

THE GENUS ESPELETIA *

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The genus *Espeletia* is a member of the Asteraceae, placed by Hoffman in the tribe Heliantheae, subtribe Melampodinae, in his treatment of the family in Engler and Prantl's *Natürlichen Pflanzenfamilien*.¹ Although it has often been referred to other groups, systematists are now agreed as to its proper disposal. The plants are among the most conspicuous of the composites, because of the long wool which closely invests the leaves and inflorescence of most species, and because of the peculiar habit of growth of some members of the genus. The woolly covering is not peculiar to the *Espeletias*, however, some species of the genus *Culcitium*, for example, a member of the Senecioneae, closely simulating in their general appearance certain species of the present genus.

Two species of *Espeletia* are tall, much branched shrubs. Others have a large tuft of radical leaves borne upon the surface of the ground from which one or more flowering stems rise. A few, like *Espeletia grandiflora*,² develop tall, thick, erect caudices a meter high or more, which are naked below but bear at the summit a large cluster of leaves from which several flowering stems rise. In their habit of growth this group suggests some of the *Senecios* and *Lobelias* which abound in similar situations in the high mountains of East Africa.³ The species are not numerous and are confined, so far as known, to the páramos of the high cordilleras of Colombia and Venezuela, occurring usually at elevations of 3,000 meters or more. The southernmost species, *E. corymbosa*, was collected not far from the southern border of Colombia, and it is not improbable that it or some related species may occur in Ecuador.

The genus *Espeletia* was founded by Humboldt and Bonpland in 1809,⁴ three species being described and illustrated. The name was

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¹ 4⁵: 216. 1890.

² See Engl. & Prantl, *Pflanzenfam.* 4⁵: f. 109.

³ See the *National Geographic Magazine* 27: 194, 196, 197, 200. 1915.

⁴ *Pl. Aequin.* 2: 9.

given in honor of Don José de Espeletia, at one time viceroy of the Kingdom of New Grenada, who encouraged botanical explorations about Bogotá during his term of office. Bonpland expressly states that the generic name should be credited to Mutis, who discovered *E. grandiflora* in the vicinity of Bogotá. It is thus apparent that *Espeletia grandiflora* is the type of the genus,—a matter of no very great importance, since only one species has ever been referred to any other genus. Libanothamnus was based by Ernst upon the plant now known as *Espeletia neriifolia*, which differs in habit from other members of the group and had previously been referred to two other genera. Ernst did not recognize the relationship of Humboldt's *Trixis neriifolia* with Espeletia, nor was he aware that Weddell had already transferred it to its proper position, otherwise he probably would not have made it the type of a new genus.

No additions were made to Espeletia after 1809 until Weddell published his elaborate treatment of the Andine flora in 1855.⁵ That author lists eleven species, seven of which are described as new, while one is transferred from another genus. Since 1855 the only published addition to Espeletia is a subspecies described in 1905.

That so little concerning the genus is found in later literature results from the fact that few botanists have visited the Andine regions of Venezuela and Colombia in recent years. Lately the U. S. National Herbarium has received twenty-two sheets of Espeletia, representing nearly as many collections. This is probably more material than is found in any other herbarium and has led the writer to undertake a review of the genus as a whole, in the course of which no less than six species apparently new have been discovered. Nearly all these sheets were included in a large set of Venezuelan plants collected by Dr. Alfredo Jahn, mainly in the high cordilleras, in regions difficult of access and not visited by any other recent collector. The collection includes many highly interesting plants, but no genus is so completely represented as the present one. Of the species of Espeletia previously described from this region Doctor Jahn has recollected all but two, and one of these is a plant of doubtful standing.

Of the shrubby species of Espeletia one is known as "incienso," since the branches produce a large quantity of resin which is burned as incense in the churches. The non-shrubby species are commonly

⁵ Chloris Andina, Essai d'une flore de la région alpine des cordillères de L'Amérique du Sud, in Castelnau, Expédition dans les parties centrales de l'Amérique du Sud, part 6.

known as "frailejón," their dense covering of white or gray wool recalling to the Venezuelans the cloaks of the brothers of some of the religious orders. Humboldt and Bonpland state that the resin of *E. grandiflora* was used at Bogotá in the manufacture of printers' ink, a purpose for which it was highly prized. The resin, they state, was known at Bogotá as "trementina (turpentine)," although it did not possess either the odor or the consistency of the turpentine of commerce.

KEY TO THE SPECIES

Shrubs or trees with much branched, woody stems.

Leaf blades sinuately and subspinously denticulate.

1. *E. banksiaefolia*.

Leaf blades entire.

2. *E. neriifolia*.

Herbs, often with much elongated, erect caudices, but these simple, never with much branched, woody stems.

Heads usually solitary on each scape, rarely more than one.

Leaf blades linear or narrowly ligulate, attenuate, 25 to 30 cm. long; heads 4 to 4.5 cm. in diameter; pubescence rufous or fulvous.

3. *E. moritziana*.

Leaf blades linear-oblong, 4 to 6 cm. long; heads about 2 cm. in diameter; pubescence nearly white.

4. *E. weddellii*.

Heads several or numerous, the stems not scapose.

Cauline leaves opposite; bracts of the inflorescence often opposite or verticillate.

Pubescence of stems and leaves white, silvery; heads radiate or discoid; basal leaves 4 cm. wide or less.

Bracts of the inflorescence verticillate; leaves 3 to 4 cm. wide.

7. *E. argentea*.

Bracts alternate; leaves 1.8 cm. wide or less.

8. *E. grisea*.

Pubescence usually fulvous or rufescent; heads radiate; basal leaves 4 to 10 cm. wide.

Involucral bracts broadly ovate; nerves of the leaves mostly obscured by the wool.

5. *E. grandiflora*.

Involucral bracts lanceolate or narrowly ovate; nerves of the leaves prominent.

6. *E. schultzei*.

Cauline leaves and bracts of the inflorescence all alternate, rarely subopposite.

Heads in an elongated simple raceme.

9. *E. spicata*.

Heads in a more or less compound panicle or corymb.

Leaf blades of nearly uniform width throughout, not noticeably narrowed toward the base.

Leaf margins strongly revolute, the blades 3 to 6 mm. wide, soon glabrate on the upper surface; inflorescence congested.

10. *E. jahni*.

