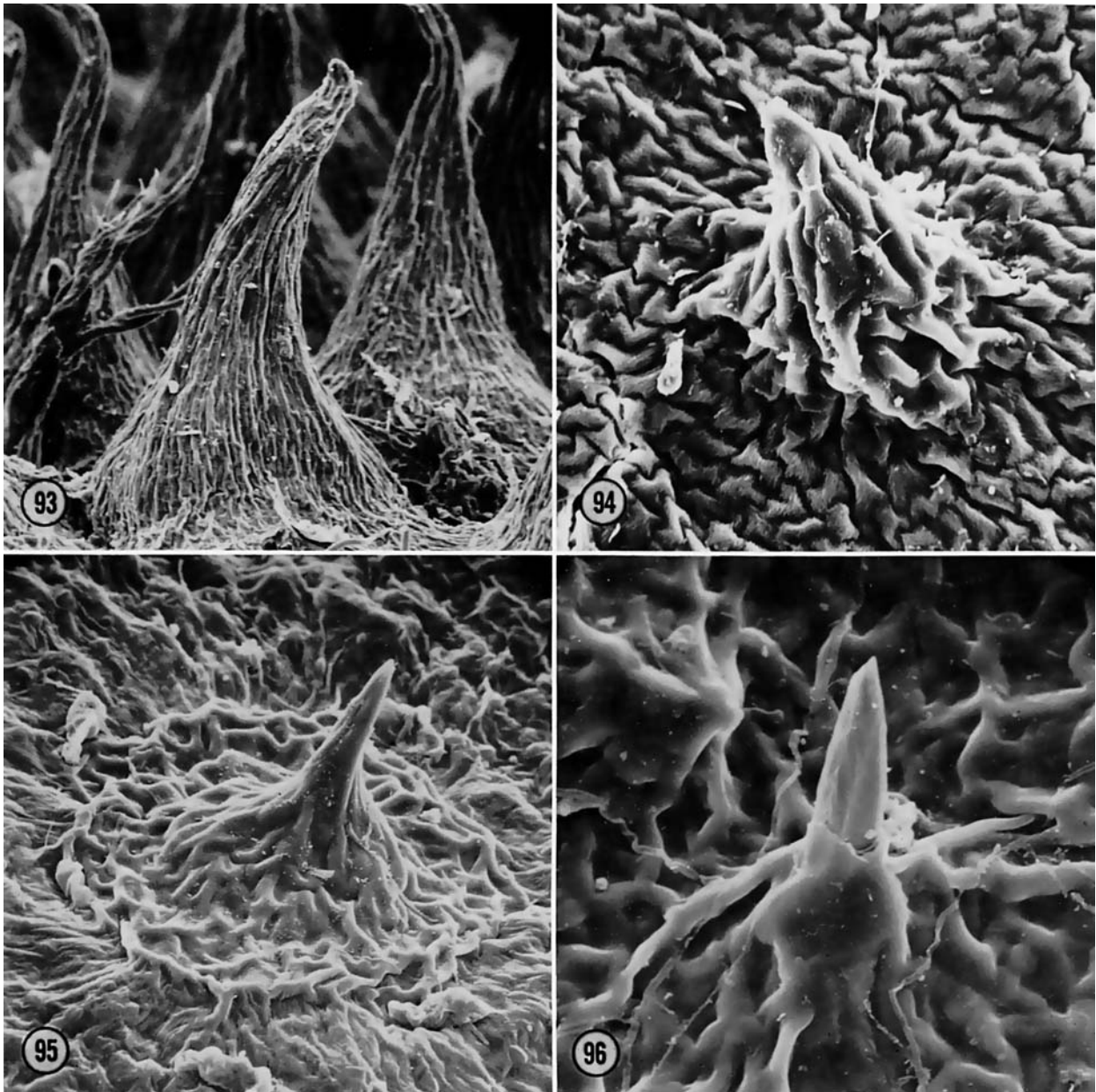


FIGURES 85-88.—Elongated alveolate hairs: 85, *Salpinga secunda* (UL, $\times 150$); 86, *Svitramia pulchra* (UL, $\times 90$); 87, *Miconia luteyana* (LL, $\times 110$); 88, *Topobea glabrescens* (LL, $\times 80$).

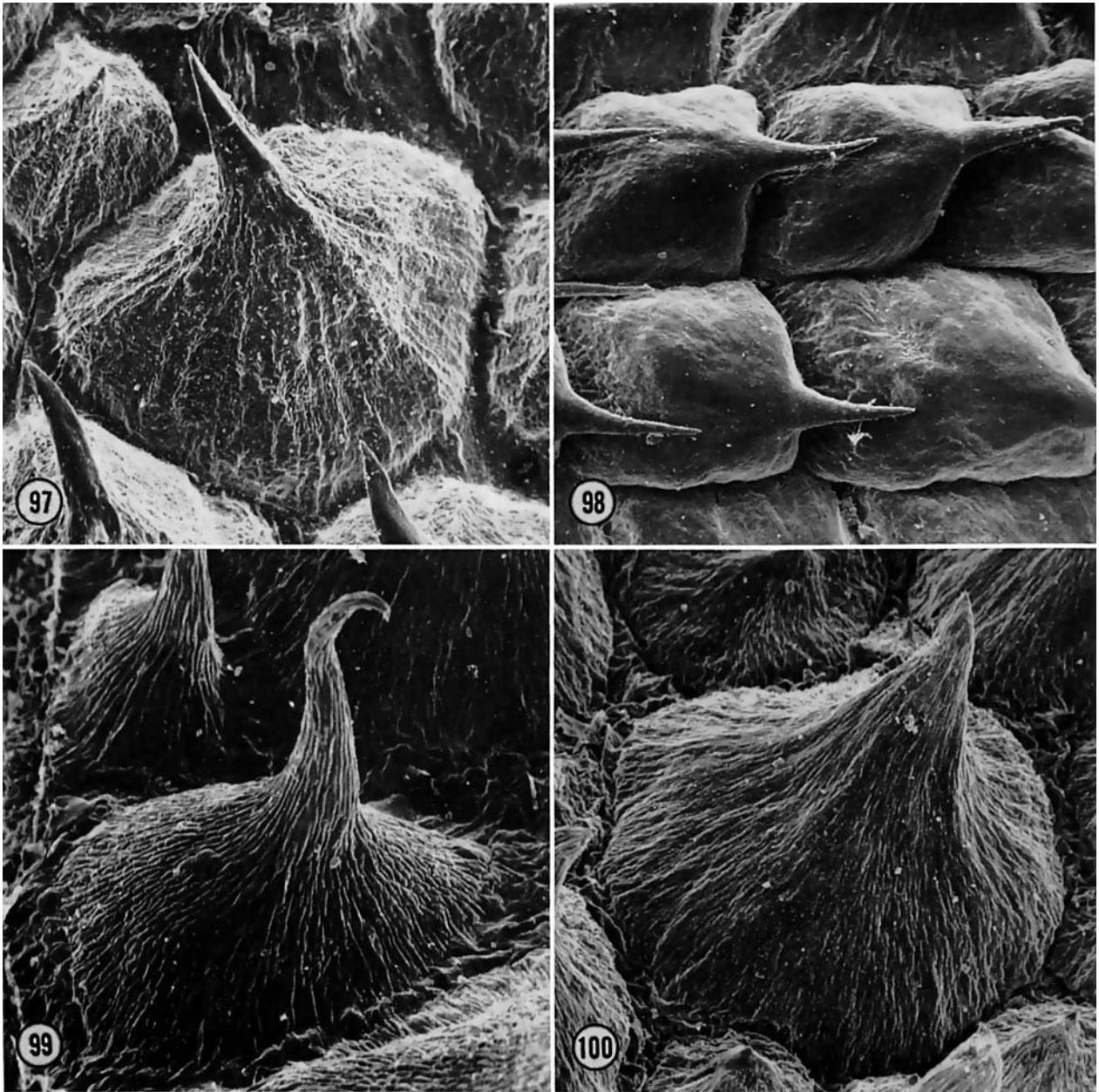


FIGURES 89, 90.—Elongated smooth thin-walled hairs: 89, *Ernestia pullei* (LL, $\times 400$); 90, *Miconia anderssonii* (H, $\times 530$).

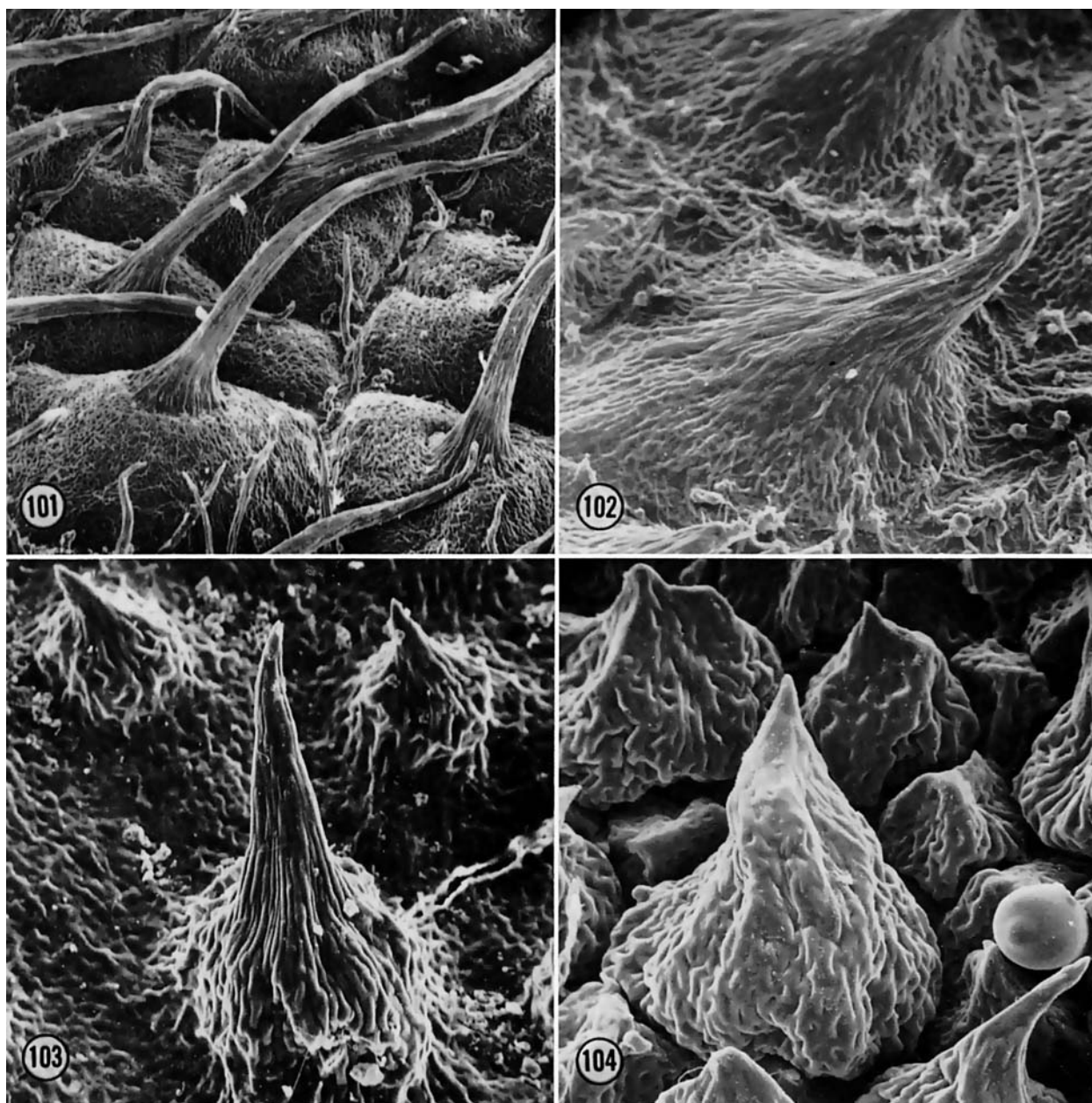
FIGURES 91, 92.—Conic hairs without enations: 91, *Meriania radula* (UL, $\times 200$); 92, *Marcetia lanuginosa* (UL, $\times 85$).



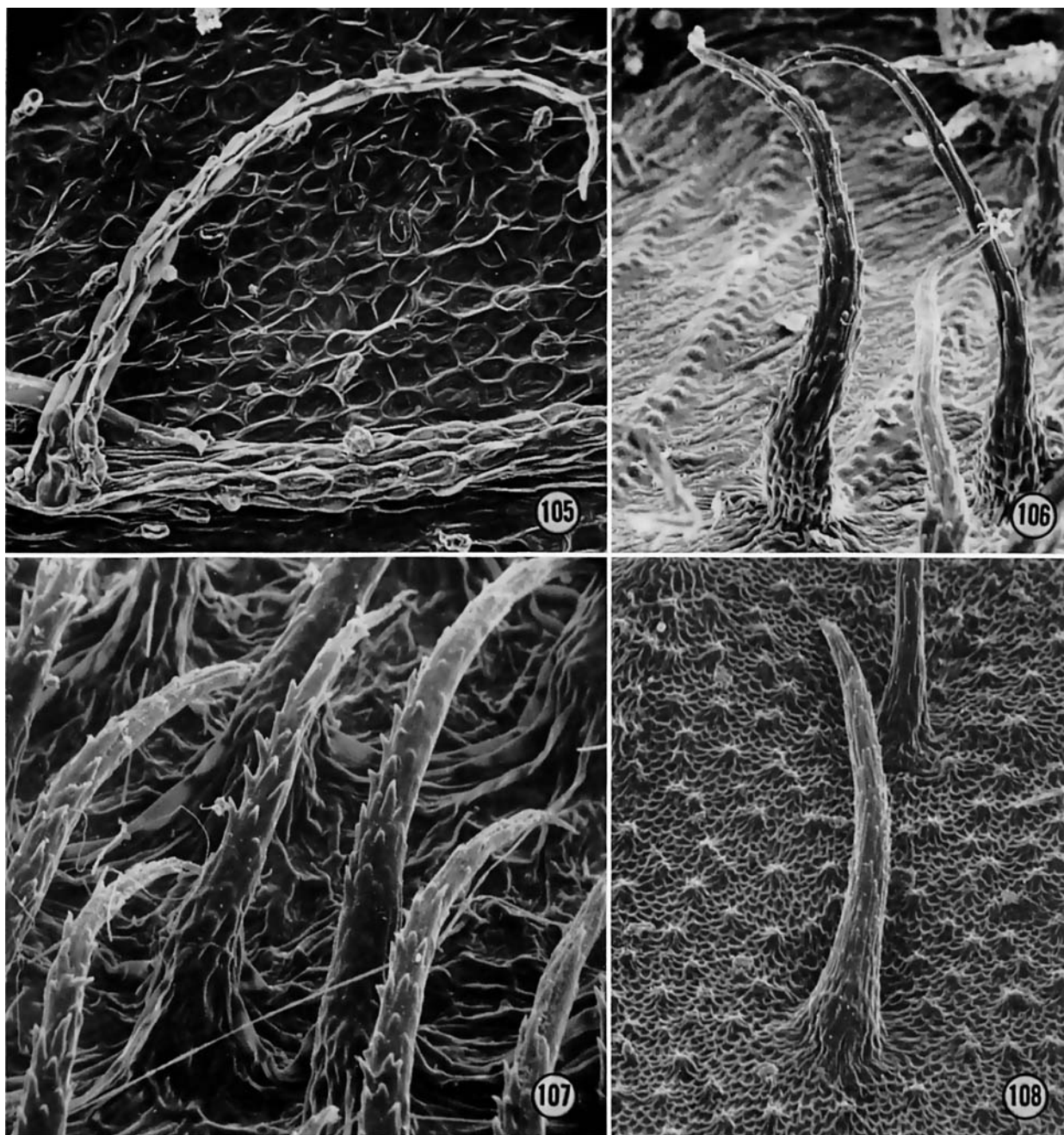
FIGURES 93-96.—Conic hairs without enations: 93, *Miconia penicillata* (UL, $\times 140$); 94, *Leandra multiplinervis* (UL, $\times 600$); 95, *Ossaea asperifolia* (LL, $\times 360$); 96, *Llewelynina williamsii* (UL, $\times 650$).



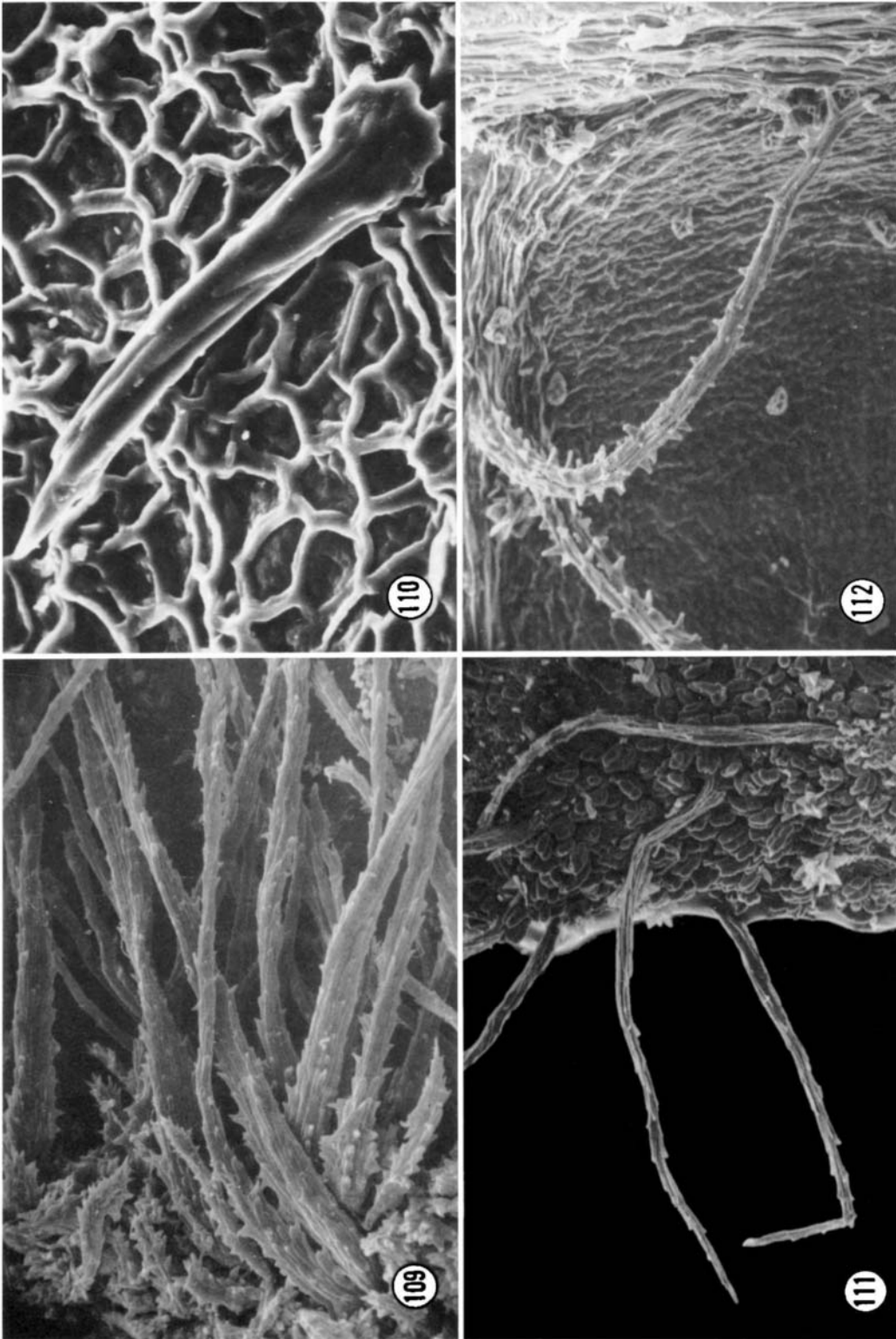
FIGURES 97–100.—Bulla-based hairs without enations: 97, *Tibouchina gleasoniana* (UL, $\times 50$); 98, *Brachyotum angustifolium* (UL, $\times 50$); 99, *Miconia ancistrophora* (UL, $\times 110$); 100, *Calycogonium krugii* (UL, $\times 90$).



