THE NORTH AMERICAN SPECIES OF SCUTELLARIA

By Emery C. Leonard

INTRODUCTION

The genus of mints which we now call *Scutellaria* was first described by Tournefort in 1700,[1] under the name *Cassida*. Of the Tournefortian references to the species of this genus the oldest (1581) is to the *Lysimachia galericulata* of Lobelius' Icones,[2] which seems to be the first published reference to any plant now classified under *Scutellaria*.

The name *Scutellaria* itself, first proposed in 1735 by Rivin,[3] was taken up by Linnaeus[4] in 1753, 12 species being ascribed to the genus. Of these, *S. lateriflora*, *S. integrifolia*, and *S. hyssopifolia* are native to North America; the remaining species are European or Asiatic. *S. hyssopifolia* has, however, been proved synonymous with *S. integrifolia*.

Scutellarias are now known to occur in nearly every temperate and tropical region of the world, excepting central and southern Africa, and there has been a steady increase in the number of recognized species from 1753 to the present time, as may be seen from the following table:

	North America	South America	Old World	Total
Linnaeus,[1] 1753	3		9	12
Hamilton,[2] 1832	16	5	27	48
Bentham,[3] 1832	21	8	29	58
Bentham,[4] 1836	23	10	30	63
Bentham,[5] 1848	25	16	45	86
Briquet,[6] 1895				180
Index Kewensis and supplements, 1893–1915	75	24	150	249
Present revision, 1926	62			

[1] L. Sp. Pl. 598–600.
[2] Seringe, Bull. Bot. 271–326.
[3] Bot. Reg. **18**: under *pl. 1493*.
[4] Benth. Labiat. Gen. Sp. 419–445.
[5] In DC. Prodr. **12**: 412–431.
[6] In Engl. & Prantl, Pflanzenfam. **4**[3a]: 225–227.

In his monograph of the genus Hamilton proposed three sections, which he called *Lupulinaria*, *Stachymacris*, and *Galericularia*. The

[1] Inst. Herb. 1: 181.
[2] Pl. Stirp. Icon. 344.
[3] L. Syst. Nat. 1735.
[4] L. Sp. Pl. 598–600.

first, characterized by large, imbricate, and usually membranaceous bracts, is represented entirely by Old World species; the sections *Stachymacris* and *Galericularia* correspond to the paniculate and axillary sections, respectively, of the blue-flowered group in the present revision.

Four years later came Bentham's Labiatae, in which is found a full and comprehensive treatment of the genus. In addition to the three sections devised by Hamilton two others are proposed, *Heteranthesia* and *Maschalostachys*. The first, composed chiefly of red-flowered plants of tropical America, differs from the other sections in having the flowers, or at least the uppermost ones, scattered instead of opposite. The section *Maschalostachys* is intermediate between *Stachymacris* and *Galericularia*, in that the single axillary flowers characteristic of *Galericularia* are replaced by racemes. This section is represented in America by *S. lateriflora*.

In 1924 Penland published [5] a revision of the species of the United States. This work is unique in that the key is based wholly on nutlet characters. A number of interesting facts have been brought to light in this new treatment, but the work is not altogether satisfactory for general use, since it is not always possible to procure mature nutlets for study.

The word *Scutellaria* has been derived from two possible sources,[6] *scutella* (a small dish) and *scutellum* (a little shield), both of which are suggested by the peculiar shape of the calyx. The older term, *Cassida*, meaning "helmet," alluded to the shape of the upper part of the calyx. Tournefort and his contemporaries applied the vernacular name "la toque"—a small hat worn in the sixteenth century by both men and women—again in allusion to the upper lip of the calyx, and in a somewhat similar fashion the plants are called by present-day writers "skullcap."

These plants form a natural and well-defined genus, but many of the species are variable and difficult to distinguish, especially since the distinguishing characters are taken chiefly from the shape of the leaves, the nature of the pubescence, the arrangement of the inflorescence, and the color of the flowers. Bentham suggested [7] that reliable characters might perhaps be found in the lobing of the corolla, but an examination of softened flowers of numerous specimens has failed to reveal any constant specific differences of this sort. The lobing of the corolla sometimes shows as great a range of variation within the same species as between different species. If slight and variable vegetative differences are considered as consti-

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[5] Rhodora 26: 68. 1924.

[6] Rees Cycl. 32. 1819.

[7] Benth. Labiat. Gen. Sp. 420. 1836.

tuting the specific characters, it is possible to maintain a large number of species; but if less weight is given to these characters, a small number of highly diverse species will be recognized. The writer has chosen an intermediate course between these two extremes, giving specific rank to certain well-known varieties, but reducing other species based on too slight a differentiation.

The nomenclature of the species in the United States has been well established, and the material in herbaria for the most part has been found correctly named. For Mexico and Central America, however, the nomenclature has been found to be in a chaotic state, and as a consequence many of the specimens in American herbaria are unidentified or incorrectly named.

Except for a few species, such as *S. ventenatii* and *S. splendens*, which may be used for ornamental purposes, none of the Scutellarias have any economic value. They are variable in their habitat, growing in thickets, among rocks, in meadows, and along streams and roads, but they are seldom abundant and never become persistent or pernicious weeds.

Through the kindness of the curators of the New York and the Missouri Botanical Gardens, the Gray Herbarium, and the Academy of Natural Sciences of Philadelphia, the writer has been able to examine much material in addition to that in the United States National Herbarium. The privilege of studying type specimens represented only in these herbaria has been particularly helpful in the preparation of this revision.

SYSTEMATIC TREATMENT

KEY TO THE SPECIES

Flowers yellow or whitish.
- Plants shrubby ..... 1. S. suffrutescens.
- Plants herbaceous.
  - Inflorescence paniculate; corolla 2 to 2.5 cm. long.
    - Leaves thick, densely velvety-hirsute ..... 2. S. lutea.
    - Leaves thin, puberulent or finely pubescent.
      - Stems puberulent; leaf blades averaging 1.5 cm. in width. 3. S. orichalcea.
      - Stems pubescent; leaf blades averaging 6 cm. in width. 4. S. aurea.
  - Inflorescence axillary; corolla 1 to 1.2 cm. long.
    - Leaves entire ..... 5. S. nana.
    - Leaves (at least the lowermost) toothed.
      - Leaf blades cordate at base, pubescent with soft spreading hairs. 6. S. bolanderi.
      - Leaf blades narrowed at base, pubescent with minute curved hairs. 6a. S. bolanderi californica.

Flowers not yellow.
Flowers red or reddish purple.
Flowers reddish purple.
Racemes elongate (15 to 20 cm. long) ; corolla over 2 cm. long.
7. S. rosea.
Racemes short (2 to 4 cm. long) ; corolla less than 2 cm. long.
Floral bracts orbicular; stems usually branched..... 8. S. seleriana.
Floral bracts lanceolate; stems usually simple.
Leaves firm, canescent..... 9. S. guatemalensis.
Leaves thin, nearly glabrous.... 45a. S. purpurascens heterophylla.
Flowers red.
Leaves panduriform, cordate at base, at least twice as long as wide.
Stems minutely puberulent..... 10. S. costaricana.
Stems glabrous or subglabrous..... 11. S. glabra.
Leaves not panduriform, if twice as long as wide not cordate.
Leaves, at least some of them, cordate.
Leaves rather finely dentate with numerous unequal teeth; racemes elongate; Mexico..... 12. S. splendens.
Leaves coarsely crenate-dentate or crenate with relatively few teeth; racemes usually short; chiefly Central America and West Indies.
Leaves pubescent with short inconspicuous hairs or nearly glabrous; plants usually erect.
Inflorescence pubescent with white hairs.... 13. S. ventenatii.
Inflorescence puberulent with minute brown hairs.
15. S. longifolia.
Leaves densely canescent; plants often decumbent.. 14. S. ornata.
Leaves not cordate.
Corolla not more than 2.5 cm. long, straight or but slightly curved.
Stems minutely puberulent; leaves usually over 6 cm. long; flowers numerous ..... 15. S. longifolia.
Stems pubescent; leaves usually under 6 cm. long; flowers few.
16. S. maxonii.
Corolla more than 2.5 cm. long, strongly curved.
Stems minutely puberulent; leaves thin..... 17. S. formosa.
Stems pubescent above; leaves firm..... 18. S. mociniana.
Flowers blue.
A. Inflorescence axillary, the flowers solitary or in racemes.
Flowers in axillary racemes.
Petioles short, not exceeding 4 mm.; corolla 8 to 10 mm. long.
19. S. churchilliana.
Petioles slender, usually over 15 mm. long; corolla 5 to 8 mm. long.
20. S. lateriflora.
Flowers solitary in the axils.
Corolla very small, less than 3 mm. long; leaf blades halberd-shaped.
21. S. racemosa.
Corolla more than 3 mm. long; leaves not halberd-shaped.
Leaves mainly toothed.
Plants annual; floral leaves cordate, nearly as broad as long.
23. S. cardiophylla.
Plants perennial; floral leaves narrowed at base or, if cordate, at least twice as long as broad.

Stems pubescent in lines; corolla 10 to 20 mm. long.
Upper floral leaves much smaller than the main stem leaves, distant at summit---------- 24. S. coerulea.
Upper floral leaves similar to the stem leaves, crowded at summit---------- 25. S. microphylla.
Stems not pubescent in lines; corolla 5 to 10 mm. long.
Leaf blades averaging 3 cm. in length; roots not tuberous; plants taller, usually over 10 cm.
Under surface of leaf blades velvety-pubescent; corolla 15 mm. long.
Lower leaves ovate; petioles slender, 3 to 5 mm. long. 27. S. alta.
Lower leaves oblong; petioles 1 to 2 mm. long. 26. S. epilobifolia.
Under surface of leaf blades nearly glabrous; corolla up to 1 cm. long.
Nutlets membranous-winged, on a slender base; leaf blades rounded at base---------- 22. S. nervosa.
Nutlets wingless, on a low base; leaf blades abruptly narrowed, truncate or subcordate at base. 19. S. churchilliana.
Leaf blades averaging 15 mm. in length; roots tuberous; plants lower, usually less than 10 cm. high.
Leaves petioled; plant of western United States. 28. S. tuberosa.
Leaves subsessile; plant of eastern and central United States. 33. S. parvula.

Leaves mainly entire.
Corolla 20 mm. long or more.
Leaves narrowly linear, less than 4 mm. wide-- 60. S. floridana.
Leaves not narrowly linear, more than 4 mm. wide.
Stems cespitose; roots fibrous; leaves strongly punctate. 29. S. bushii.
Stems not cespitose; roots slender or thickened; leaves not strongly punctate.
Plants canescent; calyx glandular. 30a. S. angustifolia canescens.
Plants minutely puberulent; calyx not glandular.
Leaves linear, usually 6 times longer than broad; upper lip of corolla much longer than the lower; stamens usually exserted----- 30b. S. angustifolia austinae.
Leaves oblong-ovate to elliptic; lips of corolla equal; stamens not exserted.
Upper stem leaves similar to the lower spreading leaves, the veins seldom prominent; plant of Idaho, Washington, Oregon, and California- 30. S. angustifolia.
Upper stem leaves more crowded and pointed than the lower, the veins prominent; plant of Wyoming and Colorado.
Leaf blades firm, less than 25 mm. long. 31. S. brittonii.
Leaf blades thin, over 25 mm. long. 31a. S. brittonii virgulata.

Corolla less than 15 mm. long.
Under surface of leaf blades sparsely pubescent, the hairs confined chiefly to the veins.
Stems from a woody base; Mexican species_ 32. S. hispidula.
Stems from moniliform rootstocks; United States species.
Stems pubescent, glandular _____ 33. S. parvula.
Stems puberulent, not glandular_____ 34. S. ambigua.
Under surface of leaves uniformly and closely pubescent.
Calyx glandular.
Plants from slender, usually tuberous-thickened rootstocks.
Leaves mostly truncate or subcordate at base; eastern United States species_____ 33. S. parvula.
Leave mostly narrowed at base; western United States species_____39a. S. antirrhinoides sanhedrensis.
Plants annual or perennial with woody base.
Larger leaves less than 10 mm. long, puberulent.
35. S. potosina.
Larger leaves over 10 mm. long, pubescent.
36. S. drummondii.
Calyx not glandular.
Plants with fibrous roots; southern United States, Mexico, and West Indies.
Leaves sessile, entire, crowded; throat of corolla 5 to 6 mm. broad _____ 37. S. resinosa.
Leaves petioled, shallowly toothed, distant; throat of corolla 2 to 3 mm. broad_____ 42. S. havanensis.
Plants with tuberous-thickened roots; western United States.
Leaves upright, coriaceous, crowded; branches numerous, crowded_____ 38. S. nevadensis.
Leaves spreading, not conspicuously crowded or coriacious.
Plants 15 cm. high; leaves not over 15 mm. long.
39a. S. antirrhinoides sanhedrensis.
Plants normally over 15 cm. high; larger leaves 2 cm. long_____ 39. S. antirrhinoides.
AA. Inflorescence a terminal panicle or raceme.
Leaves hastate_____ 21. S. racemosa.
Leaves not hastate.
Leaves, at least some of those above the middle of the stem, cordate.
Calyx and pedicels glandular-pubescent.
Plants glabrous, sparsely pubescent, or pilose; racemes with few and mostly scattered flowers.
Stem and leaves glabrous or nearly so_____ 40. S. saxatilis.
Stem and leaves pilose_____ 40a. S. saxatilis arguta.
Plants copiously pubescent; racemes usually many-flowered.
Petioles not exceeding 5 mm_____ 7. S. rosei.
Petioles 2 cm. long or more_____ 41. S. ovata.
Calyx and pedicels not glandular.
Leaf blades not over 2 cm. long.
Under surface of leaf blades puberulent____ 42. S. havanensis.
Under surface of leaf blades (excepting larger veins) glabrous.
43. S. oaxacana.

Leaf blades, at least some of them, more than 2 cm. long.
Flowers numerous, in stout compact much-branched panicles; southeastern United States plant_____ 44. S. ocumulgee.
Flowers few, in loose panicles or racemes; Mexican or Central American plants.
Stems and veins of leaf blades puberulent with very short, brownish hairs_____ 45. S. purpurascens.
Stems and veins of leaf blades pubescent with straight or curved hairs.
Racemes short, crowded; floral bracts much longer than the pedicels_____ 43. S. oaxacana.
Racemes elongate; floral bracts small, scarcely exceeding the pedicels.
Leaf blades 4 cm. wide or less; flowers scattered. 46. S. pseudo-coerulea.
Leaf blades, at least some of them, more than 4 cm. wide; flowers crowded_____ 47. S. vitifolia.
Leaves above the middle of the stem abruptly or gradually narrowed at base.
Leaves all toothed.
Calyx glandular.
Lower leaves crowded, longer than the internodes; floral bracts gradually intergrading with the stem leaves. 48. S. arenicola.
Lower leaves shorter than the internodes; floral bracts abruptly smaller than the stem leaves.
Corolla more than 2 cm. long; larger leaf blades more than 4 cm. long_____ 49. S. montana.
Corolla 1.5 cm. long or less; leaf blades usually less than 4 cm. long_____ 50. S. ovalifolia.
Calyx not glandular.
Leaf blades 2.5 cm. long or less; species of Mexico and Central America.
Corolla glandular; flowers crowded; upper leaves as large as the lower_____ 51. S. chalicophila.
Corolla not glandular; flowers distant; leaves gradually reduced toward the summit.
Plants glabreus or nearly so_____ 52. S. affinis.
Plants hirtellous_____ 53. S. gaumeri.
Leaf blades mostly 3–8 cm. long; United States species.
Inflorescence racemose _____ 54. S. serrata.
Inflorescence paniculate.
Calyx densely and finely canescent.
Under surface of leaf blades finely and densely canescent. 55. S. incana.
Under surface of leaf blades (excepting the larger pubescent veins) glabrous_____ 56. S. punctata.
Calyx pubescent with short curved hairs.
Corolla averaging 2 cm. in length__ 57. S. mellichampii.
Corolla averaging 1 cm. in length_____ 58. S. altamaha.
Leaves above the middle of the stem entire. (Upper stem leaves of *S. integrifolia major* are often remotely toothed.)
Corolla glabrous_____ 59. S. glabriuscula.

Corolla pubescent.
Lower leaves entire.
Leaves narrowly linear---------- 60. S. floridana.
Leaves oval or elliptic.
Corolla over 1.5 cm. long, pubescent----- 61. S. brevifolia.
Corolla 1.5 cm. long or less, glandular-- 51. S. chalicophila.
Lower leaves more or less toothed--------- 62. S. integrifolia.

1. Scutellaria suffrutescens S. Wats. Proc. Amer. Acad. **25**: 160. 1890.
Scutellaria spinescens Fernald, Proc. Amer. Acad. **45**: 416. 1910.

Plant 10 to 20 cm. high, woody below, much branched above, the branches rigid, puberulent (sometimes glandular), and relatively short; leaves sessile or short-petioled; leaf blades ovate to oblong-ovate, the larger lower ones 10 mm. long and 4 mm. wide, gradually reduced toward the summit to small bracts, giving the plant a spiny appearance, rounded at base, obtuse at apex, entire, strongly nerved beneath, impressed-nerved above, pubescent with small white curved hairs; flowers in the axils of the upper leaves but well below the tips of the branches; pedicels 2 to 3 mm. long, puberulent and occasionally glandular; calyx 3 to 5 mm. long, sparingly pubescent, usually glandular; corolla yellow, marked with red, 1.5 to 2 cm. long, the tube slender, gradually expanding from 2 mm. at base to 3 or 4 mm. at throat, the lips equal or the upper slightly longer than the lower, the middle lobe of the upper lip notched, the lower lip ovate, crenate, slightly lobed; nutlets 1 mm. in diameter, black, granular.

Type locality: Bare summit of the Sierra de la Silla, Nuevo León, Mexico. Type collected June, 1889, by Pringle (no. 2536).

Specimens examined:

Nuevo León: Sierra de la Silla, alt. 1,600 meters, *Pringle* 2535 (N,[6] G, type, M, P, F).

Coahuila: San Lorenzo Canyon, 6 miles southeast of Saltillo, *Palmer* 392 (N, F, G, type of *S. spinescens*, M, Y), 394 (N, G, M, F, Y).

In Palmer's 392 and 394 the branches, leaves, and calyx are minutely and glandular-pubescent. In Pringle's 2535, however, they are merely puberulent. It is on this slight difference that Fernald bases his *S. spinescens*. The woody base and the bushy top of slender spinelike branches give this plant an appearance strikingly dissimilar from that of any other American *Scutellaria*.

2. Scutellaria lutea Donn. Smith, Bot. Gaz. **13**: 76. 1888.

Entire plant brownish velvety-pubescent; stem erect or ascending, up to 60 cm. high (entire plant not available for study), branched, glandular above; petioles up to 5 mm. long; leaf blades ovate to oblong-ovate, 1 to 2.5 cm. long, 0.8 to 2 cm. wide, narrowed or rounded at base, obtusish at apex, crenate-serrate, firm; racemes short (2 to 3 cm. long), few-flowered; bracts ovate-lanceolate, 1 to 2 mm. long, the lower crenate-serrate, the upper entire; pedicels 3 to 6 mm. long; calyx 3 to 4 mm. long; corolla yellow, 2 to 2.5 cm. long, glandular near base, the tube gradually enlarging from 1.5 mm. below the middle to 5 mm. at throat, the lips equal, the lobes of the upper lip short, the middle lobe notched, the lower lip rather narrow, ovate, entire; nutlets 1 mm. in diameter, black, granular.

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[6] The letters in parenthesis indicate the herbaria in which the specimens are found. The following abbreviations are used: N, United States National Herbarium; G, Gray Herbarium; F, Field Museum of Natural History; P, Academy of Natural Sciences of Philadelphia; M, Missouri Botanical Garden; Y, New York Botanical Garden; C, University of California.

TYPE LOCALITY: Santa Rosa, Guatemala. Type collected by Türckheim, July, 1887 (J. D. Smith, no. 1309).

SPECIMENS EXAMINED:

GUATEMALA: Cuesta de Cachil, near Salamá, Baja Verapaz, alt. 1,200 to 1,600 meters, *Pittier* 148 (N). Santa Rosa, Baja Verapaz, alt. 1,600 meters, *Türckheim* 1309 (N, type, G). Santo Tomás, Salamá, *Seler* 3406 (N, G).