- Leaf margins flat or slightly revolute, the blades 7 to 12 mm. wide; inflorescence openly corymbose or paniculate.
- Heads 12 mm. broad, their pubescence brown, short. 11. *E. pannosa*.
- Heads 20 to 25 mm. broad, their pubescence white, very long. 12. *E. floccosa*.
- Leaf blades evidently broadest above the middle, conspicuously narrowed at the base.
- Leaves sericeous beneath, with short appressed hairs; heads about 8 mm. broad. 13. *E. paltonioides*.
- Leaves more or less lanuginous beneath, with loose hairs; heads more than 8 mm. broad.
- Leaves in age glabrous on the upper surface or sparsely pubescent.
- Heads 25 mm. broad; leaf blades narrowly oblong, attenuate at the apex, slightly narrowed below; involucral bracts glanduliferous but nearly without pubescence. 14. *E. lindenii*.
- Heads about 12 mm. broad; leaf blades elliptic, attenuate below to a winged petiole; involucral bracts copiously pilose. 15. *E. bracteosa*.
- Leaves copiously lanuginous on the upper surface.
- Involucral bracts ovate or elliptic-ovate, sparsely pilose outside. 16. *E. corymbosa*.
- Involucral bracts lanceolate, densely pilose outside. 17. *E. funckii*.

I. ESPELETIA BANKSIAEFOLIA Schultz Bip. & Ettingh.; Wedd. in Cast.
Expéd. Amér. Sud Bot. 1: 67. 1855

TYPE LOCALITY: Sierra Nevada de Mérida, Venezuela, at an altitude of 3,500 meters. Type collected by Funck and Schlim (no. 1550).

This differs from all other species in having denticulate leaves. Weddell stated that he had seen only a fragment of the plant. It is more than possible that it has been referred to the wrong genus.

2. ESPELETIA NERIIFOLIA (H. B. K.) Schultz Bip.; Wedd. in Cast. Expéd. Amér. Sud Bot. 1: 67. 1855

Trixis neriifolia Humb. Voy. Rég. Équin. Rel. 1: 605. 1814.

Bailliera ? neriifolia H. B. K. Nov. Gen. & Sp. 4: 289. 1820.

Clibadium ? neriifolium DC. Prodr. 5: 507. 1836.

Libanothamnus neriifolia Ernst, Vargasia 186. 1870.

TYPE LOCALITY: Silla de Caracas, Venezuela. Type collected by Bonpland.

Weddell reports several collections from the Silla de Caracas and the Sierra Nevada de Mérida, Venezuela. A specimen in the U. S. National Herbarium was collected by Otto Kuntze in 1877 at the type locality. In May, 1913, Mr. Pittier collected the plant in the upper belt of the Pico de Naiguatá, State of Miranda, at an altitude of 2,400 to 2,765 meters. The common name is "incienseo."

The species differs from most others in being a shrub 3 to 4 meters high with numerous leafy branches. The heads are very numerous, in broad corymbs, and comparatively small, 1 cm. broad or less. They are nearly destitute of the long wool characteristic of most of the other species. Upon this plant Ernst founded his genus *Libanothamnus* ("incense tree"). He erred in referring it to the Senecioneae and was apparently unaware that Weddell had previously referred it to *Espeletia*. The shrub differs so conspicuously in habit from other members of the genus, with some of which Ernst must have been acquainted, that it is not surprising that he did not associate it with *Espeletia*.

3. ESPELETIA MORITZIANA Schultz Bip.; Wedd. in Cast. Expéd. Amér. Sud Bot. 1: 65. 1855

TYPE LOCALITY: Sierra Nevada de Mérida, Venezuela, at an altitude of 4,200 to 4,500 meters. Type collected by Moritz (no. 1416).

Two collections of this have been secured by Doctor Jahn, one in the Páramo de Timotes, State of Táchira, at an altitude of 3,000 to 3,500 meters (no. 150); and the other in the Páramo de la Culata, Cordillera de Mérida, at an altitude of 3,500 meters (no. 235). The common name is given as "frailejón dorado."

This species, like *E. weddellii*, is characterized by monocephalous stems. The heads are much larger than in that species, however, being 4 to 5.5 cm. in diameter. The bracts are covered with very

long and dense pubescence, the unopened heads appearing to be globular masses of wool.

Weddell says the heads are "perpaucis, interdum solitariis," and in the present specimens they are always solitary. The following notes may be added from the recent collections: Pubescence ferruginous, especially on the younger leaves; leaves 25 to 30 cm. long, 8 to 14 mm. wide, coriaceous; flowering stems stout, 40 to 60 cm. high;

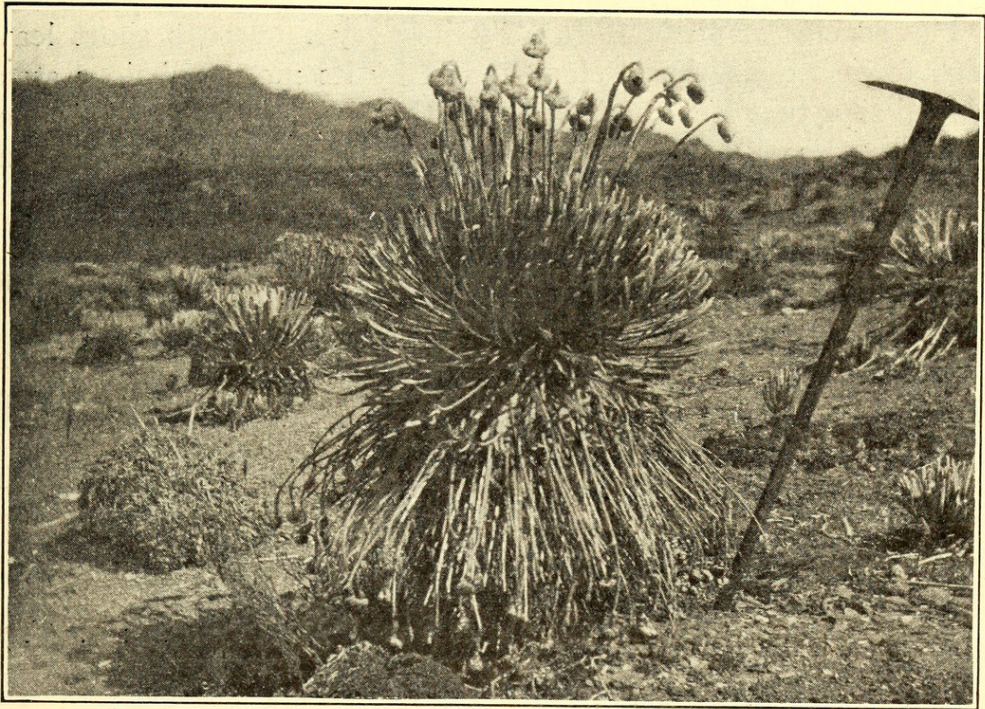


FIG. 1. *Espeletia moritziana*. Páramo de Timotes, Venezuela. Photo by Dr. A. Jahn.

paleæ of the disk linear or oblong-linear, acuminate, minutely serrulate near the apex; achenes 2 to 2.5 mm. long, nearly black, smooth, sharply angled.