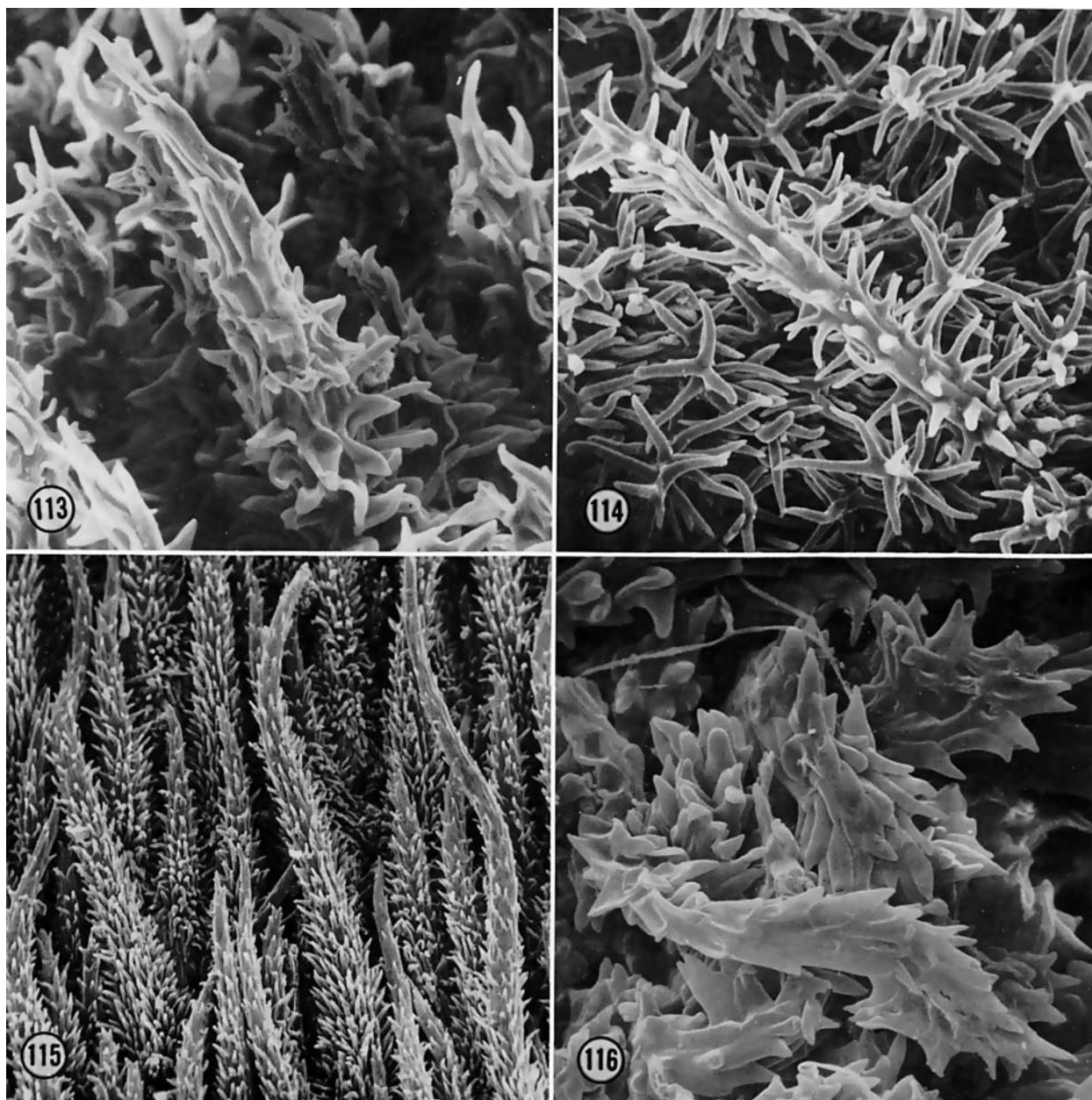
FIGURES 101-104.—Bulla-based hairs without enations: 101, *Anaectocalyx bracteosa* (UL, $\times 60$); 102, *Henriettella tuberculosa* (UL, $\times 120$); 103, *Leandra melastomoides* (UL, $\times 170$); 104, *Ossaea asperifolia* (H, $\times 175$).



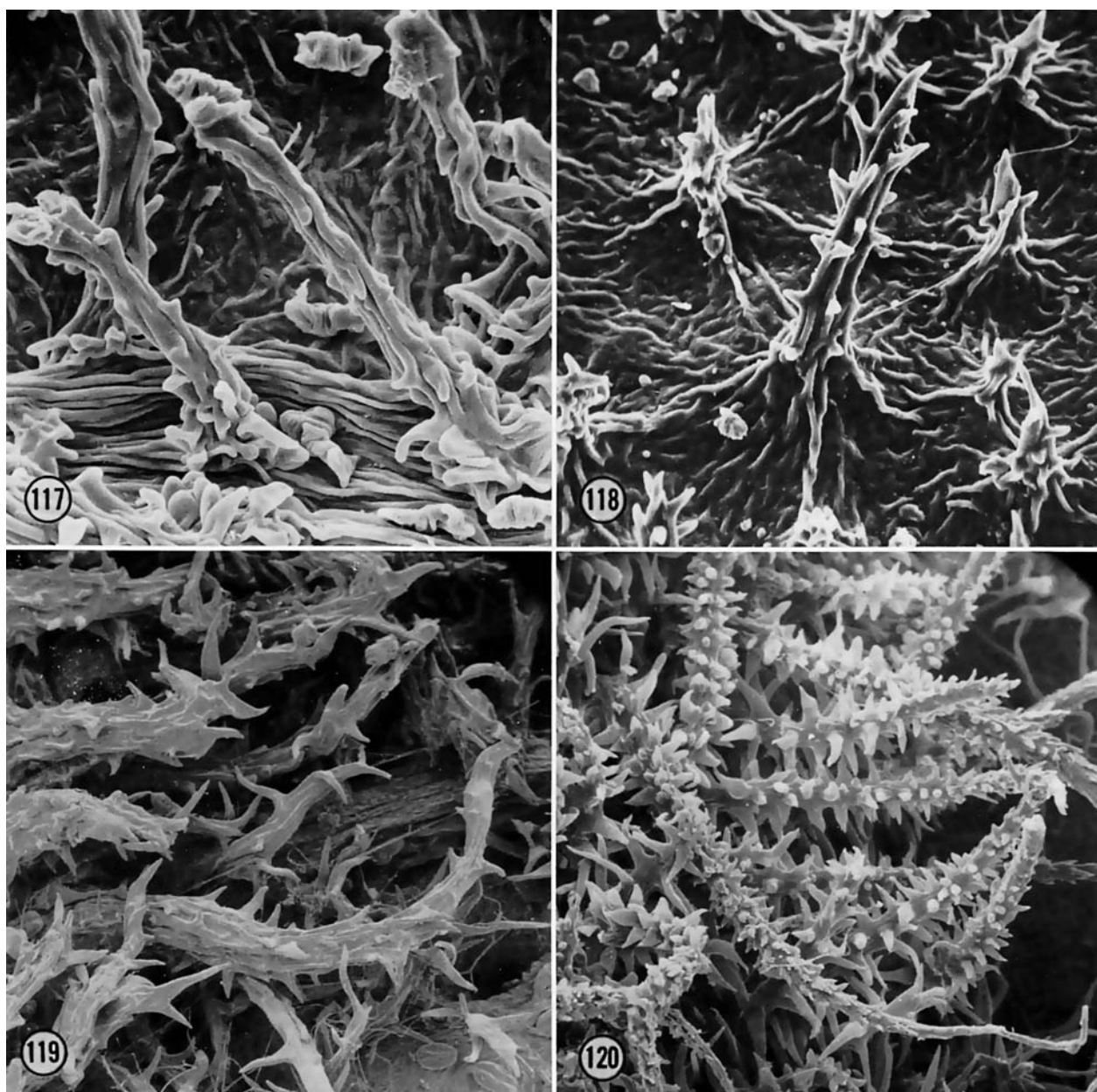
FIGURES 105–108.—Elongated slightly roughened hairs: 105, *Bertolonia maculata* (LL, $\times 100$); 106, *Tibouchina aspera* var. *asperrima* (LL, $\times 175$); 107, *Monochaetum rotundifolium* (UL, $\times 185$); 108, *Conostegia setosa* (UL, $\times 80$).



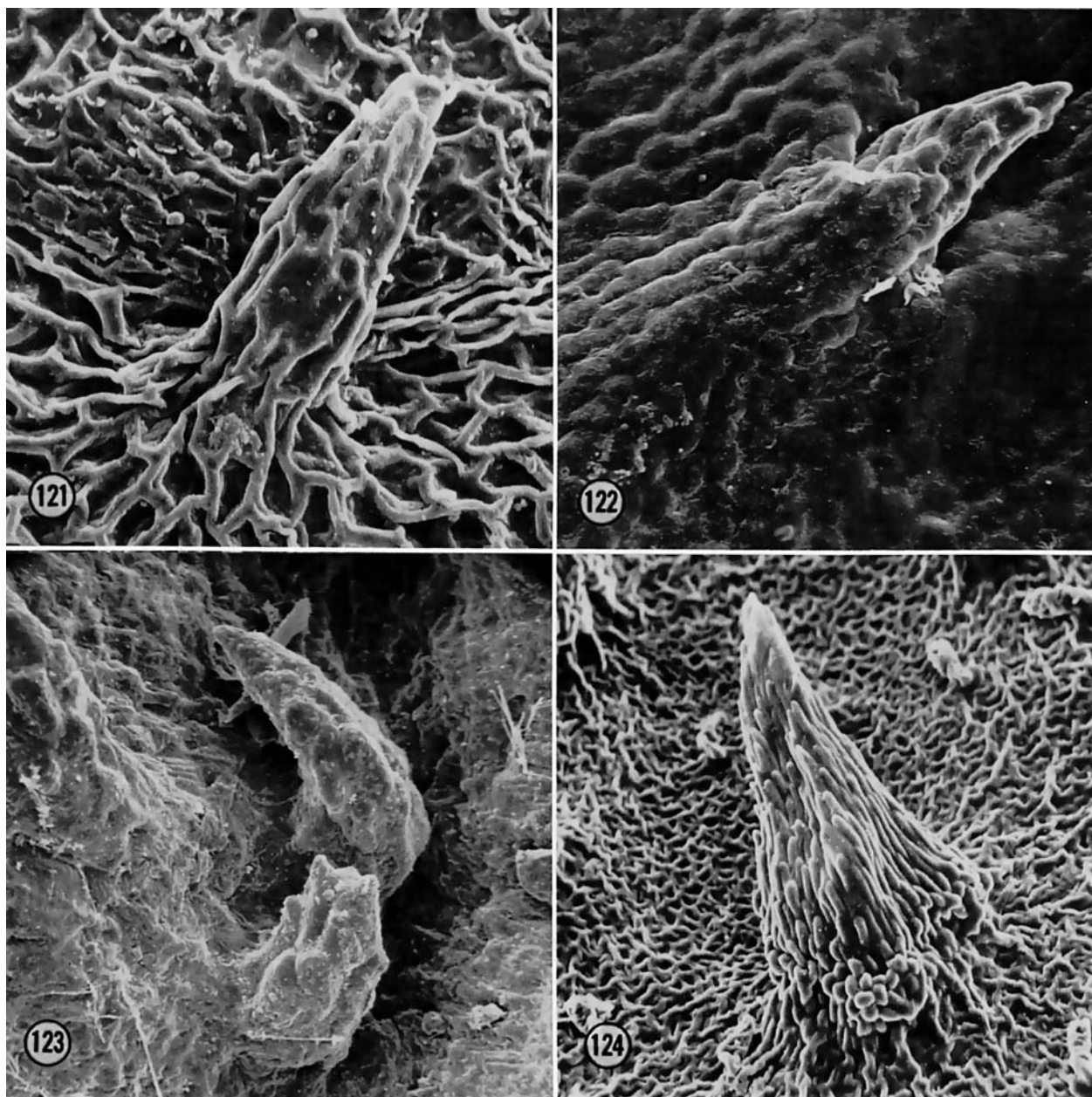
FIGURES 109-112.—Elongated slightly roughened hairs: 109, *Clidemia cuatrecasii* (LL, $\times 50$); 110, *Leandra clidemioides* (UL, $\times 575$); 111, *Ossaea quinquerria* (H, $\times 75$); 112, *Topobea castanadae* (LL, $\times 140$).



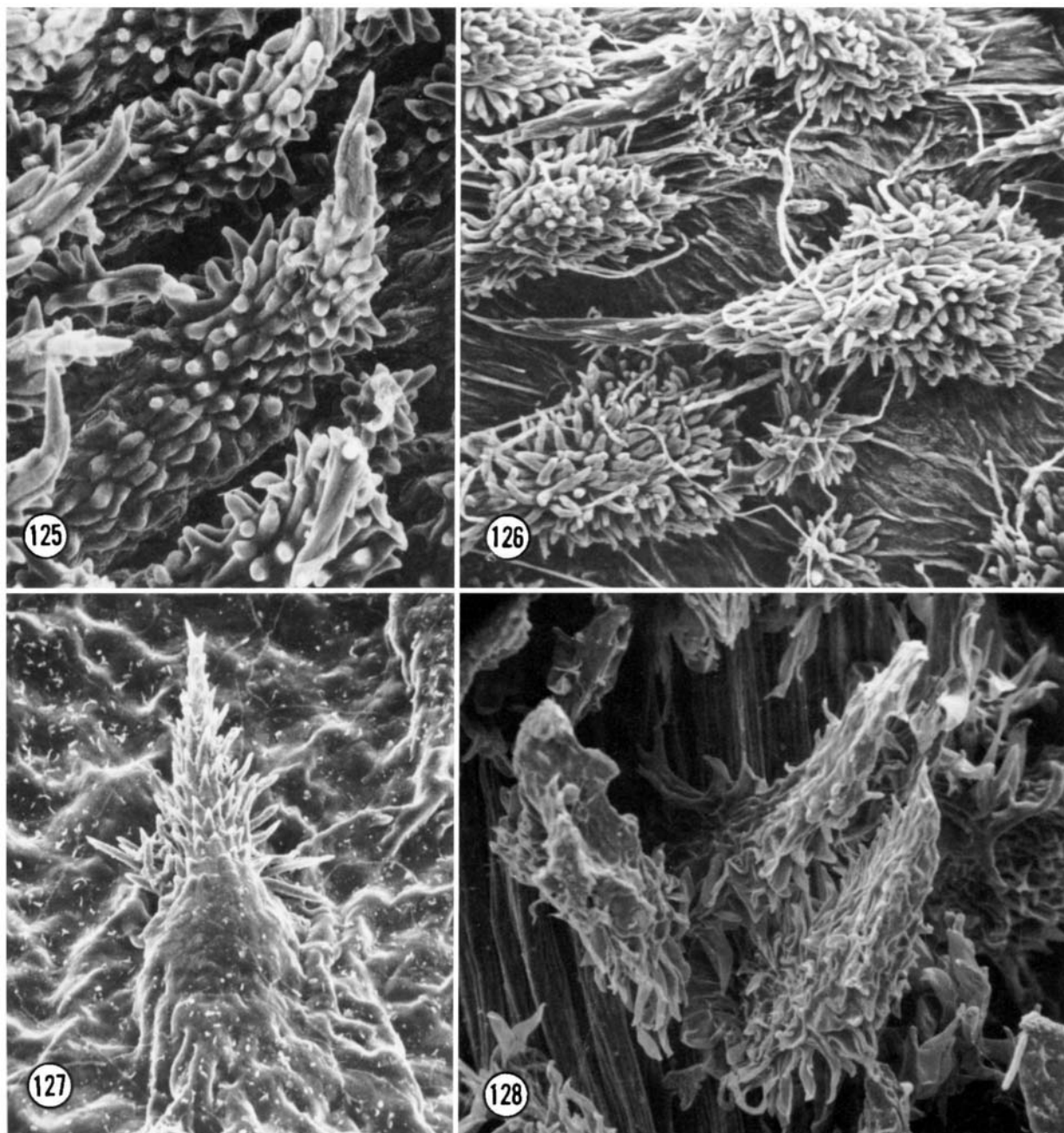
FIGURES 113-116.—Elongated moderately roughened hairs: 113, *Meriania sclerophylla* (LL, $\times 300$); 114, *Chaetolepis microphylla* (LL, $\times 200$); 115, *Monochaetum discolor* (H, $\times 110$); 116, *Clidemia cuatrecasii* (LL, $\times 170$).