This species is probably related to *S. scleriana*, as indicated by a similarity in the pubescence and shape of the leaves.

3. **Scutellaria orichalcea** Donn. Smith, Bot. Gaz. 14: 29. 1889.

Scutellaria pedicularis Fernald, Proc. Amer. Acad. 35: 563. 1900.

Stems tufted, erect, branched, usually purplish, 10 to 25 cm. tall, puberulent; petioles slender, 0.5 to 2.5 cm. long; leaf blades oblong-ovate, 1 to 5 cm. long, 1 to 2 cm. wide, acutish or roundish at base, obtuse at apex, remotely crenate, undulate, or entire, usually purplish, minutely puberulent on both surfaces, the upper surfaces bearing additional scattered longer hairs; racemes terminal, 1 to 3.5 cm. long, with crowded erect flowers; bracts linear or narrowly lanceolate, the smaller and uppermost not exceeding the calyx; pedicels, 3 to 5 mm. long, puberulent; calyx 3 to 4 mm. long, puberulent; corolla yellow, 2 cm. long, the tube very slender, enlarging near the throat, pubescent, the lips equal or the upper shorter and narrower than the lower, the middle lobe twice as long as the lateral lobes, the lower lip undulate, prominently 3-lobed; nutlets 1 mm. in diameter, black, granular.

TYPE LOCALITY: Chajrax, Department of Alta Verapaz, Guatemala. Type collected by Türckheim, December, 1887 (J. D. Smith, no. 406).

SPECIMENS EXAMINED:

CHIAPAS: Near Tumbala, alt. 1,300 to 1,800 meters, *Nelson* 3342 (N, type of *S. pedicularis*).

GUATEMALA: Vicinity of Secanquím, Alta Verapaz, alt. 550 meters, *Pittier* 244 (N), 187 (N). Cubilquitz, Alta Verapaz, *Türckheim* 8264 (N), II.2247 (N). Chajrax, *Türckheim* 406 (N, type).

BRITISH HONDURAS: Moho River, *Peck* 572 (G).

COSTA RICA: Laguna de la Escuadra, northeast of El Copey, Prov. San José, *Standley* 41989 (N).

Scutellaria orichalcea is a well-marked species, characterized by its purplish puberulent leaves and stems and the short terminal racemes of slender upright yellow flowers. Dried specimens of *S. longifolia* with faded flowers might be mistaken for this species, but can be separated readily by the much larger leaves and flowers and brown-pulverulent stems.

Nelson's 3342, the type collection of *S. pedicularis*, agrees with the plants here cited in every respect except that it has a slightly larger corolla.

4. **Scutellaria aurea** Robins. & Greenm. Amer. Journ. Sci. 50: 163. 1895.

Stem erect, branched (height not known, but probably reaches 50 cm.), pubescent; petioles up to 3 cm. long, pubescent; leaf blades ovate to broadly ovate, 7 to 10 cm. long, 5 to 7 cm. wide (those of the axillary branches smaller), cordate or truncate at base, obtuse or obtusish at apex, coarsely crenate-dentate, the upper surface bright green, minutely and sparsely pubescent, the lower surface paler and more densely pubescent, especially on the veins; inflorescence of several elongate racemes (15 cm. long in specimen examined), the lowermost flowers subtended by large leaflike bracts, the succeeding ones by small acuminate bracts, the upper naked; pedicels up to 4 mm. long, finely pubescent; calyx 4 to 6 mm. long, puberulent; carolla bright orange, 2 cm.

long, finely and rather densely pubescent, the tube enlarged from 2 mm. near the base to 6 mm. at throat, the lips nearly equal, the upper broader than the lower, its middle lobe notched, the lower lip orbicular, slightly emarginate at tip, otherwise entire; nutlets 1 mm. in diameter, granular, brown.

TYPE LOCALITY: Rancho de Calderón, Oaxaca, Mexico. Type collected by L. C. Smith in 1894 (no. 173).

SPECIMEN EXAMINED:

OAXACA: Rancho de Calderón, alt. 2,160 meters, *Smith* 173 (G, type).

This species, well marked by its large, bright green, cordate leaves, is very distinct from all other yellow-flowered Scutellarias hitherto described.

4a. Scutellaria aurea conzattii Greenm. Field Mus. Bot. 2: 261. 1895.

Leaf blades lance-ovate, 2 to 7 cm. long, 1 to 3 cm. wide, entire.

TYPE LOCALITY: Cerro San Antonio, Oaxaca, Mexico.

SPECIMEN EXAMINED:

OAXACA: Cerro San Antonio, alt. 1,800 meters, *Conzatti* 1584 (F, type).

Scutellaria aurea conzattii is described by Greenman as a variety "having smaller and perfectly entire leaves."

5. Scutellaria nana A. Gray, Proc. Amer. Acad. 11: 100. 1876.

Scutellaria footeana Mulford, Bot. Gaz. 19: 118. 1894.

A grayish cinereous plant from a rootstock bearing subterranean moniliform tubers; stems 3 to 19 cm. high, much branched, the branches crowded, puberulent; leaves erect, usually crowded; leaf blades ovate to spatulate, 5 to 10 mm. long, 3 to 10 mm. wide, narrowed to a sessile or subsessile base, obtuse or rounded at apex, thickish, obscurely veined, cinereous-pubescent; pedicels 2 to 3 mm. long; calyx 3 to 4 mm. long; corolla yellow, 10 to 12 mm. long, cinereous-pubescent, the tube rather broad, expanding somewhat abruptly from 2 to 2.5 mm. at or below the middle to 5 mm. at throat, the lips about equal, the middle lobe of the upper lip notched, the lower lip ovate, shallowly 3-lobed, entire; nutlets 1 mm. in diameter, strongly tuberculate.

TYPE LOCALITY: Winnemucca Valley near Pyramid Lake, northwestern Nevada. Type collected by J. G. Lemmon.

RANGE: Wyoming, Nevada, Oregon, and California.

Scutellaria nana is readily distinguished by its cinereous and usually dwarfed, erect, crowded, leafy branches. Whited's 3125 and Leiberg's 472, collected in Crook County, Oregon, differ from the usual form in their relatively narrower, more distant leaves and their longer, less crowded branches.

The type of *S. footeana* was collected near Black Canyon, Idaho. In her remarks following the description, Miss Mulford points out the relationship with *S. nervosa* and the Japanese *S. guilielmi*, because of the slender gynobase on which the nutlets are raised. This character, however, applies to *S. nana* as well, and, except for its larger leaves, the type specimen agrees perfectly with the rather ample material of *S. nana* in the U. S. National Herbarium.

6. Scutellaria bolanderi A. Gray, Proc. Amer. Acad. 7: 387. 1868.

A pubescent plant 10 to 50 cm. high, from a slender rootstock; stem weak, simple or branched, erect, ascending, or occasionally prostrate with erect or ascending branches, leafy to the summit; leaves subsessile or short-petioled, slightly reduced toward the summit; leaf blades oblong, 1 to 4 cm. long, 0.5 to 2 cm. wide, truncate or cordate at base, obtuse or rounded at apex, entire or coarsely crenate, sparingly pubescent; flowers usually few, in the axils of the upper leaves; pedicels 2 to 3 mm. long; calyx 3 to 4 mm. long; corolla dull yellow or whitish, 1 to 1.2 cm. long, finely pubescent, the tube gradually

expanding from 2 mm. at base to 6 mm. at the ampliate throat, the upper lip much smaller than the lower, the middle lobe notched, the lower lip broadly ovate, undulate, shallowly 3-lobed; nutlets 1 mm. in diameter, rugose.

TYPE LOCALITY: Clarks Meadows, Mariposa County, California. Type collected by Bolander.

SPECIMENS EXAMINED:

CALIFORNIA: Clarks Meadows, *Bolander* 5006 (N, type collection). San Diego, *Orcutt* 429 (M). Tulare County, *Culbertson* 4199 (M). San Jacinto, alt. 160 meters, *Hall* 696 (N, M). South Jackson, Amador County, alt. 400 meters, *Hansen* 448 (N, M). Mojave River, San Bernardino, *Parish* 474 (N, M). Mariposa County, *Hollick* in 1880 (M, N). Sierra Nevada, *Hall & Chandler* 39a (N, M). Without locality, *Bridges* 303 (N); *Sheldon* (Y). Little Flat Gulch above Indian Creek, Tuolumne County, alt. 380 meters, *Williamson* 167 (M).

Scutellaria bolanderi bears a close resemblance to *S. epilobifolia*, differing only in its whitish corolla and wider and shorter, round-tipped, more sparsely pubescent leaves.

6a. **Scutellaria bolanderi californica** (A. Gray) Penland, Rhodora 26: 68. 1924.

Scutellaria antirrhinoides californica A. Gray, Proc. Amer. Acad. 8: 396. 1872.

Scutellaria californica A. Gray, Syn. Fl. 2[1]: 381. 1878.

Leaf blades oblong-ovate to elliptic, 1.5 to 3 cm. long, 0.5 to 1 cm. wide, entire or the lower shallowly toothed; corolla yellowish, the lower lip distinctly broader than long.

TYPE LOCALITY: California.

SPECIMENS EXAMINED:

CALIFORNIA: *Frémont Expedition*, 1845 to 1847 (N). Elk Mountain, northern Lake County, *Tracy* 2297 (N). Vicinity of Ione, Amador County, *Braunton* 1047 (N, M), 1017 (M). Without locality, *Vasey* in 1875 (N); *Rattan* 255 (N); *Bridges* 304 (N); *Kellogg & Harford* 740 (M). Newcastle, Placer County, *Mackie* in 1904 (N). Lake County, *Torrey* 405 (N). Anderson Valley, *Bolander* 4833 (N). San Francisco, *Schmitt* 54 (N). Round Valley, Mendocino County, *Chestnut* 8 (N). Donner Lake, Nevada County, *Hall & Babcock* 4548 (N); *Sonne* in 1888 (N), 286 (M). Mount Sanhedren along Hullville road, *Hall* 9525 (N), 4548 (M). Near Chico, Butte County, *Palmer* 2045 (N). Little Chico Creek, *Leiberg* 5006 (N). Plumas County, *Austin* (N). Little Chico, *Austin* 1825 (N), 279 (N). Lake County, *Heller* 12279 (N). Donner Lake, *Heller* 7020 (M). Sonoma County, *Heller* 5743 (M). Glenn County, *Heller* 11551a (N, M). Marin County, *Eastwood* 1530 (M). Squaw Creek, *Eastwood* 295 (N). Rockville, *Earle* in 1880 (M). Soda Springs, Nevada County, *Jones* 13485 (M). Near Calaveras, *Hooker & Gray* 11265 (M). Sequoia Region, *Hansen* 110 (M).

This variety is intermediate between *S. bolanderi* and *S. antirrhinoides*.

7. **Scutellaria rosei** Fernald, Proc. Amer. Acad. 35: 563. 1900.

Stem simple, slender, 60 to 70 cm. high (only the upper portions available for study), cinereous-pubescent, glandular (at least the inflorescence); petioles 2 to 3 mm. long, pubescent; leaf blades ovate (the lower suborbicular), 4 to 6 cm. long, 3 to 4 cm. wide, rounded or subcordate at base, rounded or acutish at apex, coarsely crenate-dentate, softly and minutely pubescent on both surfaces; bracts lanceolate, 3 to 5 mm. long (lowermost foliaceous);

flowers scattered in elongate racemes; pedicels and calyx each 3 to 4 mm. long, glandular-hirsute; corolla rose-purple, 2 to 2.5 cm. long, pubescent, the tube enlarging gradually from 2 mm. at base to 3 mm. near throat, then abruptly expanding to 7 or 8 mm., the upper lip smaller and slightly shorter than the lower, its middle lobe shallowly notched, the lower lip broadly ovate, notched at apex, strongly erose; nutlets unknown.

TYPE LOCALITY; Near Colomas, Sinaloa, Mexico. Type collected by Rose in 1897 (no. 1784).

SPECIMENS EXAMINED:

SINALOA: Foothills of the Sierra Madre near Colomas, *Rose* 1784 (N, G, type).

A possible relationship between *S. rosei* and *S. ventenatii* is indicated by a similarity in the shape of the leaves and character of the pubescence. They differ, however, very greatly, since *S. rosei* has shorter petioles, longer racemes, and purple flowers instead of red. *S. rosei* bears a somewhat closer resemblance to *S. guatemalensis*, but differs from that species in its much larger flowers and longer racemes.

8. Scutellaria seleriana Loesener, Bull. Herb. Boiss. 7: 568. 1899.

Scutellaria saxicola T. S. Brandeg. Univ. Calif. Publ. Bot. 3: 391. 1909.

Stems erect, 5 to 40 cm. high, branched above, the branches few or sometimes numerous, usually purplish, finely white-pubescent; petioles 5 to 12 mm. long; leaf blades ovate to broadly ovate, 4 to 25 mm. wide, but usually longer than broad, narrowed or subtruncate at base, obtuse at apex, densely canescent with spreading hairs on both surfaces; bracts orbicular, entire or crenate, 2 to 4 mm. long (if larger, leaflike); flowers in short racemes or some of them in the axils of the upper leaves; pedicels and calyx 2 to 5 mm. long, canescent; corolla 10 to 15 mm. long, purple, pubescent, the tube slender, 1 to 1.5 mm. broad at base, enlarging abruptly at throat to 3 mm., the upper lip smaller than the lower, the middle lobe notched, the lower lip prominently 3-lobed, strongly undulate; nutlets about 1 mm. in diameter, black, tuberculate.

TYPE LOCALITY: Department of Huehuetenango, Guatemala. Type collected by Seler (no. 2799).

SPECIMENS EXAMINED:

SAN LUIS POTOSÍ: Guascama, Minas de San Rafael, *Purpus* 5256 (N, G, M, F). Río de las Gallinas, *Purpus* 5266 (N, G, M). Limestone ledges, Tamasopo Canyon, *Pringle* 3910 (N, G, M, F, P), 3670 (G).

VERACRUZ: Moist shaded slopes, Barranca de Tenampa, Zucuapan, *Purpus* 2010 (N, G, M. F).

PUEBLA: Río de San Francisco, *Purpus* 3967 (N, G, M, F). Barranca de Tlacuilosto and Cosconati, in the vicinity of San Luis Tultitlanapa, *Purpus* 2560a (N, G, M, F).

OAXACA: Six miles above Dominguillo, alt. 1,500 to 1,800 meters, *Nelson* 1851 (N). Cerro de Teutila, *Conzatti* 3839 (N). Below Coyacatlán, *Smith* 873 (G).

GUATEMALA: Dept. Huehuetenango, *Seler* 2799 (G, Y, type collection).

The bracts of *Scutellaria seleriana* are similar to those of *S. gaumeri*, but in other respects, especially its canescent undulate ovate leaves, this plant is very different from all other described Scutellarias. It is not uncommon for some plants which have lost their stem leaves to develop numerous axillary branches, bearing many small leaves. This gives the plant a very different appearance. The type collection in the New York Botanical Garden is a plant of this kind.

9. Scutellaria guatemalensis Leonard, sp. nov.

Stem erect or ascending, simple or occasionally branched, 10 to 30 cm. high, densely and finely grayish-pubescent; petioles 5 to 12 mm. long, densely pubescent; leaf blades ovate to broadly ovate, 1 to 4 cm. long and wide (usually 1 to 4 cm. long and 1 to 3 cm. wide), truncate or shallowly cordate at base, obtusish at apex, coarsely crenate-dentate, grayish-pubescent on both surfaces, the lower surface more densely pubescent and paler than the upper; floral bracts, excepting the leaflike lower ones, lanceolate, their upper surface glabrous or nearly so, the lower pubescent; racemes simple, 3 to 5 cm. long; pedicels 2 to 4 mm. long, pubescent; calyx 1.5 to 2 mm. long at anthesis, becoming 4 mm. long in fruit, pubescent; corolla purple, 1.2 to 1.5 cm long, finely pubescent, the tube gradually enlarging from 1 mm. at base to 2 mm. at throat, the lips equal or the lower slightly longer than the upper, the middle lobe of the upper lip equaling the lateral lobes, notched, strongly undulate, the lower lip ovate, rather prominently 3-lobed, undulate; nutlets unknown.

Type in the U. S. National Herbarium, no. 941626, collected at Santa Rosa, Department of Baja Verapaz, Guatemala, July, 1887, by H. von. Türckheim (J. D. Smith, no. 1196).

ADDITIONAL SPECIMENS EXAMINED:

MEXICO: Chiapas, *Ghiesbreght* 803 (G, M).

GUATEMALA: Santa Rosa, alt. 2,000 meters, *Türckheim* 1196 (N, G). San Miguel Uspantán, *Heyde & Lux* 3123 (N, G).

Large-leaved specimens of *S. seleriana*, when confused with this species, can easily be distinguished by their characteristic orbicular slender-petioled bracts. *S. purpurascens heterophylla* has similarly shaped leaves, but with glabrous under surfaces.

10. Scutellaria costaricana Wendl. Hamb. Gart. Zeit. 19: 29. 1863.

Tall slender plant; stems erect, simple or sparingly branched (only tips of plants available for study), minutely brown-puberulent; petioles 1.5 to 2.5 cm. long, puberulent; leaf blades elliptic, 8 to 12 cm. long, 4 to 6 cm. wide, more or less panduriform, subcordate at base, attenuate or acute at apex, sinuate-dentate to nearly entire, the veins minutely brown-puberulent, otherwise glabrous; floral bracts minute, linear, 3 to 5 mm. long or the lowermost larger; racemes short, the flowers crowded; pedicels up to 4 mm. long, puberulent; calyx 3 to 4 mm. long, puberulent; corolla red, 4 to 5 cm. long, glabrous or the lower portion slightly pubescent, the tube gradually expanding from 2.5 mm. at base to 8 mm. at throat (slightly constricted below the throat), the upper lip slightly longer than the lower, the lobes short and nearly equal, the lower lip ovate, notched at apex; nutlets not seen.

TYPE LOCALITY: Costa Rica. Type collected by Wendland.

SPECIMENS EXAMINED:

MEXICO: Without data (G).

COSTA RICA: Talamanca, alt. 100 meters, *Tonduz* 9300 (N). Between the Volcán and Convento rivers, *Pittier* 12111 (N). Vicinity of La Palma, on the road to La Hondura, alt. 1,500 to 1,700 meters, *Maxon & Harvey* 7989 (N); *Standley* 36594 (N). Without locality *Kuntze* (Y); *Worthen* in 1910 (M). La Hondura, Prov. San José, alt. 1,300 to 1,700 meters, *Standley* 36579 (N).

This species is well marked by a peculiar inflorescence of long slender crowded vermillion flowers, and by panduriform leaf blades.

11. Scutellaria glabra Leonard, sp. nov.

Tall glabrous plant with simple or branched stems (height unknown but probably reaches 60 cm.); petioles 1.5 to 3 cm. long; leaf blades elliptic-

ovate, 10 to 16 cm. long, 3 to 7 cm. wide, cordate at base (often asymmetric), attenuate at apex, sinuate-dentate or undulate; bracts minute, linear, soon deciduous; racemes 6 to 10 cm. long; pedicels up to 4 mm. long; calyx 3 to 4 mm. long; corolla crimson, 1.5 to 2 cm. long, the tube gradually enlarging from 1 mm. at base to 3 mm. at throat, the lips nearly equal and very short, the lower lip much narrower than the upper, 3-lobed, entire; nutlets 1.5 mm. in diameter, black, tuberculate.

Type in the U. S. National Herbarium, no. 577410, collected at Platanillo, Cañas Gordas Road, Costa Rica, February, 1897, by H. Pittier (no. 11194).

ADDITIONAL SPECIMENS EXAMINED:

COSTA RICA: Finca Navarro, *Maxon* 649 (Y). El Muñeco, south of Navarro, Province of Cartago, alt. 1,400 meters, *Standley* 33692 (N).

Closely related to *S. longifolia*, this plant differs distinctly in its much smaller flowers and glabrous stems and leaves.

12. Scutellaria splendens Link, Klotzsch & Otto, Icon. Pl. Rar. 1: 31. *pl. 13.* 1841.

Perilomia cordifolia Cham. & Schlecht. Linnaea 6: 314. 1831.

Scutellaria scarlatina Planch. & Lind. Hort. Lem. 3: *pl. 104.* 1856.