The inner involucral bracts are longer than in any other species, their apices being long-attenuate.

4. *ESPELETIA WEDDELLII* Schultz Bip.; Wedd. in Cast. Expéd. Amér. Sud Bot. 1: 66. *pl. 15, B.* 1855

TYPE LOCALITY: "Venezuela: Páramo de Niquitao!, dans les Andes de Truxillo, á une élévation de 4,000-4,500 mètres." Type collected by Linden (no. 1443).

Two specimens of this are in Doctor Jahn's collections, one from the Páramo de Timotes, State of Táchira, at an altitude of 3,000 to 3,500 meters (no. 152); and the other from the type locality, the Teta de Niquitao, the highest peak of the Sierra Nevada de Mérida, at an altitude of 3,000 to 4,000 meters (no. 151). The common name is given as "frailejón de batata." The word batata (tuber or bulb) refers to the large tuber-like roots which, however, are not present upon the specimens.

The species is distinguished by its very numerous short leaves which form a dense basal cluster, and by its monocephalous stems. Weddell says that it is the lowest plant of the genus and this is probably true. From the specimens it can be seen that the caudex is not elongated and that the leaves rest upon the ground.

Weddell states that there are one or two heads on each stem. In these recent specimens there is never more than one. The leaves are described as "acutatis" but the tips are very blunt, and Weddell so figures them. In Doctor Jahn's specimens the leaves are 4 to 6 cm. long and 5 to 10 mm. wide; the flowering stems are 6 to 30 cm. long, evidently elongating in age; the paleæ of the disk are oblong-linear, densely villous at the apex, and bearded at the base with long, white, erect hairs; the achenes, which seem not to be full developed, are about 2.5 mm. long.

5. ESPELETIA GRANDIFLORA Humb. & Bonpl. Pl. Aequin. 2: 9. *pl.* 70.
1809

Espeletia hartwegiana Schultz Bip.; Wedd. in Cast. Expéd. Amér. Sud Bot. 1: 62. 1855, as synonym.

Espeletia oppositifolia Schultz Bip.; Wedd. loc. cit., as synonym.

TYPE LOCALITY: Near Bogotá, Colombia. Type collected by Bonpland.

ILLUSTRATIONS: Wedd. in Cast. Expéd. Amér. Sud Bot. 1: *pl.* 15, A.

Collected by Mr. H. Pittier in the Páramo de Buena Vista, Huila Group, Central Cordillera, State of Cauca, Colombia, at an altitude of 3,000 to 3,600 meters, in January, 1906 (no. 1116). Weddell¹ reports several collections from Colombia and a single one from the Sierra Nevada de Mérida, Venezuela (*Linden* 398, in part).

Schultz's manuscript name *hartwegiana* was based, doubtless, upon a specimen collected by Hartweg (no. 1137) in the Páramo de

¹ In Cast. Expéd. Amér. Sud Bot. 1: 63. 1855.

Guanacas, in the Andes of Popayán, Colombia. The name *oppositifolia* was based upon Linden's no. 398 from the Sierra Nevada de Mérida, Venezuela. Weddell states that this collection is a mixture, the inflorescence (from which the specific name was taken) being of *E. grandiflora* and the leaves those of *E. moritziana*.

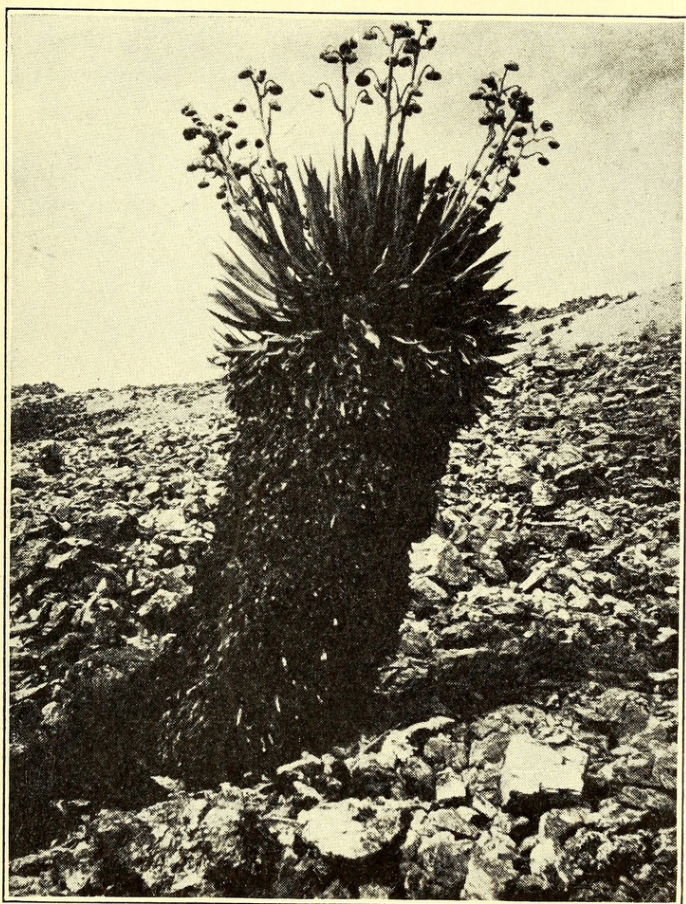


FIG. 2. *Espeletia grandiflora*. Páramo de Culata, Venezuela. Photo by Dr. A. Jahn.

6. ESPELETIA SCHULTZII Wedd. in Cast. Expéd. Amér. Sud Bot. 1: 63.
1855

TYPE LOCALITY: Páramos of the Cordilleras of Mérida, Venezuela, at an elevation of 3,200 to 3,500 meters. Type collected by Linden (no. 370). Weddell also cites Moritz's no. 1419 from the same region.