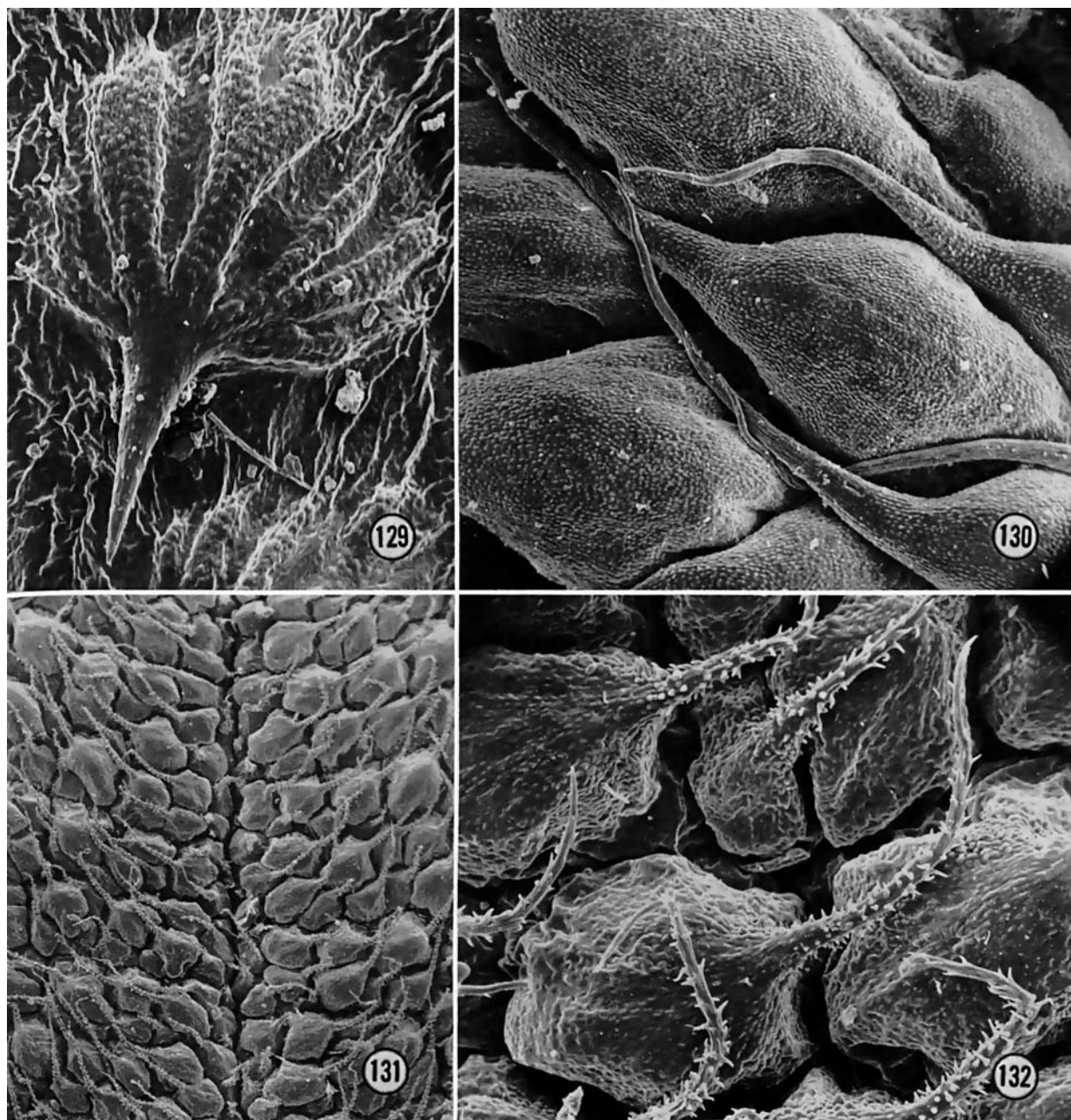
FIGURES 117-120.—Elongated moderately roughened hairs: 117, *Henriettella fascicularis* (LL, $\times 280$); 118, *Leandra microphylla* (UL, $\times 275$); 119, *Ossaea scabrosa* (LL, $\times 120$); 120, *Topobea trianaei* (LL, $\times 75$).



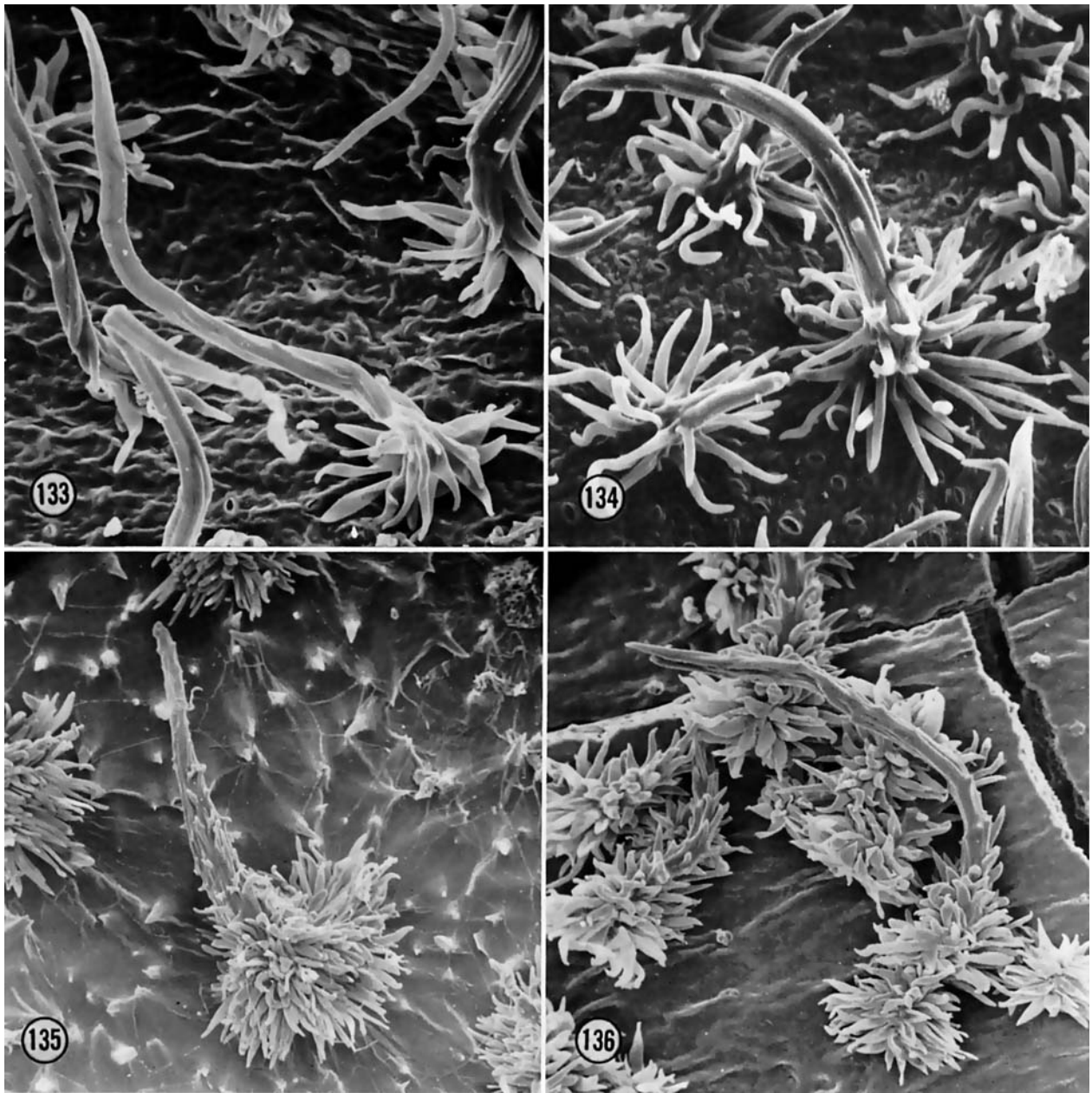
FIGURES 121-124.—Conic slightly roughened hairs: 121, *Triolena amazonica* (UL, $\times 350$); 122, *Pterolepis cataphracta* (UL, $\times 300$); 123, *Miconia luteynii* (UL, $\times 400$); 124, *Leandra amplexicaulis* (UL, $\times 200$).



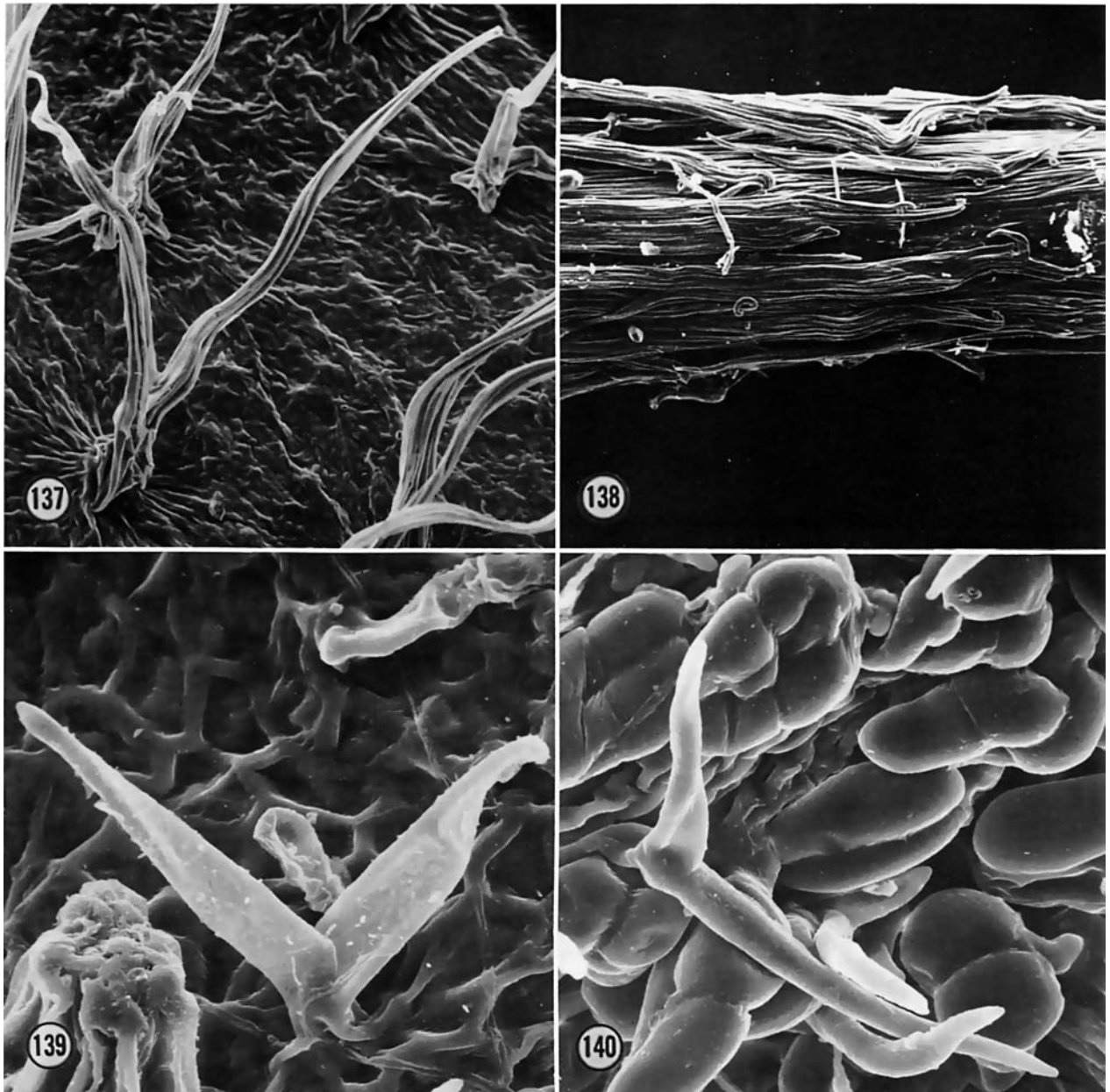
FIGURES 125–128.—Conic densely roughened hairs: 125, *Tibouchina spruceana* (LL, $\times 325$); 126, *Chaetolepis lindeniana* (H, $\times 160$); 127, *Monochaetum discolor* (UL, $\times 180$); 128, *Topobea verrucosa* (LL, $\times 132$).



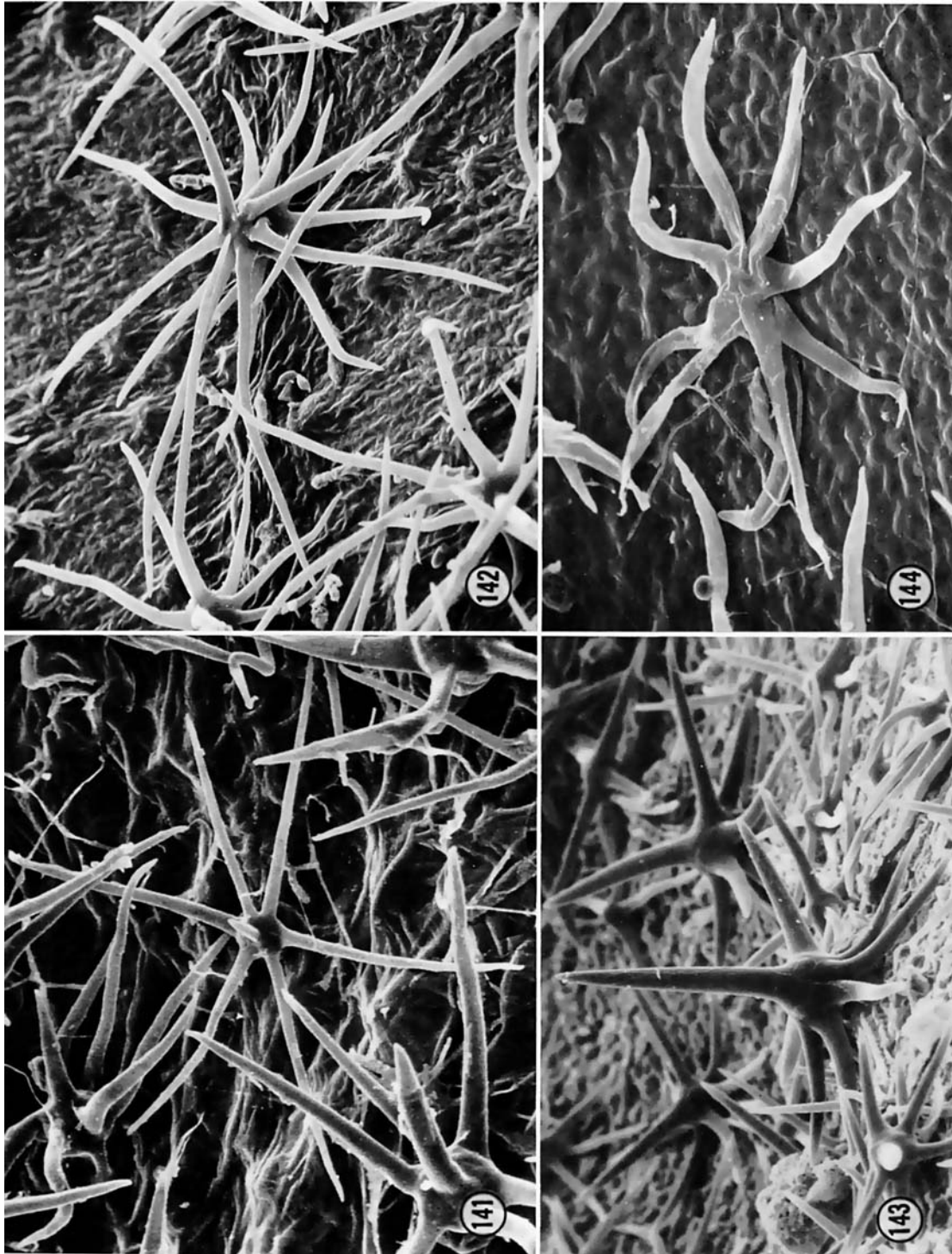
FIGURES 129–132.—Bulla-based roughened hairs: 129, *Tibouchina estrellensis* (UL, $\times 80$); 130, *Brachyotum multituberculatum* (UL, $\times 70$); 131, *Brachyotum weberbaueri* (UL, $\times 20$); 132, *Brachyotum weberbaueri* (UL, $\times 100$).



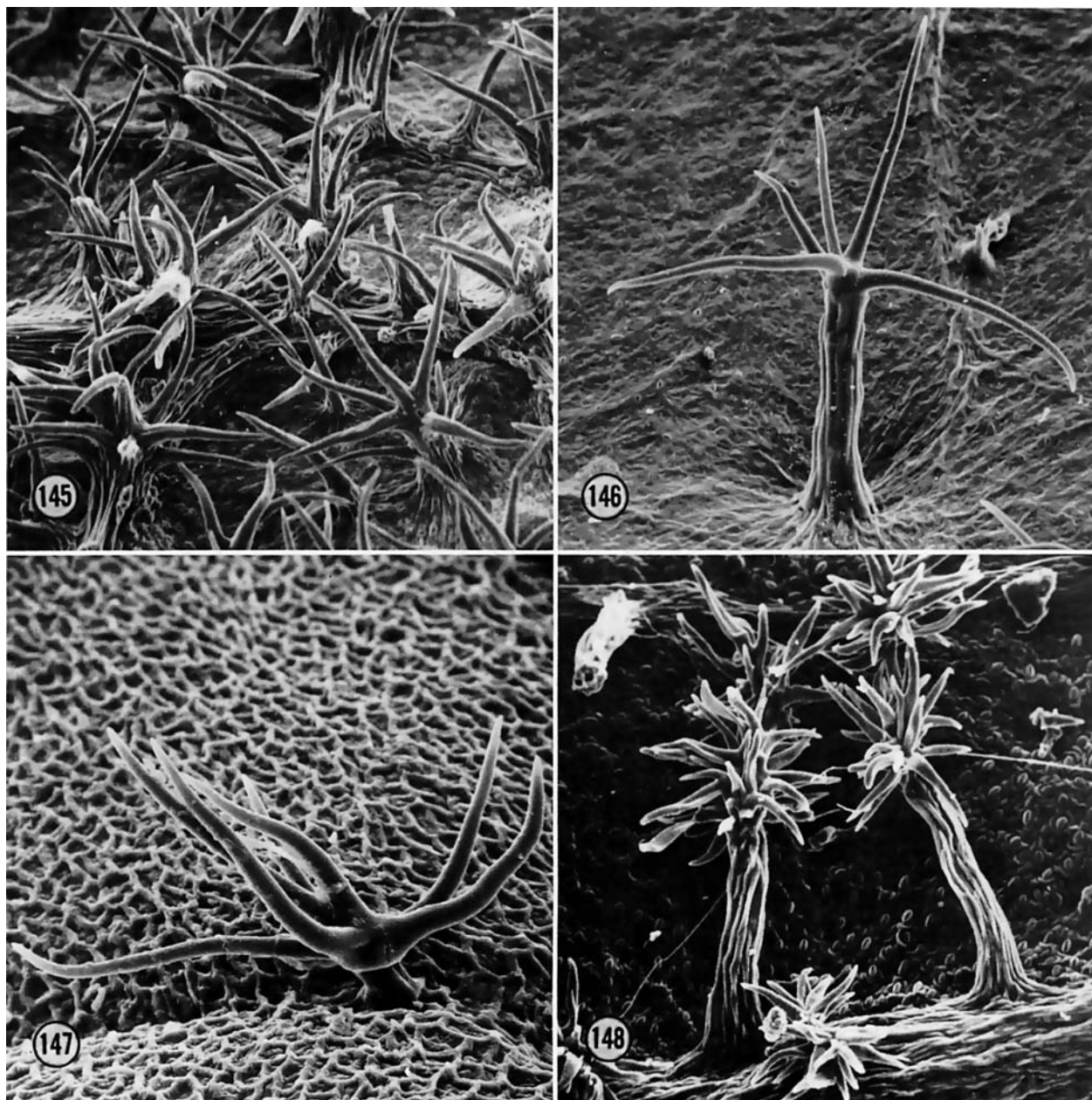
FIGURES 133–136.—Elongated hairs with greatly roughened (substellate) base: 133, *Meriania steyermarkii* (LL, $\times 240$); 134, *Tibouchina estrellensis* (LL, $\times 280$); 135, *Henriettea multiflora* (UL, $\times 100$); 136, *Blakea calyptrata* (UL, $\times 120$).