Stem erect, simple or sparingly branched above, 30 to 40 cm. high, finely pubescent, glandular at least above; petioles slender, 1 to 1.5 cm. long, pubescent; leaf blades ovate to broadly ovate, 1 to 8 cm. long, 3 to 7 cm. wide, rounded or cordate at base, abruptly acutish at apex, irregularly dentate, sparingly pubescent with straight hairs on both surfaces; floral bracts minute, lanceolate, entire, often absent (or the lowermost foliaceous); inflorescence elongate, 15 to 30 cm. long; flowers crowded above, scattered below; pedicels up to 6 mm. long, pubescent with brownish glandular hairs; calyx 3 to 6 mm. long, glandular-pubescent; corolla crimson, 2 cm. long, minutely and sparingly pubescent, the tube gradually enlarging from 1 mm. at base to 4 mm. at throat, the upper lip as long as the lower and much broader, the lobes equal and very short, the middle lobe notched, the lower lip orbicular, entire, scarcely lobed; nutlets unknown.

TYPE LOCALITY: Mexico.

SPECIMENS EXAMINED:

VERACRUZ: Misantla, *Purpus* 5910 (N, G, M, F). Coffee fields, Zacuapan, *Purpus* 1930 (N, G, M, F).

Scutellaria splendens is distinct in its broadly ovate, irregularly dentate leaves with cordate base, and in its elongate racemes.

13. Scutellaria ventenatii Hook. in Curtis's Bot. Mag. 72: *pl. 4271.* 1846.

Stem erect, simple, or sparingly branched, 30 to 40 cm. high, purple, minutely pubescent, the inflorescence glandular; petioles 1 to 3 cm. long, puberulent; leaf blades ovate, 3 to 5 cm. long, 2 to 4 cm. wide, rounded or cordate at base, obtuse or acutish at apex, crenate, minutely pubescent on both surfaces, the lower surface grayish and paler than the sometimes glabrous upper surface; bracts minute, 2 to 3 mm. long, linear-lanceolate, shorter than the pedicels, or the lower finely serrate and foliaceous; racemes 2 to 4 cm. long at anthesis, becoming 8 to 10 cm. at maturity, the flowers rather numerous; pedicels up to 3 mm. long, pubescent with straight brownish hairs; calyx 2 to 3 mm. long at anthesis, becoming 4 to 5 mm. long in fruit, finely pubescent; corolla 2 cm. long, scarlet, sparsely pubescent, the tube gradually enlarging from 1 mm. at base to 4 mm. at throat, often curved, the upper lip as long as the lower but much broader, the middle lobe notched, the lower lip ovate, entire, obscurely 3-lobed; nutlets tuberculate.

TYPE LOCALITY: Santa Marta Mountains, Colombia.

SPECIMENS EXAMINED:

JAMAICA: Resources, *Harris* 6318 (N, Y). Green Valley, St. Andrew, *Harris* 12387 (M, Y). Vicinity of Troy, *Harris* 8824 (N), 12645 (N, G, M). Ewarton, *Killip* 591. Mandeville, *Britton* 3222 (Y), *Brown* 163 (P), *Crawford* 744 (P). Mount Diabolo, *Maxon & Killip* 485 (N), *Maxon* 2265 (N).

DOMINICA: *Lloyd* 472 (Y).

GUADELOUPE: *Duss* 2150 (Y).

MARTINQUE: *Duss* 1973 (N, Y).

The original description was of a plant grown from seeds found in the mountains of Santa Marta, Colombia, and sent through Purdie to Kew in 1845. Nothwithstanding the fact that all the specimens cited above were collected in the West Indies, they agree in every respect with both the original description and the Colombian specimens in the National Herbarium. In all probability this plant is not native in the West Indies but occurs as an escape from gardens. The herbarium sheets of Harris's no. 6318 and Duss's 1973 bear notes stating that the plants were introduced.

14. Scutellaria ornata Leonard, sp. nov.

Plants densely gray-canescent; stem up to 1 meter long, erect, or at length procumbent with erect branches; petioles 5 to 15 mm. long; leaf blades ovate, 4 to 6 cm. long, 3 to 4 cm. wide (those of the axillary branches smaller), cordate at base, acute or obtusish at apex; bracts minute, soon deciduous; racemes 4 to 10 cm. long, terminating the axillary branches; pedicels up to 4 mm. long, glandular-pubescent; calyx 3 to 4 mm. long, glandular-pubescent; corolla bright red, 1 to 1.2 cm. long, the tube rather abruptly enlarging from 2 mm. below the middle to 4 mm. at throat, the lips equal or the upper slightly longer than the lower, the middle lobe of the upper lip notched, the lower lip ovate, strongly undulate and obscurely 3-lobed; nutlets unknown.

Type in the U. S. National Herbarium, no. 1,139,349, collected in a garden at Puerta de la Laguna, Departamento de la Libertad, El Salvador, April 27, 1922, by Paul C. Standley (no. 23664).

Except for its decumbent habit and densely canescent stems and leaves, *S. ornata* closely resembles *S. ventenatii*, and may be only a form of that well-known species. The origin of the plant here described is unknown.

15. Scutellaria longifolia Benth. in Lindl. Bot. Reg. **18**: under *pl. 1493*. 1832.

Scutellaria isocheila Donn. Smith, Bot. Gaz. **57**: 426. 1914.

Stem erect, simple or sparingly branched above, 30 to 80 cm. high, minutely puberulent, without lens appearing glabrous; petioles slender, 0.5 to 3 cm. long, puberulent; leaf blades thin, ovate to lanceolate, 4 to 10 cm. long, 2 to 4 cm. wide, rounded or narrowed at base, acute at apex, coarsely crenate-serrate, minutely puberulent on the veins, otherwise glabrous; bracts minute, soon deciduous; flowers more or less secund, in elongate racemes; pedicels up to 6 mm. long, puberulent; calyx 3 to 6 mm. long, puberulent; corolla red, 2 to 3 cm. long, pubescent, the tube rather abruptly enlarged from 1.5 mm. below the middle to 4 mm. at throat, the lips nearly equal, the lobes of the upper lip equal and short, the middle lobe notched, the lower lip nearly orbicular, entire; nutlets 2 mm. in diameter, black, tuberculate.

TYPE LOCALITY: Mexico. Type collected by Mociño and Sessé.

SPECIMENS EXAMINED:

MICHOACÁN?: El Porvenir, *Langlassé* 965 (N, G).

GUATEMALA: Volcán Tecuamburro, Dept. Santa Rosa, *Heyde & Lux* 4566 (N, G). Acatepeque, Dept. Zacatepéquez, *Donnell Smith* 2596 (N, G).

San Vicente Tacaya, Dept. Amatitlán, *Tonduz* 479 (N). Without locality, *Heyde* 716 (N). Chama to Cobán, Alta Verapaz, *Johnson* 199 (N).

SALVADOR: Dept. Ahuachapán, *Padilla* 24 (N), 166 (N).

COSTA RICA: Cerro de las Caricias, alt. 1,800 meters, *Pittier* 16128 (N, type of *S. isocheila*). Atirro, Prov. Cartago, *Donnell Smith* 6700 (N. G). Alto de la Estrella, Prov. Cartago, *Standley* 39119 (N), 39134 (N). Viento Fresco, Prov. Alajuela, alt. 1,600 to 1,900 meters, *Standley & Torres* 47823 (N), 47847 (N). Yerba Buena, northeast of San Isidro, Prov. Heredia, alt. 2,000 meters, *Standley & Valerio* 49105 (N), 49712 (N), 49764 (N). Cerros de Zurquí, northeast of San Isidro, Prov. Heredia, alt. 2,000 to 2,400 meters, *Standley & Valerio* 50547 (N). Cerro de las Caricias, north of San Isidro, Prov. Heredia, *Standley & Valerio* 52188 (N).

Scutellaria longifolia is readily distinguished by its brown-puberulent stem, thin, nearly glabrous leaves, and conspicuous red flowers.

Pittier's 16128, the type of *S. isocheila*, differs from other specimens of *S. longifolia* in its smaller leaves.

16. Scutellaria maxonii Leonard, sp. nov.

Stem up to 1 meter long, branched, erect when young, becoming decumbent, finely pubescent with straight spreading hairs; petioles slender, 1 to 2.5 cm. long, pubescent; leaf blades ovate, 3 to 6 cm. long, 2 to 4 cm. wide, rounded at base, acutish at apex, crenate-dentate to undulate, glabrous and dark green above, grayish beneath; bracts minute, soon deciduous; racemes short, 2 to 3 cm. long, few-flowered; pedicels up to 6 mm. long, densely pubescent with straight brownish hairs; calyx 4 to 6 mm. long, glandular-pubescent; corolla bright red, 1.5 to 2 cm. long, pubescent, the tube first rather abruptly, and then gradually, enlarging from 1.5 mm. below the middle to 5 mm. at throat, the upper lip slightly shorter than the lower. the middle lobe shorter than the lateral lobes, the lower lip ovate, entire; nutlets unknown.

Type in the U. S. National Herbarium, No. 675777, collected between the Río Ladrillo and Los Siguas Camp, on the southern slope of Cerro de la Horqueta, Chiriquí, Panama, altitude 1,200 to 1,700 meters, March, 1911, by William R. Maxon (no. 5406).

ADDITIONAL SPECIMEN EXAMINED:

PANAMA: Humid forests of Cuesta de Las Palmas, southern slope of Cerro de la Horqueta, Chiriquí, *Pittier* 3158 (N).

Superficially this species resembles *S. ventenatii*, but it can easily be separated by its more densely pubescent stem, few-flowered racemes, and larger, more pubescent corolla. Furthermore, the upper surface of the leaf blades is glabrous excepting the minutely pubescent, impressed nerves, whereas in *S. ventenatii* the upper surface is evenly but rather sparsely pubescent, and the leaf blades are often cordate (never so in *S. maxonii*).

17. Scutellaria formosa Leonard, sp. nov.

Tall plant (only tips available for study); stems erect or sometimes straggling, simple or sparingly branched, glabrous below, minutely puberulent above; petioles 2 to 4 cm. long, puberulent; leaf blades thin, ovate to oblong-ovate, 6 to 10 cm. long, 4 to 6 cm. wide, rounded at base, gradually narrowed at apex, shallowly crenate, the upper surface glabrous or with a few scattered hairs, the lower surface glabrous except the puberulent veins; bracts minute, soon deciduous; racemes 5 to 15 cm. long; pedicels up to 6 mm. long, puberulent; calyx 3 to 6 mm. long, puberulent; corolla reddish purple, 3 to 4

cm. long, the tube enlarging from 2 mm. below the middle to 9 mm. at throat, strongly curved, the upper lip equaling or shorter than the lower, the lobes short, the middle one notched, the lower lip nearly orbicular, entire; nutlets 1 mm. in diameter, black, granular.

Type in the U. S. National Herbarium, no. 989556, collected on Cerro de la Raya, Cuyamecalco, Distrito de Cincatlán, Oaxaca, Mexico, altitude 2,800 meters, June 24, 1909, by C. Conzatti (no. 2464).

OTHER SPECIMENS EXAMINED:

VERACRUZ: Wet woods, Coatapec, *Barnes & Land* 575 (F).

OAXACA: La Loma, Cuyamecalco, Distrito de Cincatlán, altitude 2,000 meters, *Conzatti* 2496 (N, F), 2465 (N, F).

Except for its puberulent stems and nearly glabrous leaves, this species closely simulates *S. mociniana*. It differs from *S. longifolia* in its much larger flowers and subcordate leaves.

18. Scutellaria mociniana Benth. Labiat. Gen. Sp. 442. 1836.

Perilomia fruticosa Schlecht. & Cham. Linnaea 5: 102. 1830.

Stem erect or sometimes straggling, 30 cm. high or more (only portions of plants available for study), simple or sparingly branched, densely white-pubescent, especially above; petioles 1 to 3 cm. long, pubescent; leaf blades ovate to oblong-lanceolate or elliptic, narrowed or rounded at base, acute at apex, sinuate-dentate or nearly entire, the upper surface sparsely hispidulous, the lower surface minutely pubescent, especially on the veins; bracts oblong-lanceolate, minute, 4 to 5 mm. long; pedicels up to 6 mm. long, puberulent; calyx 3 to 6 mm. long, canescent; corolla red, 3 to 4 cm. long, nearly glabrous, the tube enlarging from 2 mm. below the middle to 7 mm. at throat, the upper lip equaling or shorter than the lower, the lobes short, equal, the middle lobe notched, the lower lip triangular, slightly 3-lobed, crenate toward tip; nutlets unknown.

TYPE LOCALITY: Mexico. Type collected by Mociño and Sessé.

SPECIMENS EXAMINED:

GUATEMALA: Alta Verapaz, *Türckheim* II.2029 (N, G, M, F, P), 1029 (N, G).

This species is well marked by its long red corolla, densely white-pubescent racemes, and hirtellous leaf blades.

19. Scutellaria churchilliana Fernald, Rhodora 4: 138. *pl. 38, f. 1.* 1904.

Stems ascending from a slender rootstock, simple or sparingly branched, 20 to 30 cm. tall, pubescent at least on the angles; petioles 3 to 15 mm. long; leaf blades thin, lance-ovate to oblong-lanceolate or the lowermost ovate, 2 to 5 cm. long, 0.5 to 2 cm. broad, truncate or abruptly narrowed at base, acuminate at apex (the lowermost subcordate at base and rounded at apex), remotely crenate-dentate, glabrous or the veins on the lower surface minutely and sparingly pubescent; bracts ovate-lanceolate, 3 to 19 mm. long, 2 to 5 mm. wide; flowers axillary or in small axillary racemes; pedicels 1 to 2 mm. long, puberulent; calyx 2.5 to 3 mm. long, puberulent; corolla blue, about 1 cm. long, pubescent, the tube enlarged from 2 mm. at base to 3.5 mm. at throat, the lips equal, the middle lobe of each notched, that of the lower lip undulate; nutlets unknown.

TYPE LOCALITY: Thickets by the Aroostook River, Masardis, Maine. Type collected by J. R. Churchill.

SPECIMENS EXAMINED:

QUEBEC: Bic, *Williamson* 1330 (Y).

MAINE: Gravelly river thicket, Bangor, *Fernald & Long* 260 (N, M). Bank of St. Johns River, Fort Kent, *Mackenzie* 3590 (M, Y).

This species is very similar to *S. epilobifolia* in the size and shape of the leaves, but in their thin texture and sparse pubescence it resembles *S. lateriflora*. Plants with small axillary racemes are particularly liable to be confused with *S. lateriflora*. The corolla and pedicels, as well, are intermediate, being at least 5 mm. shorter than those of *S. epilobifolia* and 2 mm. longer than those of *S. lateriflora*. The size of corolla usually furnishes the most satisfactory basis of distinction.

20. Scutellaria lateriflora L. Sp. Pl. 2: 598. 1753.

Stem simple or branched, erect or ascending, 10 to 80 cm. high, glabrous throughout or sparsely pubescent above, often purplish, stolon-producing at base; petioles slender, 5 to 10 mm. long; leaf blades ovate to ovate-oblong or ovate-lanceolate, 3 to 9 cm. long, 1 to 4 cm. wide, rounded, truncate, or cordate at base, acute or acuminate at apex, coarsely crenate-dentate, or the upper entire, thin, glabrous or very sparsely pubescent; floral bracts lanceolate, equaling or exceeding the calyx; flowers usually numerous, secund, in slender, axillary or terminal racemes; pedicels 1 to 2 mm. long, puberulent; calyx 3 to 4 mm. long, puberulent and sometimes glandular; corolla blue to nearly white, 5 to 8 mm. long, the tube gradually enlarging from 1.5 mm. at base to 3 mm. at throat, the lips nearly equal, the middle lobe of the upper lip slightly notched or entire, the lower lip nearly orbicular and shallowly 3-lobed; nutlets light brown or reddish, strongly tuberculate.

TYPE LOCALITY: "Canada, Virginia."

RANGE: Newfoundland to British Columbia, Florida, New Mexico, and Oregon.

This well-known species is easily recognized by its slender axillary secund racemes and small corollas.

Considerable variation in the color of the corolla is not uncommon. A plant with pink flowers named *S. lateriflora* forma *rhodantha* by Fernald,[9] was collected in an alluvial thicket near the mouth of the Dartsmouth River, Gaspé County, Quebec, August, 1904, by Collins, Fernald, and Pease. A white-flowered plant from Grove Isle, Michigan, was collected August, 1916, and catalogued by Farwell.[10]

21. Scutellaria racemosa Pers. Syn. Pl. 2: 136. 1807.

Scutellaria rumicifolia H. B. K. Nov. Gen. & Sp. 2: 324. 1817.

Stem diffusely branched, the branches slender, erect, ascending, or often from a prostrate stem, 10 to 50 cm. high, glabrous; petioles 1 to 5 mm. long; leaf blades ovate to lanceolate, hastate, 5 to 10 mm. long, 3 to 15 mm. wide (the lowermost reniform, the uppermost narrowly lanceolate, averaging 1 to 2 mm. in width), subcordate or narrowed at base, obtuse or rounded at apex, entire, glabrous or the uppermost minutely and sparsely pubescent; flowers very small, numerous; pedicels up to 2 mm. long, puberulent; calyx 2 mm. long, minutely pubescent; corolla blue, 3 to 4 mm. long, minutely pubescent, the tube short, the lips equal in length, the middle lobe of the upper lip notched, scarcely exceeding the lateral lobes, the lower lip nearly orbicular; nutlets less than 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Montevideo, Uruguay.

SPECIMENS EXAMINED:

SAN LUIS POTOSÍ: Grassy hillsides, Las Canoas, *Pringle* 3067 (N, G, M, F).

VERACRUZ: In damp thickets, Huatusco, *Mohr* in 1857 (N). Near Jalapa, *Pringle* 7763 (N, G, M, F). Without definite locality, *Schiede* 105 (N, M). Sierra Madre, between Misantla and Naolinco, *Purpus* 6040 (G).

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[9] Rhodora 23: 249. 1917.

[10] Rept. Mich. Acad. Sci. 19: 249. 1917.

JALISCO: Barranca near Guadalajara, *Palmer* 96 (N, P, G).
CHIAPAS: Along banks, Fenix, *Purpus* 468 (F).

Scutellaria racemosa is distinct in its halberd-shaped leaves and minute flowers.

22. Scutellaria nervosa Pursh, Fl. Amer. Sept. 412. 1814.

Scutellaria teucrifolia J. E. Smith in Rees, Cycl. 32: no. 15. 1816.
Scutellaria gracilis Nutt. Gen. Pl. 2: 37. 1818.
Scutellaria parviflora Hamilt. in Seringe, Bull. Bot. 300. 1830.

A slender plant with filiform stolons; stems erect or ascending, simple or sometimes branched, 10 to 50 cm. high, glabrous or sparingly pubescent on the angles above; petioles 2 to 3 mm. long or those of the lowermost leaves slender and reaching 10 mm.; leaf blades ovate, 1 to 4 cm. long, 0.5 to 3 cm. wide, narrowed, truncate, or subcordate at base, obtuse at apex, coarsely crenate (the lowermost nearly orbicular to ovate-lanceolate and often entire), the upper surface and veins beneath sparsely pubescent, otherwise glabrous; flowers few, axillary or on small axillary branches; pedicels up to 5 mm. long, minutely pubescent; calyx 3 to 7 mm. long, the nerves pilose; corolla blue, 6 to 8 mm long, pubescent, the upper lip shorter than the lower, the middle lobe of the upper lip notched, the lower lip strongly erose, its lateral lobes prominent; nutlets 1 mm. in diameter, tuberculate, winged.

TYPE LOCALITY: Virginia.