Three of Doctor Jahn's collections are referred here: no. 245, from La Culata, Cordillera de Mérida, altitude 3,500 meters; no. 236, from Pan de Azúcar, Cordillera de Mérida, altitude 4,000 meters,

and no. 153, from the Páramo de Timotes, State of Táchira, altitude 3,000 to 3,500 meters. The common name is given as "frailejón." The leaves are said to be used for wrapping cheese and butter, to secure the flavor and aroma which they impart.

The species appears to be very closely related to *E. grandiflora*, and Weddell's diagnoses do not afford a satisfactory means of separating the two. *E. schultzii* has paler wool, however, more conspicuously veined leaves, narrower involucral bracts, and presumably

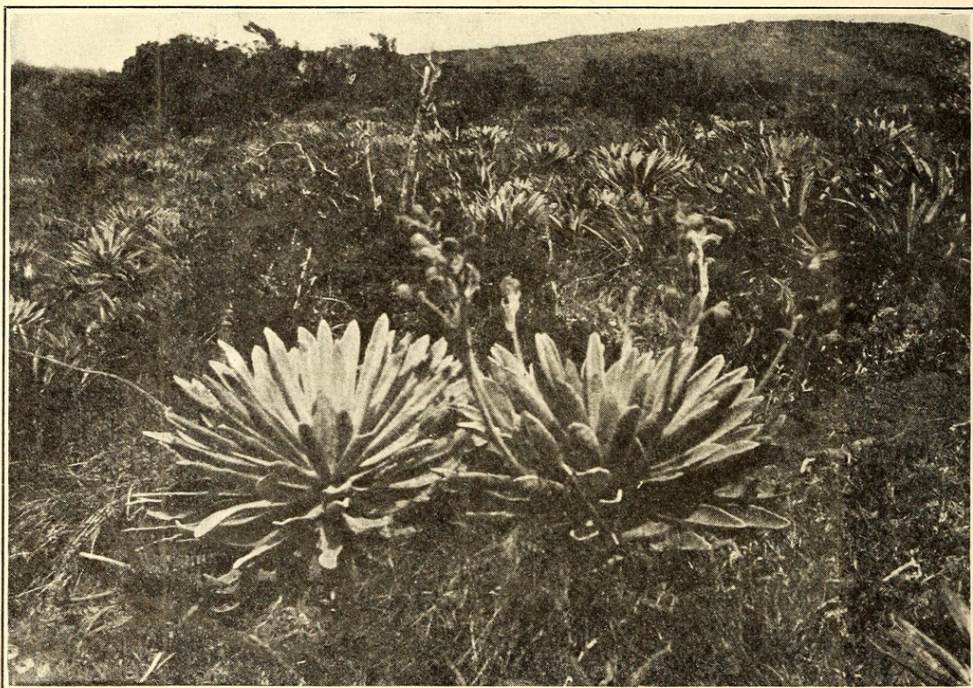


FIG. 3. *Espeletia schultzii*. Páramo de la Cristalina, Venezuela. Photo by Dr. A. Jahn.

a broader inflorescence. Whether this last distinction will hold when a large series of specimens is brought together is doubtful. The leaves are almost ligulate, not "oblongo-lanceolatis" as Weddell described them in his diagnosis, a characterization which is somewhat amended in his discussion of the species. In the present specimens they are 18 to 31 cm. long and 2.5 to 6 cm. wide, being scarcely at all narrowed at the base, slightly broadest above the middle, and from obtuse to acute. The heads vary considerably in size with age, ranging from 2 to 3.5 cm. in diameter. The paleæ of the disk are nearly linear, attenuate, furnished near the apex with numerous short, stiff hairs.

7. *ESPELETIA ARGENTEA* Humb. & Bonpl. Pl. Aequin. 2: 12. *pl.* 71.
1809

TYPE LOCALITY: Near Zipaquirá, north of Bogotá, central Colombia, at an altitude of 1,300 meters. Type collected by Humboldt and Bonpland.

Weddell reported two forms of this species: The first "capitulis radiatis," and the second "capitulis discoideis," the typical form, known only from the type collection. To the first form, with radiate heads, he referred three specimens from the mountains of Mérida, Venezuela, at elevations of 3,200 to 3,900 meters, collected by Linden (no. 401), Funck and Schlim (no. 1072), and Moritz (no. 1418). He cited as a synonym *Espeletia nivea* Moritz, mss., this name doubtless referring to Moritz's specimen. It is probable that none of the Venezuelan specimens are really *E. argentea*, but belong rather to *Espeletia floccosa*, *E. grisea*, or *E. pannosa*, which are described as new in the present paper. To which one of these three the name *nivea* was applied can not be determined without examination of Moritz's specimens.

Bonpland illustrated and described the heads as discoid. From his diagnosis and plate we also find that the leaves are opposite and the bracts of the inflorescence opposite or verticillate. Weddell describes the cauline leaves as "interdum oppositis," this modification of the original description probably necessitated by the inclusion of the Venezuelan specimens. Certain other modifications of Bonpland's diagnosis introduced by Weddell into his notes seem to indicate that he had before him perhaps the plant described here as *Espeletia pannosa*.

8. *Espeletia grisea* sp. nov.

Caudex stout, 20 cm. long, 2 to 2.5 cm. in diameter, from a stout elongated tap-root, covered with closely imbricated leaf bases; radical leaves narrowly linear-oblongate, 15 to 21 cm. long, 13 to 18 mm. wide, acuminate at the apex, gradually and slightly narrowed toward the base, dilated at the point of insertion, subcoriaceous, flat, or the margins slightly revolute, abundantly lanate on both surfaces with grayish hairs but more densely so beneath, the midrib not prominent, the lateral veins scarcely perceptible; flowering stem about 120 cm. high, stout, densely lanate below, the pubescence less abundant above and somewhat deciduous, corymbosely much branched, the branches long, ascending or erect, slender, the stems furnished below with several pairs of opposite leaves, these similar to the basal ones

but smaller; branches of the inflorescence all alternate, the bracts resembling the cauline leaves but smaller; heads very numerous, on slender peduncles 2 to 4 cm. long, these viscid and rather sparsely tomentose with long loose whitish hairs and shorter brown ones; heads 15 mm. broad in age, subglobose, the outer paleæ of the receptacle and the involucrel bracts reflexed; involucrel bracts narrowly lanceolate to narrowly obovate, acute, pilose outside with brown hairs, glabrous within; paleæ of the disk cuneate-obovate, acutish, densely viscid-pilose outside near the apex; corolla tube sparsely villous outside; achenes not seen.