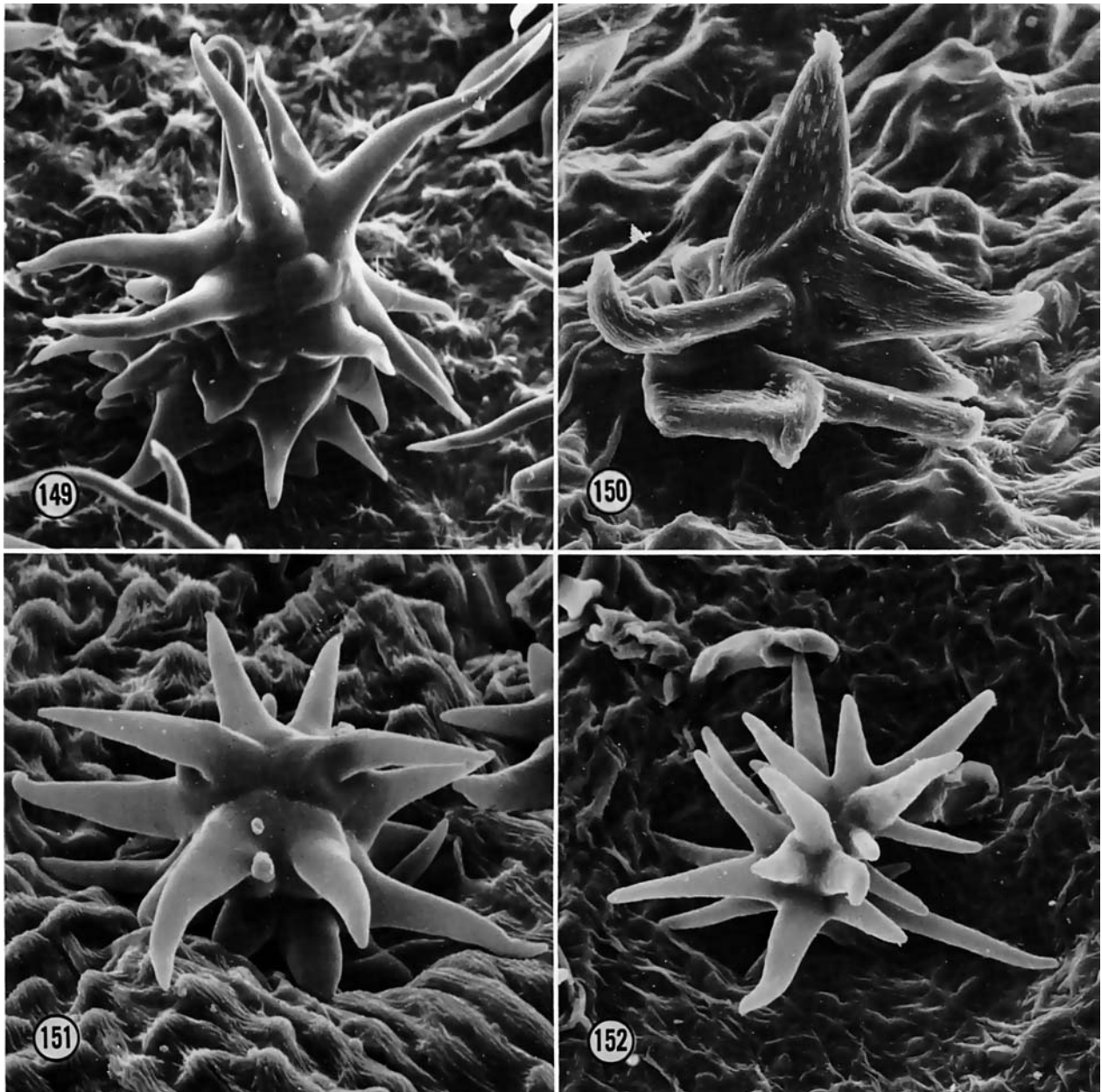
FIGURES 137-140.—Few(2-5)-armed hairs: 137, *Adelobotrys barbata* (LL, $\times 140$); 138, *Farringtonia fasciculata* (Stem, $\times 60$); 139, *Tococa caquetana* (H, $\times 650$); 140, *Necramium gigantophyllum* (LL, $\times 640$).



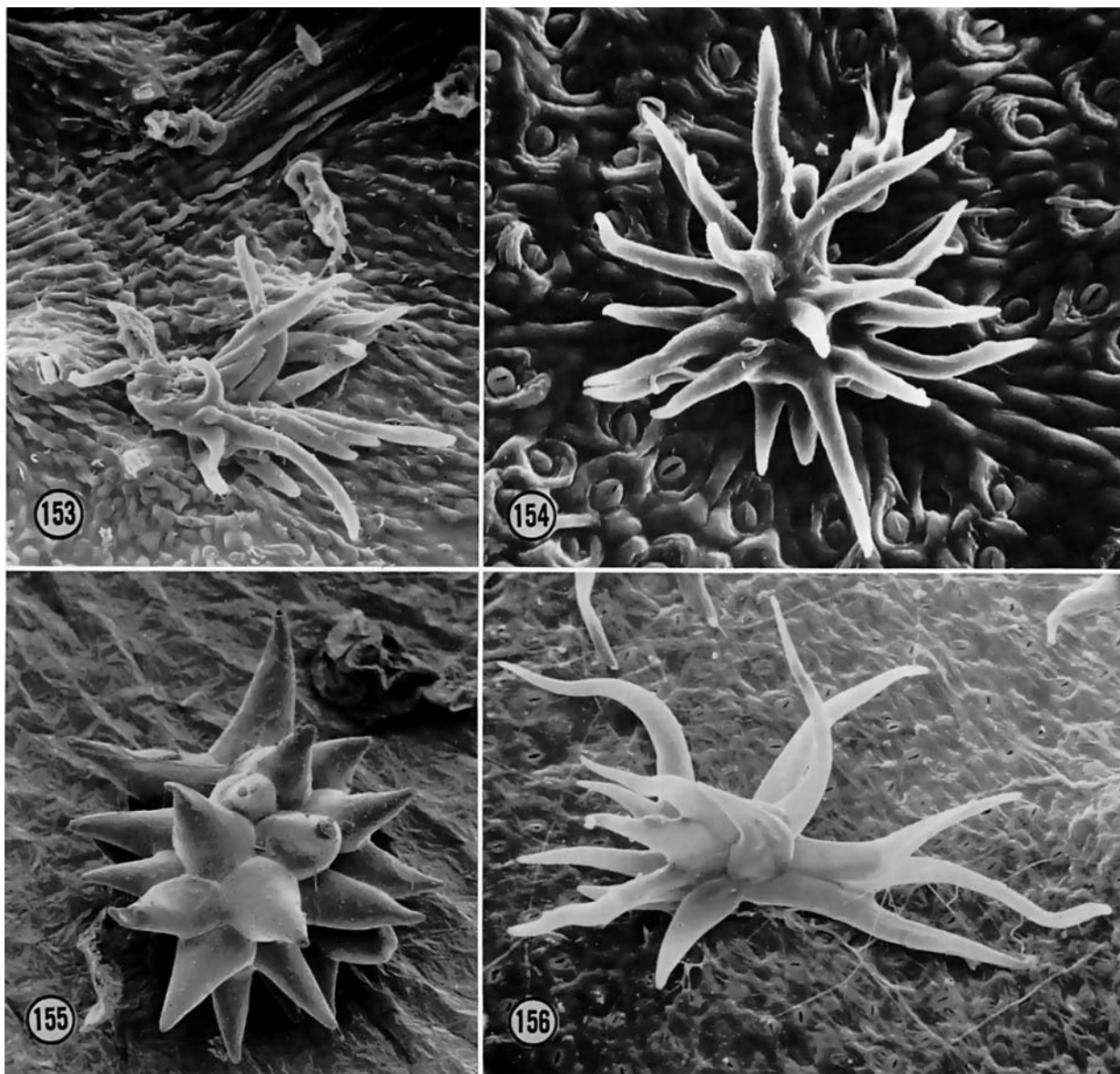
FIGURES 141-144.—Sessile-stellate hairs: 141, *Maguireanthus ayangannae* (H., ×275); 142, *Miconia heterochaeta* (L., ×210); 143, *Miconia titanophylla* (L.L., ×270); 144, *Cleidemia dimorphica* (U.L., ×260).



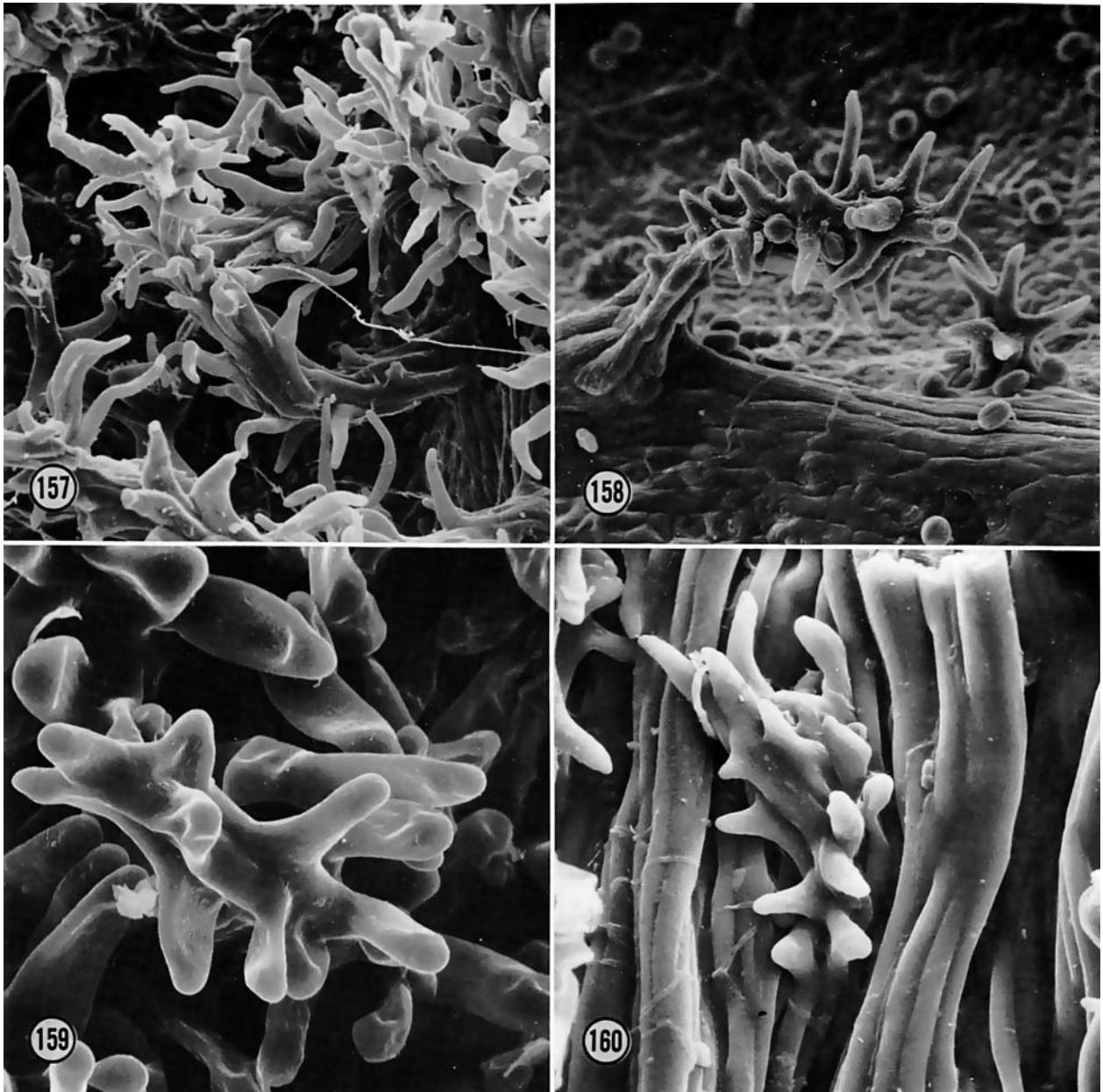
FIGURES 145-148.—Stipitate-stellate hairs: 145, *Tibouchina bahiensis* (LL, $\times 100$); 146, *Miconia dorsiloba* (LL, $\times 190$); 147, *Clidemia bullosa* (UL, $\times 300$); 148, *Leandra nervosa* (LL, $\times 175$).



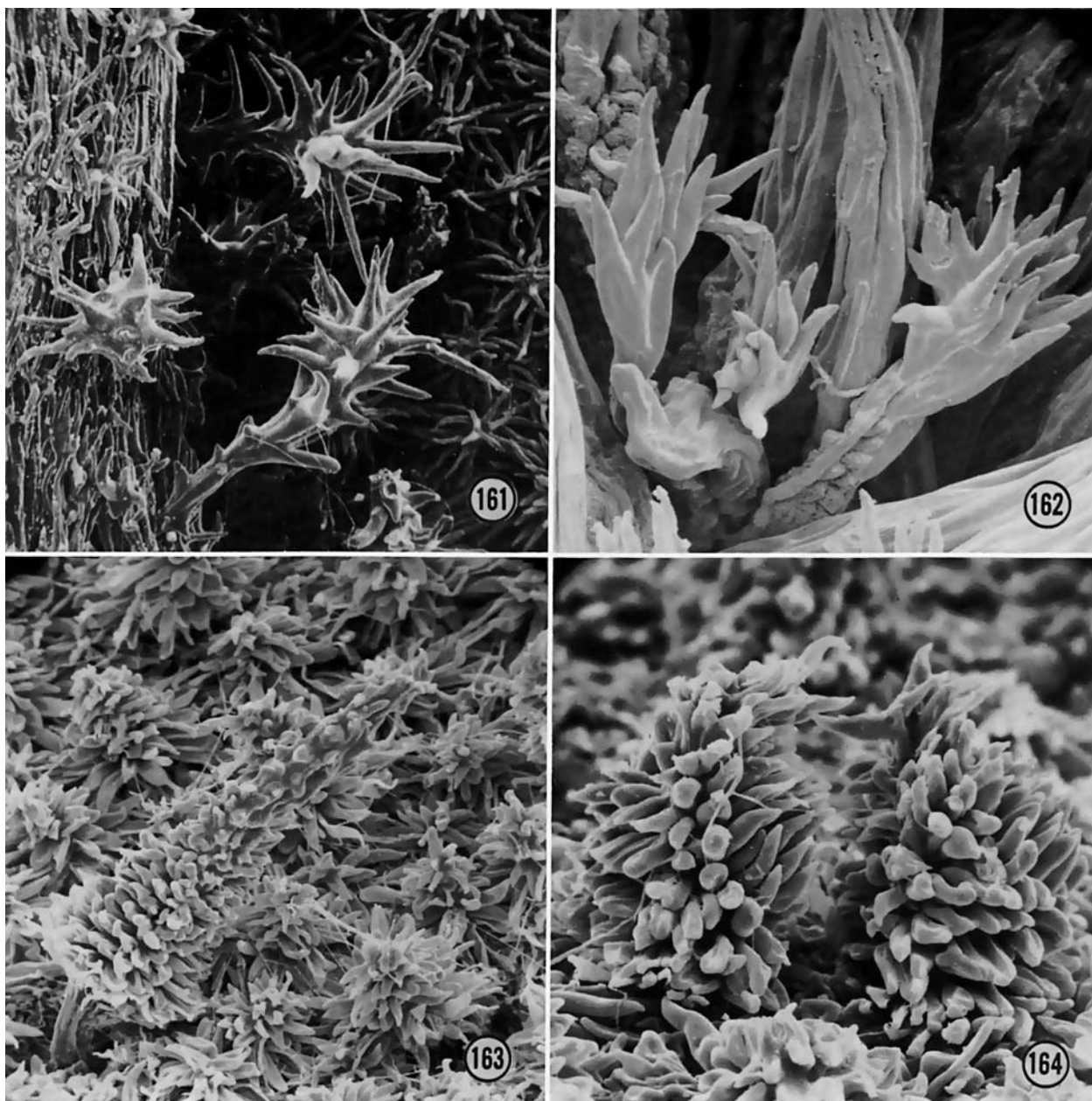
FIGURES 149–152.—Dendritic hairs with short axis and few–moderate number of terete arms: 149, *Conostegia lindenii* (LL, $\times 260$); 150, *Miconia adenocalyx* (LL, $\times 851$); 151, *Calyconium calyopteris* (H, $\times 750$); 152, *Maieta guianensis* (LL, $\times 500$).



FIGURES 153-156.—Dendritic hairs with short axis and few-moderate number of terete arms: 153, *Henriettea lasiostylis* (LL, $\times 300$); 154, *Leandra sulfurea* (LL, $\times 500$); 155, *Ossaea quinque-nervia* (UL, $\times 340$); 156, *Topobea pubescens* (LL, $\times 240$).

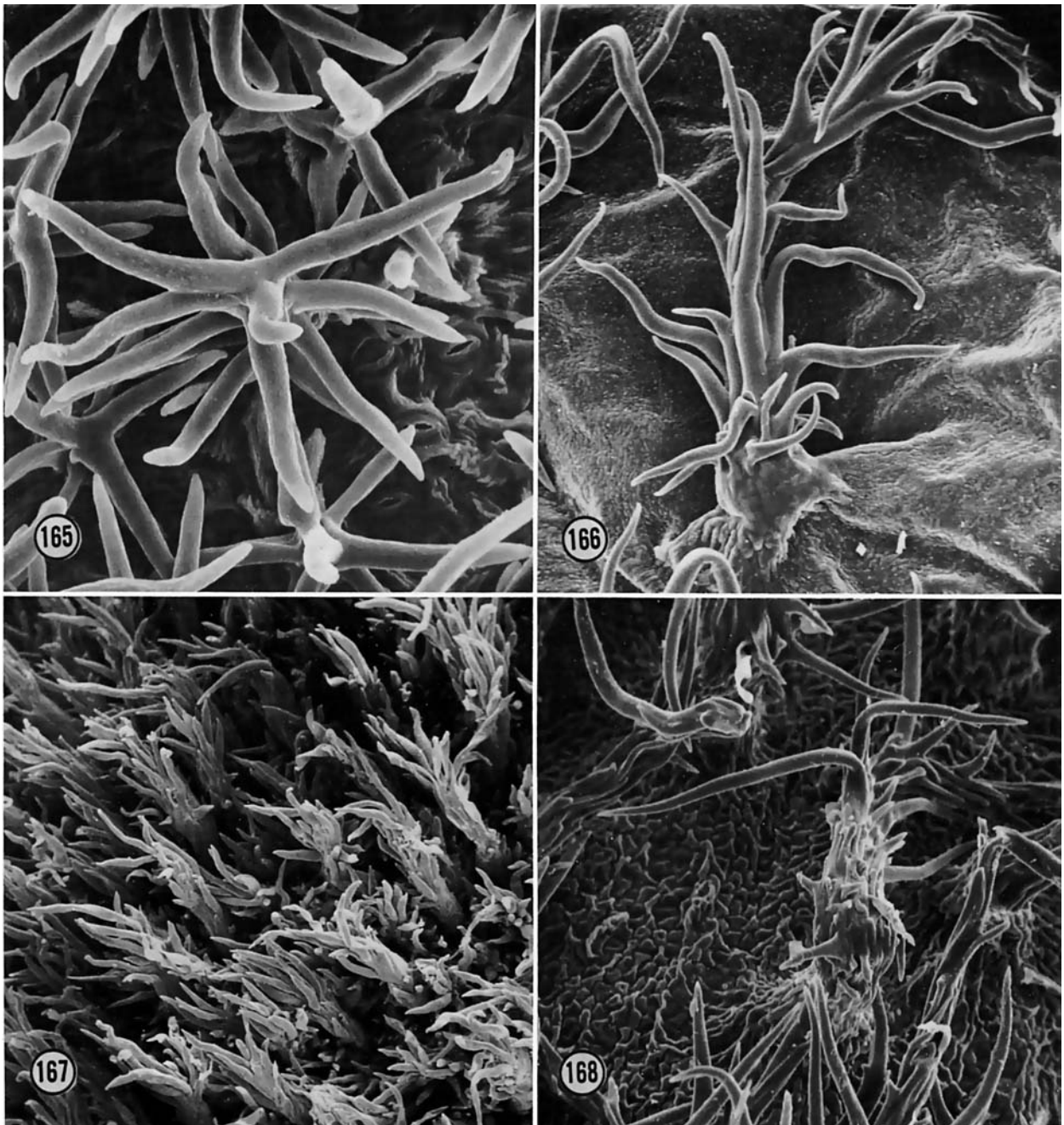


FIGURES 157-160.—Dendritic hairs with well-developed axis and moderate number of terete short to moderately long arms: 157, *Axinaea sclerophylla* (LL, $\times 200$); 158, *Cambessedesia cambessedesioides* (LL, $\times 260$); 159, *Macairea albiflora* (LL, $\times 1010$); 160, *Tibouchina oreophila* (LL, $\times 600$).