SPECIMENS EXAMINED:

PENNSYLVANIA: Aspinwall, *Twining Herbarium*, June, 1901 (N). Westmoreland County, *Pierron* in 1878 (N, M). Conewago, Lancaster County, *Heller* in 1889 (M).
OHIO: Cincinnati, *Lloyd* in 1882 (N); *Frank* in 1837 (M). North Bend on Ohio River, *Short* (M). Without locality, *Mohr* (N).
ILLINOIS: Woods, Madison County, *Eggert* in 1877 (N, M), in 1893 (M). Athens, *Hall* in 1861 (N, M). Tazewell County, *McDonald* in 1888 (M). Canton, *Wolf* (M). Olney, *Palmer* 15585 (M). Without locality, *Mead* in 1848 (M); *Breuder* in 1873 (N).
MISSOURI: St. Louis, *Eggert* in 1877 (M); *Lindheimer* 1839 (M). Dunklin County, *Bush* in 1892.
MARYLAND: Near Washington, *Ward* in 1879 (N); *Steele* in 1899 (N).
DISTRICT OF COLUMBIA: *Steele* in 1896 (M); *Ward* in 1876 (M). Reform School near Washington, *Ward* in 1884 (N). Insane Asylum, *Coville* in 1889 (N).
VIRGINIA: Dyke, Alexandria County, *Miller* in 1899 (N).
WEST VIRGINIA: Barbour County, *Pollock* in 1897 (M). Upshur County, *Pollock* in 1896 (M).
KENTUCKY: Without locality, *Short* (N). Hancock County, *Palmer* 17803 (M). Bowling Green, *Price* in 1900 (M).
TENNESSEE: Knox County, *Ruth* in 1893 (M). Knoxville, *Ruth* 525 (N); *Scribner* in 1890 (N). Nashville, *Eggert* in 1893 (M). Clarksville, Montgomery County, *Eggert* 17601 (M).
ALABAMA: Etawah County, *Eggert* in 1897 (M).
LOUISIANA: Red River, *Hall* (N).

Notwithstanding its wide range, this species exhibits no great amount of variation. It is well marked by its winged nutlets and large, subsessile, obovate, nearly glabrous, prominently veined leaves.

23. Scutellaria cardiophylla Engelm. & Gray, Bost. Journ. Nat. Hist. 5: 227. 1845.

Tall annual; stem erect or ascending, branched, 30 to 90 cm. long, puberulent with downwardly curved hairs; petioles slender, 3 to 15 mm. long; leaf blades

ovate to deltoid-ovate, 1 to 3 cm. long, 1 to 2 cm. broad, truncate at base, obtuse or acutish at apex, crenate-serrate, minutely pubescent on both sides or sometimes glabrous above; flowers in leafy racemes; pedicels up to 3 mm. long; calyx 4 to 5 mm. long, minutely pubescent, purplish; corolla blue, 7 to 9 mm. long, minutely pubescent, the tube slender, 1.5 mm. at base, expanding rather abruptly from middle to 5 mm. at throat, the upper lip broader than the lower; nutlets about 1 mm. in diameter.

TYPE LOCALITY: Houston, Texas.

SPECIMENS EXAMINED:

TEXAS: Huntsville, *Tharp* 745 (N). Altair, *Tharp* 2545 (N). Tres Palacios, *Tharp* 2551 (N). Hempstead, *Hall* 454 (N, M). Sandy woods, Dallas, *Reverchon* 770 (N). Sandy soil, Laporte, *Reverchon* 3910 (N, M), 870 (M). Houston, *Fisher* 174 (N), 5173 (N). Waller County, *Thurow* in 1898 (N). Columbus, *Rusby* in 1910 (Y). Walker County, *Warner* (N). Vicinity of Houston, *Dixon* 627 (F). Evergreen Ranch, Galveston Bay, *Joor* in 1884 (M). College Station, Brazos County, *Shaw School of Botany* in 1888 (M). Palestine, Anderson County, *Eggert* in 1899 (M). Jacksonville, Cherokee County, *Palmer* 8606 (M). Augustine, *Palmer* 7887 (M). MacNab, Hempstead County, *Palmer* 10503 (M). Without locality, *Lindheimer* 144 (M).

ARKANSAS: Hot Springs, *Letterman* (M).

This species is unique in being the only strictly annual American *Scutellaria*. The specimens cited are very uniform.

24. Scutellaria coerulea Moc. & Sessé; Benth. in Lindl. Bot. Reg. 18: *pl. 1493*. 1832.

Scutellaria dumetorum Schlecht. Linnaea 7: 400. 1832.

Scutellaria distans Fernald, Proc. Amer. Acad. 35: 562. 1900.

Roots thickened; stem slender, branching near the base, the branches often numerous, erect, ascending, 10 to 50 cm. high, pubescent in lines with curved hairs; petioles 3 to 5 mm. long; leaf blades ovate to rhombic-ovate, 2 to 5 cm. long, 1 to 4 cm. wide (gradually reduced toward the summit), cuneate or subcordate at base, obtusish at apex, sparingly pubescent with appressed hairs above and on the veins beneath; flowers few, often longer than the upper leaves; pedicels and calyx 3 to 5 mm. long, pubescent with curved hairs; corolla bluish purple, finely pubescent, 2 cm. long, the tube slender, 2 mm. thick at base, gradually expanding to 5 mm. at throat, the upper lip much smaller than the lower, the middle lobe deeply notched, the lower lip prominently 3-lobed, the middle lobe undulate; nutlets 1.5 mm. in diameter.

TYPE LOCALITY: Mexico.

SPECIMENS EXAMINED:

MEXICO: Without locality, *Coulter* 1125 (G).

VERACRUZ: Between San Miguel del Soldado and La Joya, *Schiede* 106 (M, type collection of *S. dumetorum*).

JALISCO: Sierra Madre, west of Bolaños, *Rose* 2951 (N, G, type of *S. distans*).

SAN LUIS POTOSÍ: Alvárez, *Palmer* 133 (N, G, M, F).

HIDALGO: Between Pachuca and Real del Monte, *Rose, Painter & Rose* 8704 (N). Sierra de Pachuca, *Rose & Painter* 6727 (N). Fir forests of Sierra de Pachuca, alt. 3,160 meters, *Pringle* 11102 (N, G, M, F), 7577 (F).

MICHOACÁN: Cool woods, mountains above Pátzcuaro, *Pringle* 4154 (N, G, M, F, P). Morelia, *Arsène* 8475 (N, G, M), 9043 (N, G), 5510 (N, G, M). El Parque, *Orcutt* 4375 (M).

MEXICO: Santa Fe, *Rose & Painter* 8641 (N), 6506 (N); *Bourgeau* 397 (N, G). Hacienda de la Encarnación, *Rose, Painter & Rose* 8464 (N).
MORELOS: El Parque, *Orcutt* 4375 (F).
PUEBLA: Esperanza, *Purpus* 5677 (N).
OAXACA: Sierra de San Felipe, alt. 3,300 meters, *Smith* 428 (N, M); *Nelson* 1958 (N). Cuyamecalco, *Smith* 680 (G).
VERACRUZ: *Ehrenberg* 119 (N).
CHIAPAS: *Ghiesbreght* 87 (G).
GUATEMALA: Above San Rafael, *Lehmann* 1656 (N).

Scutellaria coerulea is characterized by its thickened spindle-shaped roots, elongate inflorescence, floral leaves gradually reduced toward the summit, and the large prominent lower lip of the corolla. *Bourgeau* 397 from Mexico is a tall plant with a simple stem, larger leaves, and longer petioles. Until more material can be studied, these differences hardly seem adequate for describing this plant as a new species. It is probably a robust specimen of *S. coerulea* grown in some unusual environment.

Rose 2951, the type of *S. distans*, differs from normal plants of *S. coerulea* in being more nearly glabrous and in having more pointed leaves.

25. Scutellaria microphylla Moc. & Sessé; Benth. in Lindl. Bot. Reg. 18: *pl. 1493*. 1832.

Stem slender, 10 to 30 cm. high, usually with short branches, pubescent in lines with white curved hairs; petioles slender, up to 10 mm. long; leaf blades ovate to lance-ovate, 1 to 2.5 cm. long, 1 to 1.2 cm. wide, narrowed or truncate at base, obtusish at apex (the lowermost leaves orbicular, cordate at base), crenate, sparsely pubescent on both surfaces or glabrous, the lower surface punctate; pedicels up to 4 mm. long, pubescent; calyx 3 to 4 mm. long at maturity, sparsely pubescent; corolla blue, 10 to 15 mm. long, pubescent, the tube narrow throughout, the lower lip longer than the upper, the middle lobe of the upper lip notched; nutlets about 1 mm. in diameter, granular.

TYPE LOCALITY: Mexico.

SPECIMENS EXAMINED:

VERACRUZ: *Müller* 1736 (Y), 3026 (Y), 3029 (Y); *Botteri* 176 (N, G), 111 (G), 308 (G), 577 (G).

The small slender-petioled leaves, uniform throughout, excepting possibly the lowermost, and the small corollas serve to distinguish this plant from its near relative, *S. coerulea*. A further contrast is conspicuous in the branching of the two plants: The branches of *S. coerulea* arise from near the base and are uniform in length, while those of *S. microphylla*, especially if numerous, are much shorter and smaller than the main stem. In texture of leaves, nature of pubescence, and shape of the corolla the two plants are quite similar.

26. Scutellaria epilobifolia Hamilt. in Seringe, Bull. Bot. 300. 1832.

Scutellaria galericulata of American authors, not *S. galericulata* L. 1753.
Scutellaria pauciflora Pantoc. Oester. Bot. Zeitschr. 23: 266. 1873.
Scutellaria galericulata albiflora Millsp. Fl. W. Va. 428. 1892.
Scutellaria galericulata rosea Rand & Redfield, Fl. Mt. Desert 137. 1894.

A slender plant, perennial by filiform stolons; stems erect or reclining, simple or paniculately branched, 10 to 90 cm. high, glabrate or finely pubescent; petioles up to 3 mm. long; leaf blades oblong-lanceolate to ovate-oblong, 1 to 8.5 cm. long, 0.5 to 3.5 cm. broad, rounded, truncate, or cordate at base, acute at apex, thin, shallowly serrate, finely pubescent on both surfaces or glabrate above (uppermost leaves smaller, sessile, and often entire); flowers axillary; pedicels up to 2 mm. long, puberulent; calyx 3 to 5 mm. long,

minutely pubescent; corolla violet-blue and white, 1.5 to 1.8 cm. long, finely pubescent, the tube 1 to 1.5 mm. at base, enlarging rather abruptly from near middle to 4 or 5 mm. at throat, the upper lip shorter than the lower, the lobes shallowly notched; nutlets 2 mm. in diameter, tuberculate.

TYPE LOCALITY: United States.

RANGE: General throughout northern United States and Canada.

This species had been confused with *S. galericulata* of Linnaeus until Fernald pointed out that the Linnaean plant was exclusively European and has not, up to the present, been collected in the New World. He finds that in the case of the American plant the corolla is 1.5 to 2.5 cm. long, with a whitish or pale tube and thoat, and deep blue galea and lips, while the corolla of the European plant is never more than 1.5 cm. long and uniformly pale blue. In addition to this difference, the leaves of true *S. galericulata* are less pubescent or nearly glabrous, in contrast with the velvety under leaf surface of the American plant. The most important difference, as emphasized by Fernald, exists in the nutlets: In *S. galericulata* they are 1.2 to 1.3 mm. in diameter and sharply muricate, while in the American plant the diameter varies from 1.5 to 2 mm. and the surface is coarsely pebbled or almost warty. As to habit and general appearance the two plants are strikingly similar.

27. Scutellaria alta Jones, Contr. West. Bot. **12**: 70. 1908.

Stems erect, simple or branched, up to 60 cm. tall, from a ligneous base, purplish below, finely pubescent, sparsely pubescent above; petioles slender, 3 to 5 mm. long, the upper narrowly winged; leaf blades triangular-ovate to lance-ovate, 10 to 20 mm. long, 5 to 10 mm. wide, truncate or subcordate at base (the floral leaves narrowed), obtuse at apex, puberulent on both surfaces; flowers few; pedicels up to 5 mm. long, puberulent; calyx 3 to 5 mm. long, puberulent, often becoming glabrous; corolla purplish blue, about 1 cm. long, pubescent, the tube 1 mm. at base, expanding to 7 mm. at throat, the lower lip much larger than the upper, the lobes of both lips prominently notched, the lower lip erose, the upper entire; nutlets 1.5 mm. in diameter, black, granular.

TYPE LOCALITY: Guayanopa Canyon, Sierra Madre, Chihuahua, Mexico. Type collected September, 1903, by Marcus E. Jones.

SPECIMEN EXAMINED:

CHIHUAHUA: Guayanopa Canyon, alt. 2,000 meters, *Jones* in 1903 (N, type collection).

This species has the general appearance and habit of *S. epilobifolia* but differs in its shorter ovate leaves with slender petioles and in its longer corollas.

28. Scutellaria tuberosa Benth. Labiat. Gen. Sp. 441. 1836.

Scutellaria pilosiuscula Nutt.; Benth. in DC. Prodr. **12**: 429. 1848.

Stem from a slender tuber-producing rootstock, erect, sometimes trailing, averaging 10 cm. in height (occasionally up to 30 cm.), pubescent with villous hairs to nearly glabrous; petioles 3 to 10 mm. long; leaf blades thin, ovate, 1 to 5 cm. long, 0.5 to 2.5 cm. wide (usually not over 2 cm. long and 1.5 cm. wide), truncate or narrowed at base, obtuse or rounded at apex, coarsely crenate with a few blunt teeth to nearly entire, sparsely pilose on both surfaces; flowers few; pedicels 2 to 3 mm. long, pilose or puberulent; calyx 3 to 5 mm. long, densely pilose with long hairs; corolla blue, 15 mm. long, the tube 2 mm. at base, expanding from middle to 5 or 6 mm. at throat, the upper lip smaller than the lower, the middle lobe usually notched, the lower lip entire; nutlets black, 1.5 mm. in diameter, strongly muricate.

TYPE LOCALITY: Northern California.

RANGE: Oregon, California, and northern Lower California.

Scutellaria tuberosa is well marked, differing from other tuberous-rooted Scutellarias in its petioled, ovate, coarsely toothed, nearly glabrous leaves, and in the long hairs usually present on the calyx.

29. Scutellaria bushii Britton, Man. 785. 1901.

Roots fibrous; stems several or numerous, tufted, erect or ascending, 15 to 35 cm. high, finely cinereous-puberulent; leaves sessile, rather prominently nerved; leaf blades oblanceolate to oblong-lanceolate, 2 to 3.5 cm. long, 3 to 5 mm. broad (gradually reduced toward the summit), narrowed at base, rounded at apex, entire, minutely but rather sparsely cinereous-pubescent, punctate and resin-dotted; flowers few, in the axils of the upper leaves; pedicels up to 4 mm. long, puberulent; calyx 3 to 4 mm. long, pubescent; corolla blue, minutely pubescent, resin-dotted, the tube gradually dilated from 2 mm. at base to 8 mm. at throat, the lower lip much longer and broader than the upper; nutlets 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Shannon County, Missouri. Type collected by Bush, June, 1890 (no. 54).

SPECIMENS EXAMINED:

MISSOURI: Shannon County, *Bush* in 1888 (N), 49 (M), 48 (M). Monteer County, *Bush* 189 (N, M), 378 (N, M), 7817 (M), 461 (M), 4737 (M). Van Buren, Carter County, *Palmer* 19496 (M).

The strongly punctate leaves, tufted stems, and fibrous roots are characters distinguishing this species from both *S. angustifolia* and *S. antirrhinoides*, to which it bears some resemblance. These characters seem to indicate, however, a closer relationship to the eastern *S. integrifolia multiglandulosa*, as suggested by Penland[11] in his recent treatment of the North American Scutellarias.

30. Scutellaria angustifolia Pursh, Fl. Amer. Sept. 412. 1814.

Scutellaria veronicifolia Rydb. Bull. Torrey Club 36: 681. 1909.

Rootstocks producing thickened tuberous stolons; stem simple to diffusely branched at base, erect or ascending, minutely puberulent to nearly glabrous, 10 to 30 cm. high; leaves short-petioled or subsessile; leaf blades linear-oblong to oblong-ovate, 1 to 4 cm. long, 5 to 10 mm. broad (upper and lowermost reduced), narrowed or truncate at base, obtuse or rounded at apex, prominently nerved beneath, entire, puberulent to nearly glabrous (the lowermost, if present, ovate-cordate, shallowly serrate); flowers seldom numerous; pedicels 4 to 5 mm. long, puberulent; calyx 3 to 4 mm. long, puberulent, purplish; corolla purplish blue, 2 to 3 cm. long, finely pubescent, the tube very slender, 2 mm. thick at base, expanding rather abruptly from the middle to 10 mm. at the moderately ampliate throat, the lips nearly equal, the middle lobe of upper lip notched, the lower lip erose or undulate; nutlets 1 mm. in diameter, granular.

TYPE LOCALITY: "On the River Kooskoosky."

SPECIMENS EXAMINED:

IDAHO: Hills opposite Lewiston, *Henderson* 2745 (N). Canyon County, *Macbride* 104 (N, M). Coeur d'Alene Mountains, *Leiberg* 1548 (N, M); *Rust* 105 (N); *Aiton* in 1892 (M). Nez Perces County, *Sandberg* 115 (N, M), 8689 (M); *Heller* 3150 (N, M). Without locality, *Austin* 56 (N); *Trelease & Saunders* 4883 (M); *Mulford* in 1892, (M).

WASHINGTON: Whitman County, *Elmer* 900 (N, M), 181 (N). Wenatchee, *Whited* 2616 (N). Spokane, *Kreager* 10 (N); *Savage, Cameron &*

[11] Rhodora 26: 76. 1924.

Lenocker in 1898 (M). Stevens County, *Eggleston* 13133 (N). Waltsberg, *Horner* 411 (N). Pullman, *Piper* 1570 (N, M). Without locality, *Vasey* in 1883 (N).

OREGON: Horse Creek Canyon, Wallowa County, *Sheldon* 8007 (M, F). Crook County, *Eggleston* 11383 (N), 11381 (N), 12752 (N). Umatilla County, *Eggleston* 12752 (N). West of Fossil, *Lawrence* 438 (N). Dry Creek, *Jardine* 67a (N). Wallowa, *Sampson & Pearson* 80a (N). Near Wimer, Jackson County, *Hammond* 330 (N, M). Grants Pass, *Howell* in 1887 (N). Without locality, *Kellogg & Harford* 742 (N); *Cusick* 2145 (N, M); *Howell* in 1880 (N), in 1877 (M).

CALIFORNIA: Los Angeles County, *Abrams & McGregor* 344 (N). Tulare County, *Culbertson* 4446 (M). Without locality, *Miss Bush* in 1884 (N).

Within the range of its typical form *S. angustifolia* is uniform, but southward in California the species breaks up into several forms and varieties.

The description of *S. veronicifolia* was based on plants collected in Idaho by Sandberg, Macdougal, and Heller (no. 115). The species was described as differing from *S. angustifolia* by its broader corolla tube and usually toothed leaves, but neither of these characters seems sufficiently constant or important to establish a new species.

30a. **Scutellaria angustifolia canescens** A. Gray in Brewer & Wats. Bot. Calif. 1: 603. 1880.

Scutellaria siphocampyloides Vatke, Bot. Zeit, 30: 717. 1872.

Stem usually branched, pubescent, glandular at least above; leaves oblong-ovate to oblong-elliptic, densely pubescent, glandular; flowers usually erect; pedicels up to 4 mm. long, glandular-pubescent; calyx densely pubescent, often glandular; corolla 10 to 15 mm. long, glandular-pubescent.

TYPE LOCALITY: Western California.

SPECIMENS EXAMINED:

IDAHO: Without locality, *Ainslie* in 1873 (N).

OREGON: Grants Pass, *Howell* in 1884 (N). Troy, Wallowa National Forest, *Jardine* 256 (N).

CALIFORNIA: Dry ridge, Goosenest Mountains, Siskiyou County, *Butler* 1401 (N). Santa Clara County, *Dudley* 4131 (N). Mt. Bullion, *Bolander* 4946 (N, M). Sonora, Tuolumne County, *Eggleston* 9070 (N). Pineridge, Fresno County, *Hall & Chandler* 242 (N, M). Mariposa County, *Hollick* in 1880 (N). Pacheco Pass, Santa Clara County, *Brewer* 1285 (N). Big Sandy Creek, Fresno County, *McDonald* in 1915 (N). Southeastern California, *Purpus* 5605 (N). Cedar Mountains, Alameda County, *Elmer* 4434 (N), Siskiyou County, *Butler* 1401 (N). Long Valley, *Kellogg & Harford* 740 (N, M). Butte County, *Heller* 12814 (N, M), in 1914 (Y). Plumas County, *Austin* (N). Sierra Nevada, *Lemmon* in 1875 (N), 6594 (M). Vicinity of Ione, *Braunton* 1026 (M). Yreka, Siskiyou County, *Greene* in 1876 (M).

This variety is based on its denser glandular pubescence.

30b. **Scutellaria angustifolia austinae** (Eastw.) Leonard.

Scutellaria austinae Eastw. Bull. Torrey Club 30: 493. 1903.