Type in the U. S. National Herbarium, no. 602351, collected on the Sierra Nevada de Mérida, State of Mérida, Venezuela, at an altitude of 3,000 to 4,000 meters, in January, 1911, by Dr. Alfredo Jahn (no. 157). Additional material of the same collection, consisting of a caudex and basal tuft of leaves, is mounted on sheet no. 602352.

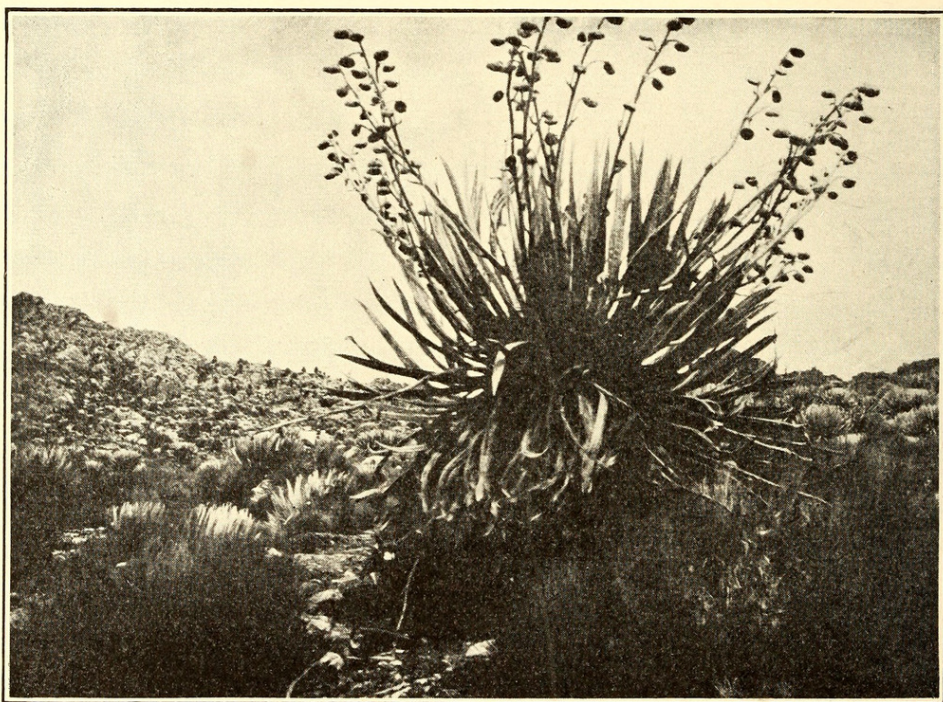


FIG. 4. *Espeletia spicata*. Sierra Nevada de Mérida, Venezuela. Photo by Dr. A. Jahn.

Espeletia grisea is evidently related to *E. argentea* but is distinguished by the shorter, narrower leaves (which are less narrowed toward the base), the villous corolla, and the alternate branches and bracts of the inflorescence. The heads are too far developed to determine whether they are radiate or discoid.

9. *ESPELETIA SPICATA* Schultz Bip.; Wedd. in Cast. Expéd. Amér. Sud
Bot. 1: 65. 1855

TYPE LOCALITY: Sierra Nevada de Mérida, Venezuela, at an altitude of 4,500 meters. Type collected by Linden (no. 400).

Collected by Doctor Jahn on the Sierra Nevada de Mérida, at an altitude of 3,000 to 4,000 meters (no. 158); on Pan de Azúcar, Cordillera de Mérida, at an altitude of 4,000 meters (no. 237); and in the Páramo de Timotes, State of Táchira, at an altitude of 3,000 to 3,500 meters (no. 149). In the first specimen the inflorescence is lacking, but the leaves show that it is of this species. The second specimen bears only part of an inflorescence, with a few heads about 15 mm. in diameter; the leaves are 27 to 40 cm. long and 18 to 27 mm. wide; and the whole plant is densely woolly with fulvous hairs. The third specimen shows a complete inflorescence about 95 cm. high; the stem is very stout and densely lanuginous; the peduncles average about 5 cm. in length, and the heads 3 to 3.5 cm. in diameter.

10. *Espeletia jahnii* sp. nov.

Leaves all basal, 18 to 35 cm. long, 3 to 6 mm. wide (excluding the strongly revolute margins), linear or nearly so, acute or acuminate at the apex, widened at the sheathing base, coriaceous, the margins strongly revolute, densely clothed on the upper surface with long, white, nearly straight wool when young but becoming glabrate in age, densely tomentose on the lower surface, the bases of the leaves more densely furnished with wool; flowering stems stout, 20 to 25 cm. high, naked up to the inflorescence, covered by a dense, matted, slightly fulvous wool; bracts of the inflorescence 2 to 5.5 cm. long, similar to the leaves but broader; inflorescence corymbose, of 12 to 15 crowded, short-pedunculate heads, these about 1 cm. in diameter; involucral bracts few, lanceolate, obtuse or acutish, densely covered with long wool; paleæ of the disk 3.5 mm. long, linear, slightly broadened upward, densely glandular near the apex; rays wanting; styles much exserted.

Type in the U. S. National Herbarium, no. 602482, collected in the Páramo del Batallón, State of Táchira, Venezuela, at an altitude of 3,000 meters, in March, 1911, by Dr. Alfredo Jahn (no. 155).

This is well distinguished from all the other species by the very narrow leaves which are soon glabrate on the upper surface and strongly revolute. The flowering stems, too, are lower than in most species. It is not possible to determine from the specimens whether the plant has an elongate, erect caudex.

In the Páramo de las Rosas, State of Trujillo, at an altitude of 3,200 meters, Doctor Jahn collected another plant which somewhat resembles this, the leaves being slightly broader and glabrous on the upper surface. Unfortunately this specimen is without flowers. It is doubtless an undescribed species.