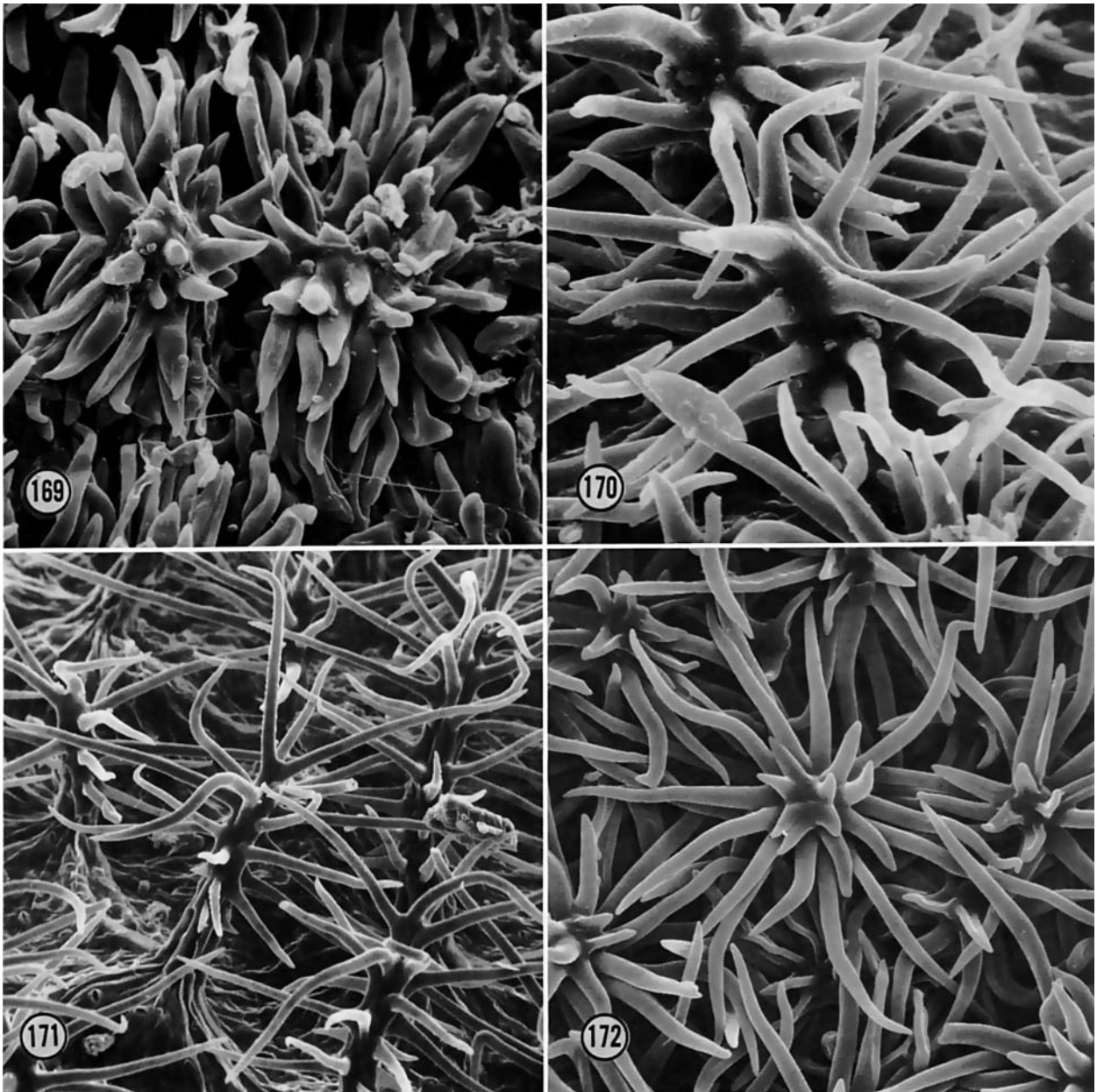


FIGURES 161, 162.—Dendritic hairs with well-developed axis and moderate number of terete short to moderately long arms: 161, *Tetrazygia discolor* (LL, $\times 160$); 162, *Ossaea pauciflora* (H, $\times 300$).

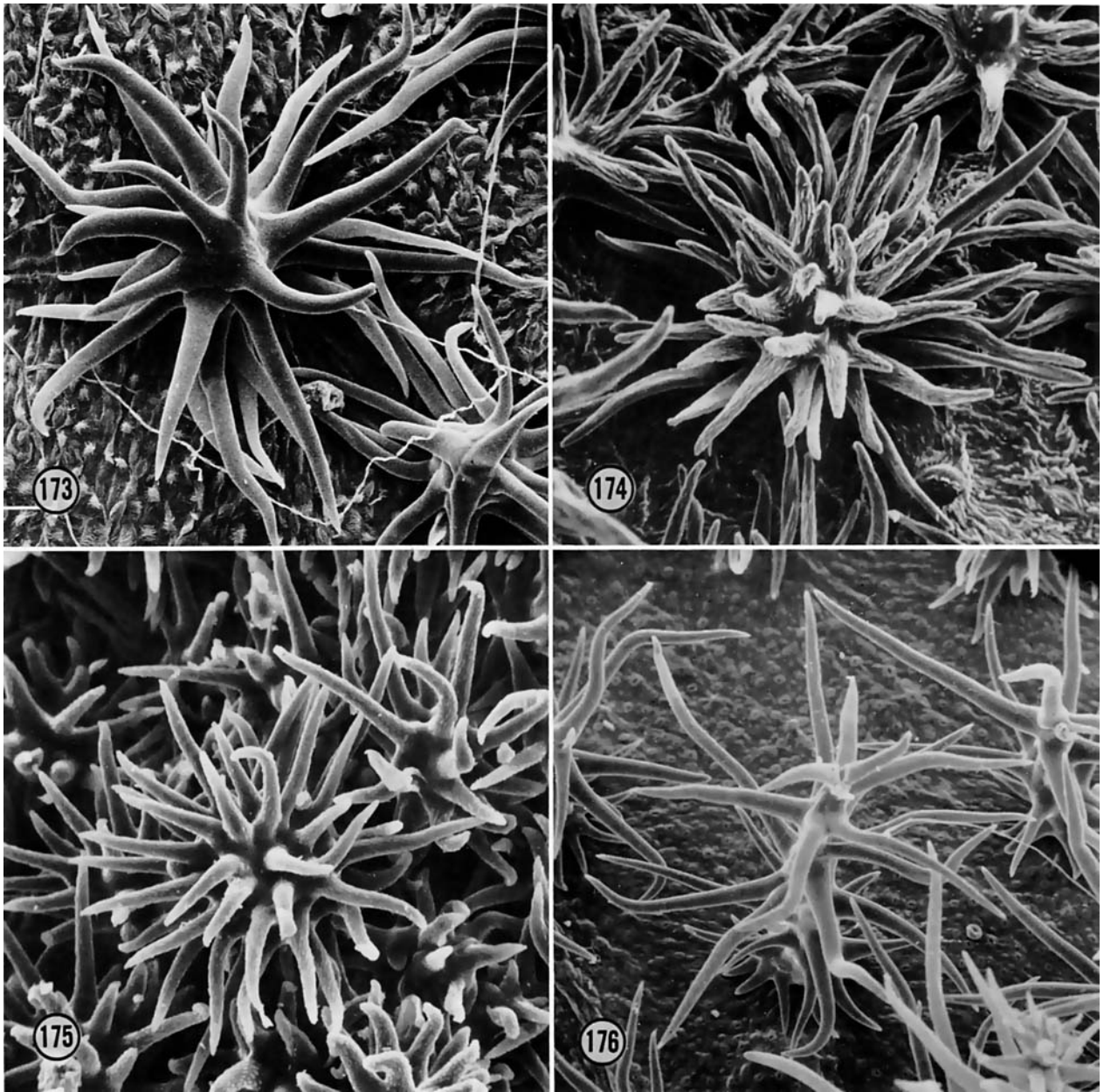
FIGURES 163, 164.—Dendritic hairs with well-developed axis and numerous short arms: 163, *Blakea calyptrata* (LL, $\times 170$); 164, *Blakea calyptrata* (H, $\times 300$).



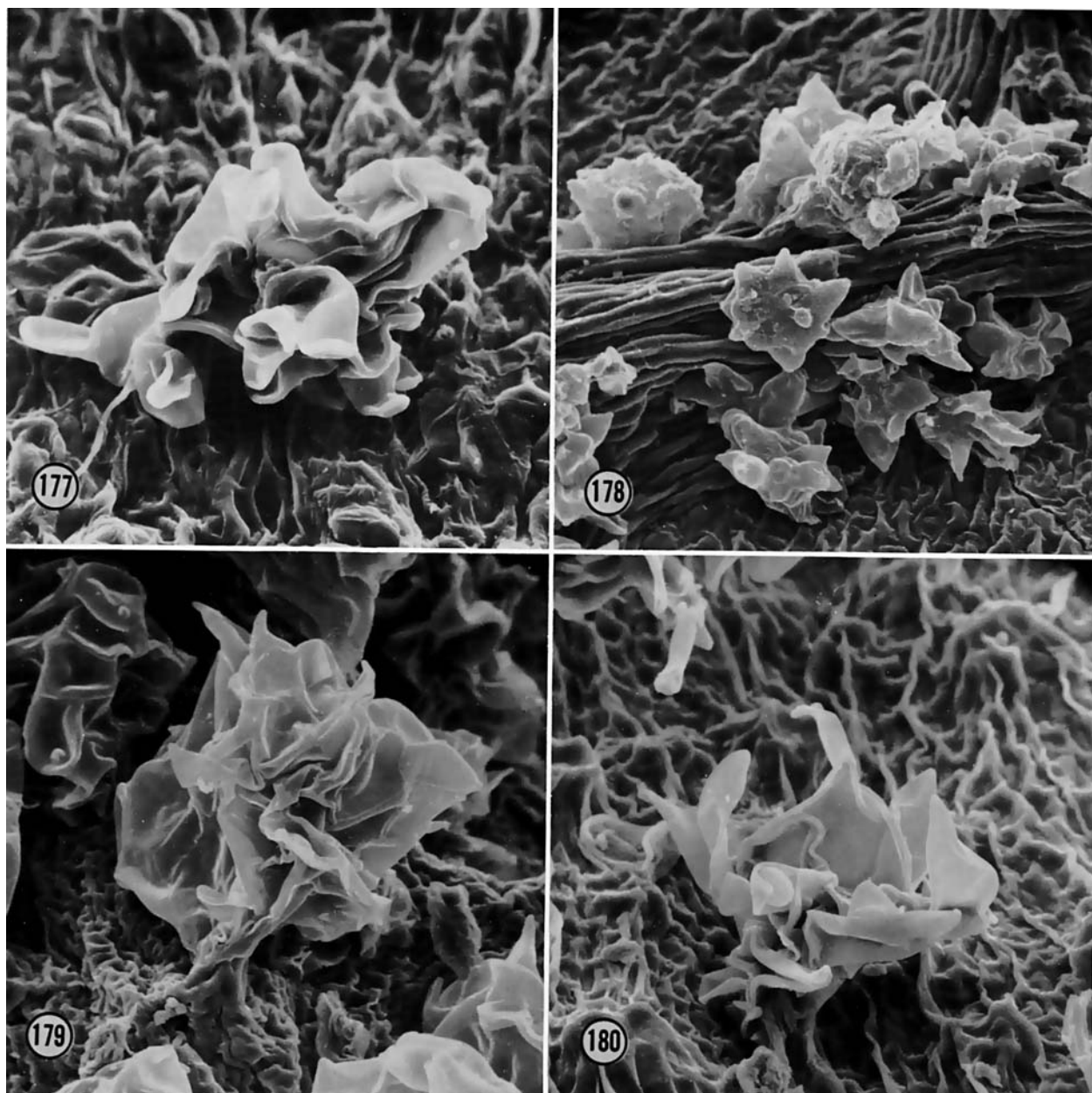
FIGURES 165–168.—Dendritic hairs with well-developed axis and few long terete arms: 165, *Chaetolepis microphylla* (LL, $\times 575$); 166, *Miconia rufescens* (UL, $\times 150$); 167, *Pachyanthus reticulatus* (H, $\times 55$); 168, *Leandra sublanata* (H, $\times 175$).



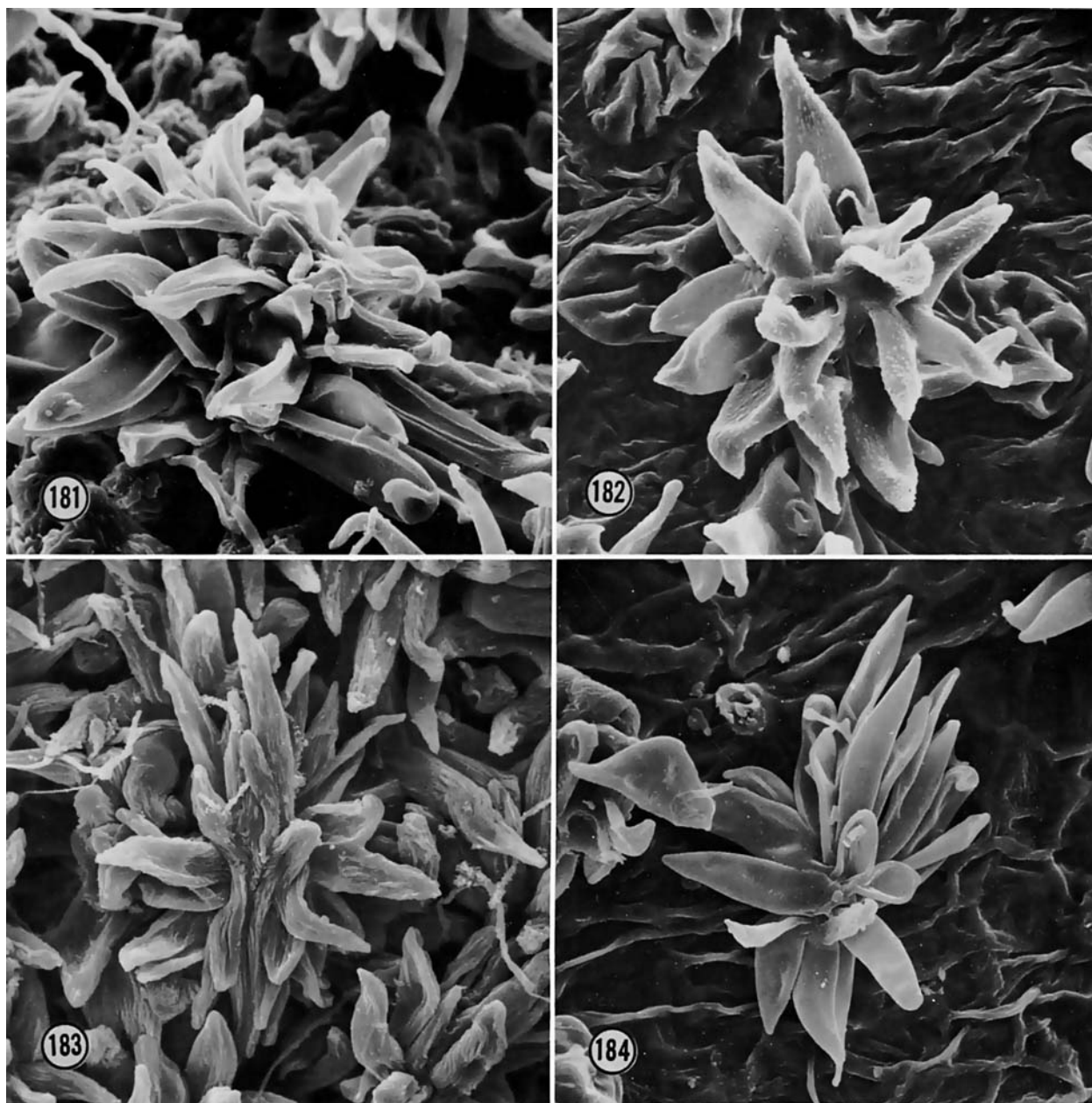
FIGURES 169–172.—Dendritic hairs with well-developed axis and many long terete arms: 169, *Meriania urceolata* (H, $\times 460$); 170, *Microlepis oleaefolia* (UL, $\times 710$); 171, *Monochaetum venosum* (LL, $\times 250$); 172, *Miconia mirabilis* (LL, $\times 460$).