Scutellaria linearifolia Eastw. Bull. Torrey Club 30: 493. 1903.

Stem simple or branched from the base, sparsely pubescent with curved hairs or glabrous; leaves usually numerous and ascending; leaf blades narrowly oblong-elliptic, minutely puberulent; corolla deep blue, 2 to 2.5 cm. long, sparingly glandular-pubescent, the tube narrow at base and usually

curved so that the flower is in an upright position, the upper lip longer than the lower, the stamens often exserted.

TYPE LOCALITY: Big Chico, Butte County, California. Type collected in May, 1897, by Mrs. C. C. Bruce (no. 1835).

SPECIMENS EXAMINED:

CALIFORNIA: Near Redding, Shasta County, *Heller* 7889 (N, M, Y). Lake County, *Heller* 12386 (N, F). Butte Creek, *Austin* 1835 (N). Plumas County, *Austin* in 1880 (N). Goose Valley, Shasta County, *Eastwood* 1015 (N, M), 1440 (N, M). Nevada City, Nevada County, *Eastwood* 560 (N, M). Frazier Mountains, Ventura County, *Coville & Funston* 1197 (N). Upper Santa Ana, San Bernardino Mountains, *Grinnell* (N); *Crawford* 37 (K); *Parish* 332 (N). Kneeland Prairie, Humboldt County, *Tracy* 3842 (N), 3670 (M). Fox Creek, Plumas County, *Hall & Babcock* 4423 (N). San Jacinto Mountains, *Hall* 334 (N). Musser Hill, Trinity County, *Yates* 353 (N). Dry banks near Yreka, Siskiyou County, *Butler* 939 (N); *Heller* in 1905 (M). Kern County, *Palmer* 146 (N). Sierra Nevada, *Lemmon* in 1875 (N). Bear Valley, San Bernardino County, *Parish* 3122 (N, M), 332 (M), in 1880 (M). Without locality, *Frémont Expedition* in 1845 (N, M); *Parry & Lemmon* 1876 (N, Y, M). Fredalba, San Bernardino Mountains, *Abrams* 2778 (N, M). Weaverville, *Jotter* 323 (N). Pit River Ferry, Shasta County, *Brown* 221 (N, M, F). Big Bear Valley, San Bernardino Mountains, *Harwood* 4318 (N). Bear Creek, Tuolumne County, *Williamson* 24 (N). Idyllwild, San Jacinto Mountains, *Spencer* 2334 (N).

Typically this variety differs from the species in having bright green, oblong-elliptic, erect leaves and an upright corolla with a relatively narrow throat and exserted stamens. The specimens listed show a great amount of variation. In some the leaves are short and approach the ovate-elliptic type characteristic of the species, while others have spreading leaves and corollas, and in many more the stamens are not exserted. In short, there seems to be no distinct line of demarcation between species and variety, especially since many plants possess characters common to both.

The same is true of *S. angustifolia canescens*, except that there exists a closer relationship to the species, as indicated by the more abruptly expanded corolla tube with its broader throat. Except for the glandular pubescence of *S. angustifolia canescens*, the two varieties could be considered identical.

Although the writer has not seen the type of *S. linearifolia*, the description seems to indicate clearly that it is merely a form of *S. angustifolia austinae*.

31. Scutellaria brittonii Porter, Bull. Torrey Club 21: 177. 1894.

Perennial, from tuberous-thickened rootstocks, the stems simple or branched at base, erect or ascending, finely and minutely pubescent or nearly glabrous, 10 to 25 cm. high; leaves sessile or the lowermost short-petioled; leaf blades ovate-lanceolate to oblong or oval, 10 to 25 mm. long, 3 to 10 mm. broad (the uppermost slightly reduced), narrowed at base, obtuse or rounded at apex, entire or the lowermost shallowly crenulate, prominently veined beneath, pubescent to puberulent on both surfaces or occasionally nearly glabrous; flowers few; pedicels up to 4 mm. long; calyx 4 to 5 mm. long, purplish, pubescent; corolla blue, 1 to 2.5 cm. long, glandular-pubescent, the tube enlarging from 2 mm. at the middle to 8 mm. at the throat, the lips equal, the middle lobe of the upper lip erose; nutlets 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Rocky Mountains of Colorado.

SPECIMENS EXAMINED:

WYOMING: Foothills west of Islay, *Cary* 324 (N). Table Mountain, *Nelson* 94 (N, M). Sand Creek, Albany County, *Nelson* 7009 (N, M).

COLORADO: Fort Collins, *Crandall* 416 (N), 1707 (N), in 1890 (N). Denver, *Wolf* 780 (N); *Smith* in 1891 (M). Clear Creek Canyon, *Coulter* in 1873 (N). Lyons, *Johnson* 162b (N, M). Eastonville, El Paso County, *Eggleston* 11181 (N). Mt. Golden, *Knowlton* 70 (N). Larimer County, *Crandall* in 1890 (N). Ruxton Cross, *Clements* 95 (N, M). Fort Collins, *Crandall* in 1896 (M); *Baker* in 1896 (M). Colorado Springs, *Jones* in 1878 (N). Estes Park, *Johnston* 855 (N). Rocky Mountains, *Patterson* 114a (N). Near Boulder, *Patterson* 296 (M). Gregory Canyon, *Hanson* C211 (M). Eldora, *Payson* in 1919 (M). Jefferson County, *Clokey* 3060 (N, M). Pikes Peak, *Schneck* in 1893 (M). Cañon City, *Brandegee* B413 (M). Evans, Johnston 162a (M), 162b (M). Upper Platte, *Parry* 303 (M). Without locality, *Parry* 431 (N); *Hall* in 1862 (N); *Hall & Harbour* 431 (M).

Scutellaria brittonii is related to *S. angustifolia*, but has broader, more crowded, prominently veined leaves and a coarser, nearly hispidulous pubescence. The specimens cited are uniform except for a variation in the amount of pubescence. *Clements* 95 and *Collins* 1707 from Colorado and *Nelson* 7009 from Wyoming approach *S. brittonii virgulata*.

31a. Scutellaria brittonii virgulata (A. Nels.) Rydb. Fl. Colo. 296. 1906.

Scutellaria virgulata A. Nels. Bull. Torrey Club **25**: 283. 1898.

Stem erect or ascending from a slender rootstock, simple or branched, 20 to 30 cm. high, minutely puberulent; leaf blades oblong-elliptic, 10 to 35 mm. long, narrowed to base, rounded at apex, thin, bright green, sparsely pubescent; pedicels 2 to 3 mm. long, puberulent; calyx 5 to 6 mm. long, pubescent, purplish; corolla 2 cm. long, the tube enlarged from 2.5 mm. at middle to 8 mm. at throat, the lower lip strongly undulate or erose; nutlets not seen.

TYPE LOCALITY: Summits of Laramie Hills, Wyoming. Type collected in June, 1897, by Nelson (no. 3218).

SPECIMENS EXAMINED:

WYOMING: Green Top, *Nelson* 3218 (N, M).

This variety is based on its longer and more slender stem and larger, thin, bright green leaves.

32. Scutellaria hispidula Robinson, Proc. Amer. Acad. **26**: 174. 1891.

Stem slender, 10 to 20 cm. high, erect or ascending from a ligneous base, sparingly hirsute, purplish; leaves small, sessile or the lowermost short-petioled; leaf blades ovate to ovate-elliptic, 5 to 12 mm. long, 5 to 6 mm. broad, entire or undulate, glabrate or sparingly hirsute; flowers few; pedicels up to 2 mm. long, hispidulous; calyx purplish, 3 to 5 mm. long, sparingly covered with white hispidulous hairs; corolla blue, 8 to 10 mm. long, softly pubescent, the tube enlarged from 2 mm. at base to 3 mm. at throat, the upper lip much smaller than the lower, the middle lobe slightly notched, the lower lip as broad as long, with the middle lobe slightly erose; nutlets 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Flor de María, Mexico. Type collected by Pringle in 1890 (no. 3233).

SPECIMENS EXAMINED:

MEXICO: Meadows, Flor de María, *Pringle* 3233 (N, G, M, F, P).

JALISCO: Huejuquilla, *Rose* 2555 (N, G).

MICHOACÁN: Morelia, *Arsène* (N, F).

Scutellaria hispidula is similar in many respects to both *S. resinosa* and *S. drummondii*, but can be separated readily by its sparsely hirsute stems, leaves, and calyx.

33. Scutellaria parvula Michx. Fl. Bor. Amer. **2**: 11. 1803.

Scutellaria parvula mollis A. Gray, Syn. Fl. **2**[1]: 380. 1878.

Scutellaria campestris Britton, Mem. Torrey Club **5**: 283. 1894.

Stem from subterranean moniliform-tuberous stolons, erect or ascending, simple to diffusely branched from base, 10 to 50 cm. high, pubescent throughout with soft spreading hairs, usually glandular, at least above; leaves sessile or the lowermost petiolate; leaf blades ovate to orbicular, 10 to 15 mm. long, 3 to 4 mm. broad, truncate or subcordate at base, obtuse at apex, entire or shallowly toothed, prominently veined beneath, pubescent on both sides (lowermost leaves, if present, reniform, with slender petioles 2 to 15 mm. long, the floral leaves similar to the main stem leaves but reduced); pedicels up to 4 mm. long, densely glandular-pubescent; calyx 2 to 4 mm. long, glandular-pubescent; corolla blue, pilose, 6 to 7 mm. long, the tube short, the lobes of the upper lip nearly equal, the lower lip distinctly 3-lobed; nutlets 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Illinois and Canada.

RANGE: Ontario to Iowa, south to Tennessee, Alabama, Louisiana, and Texas.

Scutellaria parvula is closely related to *S. ambigua*, since both species have similar flowers and roots and resemble each other in habit. There are, however, certain striking differences. The stem of *S. ambigua* is glabrous or, at most, roughened or finely puberulent on the angles, while its leaves are rather narrowly ovate or more nearly lanceolate, strongly involute, and not exceeding 7 mm. in width. The whole plant is more or less purplish and always eglandular. In contrast, *S. parvula* is finely glandular-pubescent and has flat, broadly ovate or oval leaves averaging 10 mm. in width. Furthermore, the lowermost leaves of *S. parvula* are borne on slender petioles 2 cm. long or more, while those of *S. ambigua*, when present, are much reduced, with petioles not exceeding 5 mm. Plants are not uncommon, however, in the ample material of the U. S. National Herbarium, which seem to be intermediate between the two species, but these can always be separated by the difference in character of the pubescence.

34. Scutellaria ambigua Nutt. Gen. Pl. **2**: 37. 1818.

Scutellaria parvula ambigua Fernald, Rhodora **3**: 201. 1901.

Stem erect, from subterranean moniliform-tuberous stolons, simple or diffusely branched, 10 to 20 cm. high, glabrate or minutely puberulent, the angles slightly roughened, especially above; leaves small, all but the lowermost closely sessile; leaf blades ovate to lance-ovate, 5 to 16 mm. long, 3 to 7 mm. broad, truncate or subcordate at base, obtuse at apex, entire or shallowly toothed, strongly revolute, both surfaces glabrous or sparingly puberulent above and with minutely hirsute veins beneath (lowermost leaves, if present, ovate to nearly orbicular, cordate, short-petioled, smaller than the average stem leaves, the floral leaves similar to the stem leaves but smaller); pedicels about 3 mm. long, puberulent; calyx 2 to 4 mm. long, pubescent, especially on the nerves, with curved hairs; corolla blue, minutely pilose, 4 to 8 mm. long, the tube short, the lower lip suborbicular, about 3 mm. broad, the upper lip shorter than the lower, the middle lobe notched; nutlets 1 mm. in diameter, papillose.

TYPE LOCALITY: Council Bluff on the Missouri.

RANGE: Maine to North Dakota, south to Tennessee, Missouri, and Kansas.

Scutellaria ambigua is a well-marked species, readily distinguished from *S. parvula* by its minutely puberulent stem and more pointed leaves with revolute margins.

35. Scutellaria potosina T. S. Brandeg. Univ. Calif. Publ. Bot. 4: 187. 1911.

Stems numerous, from a woody base, simple or branched, erect or ascending, 10 to 20 cm. high, glandular-puberulent; leaves sessile; leaf blades ovate (the uppermost nearly orbicular), 5 to 8 mm. long, 3 to 6 mm. wide, truncate or abruptly narrowed at base, obtuse or rounded at apex, entire, puberulent, bright green; flowers few; pedicels about 2 mm. long, puberulent; calyx 2 to 3 mm. long, glandular-pubescent; corolla blue, 7 to 8 mm. long, finely pubescent, the tube slender, expanding from 2.5 mm. at base to 3.5 mm. at throat, the upper lip smaller than the lower, the lower prominently lobed, erose; nutlets black, 0.5 mm. in diameter, obscurely granular.

TYPE LOCALITY: Minas de San Rafael, San Luis Potosí, Mexico. Type collected in November, 1910, by Purpus (no. 4874).

SPECIMENS EXAMINED:

SAN LUIS POTOSÍ: Minas de San Rafael, *Purpus* 4874 (N, G, M, F, type collection), 5294 (N, G, M, F).

This plant is intermediate between *S. resinosa* and *S. drummondii*, its puberulent stem and leaves suggesting the former and its glandular pubescence the latter. In general appearance it resembles *S. hispidula*, but that is nearly glabrous and not at all glandular.

36. Scutellaria drummondii Benth. Labiat. Gen. Sp. 441. 1836.

Scutellaria helleri Small, Fl. Southeast. U. S. 1024. 1903.

Annual or occasionally perennial; stem erect or ascending, simple or diffusely branched at base, villous-hirsute and mostly glandular; leaves sessile or the lower short-petioled; leaf blades ovate to oblong-ovate or oval, 10 to 15 mm. long, 5 to 10 mm. wide, cuneate at base, obtuse or rounded at apex, entire or crenate-undulate, villous-hirsute, often glandular; pedicels up to 6 mm. long, finely pubescent; calyx 2 to 6 mm. long, villous-pubescent; corolla blue, 10 to 12 mm. long, finely pubescent, the tube expanding from 1.5 mm. near base to 4 mm. at throat, the upper lip smaller, its middle lobe notched, the lobes prominent, the lateral erose; nutlets 1 mm. in diameter, light brown, tuberculate.

TYPE LOCALITY: Texas. Type collected by Drummond.

RANGE: Oklahoma, New Mexico, Texas, and northeastern Mexico.

This species is closely related to *S. resinosa*. It has much the same habit, but differs in its villous glandular pubescence and smaller flowers with the upper lip of the corolla much smaller than the lower. In *S. resinosa* the lips of the corolla are nearly equal.

In his key to the southern species of *Scutellaria*, Small describes *S. drummondii* and *S. cardiophylla* as annuals, and separates them from *S. helleri* and others which he considers perennials. This treatment does not seem entirely satisfactory, especially since the type plants of *S. helleri* possess the roots typical of annuals and in all other ways resemble normal plants of *S. drummondii*. This species in the northern part of its range is invariably annual, but farther south, and especially in Mexico, is plainly perennial, with a characteristic ligneous base as in *S. resinosa*.

37. Scutellaria resinosa Torr. Ann. Lyc. N. Y. 2: 232. 1827.

Scutellaria wrightii A. Gray, Proc. Amer. Acad. 8: 370. 1872.

Stems few to many, 10 to 40 cm. high, from a ligneous base, simple or branched, erect or ascending, cinereous-puberulent; leaves numerous, sessile or subsessile; leaf blades ovate to oblong-spatulate, 5 to 20 mm. long, 3 to 12 mm. wide, narrowed at base, obtuse or rounded at apex, entire, densely and minutely puberulent, resin-dotted; pedicels up to 4 mm. long, puberulent; calyx 3 to 4 mm. long, minutely pubescent; corolla blue, 10 to 15 mm. long, the

tube gradually expanding from 2 mm. at base to 6 mm. at throat, the lips equal, the middle lobe of the upper lip usually notched, the lower lip erose, the lateral lobes prominent; nutlets 1 mm. in diameter, granular.

TYPE LOCALITY: On the Canadian River, Texas.

RANGE: Oklahoma, Texas, Arizona, New Mexico, and northern Mexico.

This species differs from its close ally, *S. drummondii*, chiefly in the puberulent stems and larger flowers.

38. **Scutellaria nevadensis** Eastw. Bull. Torrey Club **30**: 492. 1903.

Stem branching mostly from the base, purplish, cinereous-pubescent with short curled appressed hairs, 10 to 15 cm. high, from monilform rootstocks; leaf blades elliptic-ovate, 10 to 25 mm. long, 5 to 15 mm. wide, narrowed to the base, rounded at apex, entire, cinereous-pubescent, slightly coriaceous; pedicels and calyx 3 to 6 mm. long, puberulent; corolla blue, 10 to 20 mm. long, pubescent, the tube narrow, enlarging from 2 mm. at base to 3 mm. at throat, the lips nearly equal, the middle lobe of upper lip rounded, entire, the lower lip slightly broader than long, shallowly 3-lobed; nutlets 1 mm. in diameter, black, tuberculate.

TYPE LOCALITY: Little Lakes Canyon, Western Stampede, Elko County, Nevada. Type collected by Beveridge, July, 1902 (no. 546).

SPECIMENS EXAMINED:

NEVADA: Seven miles east of Ely, *Hitchcock* 1286 (N).

CALIFORNIA: Plumas County, *Austin* in 1877 (F).

The crowded firm erect ovate leaves and short branches give this plant the appearance of *S. nana*.

39. **Scutellaria antirrhinoides** Benth. in Lindl. Bot. Reg. **18**: *pl. 1493*. 1882.

Scutellaria viarum Heller, Muhlenbergia **1**: 32. 1904.

Stem 10 to 40 cm. high, from uniform thickened rootstocks, erect or ascending, simple or diffusely branched, purplish at least below, puberulent, occasionally glandular; leaves sessile or short-petioled; leaf blades firm, 10 to 20 mm. long, 3 to 12 mm. wide, oblong-ovate to oblong-elliptic (or the lowermost ovate), gradually reduced toward the summit, narrowed at base, obtuse at apex, entire (or the lowermost remotely toothed), puberulent on both surfaces, somewhat canescent; pedicels up to 5 mm. long, puberulent; calyx 3 to 4 mm. long, purplish, puberulent; corolla blue, the throat marked with white, 10 to 15 mm. long, finely pubescent, the tube enlarging from 2 mm. at base to 6 mm. at throat, the lips equal, the lobes entire; nutlets black, 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Banks of the Columbia River near Fort Vancouver, Washington. Type collected by Scouler.

SPECIMENS EXAMINED:

IDAHO: Twilight Gulch, Owyhee County, *Macbride* 480 (N, M). Owyhee Mountains, *Mulford* (M). Silver City, Owyhee County, *Macbride* 739 (N, M), 1689 (N, M). Ketchum, Blaine County, *Nelson & Macbride* 1208 (N, M). Picabo, Blaine County, *Macbride & Payson* 3005 (N, M). Boise, *Nelson* 140 (N, M). Washington County, *Clark* 181 (M). Without locality, *Trelease & Saunders* (M); *Henderson* 3722 (N).

WASHINGTON: Yakima region of the Cascade Mountains, *Brandegee* 14202 (M).

OREGON: Klamath Lake, *Williamson Exped.* (N). Long Lake, Klamath County, *Applegate* 348 (N). Oakland, *Hall* in 1871 (N). Silverton, *Hall* 398 (N, M). North of Corwallis, *Gilbert* 42 (N). Near Westfall, on road to Ontario, *Coville* (N). Juniper Springs, Malheur County, *Leiberg* 2260 (N). Grasshopper Mountain, Lane County, *Coville & Applegate* 1020 (N). Shearers Grade, near Deschutes Canyon,

Lawrence 346 (N). Forest Grove, *Lloyd* in 1894 (Y). Rock Creek Bridge, Upper Klamath, *Peck* 9463 (M). Without locality, *Hall* 742 (M). Grants Pass, Josephine County, *Howell* 1253 (M).

UTAH: Peterson Canyon, *Pammel & Blackwood* 3778 (M).

NEVADA: Dry farm near Blaine, Elko County, *Heller* 11120 (N, M). Ridge above Cave Creek, Elko County, *Heller* 9514 (N). Palisade, *Stokes* in 1903 (N). Parks Station north of Elko, *Hitchcock* 969 (N). Havallah Mountains, *Watson* 834 (N). Palisade, *Jones* 4036 (N, M). Without locality, *Wheeler* in 1872 (N).