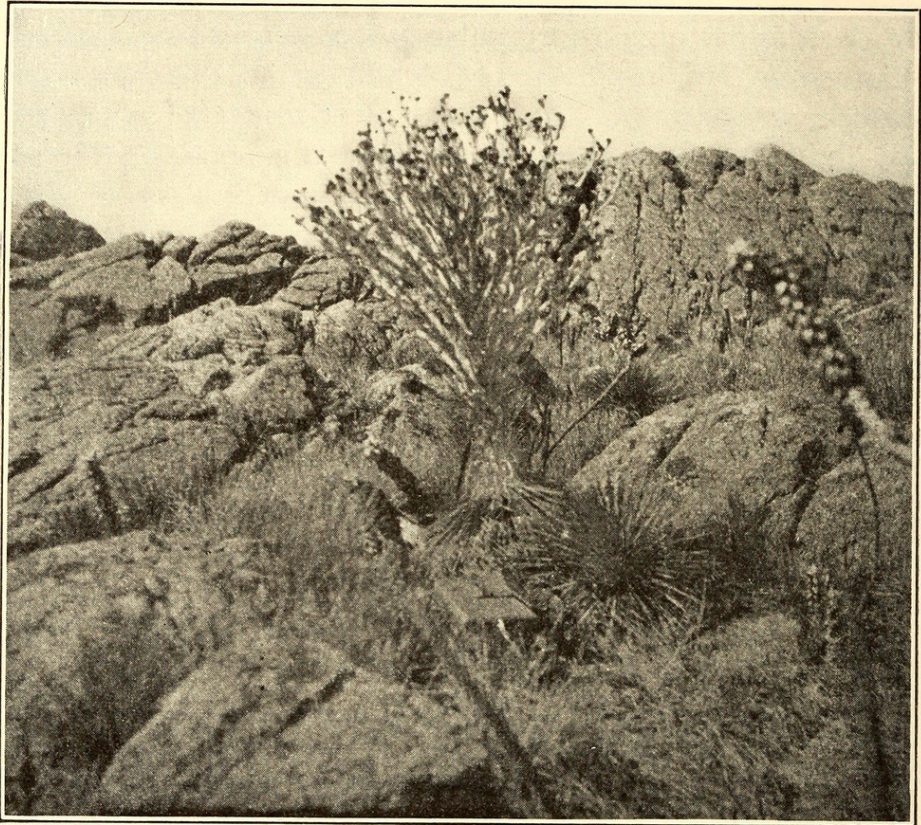


FIG. 5. *Espeletia jahnii*. Páramo Malpaso, State of Táchira, Venezuela.
Photo by Dr. A. Jahn.

11. *Espeletia pannosa* sp. nov.

Caudex short, about 9 cm. long, 8 cm. wide at the crown, from a very thick ligneous root, bearing very numerous erect leaves; radical leaves broadly linear, of uniform or nearly uniform width throughout, except for the slightly dilated point of attachment, 16 to 30 cm. long, 7 to 8 mm. wide, coriaceous and rigid, the margins slightly or strongly revolute, obtuse to acute at the apex, densely covered on the upper surface with long, straight but somewhat matted, silvery white hairs, densely tomentose beneath with long, matted, white or slightly yellowish hairs, the midrib very broad and prominent beneath, the lateral nerves not apparent; flowering stem 45 cm. high or more,

stout, bearing a few alternate leaves similar to the basal ones but much smaller, corymbosely branched above, the branches few, erect or nearly so, densely tomentose with dark brown hairs, the pubescence of the lower part of the stem lanate, white; heads rather numerous, 12 to 15 mm. broad, on stout erect peduncles 2 to 5 cm. long, these densely tomentose with brown hairs; bracts of the inflorescence 1 to 2 cm. long, oblong-lanceolate, alternate; involucral bracts numerous, linear-lanceolate to narrowly ovate, acute or acuminate, glabrous within, densely villous outside with long matted brown hairs; rays numerous, 5 to 6 mm. long, shallowly bilobate at the apex; paleæ of the disk densely villous outside; corolla lobes densely pilose; achenes 1.5 mm. long, obtusely angled, dark brown.

Type in the U. S. National Herbarium, no. 602484, collected in the Páramo del Jabón, State of Trujillo, Venezuela, at an altitude of 3,000 to 3,200 meters, in October, 1910, by Dr. Alfredo Jahn (no. 165).

This is related to *Espeletia argentea* but is easily distinguished by the radiate heads, narrow radical leaves, and alternate cauline leaves. It is a handsome plant by reason of its silvery leaves which contrast with the brown pubescence of the inflorescence.

Closely related to this is a specimen collected by Doctor Jahn (no. 244) at La Culata, Cordillera de Mérida, at an altitude of 3,500 meters. The form of the leaves is almost exactly the same as in *E. pannosa*, except that they are 40 cm. long and acuminate. The inflorescence is represented only by a few lateral branches, each subtended by a large, silvery bract, and terminated by several sessile heads. This specimen probably represents an undescribed species, but it is not complete enough to determine all the essential characters.

12. *Espeletia floccosa* sp. nov.

Radical leaves broadly linear, of nearly uniform width throughout, slightly dilated at the point of attachment, 30 cm. long, 9 to 11 mm. wide, acute or acuminate, coriaceous, rigid, erect, flat, densely sericeous on the upper surface with long, matted, silvery white hairs, densely tomentose on the lower surface with matted, white or yellowish hairs, the midrib large and prominent beneath, the lateral nerves not visible; flowering stem nearly a meter high, very stout, bearing a few long alternate leaves below, corymbosely branched above, the branches numerous, stout, erect, alternate, densely covered throughout with very long white wool, this loose and floccose; heads numerous, 18 to 25 mm. in diameter, on stout peduncles 1 to 4 cm. long; involucral bracts numerous, linear, attenuate, 10 to 15 mm. long, glabrous within, densely covered outside with long loose white wool; paleæ of the disk narrowly linear, rigid, erect, 5 to 6 mm. long, acute, pubescent

outside; corolla villous, white; achenes 2.5 mm. long, compressed, very broad, obtusely angled.

Type in the U. S. National Herbarium, no. 602483, collected in the Páramo del Jábón, State of Trujillo, Venezuela, at an altitude of 3,000 to 3,200 meters, in October, 1910, by Dr. Alfredo Jahn (no. 154). The collector gives the common name as "frailejón plateado," and states that the flowers are white. The heads have been badly eaten by insects, and if any rays were present they have disappeared.

The collector states that the same plant was observed in the Páramo de Timotes and the Sierra Nevada de Mérida. It may be, however, that this was not distinguished from *E. grisea* and *E. pannosa*.