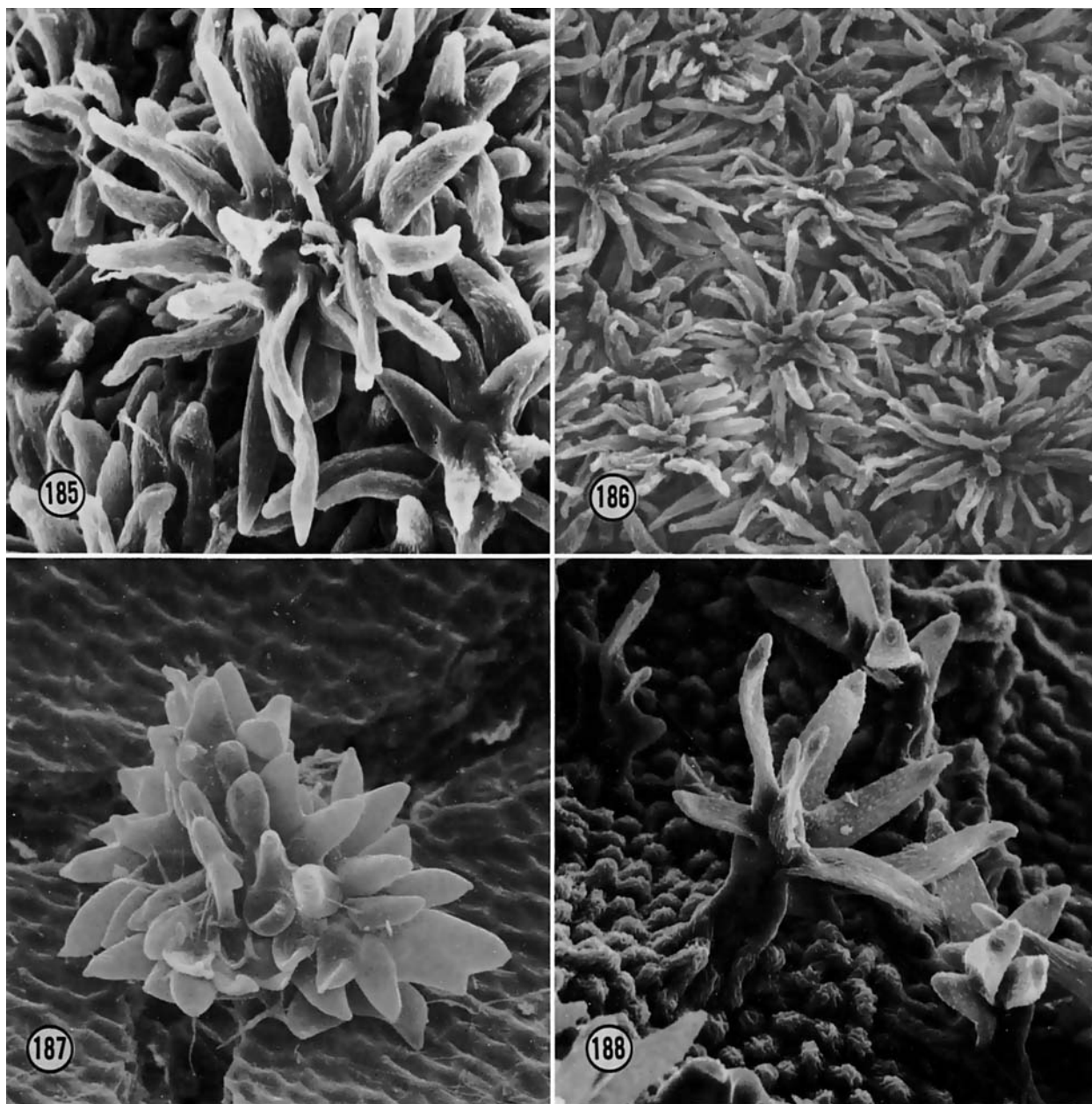
FIGURES 173–176.—Dendritic hairs with well-developed axis and many long terete arms: 173, *Miconia incurva* (LL, $\times 301$); 174, *Tetrazygia discolor* (LL, $\times 475$); 175, *Leandra sulfurea* (H, $\times 380$); 176, *Topobea trianaei* (LL, $\times 130$).



FIGURES 177–180.—Dendritic hairs with short thin-walled arms: 177, *Graffenrieda scandens* (LL, $\times 500$); 178, *Clidemia densiflora* (LL, $\times 240$); 179, *Ossaea boekei* (H, $\times 340$); 180, *Topobea praecox* (UL, $\times 425$).



FIGURES 181-184.—Dendritic hairs with moderately long thin-walled arms: 181, *Meriania sclerophylla* (LL, $\times 600$); 182, *Miconia nigricans* (LL, $\times 600$); 183, *Pachyanthus discolor* (H, $\times 520$); 184, *Tetrazygia urbanii* (H, $\times 500$).

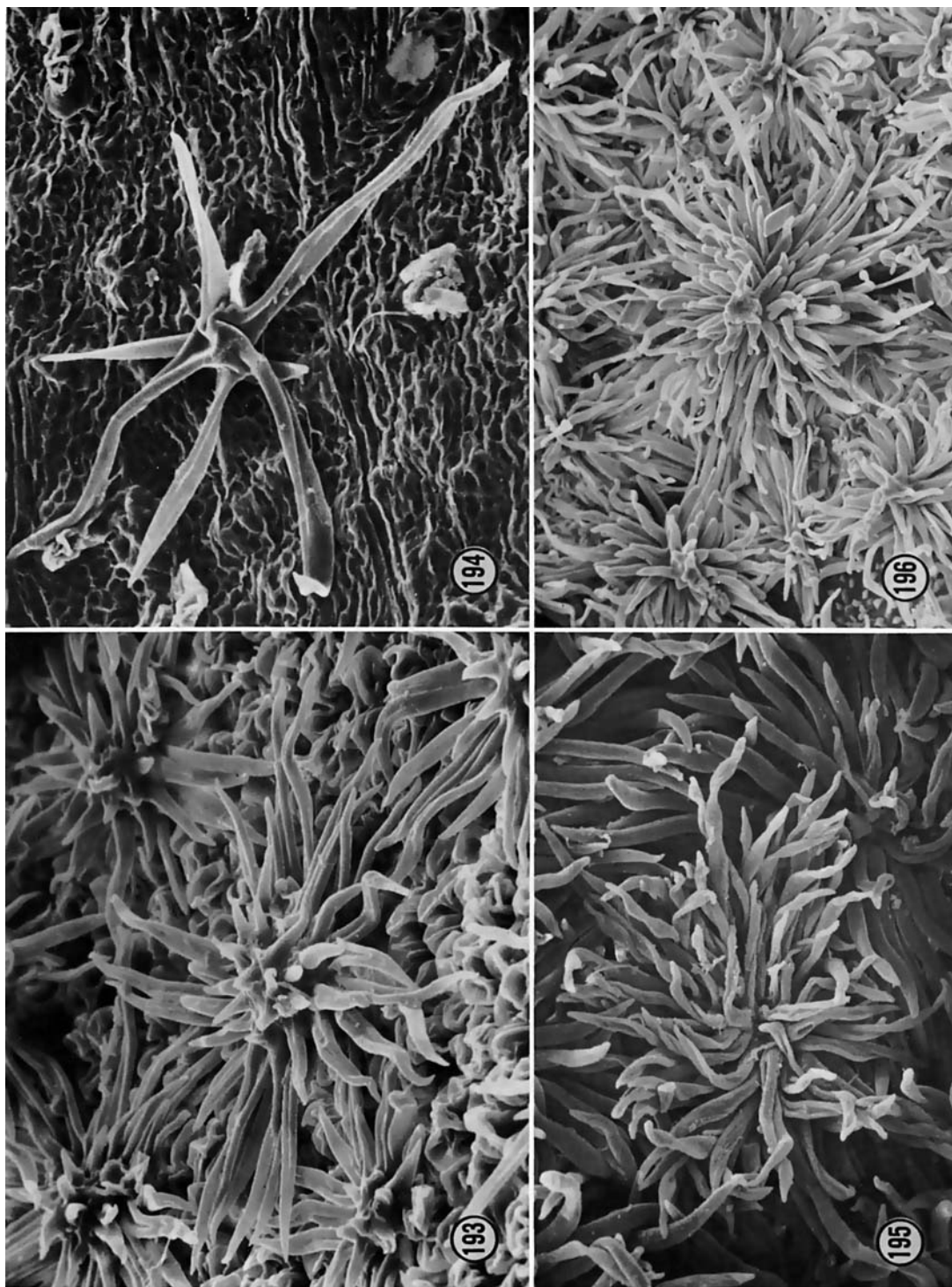


FIGURES 185-188.—Dendritic hairs with moderately long thin-walled arms: 185, *Charianthus fadyenii* (H, $\times 700$); 186, *Calycogonium cocoense* (LL, $\times 270$); 187, *Clidemia cuatrecasasi* (UL, $\times 360$); 188, *Leandra subseriata* (H, $\times 600$).

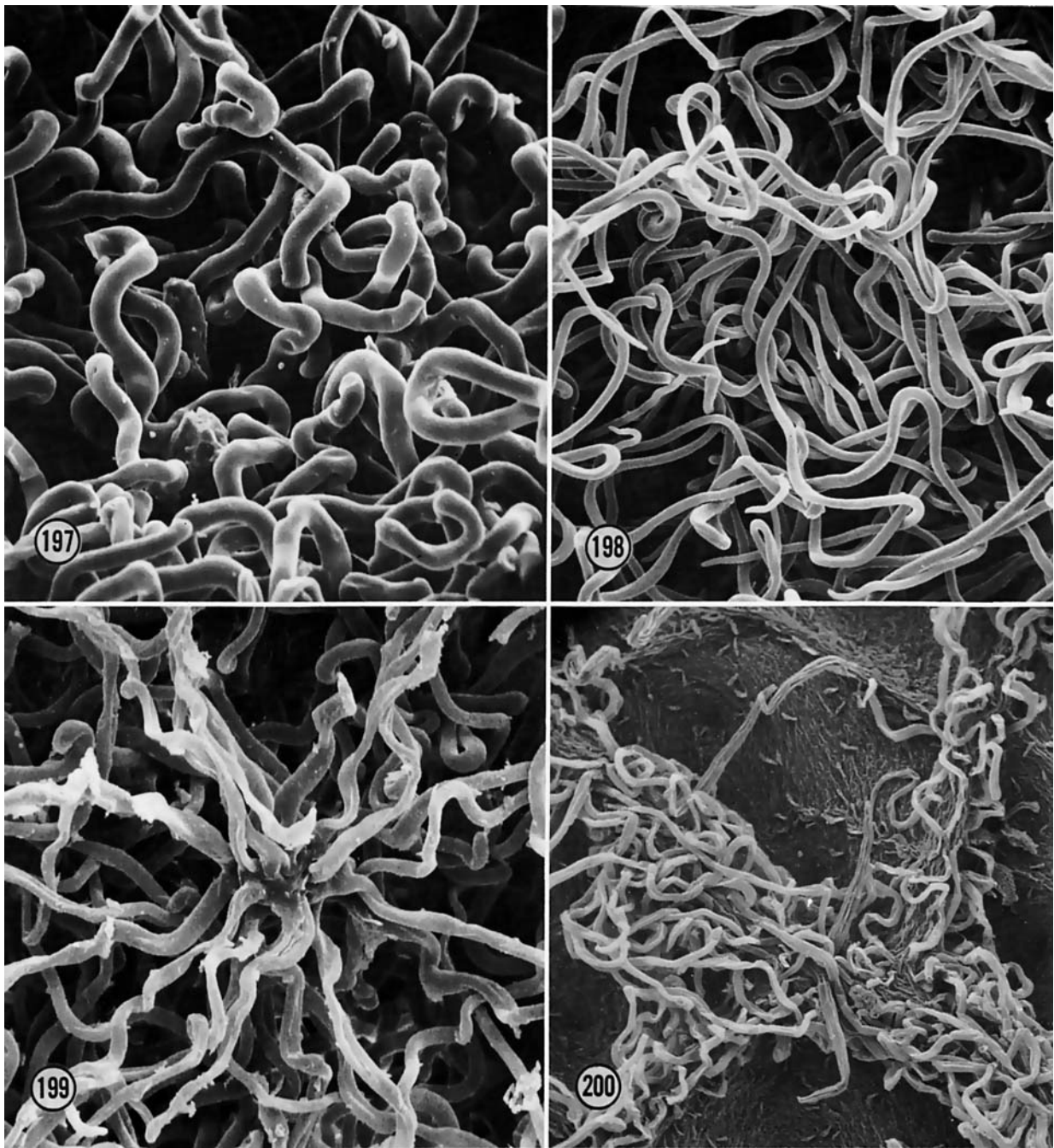


FIGURES 189, 190.—Dendritic hairs with moderately long thin-walled arms: 189, *Blakea calyprata* (UL, $\times 400$); 190, *Topobea anisophylla* (LL, $\times 260$).

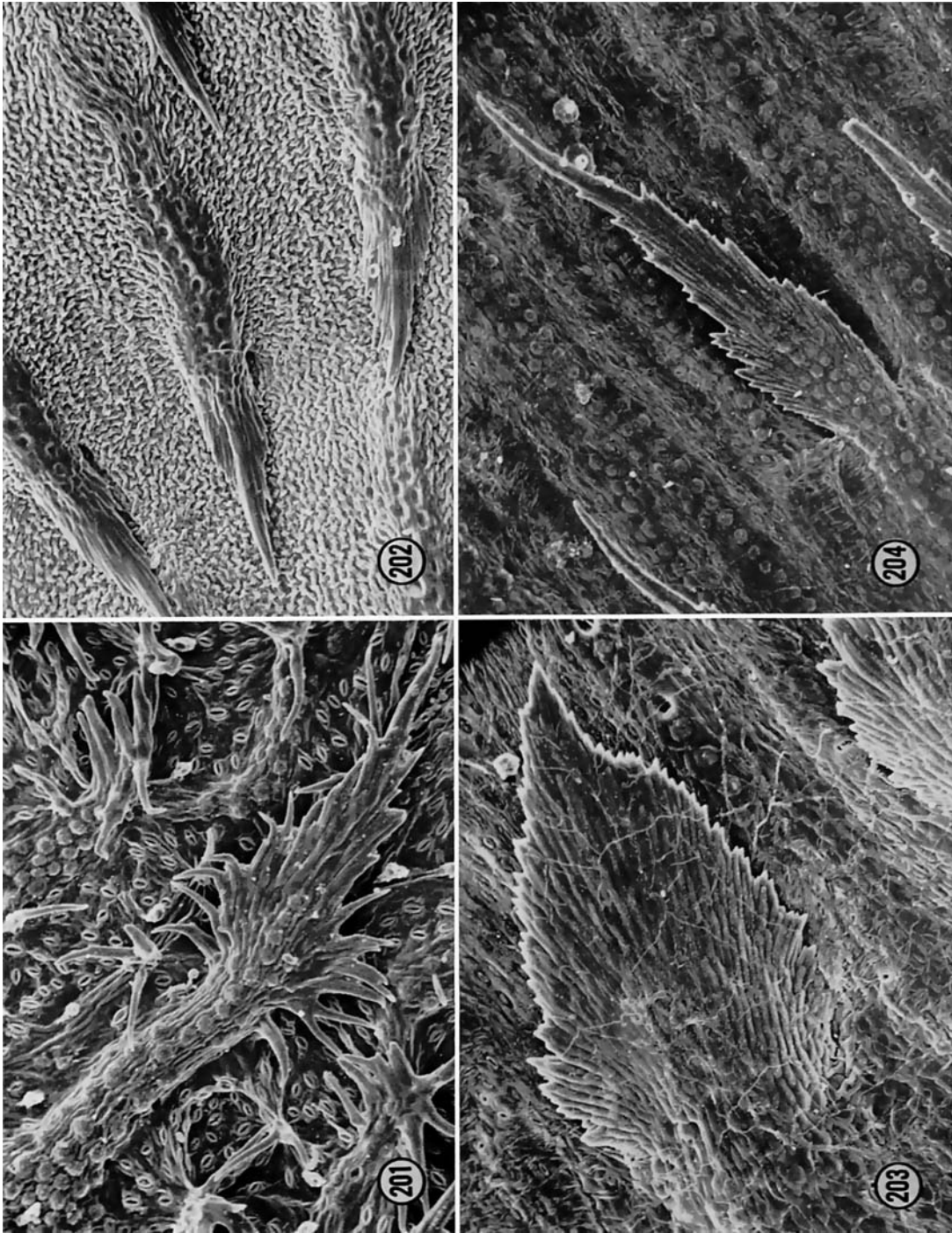
FIGURES 191, 192.—Dendritic hairs with thin-walled arms and warty trunk: 191, *Tetrazygia angustifolia* (H, $\times 340$); 192, *Leandra nervosa* (H, $\times 250$).



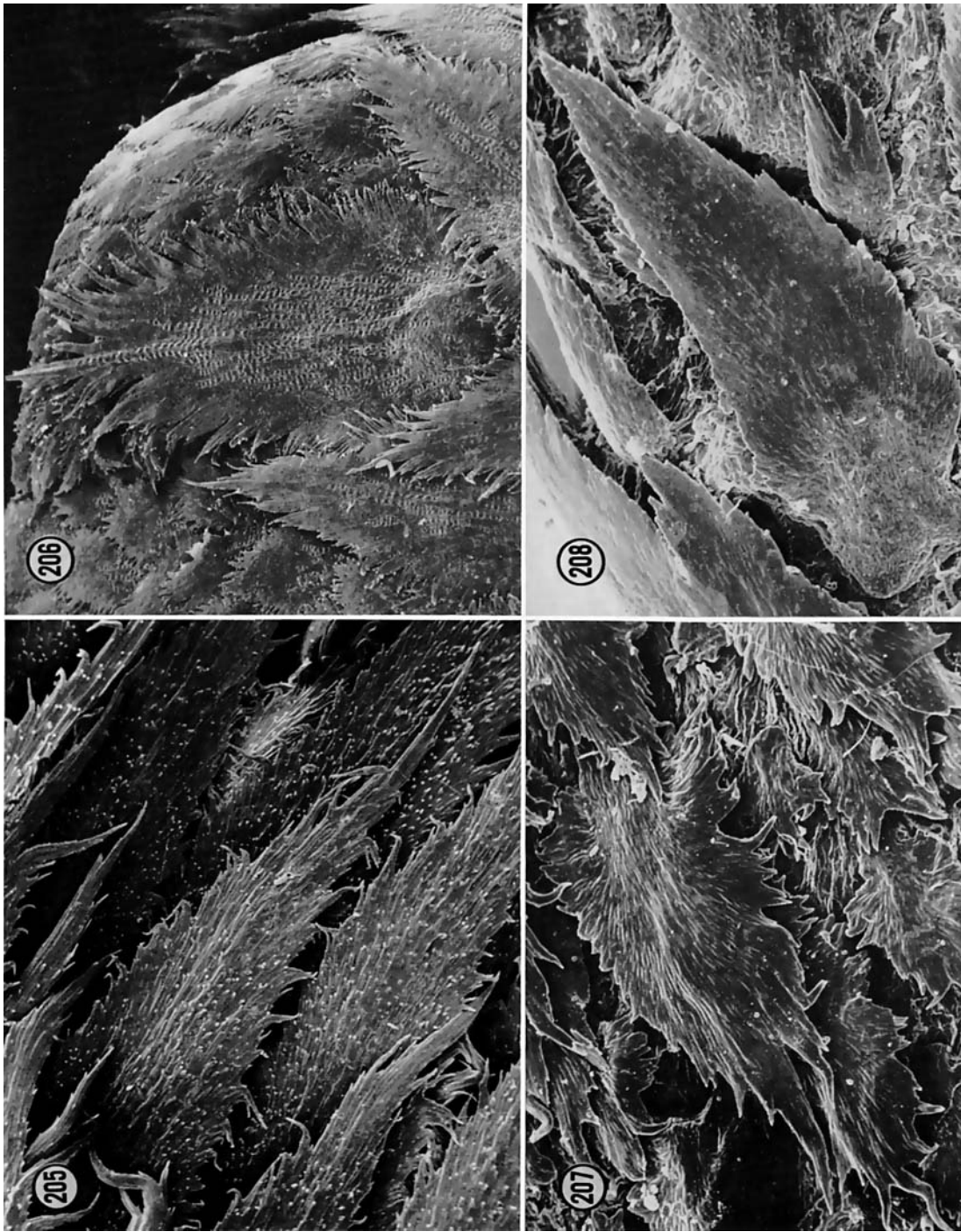
FIGURES 193-196.—Dendritic hairs with long thin-walled arms: 193, *Meriania urceolata* (L.,
 ×360); 194, *Conostegia subcrustulata* (Ul., ×300); 195, *Pachyanthus cubensis* (L., ×200); 196,
Henriettea multiflora (L., ×170).