CALIFORNIA: West of Winsor, near Russian river, Sonoma County, *Heller* 5786 (N, M, type collection of *S. viarum*). Pitt River, Shasta County, *Smith* 316 (N). Baird, *Smith* 407 (N). North fork of Castle Creek, Siskiyou County, *Smith* 1913 (N). Kneeland Prairie, Humboldt County, *Tracy* 3031 (N, M), 3399 (N). Shasta Springs, Siskiyou County, *Heller* 8020 (N, M). Base of Mount Eddy, Siskiyou County, *Heller* 12111 (N, M), 13270 (N, M). Goose Valley, Shasta County, *Eastwood* 793 (N, M). Head of Butte River, Butte County, *Eggleston* 7308 (N). Prattville, *Jones* in 1879 (N). Mokelumne River, *Hanson* 1808 (N). Near Ukiah, Mendocino County, *Chestnut* 411 (N). Dry ridge, Goosenest foothills, Siskiyou County, *Butler* 1633 (N). Sonoma County, *Bolander* 3947 (N). Sierra Nevada, *Lemmon* in 1875 (N). Hupa Indian Reservation, *Chandler* 1323 (N, M). Mount Shasta, Siskiyou County, *Brown* 384 (N, M); *Palmer* 2461 (N). Siskiyou County, *Butler* 1430 (M), 1690 (M), 1633 (M). Scotts Mountain, *Engelmann* in 1880 (M). Oakgrove, Liebre Mountains, Los Angeles County, *Abrams & McGregor* 344 (N).

Scutellaria antirrhinoides resembles *S. angustifolia* very closely, differing in its shorter and broader corolla tube, and, like its near relative, it is extremely variable. It is impossible to determine with any degree of certainty some of the plants intermediate between these two species.

The type of *S. viarum* is identical in every respect with normal specimens of *S. antirrhinoides*.

39a. Scutellaria antirrhinoides sanhedrensis (Heller) Leonard.

Scutellaria sanhedrensis Heller, Muhlenbergia 1: 31. 1904.

Stem from a slender thickened rootstock, simple or branching near base, 10 to 20 cm. high, pubescent, more or less viscid; leaf blades 1 to 2 cm. long, 5 mm. wide or less; corolla 7 to 12 mm. long, the lips equal and entire; nutlets unknown.

TYPE LOCALITY: Summit Lake, Mt. Sanhedren, Lake County, California. Type collected by Heller (no. 5894).

SPECIMENS EXAMINED:

CALIFORNIA: Lake County, *Heller* 5894 (N, M, type collection). Coffee Creek at mouth of Union Creek. Trinity County, *Hall*, 8556 (N). Summit Lake, Lake County, *Hall* 9477 (N). Mountains above headwaters of the Sacramento River, *Pringle* in 1882 (N, M). Southeast side of Snow Mountain above Bonnie View, Lake County, *Heller* 13234 (N, M). Prattville, Plumas County, *Heller & Kennedy* 8798 (N, M, F, Y). Humboldt County, *Tracy* 3399 (M). Near mouth of Little Grizzly Creek below Genesee, Plumas County, *Heller & Kennedy* 8843 (N, M, F, Y).

This variety is based on its smaller size, shorter and narrower leaves, and smaller corolla.

40. Scutellaria saxatilis Ridd. Cat. Ohio Pl. Suppl. 14. 1836.

Scutellaria chamaedryas Shuttl.; Benth. in DC. Prodr. 12:422. 1848.

A weak plant, perennial by filiform stolons; stem simple or diffusely branched, ascending or spreading, 10 to 50 cm. high, glabrous or sparingly pilose; petioles slender, 1 to 3 cm. long; leaf blades ovate, ovate-lanceolate, or deltoid, 4 to 5 cm. long, 1 to 3.5 cm. broad (the uppermost lanceolate to oblong-lanceolate, the lowermost nearly orbicular, both much smaller than the main stem leaves), thin, obtuse or rounded at apex, cordate at base, coarsely crenate or crenate-serrate (the uppermost usually entire), pubescent on both surfaces with scattered hairs or glabrous; floral bracts narrowly ovate or lanceolate; flowers mostly few, in simple loose racemes, often secund, or solitary in the axils of the upper leaves; pedicels 2 to 4 mm. long, glandular-pubescent; calyx 2 to 4 mm. long, glandular-pubescent; corolla light blue, 12 to 16 mm. long, nearly glabrous, the tube gradually enlarged from 2 mm. at base to 5 mm. at throat, the upper lip 3-lobed, entire, the lower obscurely 3-lobed, erose; nutlets brown, 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Arid cliffs opposite the mouth of the Scioto, Kentucky.

SPECIMENS EXAMINED:

DELAWARE: Near Wilmington, *Canby* 6619 (M).

PENNSYLVANIA: Jacobs Creek, *Shafer & Medoyas* in 1902 (N, M). Ohiopyle, *Ricker* 1176 (N).

MARYLAND: Along canal above Cabin John, *Leonard & Killip* 689 (N). Near Widewater, below Great Falls, *Maxon* 6335 (N).

DISTRICT OF COLUMBIA: *Vasey* in 1880 (N).

VIRGINIA: Great Falls, *Steele* in 1907 (N). Difficult Run, *Maxon* 6242 (N). Above Potomac Landing, *Ward* in 1878 (N). Without locality, *Hall* in 1828 to 1834 (F).

WEST VIRGINIA: Harpers Ferry, *Pennell* 2423 (N). Near Loudon Heights, *Steele* in 1900 (N), *Palmer* 60 (N). Potts Mountain, *Steele* 31 (N). Quinnimont, *Pollard & Maxon* 41 (N).

NORTH CAROLINA: Without locality, *Parry* in 1870 (N): *Buckley* (M); *Ashe* (M).

TENNESSEE: Rocky ravines, Chilhowee Mountains, *Curtiss* 2054 (N, M). Mountains of the Hiawassee Valley, *Ruth* 528 (N), 545 (M). Without locality, *Ward* in 1878 (N).

OHIO: Steubenville, *Mertz* in 1880 (N).

KENTUCKY: Mudlick Springs, *Short* in 1837 (N).

ARKANSAS: White River, Marion County, *Palmer* 4750 (M).

Although the range of this species is rather extensive, it is usually local and seldom grows in great abundance. The plants are invariably found in rich soil on moist shaded rocky banks.

The specimens listed vary slightly in the amount of pubescence, but otherwise are uniform. Plants with flowers secund in the raceme might possibly be confused with *Scutellaria lateriflora*, but can readily be distinguished by their larger corollas.

40a. Scutellaria saxatilis arguta (Buckl.) Penland, Rhodora **26**: 79. 1924.

Scutellaria arguta Buckl. Amer. Journ. Sci. **45**: 175. 1843.

A weak plant; stem up to 25 cm. high, pilose; leaves 16 to 25 mm. long, 5 to 20 mm. wide, ovate, sharply dentate, sparingly pilose.

TYPE LOCALITY: Black Mountain, North Carolina.

SPECIMENS EXAMINED:

NORTH CAROLINA: Moist bank near base of Mount Mitchell, Yancey County, *Biltmore Herbarium* 7171 (N, M). Vicinity of Montreat, Buncombe County, *Standley & Bollman* 10137 (N).

This variety is established on the pilose stems and more sharply toothed leaves.

41. Scutellaria ovata Hill, Hort. Kew. ed. 1. 242. 1768; ed. 2. 242. *pl.* 8. 1768.
Scutellaria pilosa Hill, Veg. Syst. 13: 64. 1768.
Scutellaria caroliniana Walt. Fl. Carol. 163. 1788.
Scutellaria cordifolia Muhl. Cat. Pl. 56. 1813.
Scutellaria versicolor Nutt. Gen. Pl. 2: 38. 1818.
Scutellaria mississipiana Martens, Bull. Acad. Brux. 8¹: 66. 1841.

Stem erect, from a slender rootstock, simple or branched, 5 to 90 cm. high, softly pubescent, glandular at least above; petioles 1 to 5 cm. long, pubescent; leaf blades ovate to ovate-oblong, 3 to 12 cm. long, 2 to 8 cm. wide (smaller leaves sometimes present), broadly ovate at base, obtuse or acutish at apex, crenate-dentate, both surfaces varying from densely pubescent to nearly glabrous, the veins very prominent, often reticulate, densely pubescent with straight or sometimes short, retrosely curved hairs; floral bracts ovate or often broadly ovate, usually longer than the pedicels, cordate, subcordate, or narrowed at base, acute or acutish at apex, glandular-pubescent, the lower generally larger and leaflike; flowers numerous, in terminal, simple or panicled racemes; pedicels 2 to 5 mm. long, glandular-pubescent; calyx 3 to 4 mm. long, glandular-pubescent; corolla bright blue, 1 to 2 cm. long, pubescent and slightly glandular, the tube narrow, dilated from 1.5 mm. below the middle to 5 mm. at the throat, the lobes of the upper lip notched, entire, the lower lip deeply notched, slightly longer than broad, undulate; nutlets brown, 1 mm. in diameter, tuberculate.

TYPE LOCALITY: North America.

RANGE: Pennsylvania to Florida, west to Minnesota and Kansas.

The history of the name *Scutellaria ovata*, according to Blake,[12] is, in brief, as follows: Hill described the species in the first edition of Hortus Kewensis, printed in 1768, as *S. ovata* and redescribed it as *S. pilosa* in the thirteenth volume of his Vegetable System, dated 1773, but actually published in 1768, the same year in which the Hortus Kewensis appeared. It was again called *ovata* in the second edition of Hortus Kewensis, published in 1769. The fact that volume 12 of the Vegetable System, published in 1767 (dated 1773), is quoted in the first edition of Hortus Kewensis, while volume 13 is not, would seem to indicate the priority of this edition of the Hortus Kewensis over the thirteenth volume of the Vegetable System. However, since both publications were clearly under preparation at the same time, the wisest choice would be *Scutellaria ovata*.

Scutellaria ovata has long been known as *S. versicolor* Nutt., both the earlier names of *S. ovata* and *S. pilosa*, as well as *S. caroliniana* Walt., having been overlooked.

The large number of specimens examined show great variation in leaf form. The typical plant has large thin leaf blades with the veins on the under surface pubescent with fine white spreading hairs. Other plants have smaller thicker leaves, the rugose veins of which are pubescent with slightly recurved hairs. Since none of these characters are constant in the slightest degree, it does not seem advisable to use them as a basis of segregation.

Small depauperate plants are readily confused with the variety *pilosior;* in fact it is often impossible to find any definite contrasting characters for a basis of separation.

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[12] Rhodora 17: 134. 1915.

41a. Scutellaria ovata bracteata (Benth.) Blake, Rhodora 17: 134. 1915.

Scutellaria versicolor bracteata Benth. Labiat. Gen. Sp. 433. 1834.

Scutellaria cordifolia pilosissima Mack. & Bush, Trans. Acad. St. Louis 12: 84. 1902.

Floral bracts prominent, ovate-cordate, 8 to 20 mm. long, often dark brown on drying.

TYPE LOCALITY: Rio Brazos, Texas.

SPECIMENS EXAMINED:

MISSOURI: Cliff Cave, *Kellogg* (M). Eagle Rock, *Bush* 190 (M, type of *S. cordifolia pilosissima*).

LOUISIANA: New Orleans, *Waite* in 1885 (N). Chopin, Natchitoches Parish, *Palmer* 7966 (M).

TEXAS: Gillespie County, *Jermy* 266 (N). San Antonio, *Havard* in 1884 (N). Shaded ravine, Gutzeit Ranch, San Antonio, *Schulz* 538 (N). Peytons Creek near Bay City, Matagorda County, *Palmer* 9686 (M). Dallas, *Reverchon* 769 (M). Granite Mountains, *Tharp* 1330 (N). Austin, *Tharp* 1766 (N). San Marcos, Hayes County, *Palmer* 12111 (M). Without locality, *Lindheimer* (N, M); *Ward* in 1877 (N).

OKLAHOMA: Caddo, *Sheldon* 47 (N). Between Fort Cobb and Fort Arbuckle on the False Washita, *Palmer* 241 (N).

NUEVO LEÓN: Sierra Madre, *Pringle* 229 (G), 2786 (G).

There appears to be, in the specimens examined, a gradual intergradation from the plants of this variety to those of the species.

41b. Scutellaria ovata pilosior (Benth.) Leonard.

Scutellaria saxatilis pilosior Benth. in DC. Prodr. 12: 424. 1848.

Scutellaria rugosa Wood, Proc. Amer. Assoc. Sci. 176. 1853.

Scutellaria versicolor minor Chapm. Fl. South. U. S. 323. 1860.

Scutellaria venosa Kearney, Bull. Torrey Club 24: 571. 1897.

Scutellaria cordifolia minor Mohr, Contr. U. S. Nat. Herb. 6: 703. 1901.

Plant small; stem simple to diffusely branched; leaf blades usually purplish, 1 to 4 cm. long, 0.5 to 2 cm. wide, the veins on the under surface pubescent with curved hairs; corolla seldom over 1 cm. long.

TYPE LOCALITY: Near Washington, Wilkes County, Georgia.

SPECIMENS EXAMINED:

MISSOURI: Eagle Rock, Barry County, *Bush* 791 (N, M); *Mackenzie* in 1896 (M). Shepherd Mountain near Ironton, *Palmer* 19537 (M). Forsythe, *Trelease* 721 (M). Roaring River, Barry County, *Trelease* 1144 (M).

VIRGINIA: Vicinity of Millboro Springs, Bath County, *Steele* in 1906 (N).

WEST VIRGINIA: Great Bend Tunnel Mountain, Summers County, *Morris* 1021 (N).

TENNESSEE: Cocke County, *Kearney* 873 (N, type of *S. venosa*).

ALABAMA: Coosa Hills, St. Clair County, *Mohr* "B" (N). Auburn, *Earle* in 1896 (N). Sandy woods, Auburn, *Earle* 2056 (N).

Plants of this variety are found in rocky elevated regions. So closely do they resemble *S. saxatilis* in habit and growth that, except for such well-marked characters as the large floral bracts and the fine pubescence of curved hairs on the under surface of the leaf blades, it would be difficult or even impossible to separate the two plants.

Mohr cites with the type of *S. cordifolia minor* Earle's specimen collected at Auburn, Alabama, in 1896, and his own collected at Coosa Hills in St. Clair County, Alabama. Both are mounted on one sheet, the former marked

"A" and the latter "B." The "A" plant resembles his 2056, collected several years later in the same locality, and is to be considered as more typical of the species *ovata* than of the variety *pilosior* on account of its larger size and simple upright stem. The "B" plant of Mohr agrees very well, however, with Chapman's description. Unfortunately the type seems to have been lost, but as it was in Mohr's herbarium when he wrote his Plant Life of Alabama, he evidently examined and compared it with the "B" plant mentioned above.

Scutellaria venosa is based mainly on the short recurved hairs of the veins on its under leaf surfaces, petioles, and, occasionally, the stems. These characters, together with a marked purple coloration, greatly accentuated in the small plants of the type specimen, are usually found in the variety *pilosior* and even occasionally in the species *ovata*.

42. Scutellaria havanensis Jacq. Enum. Pl. Carib. 25. 1762.

Scutellaria cubensis A. Rich. in Sagra, Hist. Cuba Fanerog. 2: 157. 1850.

Scutellaria longiflora Small, Bull. N. Y. Bot. Gard. 3: 437. 1905.

Stem simple or branched, sometimes becoming diffuse, erect, or prostrate with the branches erect or ascending (often elongate), 5 to 20 cm. long, finely and rather densely pubescent with spreading or curved hairs; petioles 1 to 5 mm. long, slender, puberulent; leaf blades ovate, 2 to 10 mm. long, 2 to 10 mm. broad, entire or shallowly crenate, firm, often purplish, finely pubescent on both surfaces with short curved hairs or sometimes nearly glabrous beneath; flowers mostly few in the axils of the upper leaves, forming short or sometimes elongate racemes; floral bracts similar to the leaves but smaller; pedicels 2 to 3 mm. long, puberulent; calyx 2 to 3 mm. long, pubescent with short curved hairs; corolla blue, 12 to 14 mm. long, somewhat tomentose, the tube slender, gradually enlarged from 1.5 mm. at base to 3 mm. at throat, the lips nearly equal, the middle lobe of the upper entire, the lower lip 3-lobed; nutlets about 1 mm. in diameter, reddish brown, shallowly papillose.

TYPE LOCALITY: Havana, Cuba.

RANGE: Peninsular Florida, Veracruz, Bahamas, Cuba, and Hispaniola.

Among the specimens deposited in the National Herbarium, as well as in the ample material of the New York Botanical Garden, there seems to be but little variation in the leaves, pubescence, and flowers. There is a considerable difference represented in habit of growth. The mainland plants, found chiefly in the sandy pine forests of southern Florida, are usually slender, straight, with but few branches, and flower-bearing nearly to the base, while those of the West Indies grow among rocks or on cliffs and are as a rule prostrate and more diffuse, bearing short racemes of flowers near the tips of the branches.

The slender mainland form Small described as *S. longiflora*, while the prostrate island form resembles more closely the type of *S. cubensis* A. Rich., synonymous with *S. havanensis* Jacq. In addition to these, the writer considered for some time the propriety of describing as another species the thin-leaved diffuse Porto Rico plants collected by Sintenis (nos. 5121 and 3102) and Shafer (no. 3325).

While specimens representing the extremes of these three forms, taken by themselves, could well be ranked as distinct species, the contrasting characters, when a large number of plants are examined, break down, leaving not the slightest doubt that these proposed species are conspecific, differing possibly from effects due to environmental factors.

Ervendberg's 242, collected near Tantoyuca, Province of Huasteca, Veracruz, is remarkable, for it is the only occurrence of this species in Mexico noted up to the present time. It resembles the variety *portoricensis*.

42a. Scutellaria havanensis portoricensis Leonard, var. nov.

A small purplish plant; stems several, from a small crown, prostrate and ascending, branched and diffuse, 10 to 15 cm. high, rather sparsely pubescent in lines with white curved hairs; petioles slender, equaling or slightly shorter than the leaf blades, pubescent with small curved hairs; leaf blades thin, ovate, 5 to 12 mm. long, 5 to 10 mm. broad, obtuse or rounded at apex, rounded or subcordate at base, shallowly and coarsely serrrate or the smaller entire, the upper surface sparsely pubescent with curved hairs, the lower surface glabrous except on the sparsely pubescent veins; floral bracts similar in shape to the leaves but much smaller, equaling or exceeding the calyx; flowers few, in short racemes; pedicels 3 to 6 mm. long, puberulent with curved hairs; calyx 2 to 3 mm. long, sparsely puberulent with curved hairs; corolla blue, 10 to 12 mm. long, rather densely pubescent.

Type in the U. S. National Herbarium, no. 792445, collected on the summit of Loma la Mina, Sierra de Naguabo, Porto Rico, altitude 940 meters, July 29, 1914, by J. A. Shafer (no. 3325).

ADDITIONAL SPECIMENS EXAMINED:

PORTO RICO: Summit of Loma la Mina, *Shafer* 3325 (Y); *Sintenis* 5821 (N, M). Coamo, *Sintenis* 3102 (N, G).

This variety is based on its thinner, larger, more nearly glabrous leaves and the lined pubescence of the stems. The latter character suggests a possible relationship to *S. coerulea.*

43. Scutellaria oaxacana Greenm. Field Mus. Bot. 2: 342. 1912.

Scutellaria apiciflora Briq. Ann. Cons. Jard. Genève 17: 396. 1914.

Stem erect or ascending, simple or branched near the base, 10 to 30 cm. high, cinereous-pubescent with short, downwardly curved hairs; petioles short, 2 to 3 mm. long, cinereous-pubescent; leaf blades deltoid-ovate, oval or the upper ovate-lanceolate, 1 to 2.5 cm. long, 0.5 to 1.5 cm. wide, obtuse at apex, truncate or subcordate at base, pubescent above with scattered hairs, glabrous beneath or nearly so excepting the rather sparsely pilose nerves; floral bracts leaf-like, ovate-lanceolate, pilose with curved hairs, exceeding the calyx; flowers comparatively few, somewhat crowded in short terminal racemes 2 to 3 cm. long; pedicels 2 to 3 mm. long, densely puberulent with short straight brownish hairs; calyx 2 to 3 mm. long, pubescent; corolla blue, averaging 13 mm. long, finely pubescent, the tube narrow, the middle lobe of the upper lip notched, the lower lip shallowly notched, erose; nutlets unknown.