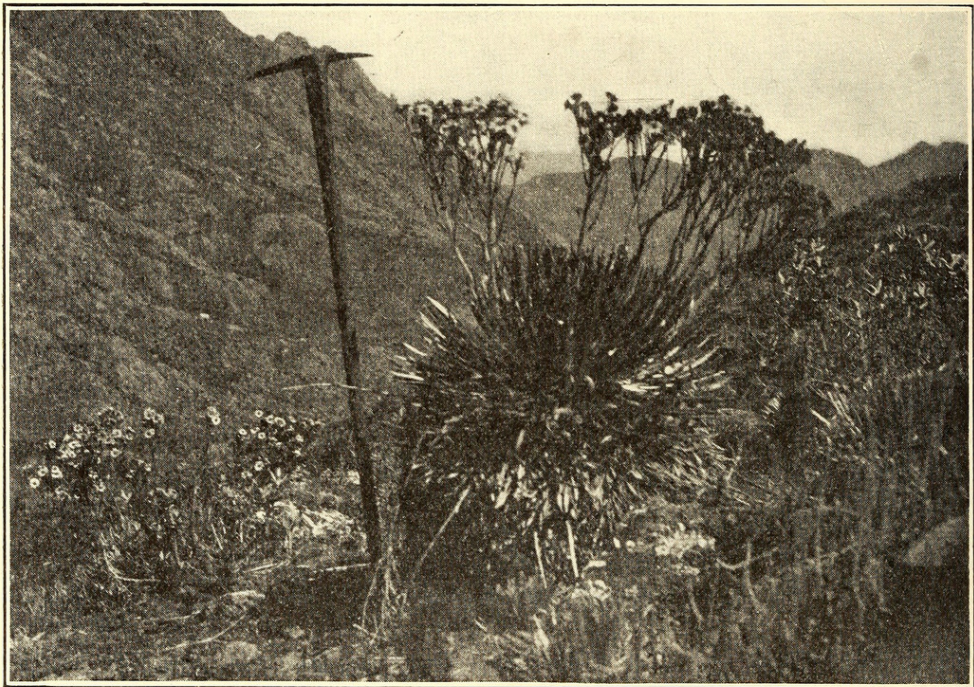


FIG. 6. *Espeletia floccosa*. / Sierra Nevada de Mérida, Venezuela. Photo by Dr. A. Jahn.

Espeletia floccosa is a most distinct species, especially because of the abundant, long, white wool. The paleæ of the disk are narrower than in any other species. The plant is related, perhaps, to *E. argentea*, but it has much larger heads, longer, narrower bracts, and narrower leaves.

13. *Espeletia paltonioides* sp. nov.

Caudex elongated, stout, 3.5 cm. in diameter, densely covered with leaves, their bases imbricated; leaf blades narrowly linear-

oblanceolate, 20 to 28 cm. long, 13 to 18 mm. wide, attenuate to the apex, long-attenuate to the broadly margined petiole, this abruptly dilated at the point of attachment, the margins strongly revolute, the upper surface grayish green, closely covered with very short, stiff, yellowish, almost scabrous hairs, densely sericeous on the lower surface with very dense, short, white or fulvous, appressed hairs, the blades coriaceous but not much thickened, the midvein very prominent beneath, the lateral veins inconspicuous, irregular, somewhat reticulate; flowering stem tall, erect, densely sericeous, furnished with numerous alternate bracts or leaves; inflorescence of many heads in a rather compact corymb 16 cm. high and 12 cm. broad, the branches 3.5 to 11 cm. long, the heads corymbose at the end of each branch, on peduncles 2 to 12 mm. long; heads 8 to 10 mm. broad; bracts few, oblong-linear to narrowly oblong, acute, glandular-puberulent at the apex, densely pubescent with mostly appressed hairs, these abraded by weathering; paleæ of the disk oblong or oblong-spatulate, rounded or subtruncate at the apex, puberulent, glandular above; corolla 3 to 3.5 mm. long, glabrous; achenes 2.5 mm. long, sharply trigonous.

Type in the U. S. National Herbarium, no. 602354, collected in the Páramo de las Rosas, State of Trujillo, Venezuela, at an altitude of 3,200 meters, in October, 1912, by Dr. Alfredo Jahn (no. 159).

The material consists of a stout caudex bearing a thick cluster of leaves and a weathered inflorescence. Unfortunately, because of the age of the latter, it is impossible to describe the pubescence of the involucre bracts or the form of the rays, if these be present. All the leaves and bracts of the inflorescence have disappeared, too. Nevertheless, this is easily distinguished from all other species by the short, close pubescence of the leaves. The heads are very numerous and small. The species is most closely related, probably, to *E. corymbosa*. The form of the leaves suggests the fronds of a fern, *Paltonium lanceolatum* (L.) Presl; hence the specific name.

14. ESPELETIA LINDENII Schultz Bip.; Wedd. in Cast. Expéd. Amér.
Sud Bot. 1: 66. 1855

TYPE LOCALITY: Páramos of the State of Mérida, Venezuela, at an altitude of 3,250 to 3,900 meters. Type collected by Linden (no. 1414).

This is the only species described from Venezuela which is not represented in Doctor Jahn's collections. Judging from the description it must be similar to the plant here described as *Espeletia bracteosa*. It is said to have heads twice as large, as well as leaves of somewhat different form. The heads are radiate, the rays being yellow.

15. *Espeletia bracteosa* sp. nov.

Basal leaves numerous, 20 to 25 cm. long, 3 to 4 cm. wide in the broadest part, the blades elliptic, acute or acutish at the apex, long-attenuate at the base to a stout margined petiole, this gradually dilated at the base, at first abundantly lanuginous on the upper surface, glabrous in age, very densely matted-tomentose beneath with fulvous hairs, with additional long loose white lanuginous hairs, the midvein prominent beneath, white-woolly, the lateral veins numerous, parallel, conspicuous beneath, visible also on the upper surface; bases of the petioles densely covered with long silky fulvous hairs; flowering stems 40 to 50 cm. high, bearing a few small, alternate, narrowly lanceolate or oblanceolate leaves below the inflorescence; inflorescence corymbosely branched, the branches erect or ascending, bearing numerous leaflike bracts 2 to 6 cm. long, these lanceolate, attenuate, pubescent like the leaves; branches of the inflorescence slender, densely lanuginous with brown hairs; peduncles 2 to 4 cm. long; heads rather few, about 12 mm. broad; involucral bracts oblong to linear, acute to attenuate, densely pilose with brown hairs; rays not seen; paleæ of the disk attenuate, densely covered above with short, stiff, appressed, viscid, reddish brown hairs; corolla tube densely viscid-pilose; achenes dark brown, smooth, sharply angled.