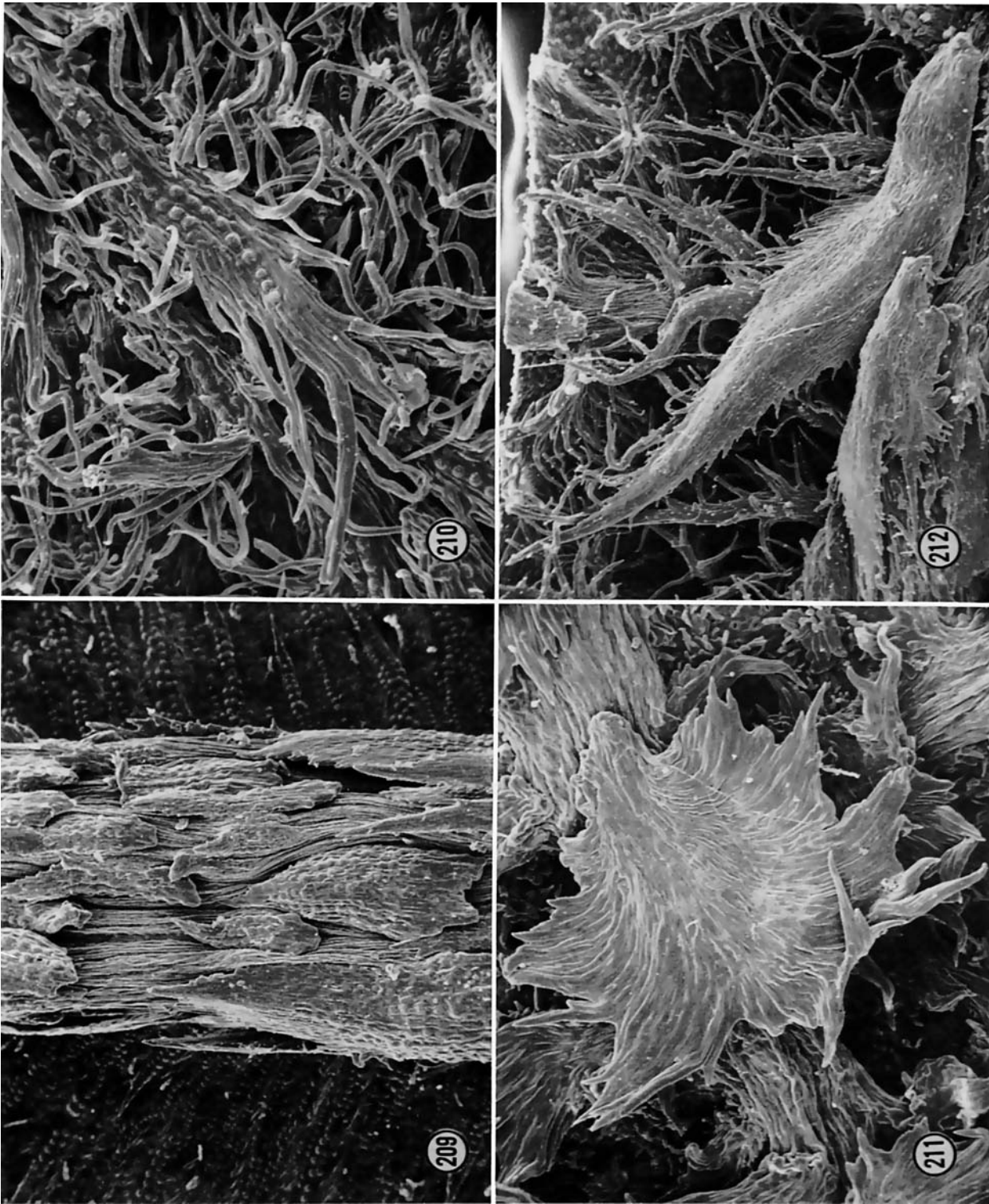
FIGURES 197-200.—Vermiform (lanate) hairs: 197, *Trembleya laniflora* (UL, $\times 350$); 198, *Tibouchina chamissoana* (LL, $\times 300$); 199, *Miconia albicans* (LL, $\times 500$); 200, *Clidemia globulifera* (LL, $\times 50$).



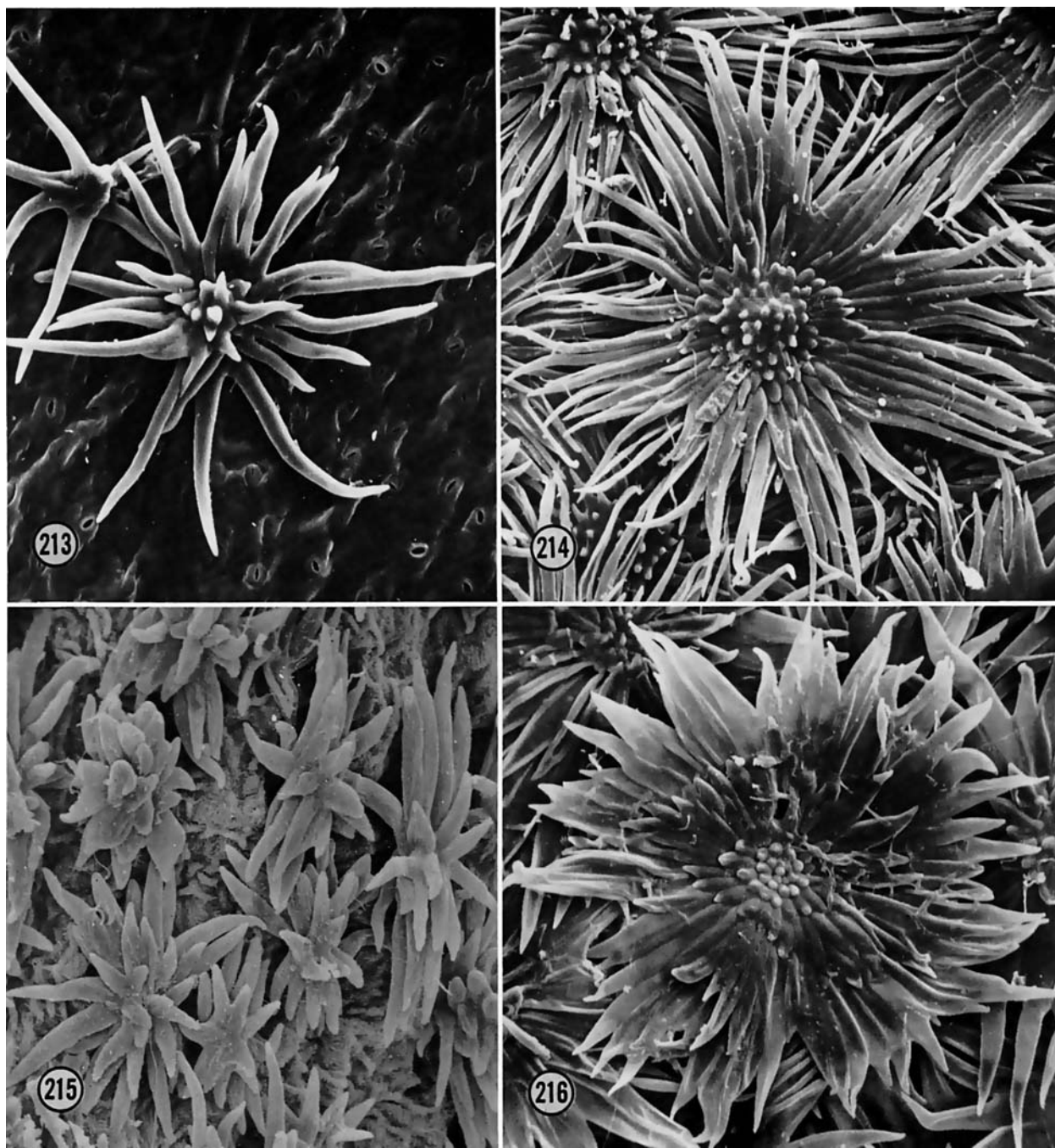
FIGURES 201–204.—Leaf scales, proximally attached: 201, *Tibouchina inopinata* (U1, $\times 75$); 202, *Tibouchina lanorum* (LL, $\times 135$); 203, *Tibouchina steyermarkii* (LL, $\times 200$); 204, *Tibouchina striphnocalyx* (LL, $\times 120$).



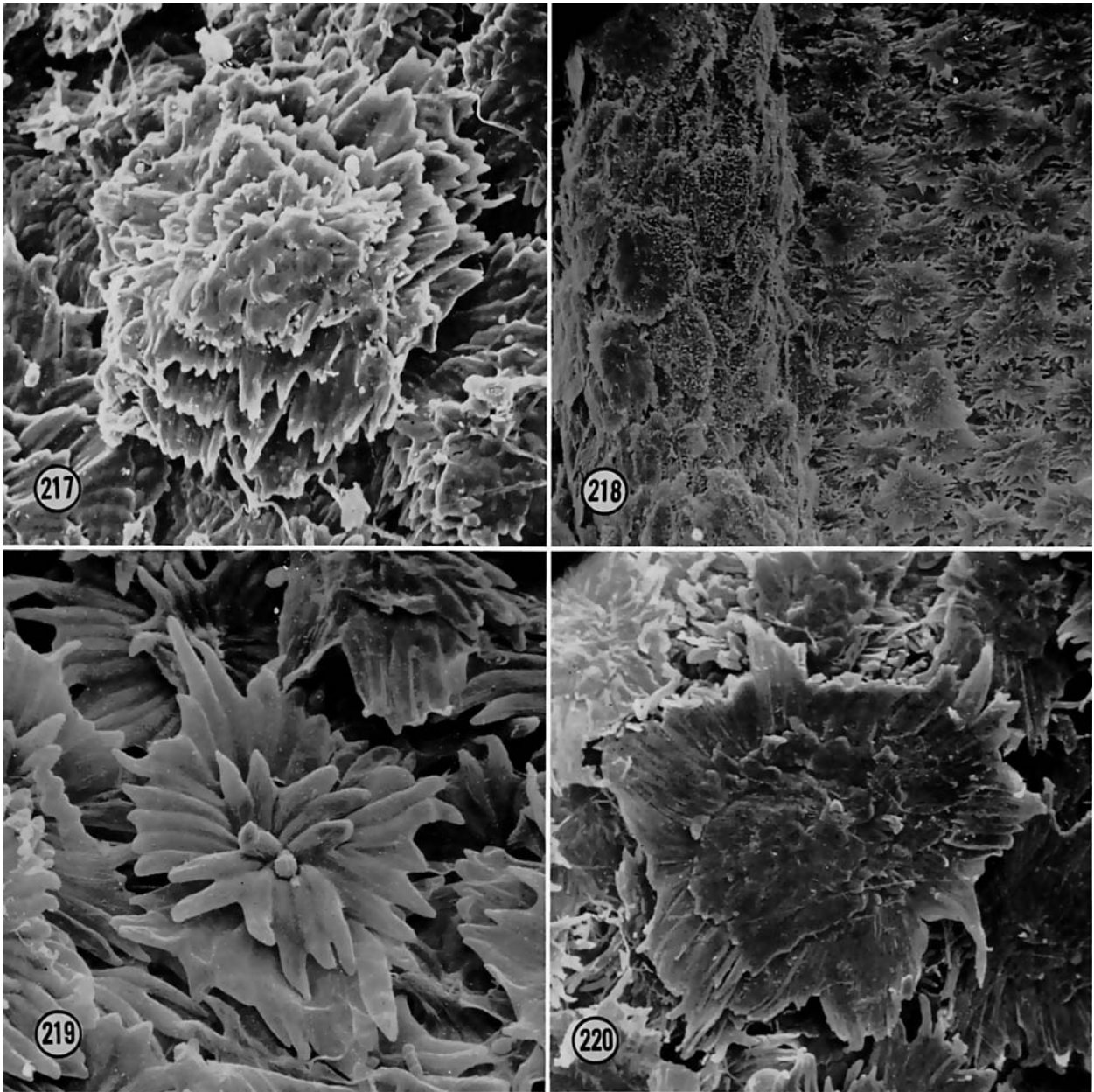
FIGURES 205-208.—Hypanthial scales, proximally attached: 205, *Tibouchina mathaei* ($\times 65$); 206, *Tibouchina dissitiflora* ($\times 30$); 207, *Tibouchina lepidota* ($\times 75$); 208, *Tibouchina steyermarkii* ($\times 65$).



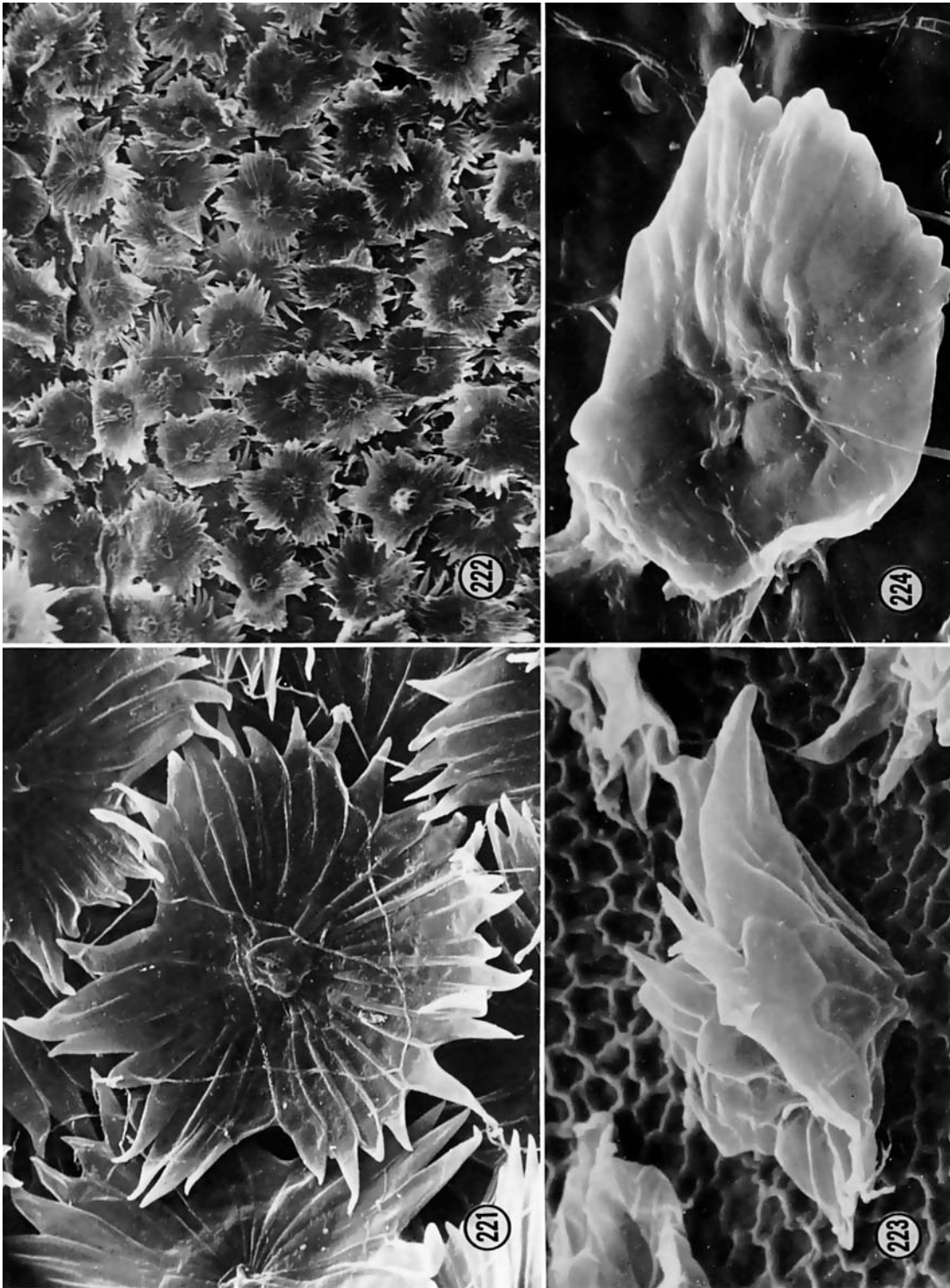
FIGURES 209-212.—Leaf scales, with basal ear: 209, *Tibouchina irwinii* (L.I., $\times 50$); 210, *Tibouchina karstenii* (L.I., $\times 135$); 211, *Tibouchina lepidota* (L.I., $\times 100$); 212, *Tibouchina praecox* (L.I., $\times 55$).



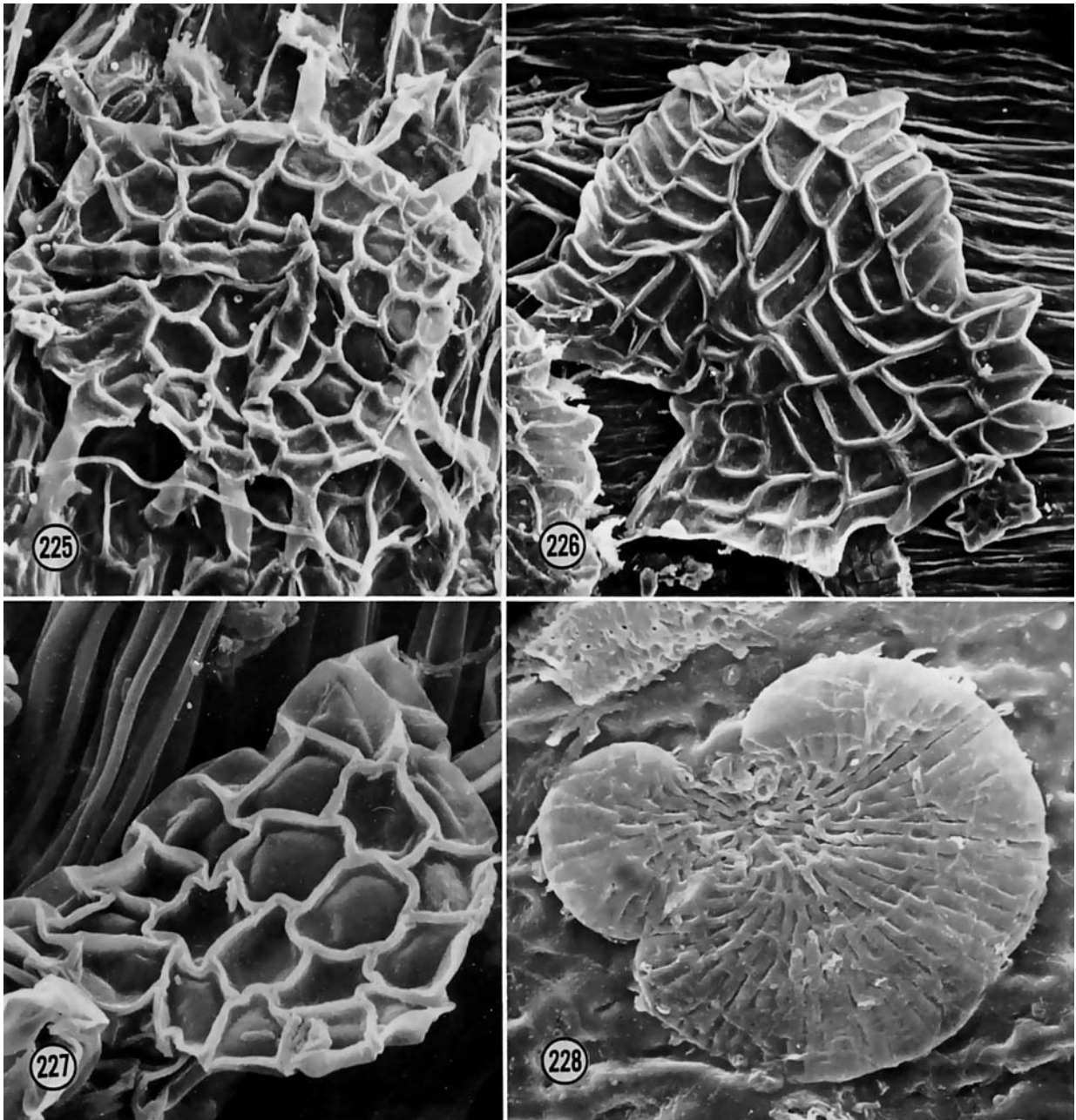
FIGURES 213–216.—Lepidote hairs, with only partially fused radii: 213, *Miconia trinervia* (LL, $\times 380$); 214, *Miconia aulocalyx* (LL, $\times 250$); 215, *Tetrazygia longicollis* (H, $\times 250$); 216, *Miconia tiliaefolia* (LL, $\times 260$).