TYPE LOCALITY: Oaxaca, Mexico. Type collected by Conzatti (no. 1849).

SPECIMENS EXAMINED:

PUEBLA: San Luis Tultitlanapa, *Purpus* 2561a (N, G, F).

OAXACA: Las Sedas, *Conzatti & González* (G). Rancho Nopalera, alt. 2,000 meters, *Conzatti* 1849 (F).

Scutellaria oaxacana is closely related to both *S. coerulea* and *S. pseudo-coerulea.* It differs from the former in its short crowded inflorescence and from the latter in its much longer bracts.

44. Scutellaria ocmulgee Small, Bull. Torrey Club 25: 142. 1898.

Stem tall, erect, usually branched at the top, 40 to 80 cm. high, densely pubescent with short villous hairs, the inflorescence sometimes slightly glandular; petioles averaging 2 cm.; leaf blades ovate to suborbicular, 3 to 8 cm. long, 3 to 6 cm. wide, obtuse or rounded at apex, cordate (the lower) or truncate (the upper) at base, crenate, pubescent on both surfaces, prominently veined, the veins densely pubescent; floral bracts oblong, oblong-oval, or spatulate, acutish, entire, equaling or nearly equaling the calyx, or some of the lower much larger and resembling stem leaves; flowers rather numerous, in panicled

racemes; pedicels 1 to 3 mm. long; calyx 3 to 5 mm. long, pubescent; corolla bright blue, 2 cm. long, minutely pubescent, the tube gradually dilated from 1.5 mm. at base to 5 mm. at throat, the lower lip suborbicular, 6 to 7 mm. broad, the upper lip slightly longer than the lower, its middle lobe shallowly notched; nutlets unknown.

TYPE LOCALITY: Ocmulgee River Swamp below Macon, Georgia. Type collected by John K. Small, July, 1895.

SPECIMEN EXAMINED:

GEORGIA: Ocmulgee River Swamp below Macon, *Small* in 1895 (Y, type).

This species resembles *S. ovata* in general appearance but differs in its more rounded leaf blades and its eglandular pedicels and calyx.

45. Scutellaria purpurascens Swartz, Prodr. Veg. Ind. Occ. 89. 1788.

Scutellaria felisberti Nees & Mart. Act. Acad. Caes. Leop. Carol. 11: 77. 1823.

Stem weak, erect or ascending, simple, or sparingly branched at base, 15 to 20 cm. high, densely puberulent with very short, brown, curved hairs to nearly glabrous; petioles slender 1 to 2 or rarely 5 cm. long; leaf blades thin, deltoid-ovate, 3 to 7 cm. long, 2 to 6 cm. wide, obtuse or rounded at apex, truncate, rounded, or cordate at base, sinuate-crenate, above sparsely pubescent, beneath glabrous or nearly so except the finely puberulent veins; floral bracts very small and narrow or the lowermost leaflike; flowers usually few, in narrow terminal racemes 2 to 6 cm. long; pedicels 3 to 4 mm. long. densely puberulent; calyx 2 to 3 mm. long, sparingly puberulent, the crest much enlarged at maturity; corolla blue or purple, finely but sparingly pubescent, 10 to 15 mm. long, the tube gradually expanding from 1.5 mm. at base to 3.5 mm. at throat, the lips equal, the lobes of the upper entire, the lower erose; nutlets brown, about 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Guadeloupe (*Du Ponthieu*).

SPECIMENS EXAMINED:

COSTA RICA: La Emilia, Llanuras de Santa Clara, *J. D. Smith* 6699 (N, G). Suerre, Santa Clara, *J. D. Smith* 670 (N). Between Limón and María, *Pittier* 16013 (N). Wet thicket, Cerro de la Carpintera, Province of Cartago, alt. 1,500 to 1,850 meters, *Standley* 35491 (N). Thicket, vicinity of San José, alt. 1,150 meters, *Standley* 34822 (N). On brushy slope, Dulce Nombre, Province of Cartago, alt. 1,400 meters, *Standley* 35863 (N). Moist thickets, vicinity of La Verbena, Province of San José, alt. 1,200 meters, *Standley* 32209 (N).

PANAMA: Cana and vicinity, *Williams* 764 (N), 949 (N). Gatún, *Hayes* 59 (Y). Between Frijoles and Monte Lirio, Canal Zone, *Killip* 12162. (N). Sibubi Falls, Sixaola Valley, *Rowlee* 378 (N). Wooded swamp, vicinity of Fort Sherman, Canal Zone, *Standley* 31095 (N).

DOMINICA: *Lloyd* 480 (Y).

MARTINIQUE: *Duss* 1975 (N, Y); *Hahn* 107 (G).

GUADELOUPE: *Duss* 2163 (N, Y), 3474 (Y).

Scutellaria purpurascens is well marked by its narrow, nearly naked racemes and brown pubescence. Smith's 6699 and 6701 from Costa Rica are remarkable for their robust inflorescences, elongate racemes, and large, deeply cordate leaves.

45a. Scutellaria purpurascens heterophylla Benth. in DC. Prodr. 12: 416. 1848.

Leaf blades ovate to deltoid-ovate, 2 to 4 cm. long, 1.5 to 3 cm. broad, obtusish at apex or the uppermost narrowed to a blunt tip, truncate or subcordate at base; flowers in short, terminal or axillary racemes; corolla blue or bluish purple.

TYPE LOCALITY: Guatemala.

SPECIMENS EXAMINED:

COSTA RICA: Alajuelita, *Tonduz* 8773 (N), 8784 (N). San José, *Tonduz* 1426 (N). Agua Caliente, *Stevens* 221 (N). Vicinity of San José, alt. 1,130 meters, *Standley* 41204 (N). Finca Las Cóncavas, Prov. Cartago, alt. 1,200 to 1,300 meters, *Standley* 41429 (N).

This variety differs in its smaller, more pointed leaves and purplish flowers.

46. Scutellaria pseudo-coerulea Briq. Ann. Cons. Jard. Genève 4: 240. 1900.

Stem erect, simple or branched, 20 to 40 cm. high, pubescent or puberulent, somewhat cinereous; petioles slender, 1 to 2.5 cm. long, pubescent with short curved hairs; leaf blades deltoid-ovate, the lower often broader than long, 1 to 6 cm. long, 0.5 to 4 cm. wide (the upper and lowermost slightly smaller), obtuse or obtusish at apex, rounded or subcordate at base, crenate-dentate, the upper surface sparingly pubescent with scattered hairs, the lower surface glabrous or nearly so except the veins, these minutely pubescent with straight white hairs; floral bracts small, lanceolate, equaling the pedicels or the lowermost longer; flowers numerous, distant, in terminal racemes 4 to 15 cm. long; pedicels 2 to 4 mm. long, pubescent; calyx 2 to 4 mm. long, pubescent when young, becoming glabrous with age; corolla blue, 15 mm. long, finely pubescent, the tube narrow, gradually enlarged from 1.5 mm. at base to 3 mm. at throat, often curved, the lips equal or the lower longer than the upper, the lateral lobes of the upper lip short, the middle lobe slightly notched, the lobes of the lower lip erose or the sinuses crenulate, the middle lobe notched; nutlets 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Las Canoas, San Luis Potosí, Mexico. Type collected by Pringle (no. 3068).

SPECIMENS EXAMINED:

MEXICO: *Sumichrast* 796 (G).

SAN LUIS POTOSÍ: Damp shaded banks, Las Canoas, *Pringle* 3068 (N, G, M, F).

VERACRUZ: Orizaba, *Mohr Herbarium* 340 (N). *Bourgeau* 2776 (N, G); *Mueller* 1599 (Y); *Seaton* 143 (G, F).

This species, if confused with *S. purpurascens*, can be separated by the straight white pubescence of the veins on the under surface of the leaf blades. It differs from *S. coerulea* in its racemose inflorescence and broad cordate leaves.

47. Scutellaria vitifolia T. S. Brandeg. Univ. Calif. Publ. Bot. 10: 415. 1924.

Stem from a thickened root, simple or sparingly branched, puberulent, up to 20 cm. high; petioles up to 7 cm. long, puberulent; leaf blades broadly ovate, up to 9 cm. long and 8 cm. wide, cordate at base, acuminate or obtuse at apex, coarsely crenate-serrate, the upper surface sparingly pilose, the lower glabrous except the minutely pilose veins; inflorescence racemose or paniculate, up to 9 cm. long, purplish, pubescent; pedicels 1 to 2 mm. long, becoming 4 mm. long in fruit, puberulent; calyx 3 to 5 mm. long, sparingly and minutely pubescent, becoming glabrous; corolla blue, 8 mm. long, minutely pubescent, the lips about equal, the lateral lobes of the upper lip notched, the middle entire, the lower lip 3-lobed, slightly undulate; nutlets black, tuberculate.

TYPE LOCALITY: Jalisco, Chiapas, Mexico.

SPECIMENS EXAMINED:

CHIAPAS: Jalisco, *Purpus* 9207 (N, C, type).

This very distinct species is easily recognized by its broad ovate leaves and bright purplish-blue flowers. It is similar in many respects to *S. ovata*,

but does not have its characteristic ovate bracts or glandular inflorescence. A similarity in the roots indicates a possible relationship to *S. coerulea.*

48. Scutellaria arenicola Small, Bull. Torrey Club. **25**: 143. 1898.

Stem from a perennial rootstock, erect or ascending, simple or branched, 15 to 30 cm. high; petioles 5 to 20 mm. long, averaging 10 mm., narrowly winged; leaves crowded; leaf blades firm, often purplish, ovate to elliptic, 1.5 to 3 cm. long, 1 to 2 cm. wide, broadly obtuse or rounded at apex and truncate at base (the lower) or obtuse or obtusish at apex and cuneate at base (the upper), serrate or crenate-serrate, rather prominently veined, pubescent on both surfaces with appressed hairs; floral bracts oblong or oblong-lanceolate, equaling or longer than the calyx, entire; flowers in simple panicled racemes; pedicels 2 to 7 mm. long, often glandular; calyx 2 to 7 mm. long, often glandular; corolla blue, 2 to 2.5 cm. long, finely pubescent, the tube gradually dilated from 2 mm. at base to 8 mm. at throat, the lips subequal, the lateral lobes of the upper lip relatively small and short, the lower lip suborbicular, 1 cm. broad, notched, entire; nutlets 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Lake County, Florida.

SPECIMENS EXAMINED:

FLORIDA: Sandy ground, Orlando, Orange County, *Curtis* 6669 (N). Sandy soil, vicinity of Eustis, Lake County, *Nash* 1316 (N, type collection). Flat woods, Fort Myers, *Hitchcock* 277 (N). Jacksonville, Duval County, *Pieters* 39 (N). Mullock Creek District, Lee County, *Jeanette Standley* 440 (N). Rather rare in dry pine barrens, Oneca, *Simpson* 88 (N).

Scutellaria arenicola is a pine-barren plant confined to peninsular Florida. It closely resembles *S. integrifolia major*, a near relative found in low damp places. From this it differs chiefly in its more numerous and thicker leaves, usually longer than the internodes, the upper similar to the lower but reduced. This last character is an especially reliable one for separating the two plants, for at least some of the uppermost leaves of *S. integrifolia major* are always narrowly lanceolate, as in the species *integrifolia.*

49. Scutellaria montana Chapm. Bot. Gaz. **3**: 11. 1878.

Stem slender, simple or sparingly branched, erect from a perennial rootstock, 30 to 50 cm. high, tomentose, glandular; petioles short, narrowly winged, 1 to 2 cm. long; leaf blades ovate to oblong-ovate or lanceolate, 3 to 8 cm. long, 2 to 4 cm. wide, obtuse or acutish at apex, narrowed, truncate, or subcordate at base, coarsely crenate-serrate, sparingly pilose on both surfaces or the veins of the under surface densely pilose; floral bracts similar to the leaves but somewhat narrower, sometimes intergrading with them; flowers few, large, erect, in simple racemes and in the axils of the upper leaves; pedicels 3 to 8 mm. long, glandular-pubescent; calyx 3 to 8 mm. long, glandular-pubescent; corolla blue, 3 to 3.5 cm. long, pubescent to nearly glabrous, the tube gradually enlarged from 2.5 mm. below the base to 5 mm. at throat, the lips nearly equal, the middle lobe of the upper lip notched, much longer than the lateral lobes, the lower lip orbicular, shallowly notched, entire or crenate near the base; nutlets 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Georgia.

SPECIMENS EXAMINED:

MISSOURI: *Pammel* (M).

GEORGIA: *Chapman* (N). Rome, *Chapman Herbarium* (N).

ALABAMA: Stevenson, *Mohr Herbarium* (N).

TENNESSEE: Near Chattanooga, *Churchill* 1911 (M).

Aside from its pubescent stem and leaves this plant is strikingly similar to *S. serrata.*

50. Scutellaria ovalifolia Pers. Syn. Pl. 2: 136. 1807.

Scutellaria elliptica Muhl. Trans. Amer. Phil. Soc. 3: 173. 1793, nomen nudum.
Scutellaria pilosa Michx. Fl. Bor. Amer. 2: 11. 1803. Not *S. pilosa* Hill, 1768.
Scutellaria hirsuta Short, Transylv. Journ. Med. 8: 582. 1836.
Scutellaria cuneata Willd.; Benth. Linnaea 11: 345. 1857.
Scutellaria pilosa hirsuta A. Gray, Syn. Fl. 2¹: 379. 1878.

A slender perennial; stem simple or branched above, 20 to 70 cm. high, pubescent with soft spreading hairs, more or less glandular above; petioles of the lower leaves 3 cm. long or less, those of the upper leaves much shorter and winged, pubescent with spreading hairs; leaves usually distant, the blades ovate, oval, deltoid-ovate, or oblong-lanceolate, 2 to 7 cm. long, 1.5 to 4 cm. broad, obtuse at apex, truncate to acuminate at base (or the lowermost cordate), crenate or dentate, entire at base, pilose on both surfaces; floral bracts oblong or spatulate, entire, exceeding the calyx, often intergrading into the stem leaves; flowers numerous, in panicles or racemes; pedicels 3 to 4 mm. long, densely pilose, usually glandular; calyx 3 to 4 mm. long, glandular-pilose; corolla blue or pale blue, 12 to 17 mm. long, minutely pubescent, the tube gradually dilated from 1.5 mm. at base to 3 mm. at throat, the upper lip notched and somewhat longer than the crisped notched deltoid-reniform lower lip; nutlets brown, 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Carolina and Georgia.

RANGE: Southern New York and Pennsylvania to Michigan, Florida, and Texas.

This plant, although extremely variable in leaf form and pubescence, can usually be distinguished from other closely related species by its short racemes of crowded, bright blue flowers and its pilose stem, leaves, and calyx.

S. pilosa hirsuta, a poorly defined form, confined to northern Kentucky, is a tall plant with larger, more coarsely toothed leaves and longer pubescence.

51. Scutellaria chalicophila Loesener, Bull. Herb. Boiss. 7: 569. 1899.

Stem branched at base, the branches simple, 15 cm. high, finely puberulent; petioles 2 to 3 mm. long; leaf blades distant, ovate, 1.8 to 2 cm. long, 0.7 to 1.2 cm. wide, acute or broadly cuneate at base, obtuse or rounded at apex, entire or nearly so, glabrous except the puberulent nerves of the under surface; flowers in short terminal racemes; bracts elliptic-ovate, 3 to 5 mm. long; pedicels about 2 mm. long, puberulent; calyx about 2.5 mm. long, subglabrous or puberulent; corolla blue, about 1.5 cm. long, glandular-pubescent, the tube expanding from 1.5 mm. at base to 3.5 mm. at throat, the lips nearly equal; nutlets not seen.

TYPE LOCALITY: Department of Huehuetenango, Guatemala. Type collected by Seler (no. 2824).

SPECIMEN EXAMINED:

GUATEMALA: On calcareous wooded mountain between Chacula and Uaxackanal, Department of Huehuetenango, alt. 1,400 to 1,500 meters, *Seler* 2824 (G, type collection).

S. chalicophila is closely allied with *S. coerulea*, differing chiefly in its racemose inflorescence and puberulent stems.

52. Scutellaria affinis Leonard, sp. nov.

Roots thickened; stem slender, erect or ascending, simple or branched at base, 10 to 30 cm. high, puberulent or glabrous; petioles 1 to 2 mm. long; leaf blades ovate to rhombic, 1 to 2 cm. long, 0.5 to 2 cm. broad, obtuse at base, shallowly sinuate, the veins on the under surface puberulent, otherwise glabrous or the upper surface sparsely pubescent with minute hairs, often purplish; floral bracts lanceolate, entire, glabrous or puberulent, equaling or slightly

exceeding the calyx; racemes simple, the flowers somewhat crowded; pedicels up to 3 mm. long, puberulent; calyx 2 to 3 mm. long at anthesis (mature calyx not seen), usually purple; corolla blue, 15 mm. long, puberulent, the tube gradually expanding from 2 mm. at base to 4 mm. at throat, the lips equal, the middle lobe of upper lip notched, the lower lip broader than the upper, shallowly three-lobed and notched at apex; nutlets not seen.

Type in the Gray Herbarium, collected in southern Mexico, 1864 to 1870, by Ghiesbreght (no. 802).

ADDITIONAL SPECIMENS EXAMINED:

CHIAPAS (?): *Ghiesbreght* (F, M).

This species is intermediate between *S. coerulea* and *S. pseudo-coerulea*. In its general habit and in shape and size of the leaves it resembles *S. coerulea*, but differs in the glabrous or puberulent stem and leaves and in the racemose inflorescence. The obtuse rhombic-ovate subsessile leaves distinguish it readily from *S. pseudo-coerulea*.

53. Scutellaria gaumeri Leonard, sp. nov.

Hirtellous; stem erect or ascending, 10 to 30 cm. high, branched, tomentose-hirsute; petioles up to 15 mm. long; leaf blades triangular-ovate, 1.5 to 2.5 cm. long, 1.5 to 2.5 cm. wide, truncate at base, obtuse or rounded at apex, crenate: racemes axillary and terminal, up to 12 cm. long; bracts orbicular, slender-petioled, up to 5 mm. in diameter or the lowermost larger and leaflike; pedicels up to 6 cm. long; calyx 1 mm. long, becoming 4 mm. long in fruit; corolla blue, 7 to 8 mm. long, minutely pubescent, the tube gradually enlarging from 1 mm. at base to 2 mm. at throat, the upper lip longer than the lower, its middle lobe notched, the lower lip shallowly 3-lobed, erose; nutlets 1.5 mm. in diameter, brownish, tuberculate.

Type in the herbarium of the Field Museum of Natural History, no. 125961, collected at Pocoboch, Yucatán, Mexico, in 1895 by G. F. Gaumer (no. 2392).

ADDITIONAL SPECIMENS EXAMINED:

YUCATÁN: Chichankanab, *Gaumer* 1435 (F), 1497 (F).

This plant is similar in habit and shape of leaf blades to *S. guatemalensis*, but differs in its coarser hirtellous pubescence and longer purple corolla. In its inflorescence and orbicular slender-petioled bracts there is a close resemblance to *S. seleriana*.

54. Scutellaria serrata Andr. Bot. Rep. 8: 494. 1797.

Scutellaria laevigata Aiken in Eaton, Man. Bot. ed. 6, 333. 1833.

Stem slender, erect, simple or rarely branched, 25 to 70 cm. high, glabrous or sparingly pubescent above; petioles slender, usually 2 cm. long; leaf blades thin, ovate to oval, 3 to 12 cm. long, 2 to 7 cm. broad, narrowed or acute at apex, narrowed or rounded at base, crenate, glabrous on both surfaces or with a few scattered hairs; floral bracts lanceolate, the upper shorter, the lower longer than the calyx; flowers rather few, in a loose terminal raceme; pedicels up to 6 mm. long, puberulent; calyx 4 to 6 mm. long, puberulent, with a purple margin; corolla blue, 2 to 3 cm. long, minutely puberulent, the tube gradually dilated from 3 mm. at base to 10 mm. at throat, curved sharply upward at base, the lips about equal, notched, the upper entire, the lower undulate; nutlets 2 mm. in diameter, tuberculate.

TYPE LOCALITY: Carolina and Florida.

RANGE: Southern New York and Pennsylvania to South Carolina, Illinois, Kentucky, and Tennessee.