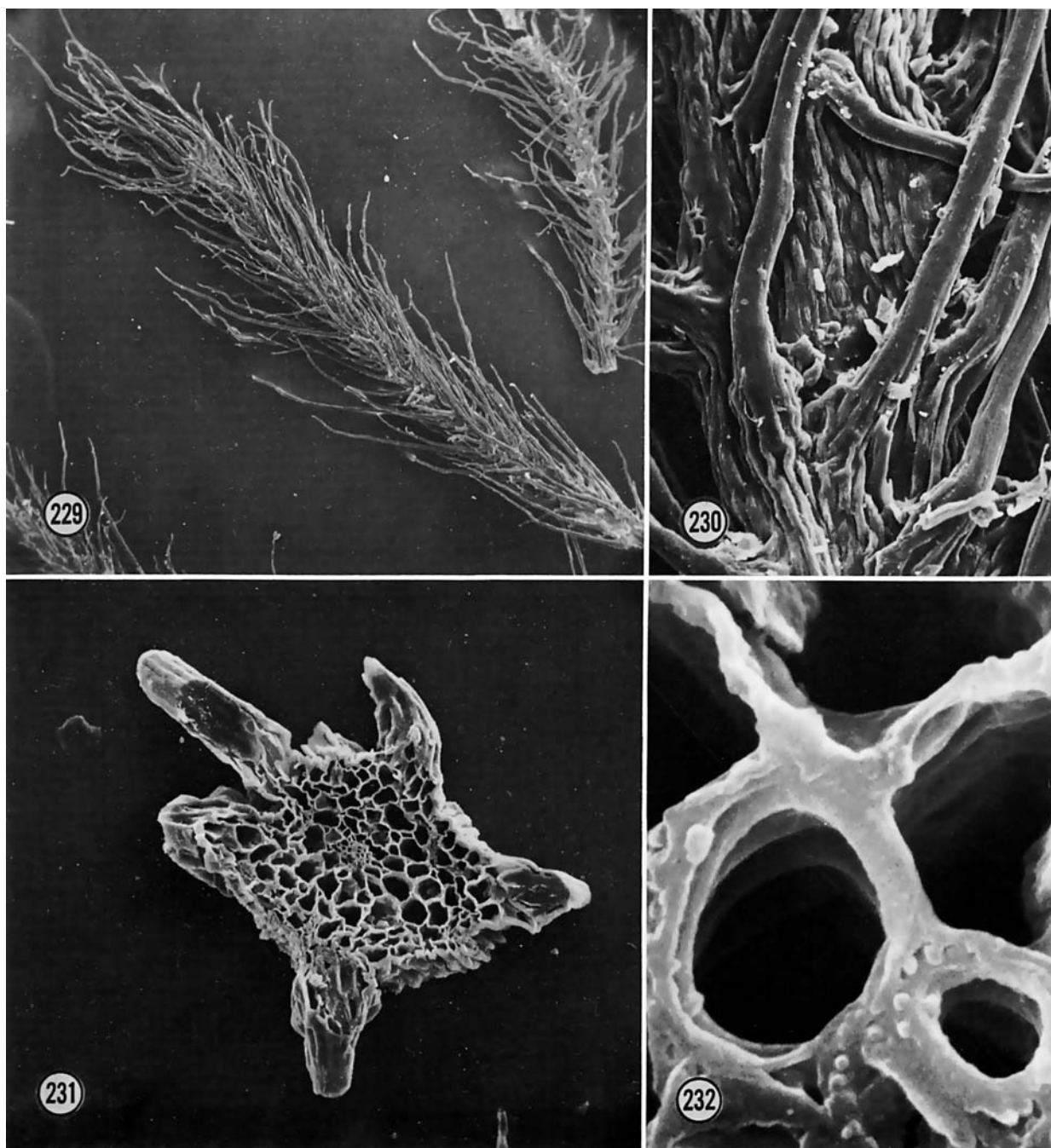
FIGURES 217-220.—Several-tiered lepidote hairs, the radii nearly completely fused: 217, *Calycogonium squamulosum* (H, $\times 250$); 218, *Mommsenia apleura* (LL, $\times 50$); 219, *Mommsenia apleura* (LL, $\times 300$); 220, *Henriettella squamata* (H, $\times 155$).



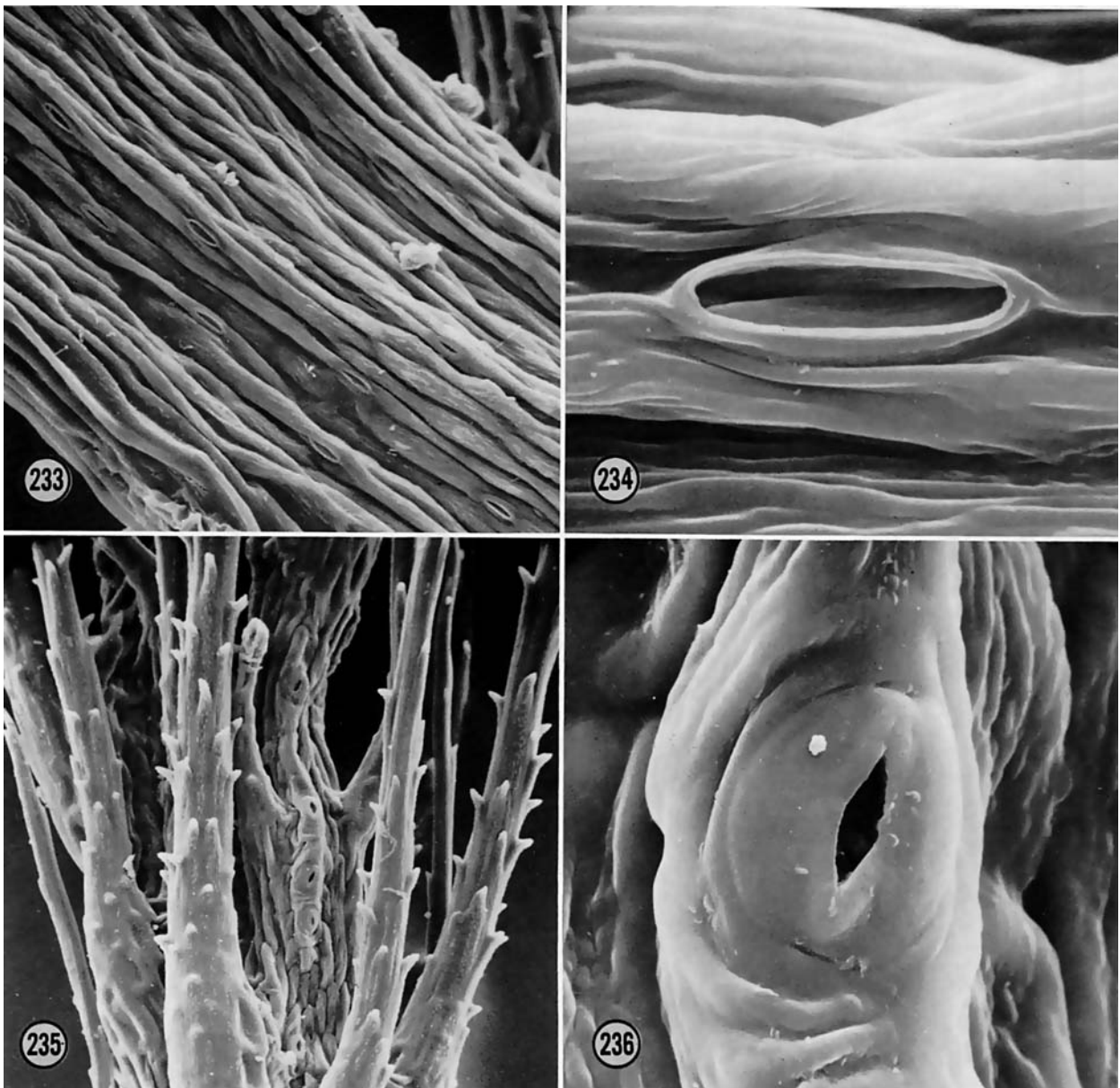
FIGURES 221-224.—Single-tiered lepidote hairs, the radii nearly completely fused: 221, *Miconia chrysophylla* (L.L., $\times 300$); 222, *Miconia elaeagnoides* (L.L., $\times 100$); 223, *Ossaea brenesii* (U.L., $\times 400$); 224, *Tessmanianthus calcaratus* (L.L., $\times 1000$).



FIGURES 225–228.—Single-tiered lepidote hairs, with alveolate surface, the radii completely fused: 225, *Boyania ayangannae* (LL, $\times 400$); 226, *Salpinga maguirei* (petiole, $\times 240$); 227, *Calogonium domatiatum* (LL, $\times 900$); 228, *Topobea cutucuensis* (UL, $\times 300$).

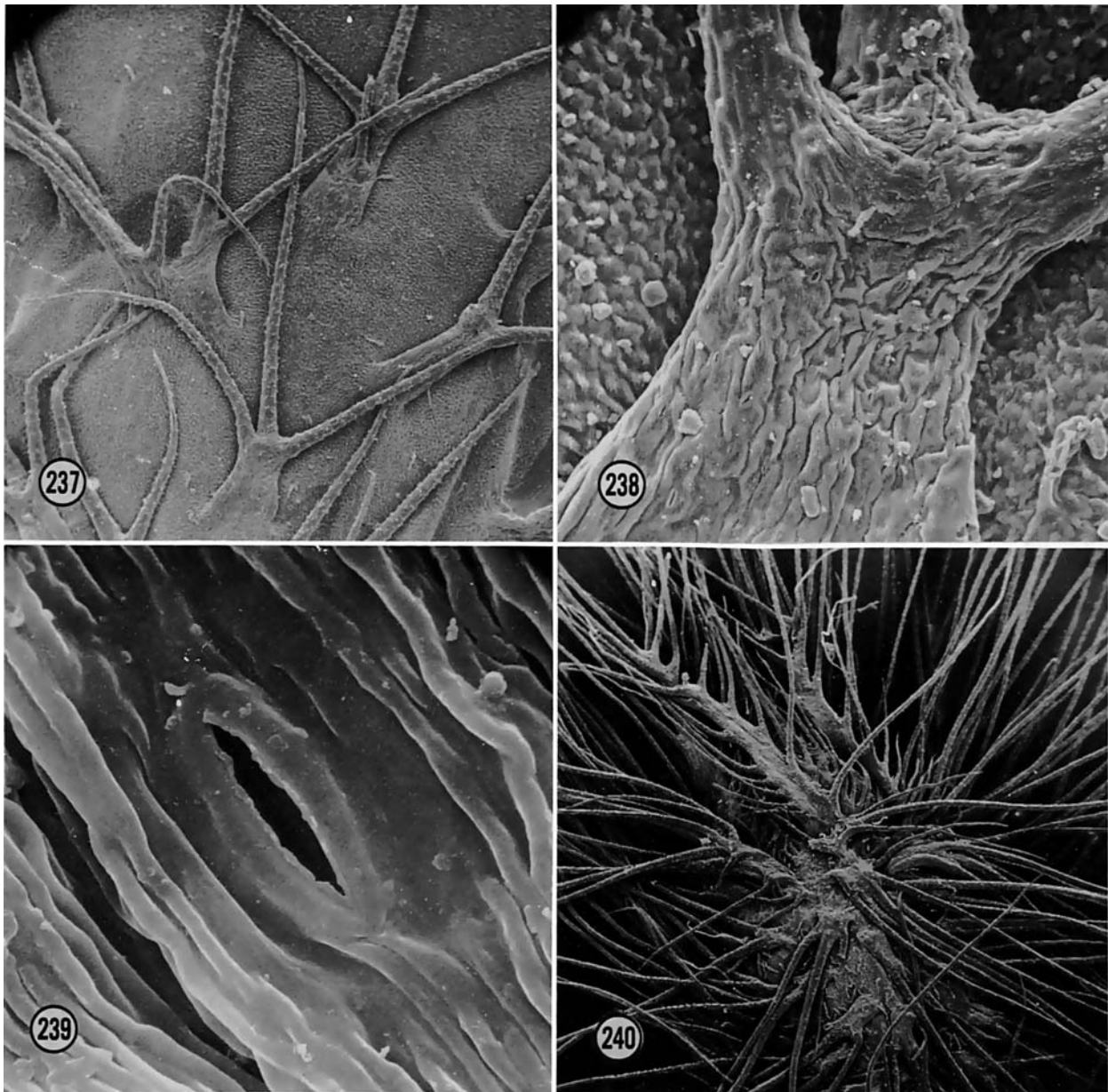


FIGURES 229–232.—Pterolepoid hairs, essentially smooth, with glandular branches, *Pterolepis parnassifolia*: 229, hypanthial hair ($\times 20$); 230, hair trunk ($\times 235$); 231, hair trunk cross-section ($\times 225$); 232, hair trunk cross-section ($\times 7500$).



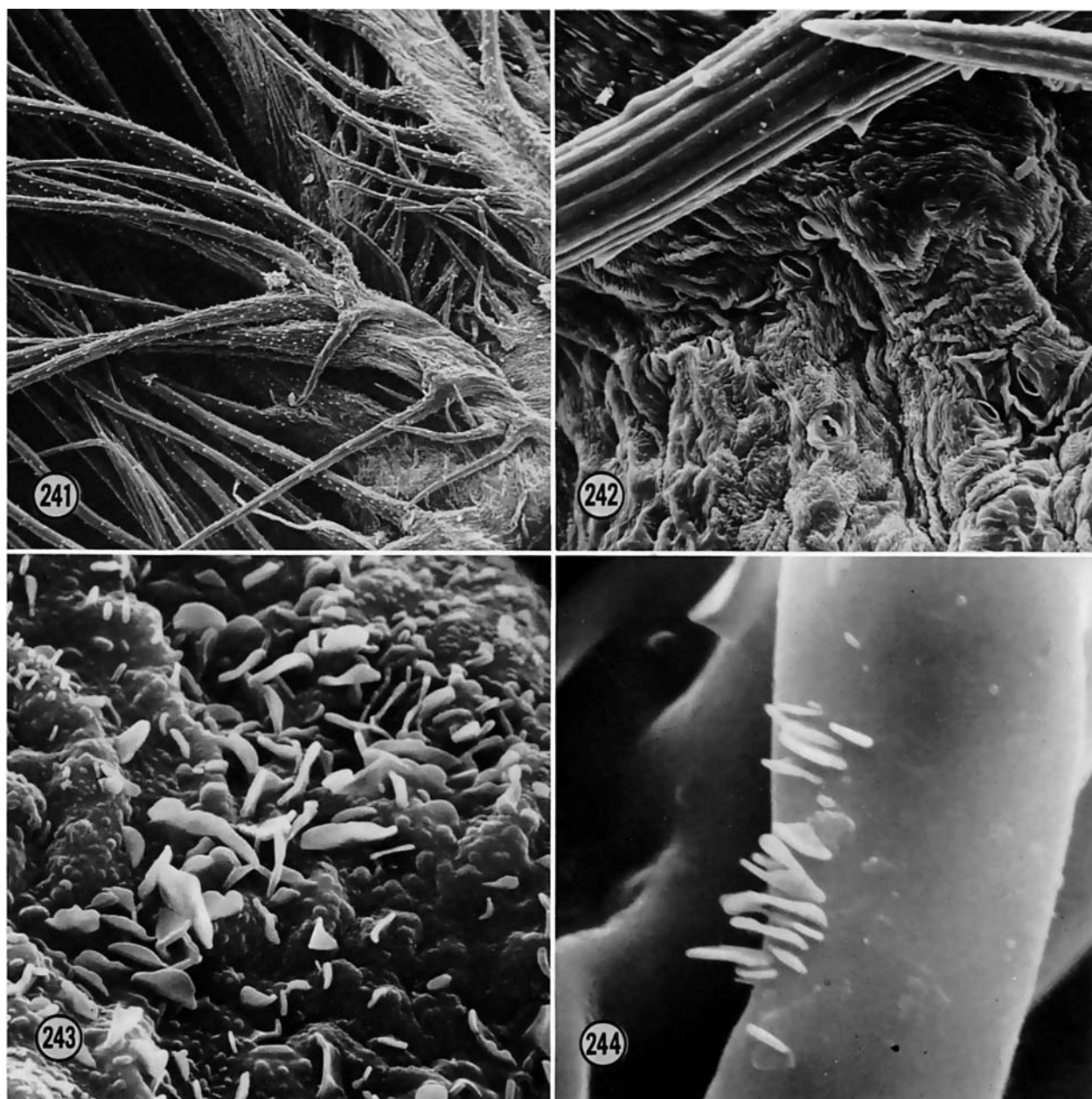
FIGURES 233, 234.—Pterolepid hairs, essentially smooth, eglandular, *Pterolepis salzmannii*:
233, hair trunk ($\times 400$); 234, "stomate" ($\times 3500$).

FIGURES 235, 236.—Pterolepid hairs, roughened, in part gland-tipped, *Pterolepis alpestris*:
235, hair trunk ($\times 200$); 236, "stomate" ($\times 2000$).



FIGURES 237-239.—Pterolepid hairs, roughened, eglandular, *Pterolepis balansaei*: 237, hypanthial hair ($\times 30$); 238, hair trunk ($\times 200$); 239, "stomate" ($\times 3000$).

FIGURE 240.—Pterolepid hairs, roughened, eglandular, *Tibouchina striphnocalyx*, hypanthial hair ($\times 20$).



FIGURES 241, 242.—Pterolepid hairs, roughened, eglandular, *Tibouchina striphnocalyx*: 241, sepal sinus hair ($\times 50$); 242, hair trunk with "stomates" ($\times 500$).
 FIGURES 243, 244.—Epicuticular waxes: 243, *Heterotrichum angustifolium* (UL, $\times 3000$); 244, *Topobea aeruginosa* (UL, $\times 5000$).