This plant is readily recognized by its large, green, nearly glabrous leaves, showy flowers, and glabrous reddish stems.

55. Scutellaria incana Spreng. Mant. Fl. Hal. 44. 1807.

Scutellaria pubescens Muhl. Trans. Amer. Phil. Soc. 3:173. 1793, nomen nudum.

Scutellaria canescens Nutt. Gen. Pl. 2:38. 1818.

Scutellaria villosa Ell. Bot. S. C. & Ga. 2:90. 1824.

Scutellaria serrata Spreng. Syst. Veg. 2:703. 1825. Not *S. serrata* Andr. 1797.

A tall perennial; stem usually branched above, 50 to 120 cm. high, finely pubescent with variously curved hairs, puberulent or sometimes glabrous; petioles slender; leaf blades ovate-oval or oblong-lanceolate, 4 to 12 cm. long, 1.5 to 7 cm. wide, acute or acutish at apex, narrowed or rounded at base (the lowermost sometimes subcordate), crenate-dentate, the upper surface green, glabrous or finely pubescent, the lower surface paler, densely and softly pubescent; floral bracts narrowly lanceolate or linear, more or less pubescent, the upper seldom exceeding the calyx, the lower longer and often intergrading with the stem leaves; flowers numerous, in terminal paniced racemes; pedicels 2 to 3 mm. long; calyx 3 to 5 mm. long, densely pubescent; corolla blue, 2 cm. long, canescent, the tube enlarging from 2.5 mm. at base to 7 mm. at throat, the upper lip larger than the lower, its middle lobe shallowly notched, the lower lip notched, undulate; nutlets black, 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Eastern Pennsylvania.

RANGE: Ontario to Michigan, south to North Carolina, Tennessee, and Missouri.

Notwithstanding the wide range of this species, the specimens examined show but little variation. The plant is very distinct in its canescent calyx, leaf blades (lower surfaces), inflorescence, and stem.

56. Scutellaria punctata (Chapm.) Leonard.

Scutellaria canescens punctata Chapm. Fl. South. U. S. 323. 1860.

Scutellaria incana punctata Mohr, Bull. Torrey Club 24:26. 1897.

A tall perennial; stem erect, usually much branched above, 50 to 120 cm. high, minutely pubescent with short, curved or appressed hairs above, glabrous, sparsely pubescent, or sometimes glandular-puberulent below; petioles 1 to 2 cm. long, sparsely pubescent with appressed hairs or canescent; leaf blades ovate to oblong-ovate or lanceolate, 3 to 12 cm. long, 1 to 6 cm. wide, tapering, truncate, or (the lowermost) cordate at base, acute or acutish at apex, crenate-dentate, glabrous, resin-dotted, the veins sparsely covered with appressed hairs (appearing glabrous without lens); pedicels 2 to 3 mm. long; calyx 2 to 3 mm. long, pubescent; corolla blue and white, 1.5 to 2 cm. long, the tube enlarging from 2 mm. at base to 6 mm. at throat, the upper lip longer than the lower, its middle lobe notched, the lower lip ovate, notched, entire; nutlets black or brownish black, about 1 mm. in diameter, tuberculate.

TYPE LOCALITY: Florida and Georgia.

RANGE: North Carolina to Tennessee and Missouri and southward.

Scutellaria punctata is very closely related to *S. incana*, differing only in the glabrous, punctate, and usually resinous under surface of its leaf blades and its more nearly glabrous stem. It is interesting to note that the northern limit of the range of this species corresponds with the southern limit of the range of its nearest relative. This definite demarcation of range, it would seem, should further justify the maintenance of specific rank for this plant.

A good deal of variation is exhibited in the material examined. This is true chiefly of the plants from Florida, southern Alabama, and Georgia which have smaller, relatively shorter leaf blades and more glandular stems. In other respects, however, these agree with the more typical plants of the northern portion of the range.

57. Scutellaria mellichampii Small, Fl. Southeast. U. S. 1022. 1903.

A tall perennial; stem erect, simple or branched, up to 40 cm. high or more, finely and closely pubescent with short, variously curved hairs; petioles averaging 1 to 3 cm. in length; leaf blades ovate to oval, 3 to 6 cm. long, 2 to 4 cm. broad, blunt at apex, cuneate or truncate at base, crenate, glabrous or nearly so on both surfaces, the veins rather prominent, finely pubescent; floral bracts spatulate, equaling or exceeding the calyx, the lowermost intergrading with the stem leaves; flowers rather numerous and crowded in short panicled racemes; pedicels up to 4 mm. long, hirsute; calyx usually 4 mm. long, strigillose; corolla bluish, 2 cm. long, minutely pubescent, the tube gradually enlarged from 2 mm. at base to 7 mm. at throat, the upper lip much longer than the lower, notched, the lower lip shallowly notched, undulate, entire; nutlets not seen.

TYPE LOCALITY: Near Bluffton, South Carolina.

SPECIMENS EXAMINED:

SOUTH CAROLINA: Beaufort District, *Mellichamp* in 1883 (N, M). Bluffton, *Mellichamp* (M, Y, type).

GEORGIA: Rather dry woods on bank of the Oconee River below Dublin, Laurens County, *Harper* 1368 (N, M, F, Y).

ALABAMA: Tuscaloosa, *Vasey* in 1878 (N). Attalla, Etowah County, *Eggert* in 1897 (N, M); in 1898 (M). Woods, Tuscaloosa, *Mohr* in 1898 (N). Without locality, *Winchell* (N).

S. mellichampii differs from its close relative, *S. puncata*, in having relatively broader leaves, larger corolla, and usually more pubescent stems.

58. Scutellaria altamaha Small, Bull. Torrey Club 25: 143. 1898.

A slender perennial; stem usually simple, erect or ascending, 20 to 30 cm. high, densely canescent with variously curved hairs or tomentose, often purplish; petioles short; leaf blades ovate-oblong, 2 to 5 cm. long, 1 to 2.5 cm. wide, narrowed or truncate at base, acute or acutish at apex, rather finely serrate, glabrate or pubescent with scattered hairs except on the rather densely appressed-pubescent veins, punctate, especially beneath, often resin-dotted; floral bracts equaling or slightly exceeding the calyx or the lowermost intergrading with the stem leaves, oblong-ovate, entire or the larger serrate, punctate, resin-dotted, and pubescent with scattered hairs; flowers numerous and crowded on the short racemes of the narrow panicle; pedicels 1 to 2 mm. long, canescent; calyx 2 to 5 mm. long, rather sparsely pubescent, punctate, resin-dotted; corolla blue, the lower lip marked with white, 1 to 1.3 cm. long, glandular-pubescent, resin-dotted, the tube enlarging from 2 mm. at base to 3 mm. at throat, the upper lip notched, exceeding the lower, the lower lip suborbicular, notched, shallowly 3-lobed, entire or slightly undulate; nutlets not seen.

TYPE LOCALITY: Along the Altamaha River Swamp, Liberty County, Georgia. Type collected by Small in 1895.

SPECIMENS EXAMINED:

GEORGIA: Dry pine barrens two miles west of Dublin, Laurens County, *Harper* 1358 (N, Y). In and about the Altamaha River Swamp, *Small* in 1895 (Y, type).

FLORIDA: In woods, Walton County, *Curtiss* in 1885 (Y).

Scutellaria altamaha resembles *S. punctata* in many ways, but its inflorescence is narrower and more crowded and its corolla much smaller. When confused with *S. ovalifolia* it can easily be separated by its rigid habit, the numerous small branches of the inflorescence with smaller and more crowded flowers, and the eglandular pubescence.

59. Scutellaria glabriuscula Fernald, Bot. Gaz. **33**: 156. 1902.

Slender perennial with a slightly woody base; stem erect, simple or branched, 3 to 7 cm. high, minutely puberulent; leaf blades linear-spatulate to oblong-ovate, gradually narrowed to a slender petiole, acute or acutish at apex, 2 to 6 cm. long, 3 to 10 mm. broad, entire or (the lowermost) obscurely and remotely toothed, glabrous, punctate beneath; floral bracts resembling the leaf blades but smaller; flowers in simple panicled racemes; pedicels 2 to 4 mm. long, puberulent, often bearing scattered glandular hairs; calyx 3 to 5 mm. long, minutely puberulent, at least on the angles and margins; corolla blue with whitish throat, 2.5 cm. long, glabrous, the tube enlarged from 2 mm. at base to 10 mm. at throat, the upper lip slightly longer than the lower, its broad middle lobe notched, the lower lip deeply notched, shallowly 3-lobed, erose or undulate; nutlets not seen.

TYPE LOCALITY: Walton County, Florida.

SPECIMENS EXAMINED:

FLORIDA: Oak thickets on dry sandy land near De Funiak Springs, *Curtiss* 6907 (N, type collection). Sandy pinelands, *Curtiss* 2060 (N). Flat woods, Fort Myers, *Hitchcock* 278 (N). Sanford, Orange County, *Nash* 2277 (N).

Although closely related to *S. integrifolia*, this plant is well characterized by the glabrous corolla and leaves and the minutely puberulent stem.

60. Scutellaria floridana Chapm. Fl. South. U. S. 324. 1860.

A slender perennial; stem simple, erect or ascending, 20 to 50 cm. high, minutely pubescent; leaves sessile, often bearing fasicles of smaller leaves in their axils; leaf blades narrowly linear, 1-nerved, 2 to 3 cm. long, 2 to 3 mm. broad, blunt at apex, entire, glabrous or the veins puberulent, punctate and often resin-dotted; floral bracts similar to the leaf blades but slightly reduced toward the summit; flowers few, large, in simple racemes; pedicels 3 to 4 mm. long, puberulent; calyx 3 to 4 mm. long, glandular-puberulent; corolla blue, 2 cm. long, the tube 3 mm. thick at base, 10 mm. at throat, the lips nearly equal, the middle lobe of the upper lip shallowly notched, the lower lip subovate, deeply notched, entire; nutlets 1.5 mm. in diameter, tuberculate.

TYPE LOCALITY: West Florida.

SPECIMENS EXAMINED:

FLORIDA: Apalachicola, *Chapman* (N). Swamps of the pine barrens, near Apalachicola, *Biltmore Herbarium* 4557a (N).

Related to both *S. integrifolia* and *S. glabriuscula*, this species differs from the former in its strictly linear leaves, and from the latter in its puberulent corolla.

61. Scutellaria brevifolia A. Gray, Syn. Fl. **2**[1]: 380. 1878.

Scutellaria integrifolia brevifolia A. Gray in Hall, Fl. Texas 17. 1873.

A rigid plant from a shrubby base; stems several to numerous, leafy, erect or ascending, simple or branched, 10 to 40 cm. high, gray, puberulent; leaf blades thick, oblong to oblong-ovate or oval, 0.5 to 2 cm. long, 0.3 to 0.7 cm. broad, acutish at apex, rather abruptly narrowed at base, entire, finely puberulent with curved hairs; floral bracts similar to the leaves but slightly reduced toward the summit; flowers in leafy, simple or panicled racemes, often appearing axillary rather than panicled; pedicels 2 to 3 mm. long, cinereous-pubescent; calyx 3 to 4 mm. long, cinereous-puberulent; corolla blue, 1.5 to 2 cm. long, softly pubescent, the tube enlarged rather abruptly from 1.5 mm. below the middle to 7 mm. at the throat, the lips equal or the lower slightly longer than the upper, the lateral lobes of the upper lip nearly as large as the notched middle lobe, the lower lip blunt at apex, 3-lobed, erose to undulate; nutlets granular.

TYPE LOCALITY: Dallas, Texas.

SPECIMENS EXAMINED:

TEXAS: Dallas, *Letterman* 119 (N), 35 (M); dry rocky banks and calcareous soil, *Reverchon* 771 (N, M), 2059 (N, M); dry banks, *Hall* 458 (N, type collection). Common on bluffs, Hutchins, *Reverchon* 2126 (N, M). Texarkana, *Letterman* in 1894 (M).

Scutellaria brevifolia is a distinct species, bearing but little or no resemblance to *S. integrifolia*, as Gray evidently believed it to do when he first described it as a variety of that species. There is, however, some similarity between this species and *S. resinosa*, but the two can always be separated easily by the obovate leaves and smaller, strictly axillary flowers of the latter.

62. Scutellaria integrifolia L. Sp. Pl. 599. 1753.

Scutellaria hyssopifolia L. Sp. Pl. 599. 1753.

Scutellaria caroliniana Lam. Encycl. 7: 706. 1806.

Scutellaria polymorpha Hamilt. in Seringe, Bull. Bot. 306. 1832.

Scutellaria integrifolia hyssopifolia Millsp. Fl. W. Va. 427. 1892.

A slender perennial with fibrous roots; stems one to several, erect, simple or sometimes branched above, 20 to 50 cm. high, minutely pubescent with curved hairs, often glandular above; petioles 2.5 cm. long or less; leaf blades thin, various, the upper linear to oblong or lanceolate, 1.3 to 6.5 cm. long, 0.5 to 1.5 cm. wide, obtuse at apex, narrowed at base, mostly entire, the lower slender-petioled, lanceolate to ovate or nearly orbicular, 1 to 1.5 cm. long, 0.8 to 1.5 cm. wide, obtuse at apex, subcordate or rounded at base, sparingly toothed or the lowermost crenate, puberulent on both surfaces, sometimes punctate and glandular beneath; bracts similar to the upper leaf blades and intergrading with them; flowers few to many, in terminal or panicled racemes; pedicels varying in length, up to 5 mm. long; calyx 4 to 5 mm. long, both calyx and pedicels pubescent and usually glandular; corolla blue or whitish, 2 to 2.5 cm. long, pubescent, the tube enlarged from 2 mm. at base to 7 mm. at throat, the lips subequal, the lateral lobes of the upper lip short, the middle lobe notched, the lower lip triangular-ovate, prominently notched, erose; nutlets about 1 mm. in diameter, gray, deeply papillose.

TYPE LOCALITY: Virginia, Canada.

DISTRIBUTION: Massachusetts to West Virginia, Tennessee, Arkansas, Florida, Louisiana, and Texas.

This species is extremely variable in leaf form. In some plants oblong-lanceolate or linear, entire leaves predominate, while in others ovate toothed leaves extend nearly to the summit. Any degree of variation between these two extremes may easily be found. There is likewise a great degree of variability in leaf texture and in pubescence.

62a. Scutellaria integrifolia major Chapm. Fl. South. U. S. 323. 1887.

Stem 20 to 80 cm. high, usually branching; leaf blades 1 to 7 cm. long, 0.5 to 3 cm. broad, the upper narrowly ovate to oblong-lanceolate, obtuse or acute at apex, narrowed at base, sparsely toothed, the lower ovate, rounded at apex, truncate or cordate at base, slender-petioled, crenate; lower lip of the corolla usually much larger than the upper.

TYPE LOCALITY: Florida.

SPECIMENS EXAMINED:

FLORIDA: Hasting, *Tracy* 9162 (N). Kissimee Prairie, *Mearns* in 1901 (N). Low black soil near Bayou, vicinity of St. Petersburg, *Deam* 4075 (N). Apalachicola, *Vasey* in 1892; *Mohr* in 1892 (N). Low rich places near Jacksonville, *Curtiss* 2060 (N), 5671 (N). Without locality, *Chapman* (N).

ALABAMA: Lookout Mountain, De Kalb County, Mohr in 1892 (N). Baldwin, Point Clear, *Mohr* in 1898 (N). Marion Junction, Dallas County, *Cole* in 1893.

MISSISSIPPI: Ocean Springs, Jackson County, *Pollard* 1343 (N). Biloxi, *Tracy* 4453 (N).

The predominance of toothed leaves marks this variety.

62b. **Scutellaria integrifolia multiglandulosa** Kearney, Bull. Torrey Club. 21: 482. 1894.

Scutellaria multiglandulosa Small, Fl. Southeast. U. S. 1023. 1903.

Stem 15 to 30 cm. high, glandular-pubescent; leaf blades oblanceolate, rounded at apex, narrowed at base, firm, entire, glandular (at least the uppermost), the lowermost ovate and crenate; floral bracts leaflike but reduced in size; pedicels and calyx strongly glandular-pubescent; corolla with broad subequal notched lips, the lower lip strongly erose-undulate.

TYPE LOCALITY: Vicinity of Eustis, Lake County, Florida. Type collected by Nash in 1894 (no. 1126).

SPECIMENS EXAMINED:

GEORGIA: Dry pine barrens, Bulloch County, *Harper* 822 (N).

FLORIDA: Bristol, *Chapman* (N). Apalachicola, *Chapman* (N). Eustis, *Nash* 1126 (N, type). Without locality, *Chapman* (M). Gainesville, *O'Neil* 481 (N).

ALABAMA: Chatta, *Chapman* (N).

This variety is based chiefly on its glandular pubescence.

62c. **Scutellaria integrifolia hispida** Benth. Labiat. Gen. Sp. 435. 1836.

A slender plant up to 70 cm. high; stem usually branching, pilose; leaves thin, pilose.

TYPE LOCALITY: New Orleans, Louisiana. Type collected by Drummond.

SPECIMENS EXAMINED:

FLORIDA: Moist ground near Jacksonville, *Curtiss* 4668 (N). Pine barrens sloping to swamps near Jacksonville, *Curtiss* 6645 (N). Deland, *Marsh* in 1923 (N). Swamp, Duval County, *Fredholm* 51 (N). Pensacola, *Tracy* 8762 (N). Without locality, *Martin* (F).

ALABAMA: Without locality, *Winchell* 171 (N).

LOUISIANA: Pine barrens in the vicinity of Alexandria, *Ball* 517 (N). Vicinity of Covington, *Arsène* 11825 (N); *Anect* 59 (N).

TEXAS: Houston, *Hall* 455 (N); *Rose* 4170 (N). Near Couroe, Montgomery County, *Dixon* 594 (F), 587 (F).

Scutellaria integrifolia hispida, a pine-barren variety, differs from the species in its pilose stems and thinner pilose leaves.

DOUBTFUL SPECIES

SCUTELLARIA DELTOIDEA Raf. Fl. Ludov. 43. 1817.

"*Scutellaria deltoidea* Raf. Caulibus simpliciusculis, pubescentibus; foliis petiolatis, cordato-deltoideis, crenatis, undulatis, tomentosis, subtus canis. Raf. Toque 1. Rob. p. 393. Blossoms in April, has large flowers; stems one or two feet, upright, square, striated, large leaves."

This species is probably synonymous with *S. incana* Spreng.

SCUTELLARIA HASTATA Raf. Fl. Ludov. 44. 1817.

"*Scutellaria hastata* Raf. Pubescens, foliis petiolatis, imis hastatis, dentatis, summis ovalis integris; floralibus axillaribus solitaris, pedunculatis. Raf.

Toque 2. Rob. p. 894. Blossoms in April and May; stem rising only a foot, corolla light violet, lower lip white at the base."

This is probably identical with *S. cardiophylla* Engelm. & Gray.

SCUTELLARIA MULTIFLORA Benth. in Lindl. Bot. Reg. 18: *pl. 1493.* no. 6. 1832.

"*S. multiflora*, caule erecto tenuiter pubescente, foliis petiolatis ovatis acuminatis obtusè sinuato-dentatis basi rotundato-truncatis; floralibus lanceolato-linearibus, calyce sublongioribus, racemis elongatis simplicibus, floribus secundis, sparsis, corollis calyce villoso quintuplò longioribus.—*Hab.* in Novâ Hispaniâ, Moçino et Sessé (v. s. sp. in Herb. Lambert)."

SCUTELLARIA RADICATA Raf. Atl. Journ. 16. 1832.

"*Scutellaria radicata* Raf., disc. 1818. Root annual, very long; stem small, ramose; leaves on long petioles, ovate, ciliate, obtuse, small, broadly serrate; flowers terminal, axillary, large, pubescent. On river Ohio, three to six inches, differs from *Sc. parviflora* by leaves petiolate and the flowers four times as large."

Aside from the annual root, this description answers very well for *S. saxatilis* Ridd.

SCUTELLARIA VILLOSA Raf. Atl. Journ. 17. 1832.

"*Scutellaria villosa* Raf. disc. 1818. Stem erect, simple, hairy; leaves petiolate, ovate, obtuse, crenate, hairy; raceme bracteate, bracteas obovate, flowers opposite. Indiana and Kentucky, woods; flowers whitish, one foot high, aestival, perennial? differs from *Sc. ovalifolia* by leaves crenate and bracteas."

This is probably synonymous with *S. ovalifolia* Pers.