Type in the U. S. National Herbarium, no. 602350, collected in the Páramo de la Cristalina, State of Trujillo, Venezuela, at an altitude of 2,900 meters, December 20, 1910, by Dr. Alfredo Jahn (no. 156).

This appears to be most closely related to *Espeletia corymbosa*, but the leaves are shorter, relatively broader, and less acute, while the inflorescence is more open, more branched, and bears broader, less pubescent bracts. The corollas are densely pubescent, while for *E. corymbosa* they are figured as glabrous.

**16. ESPELETIA CORYMBOSA Humb. & Bonpl. Pl. Aequin. 2: 13. pl. 72.
1809**

Espeletia rigida Humb. & Bonpl. op. cit. pl. 72, nomen nudum.

Espeletia platylepis Schultz Bip.; Wedd. in Cast. Expéd. Amér. Sud Bot. 1: 64. 1855, as synonym.

TYPE LOCALITY: Vicinity of Almaguer, near the southern boundary of the State of Tolima, Colombia, at an altitude of 2,268 meters. Type collected by Humboldt and Bonpland.

This species is apparently the southernmost representative of the genus. Weddell also refers here specimens collected by Goudot and by Linden (no. 1291) in the mountains near Bogotá. Judging from Bonpland's original illustration and description the plant is not far

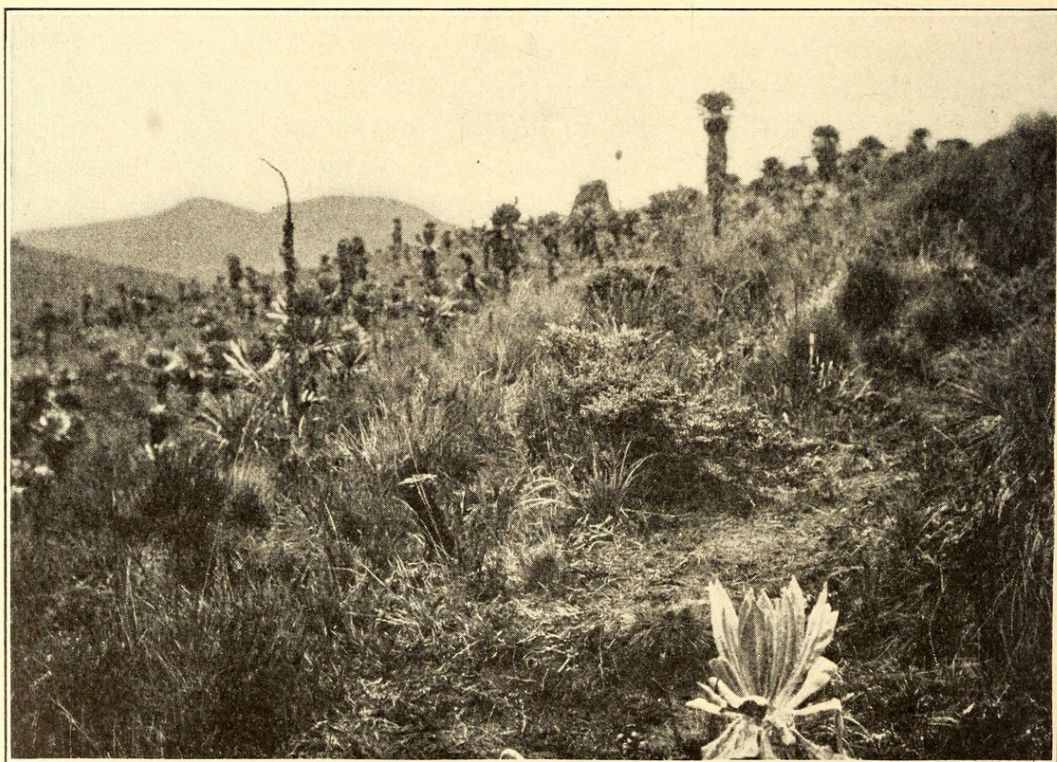
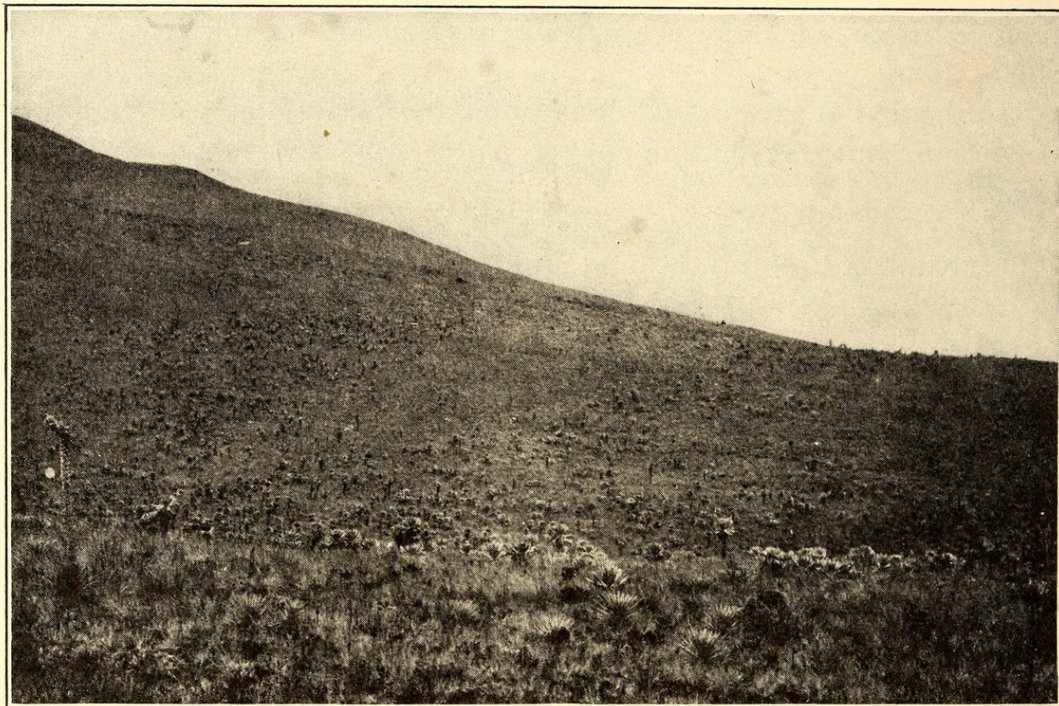
removed from some of the species here described as new from Venezuela.

In the text of the original description the species is named *Espeletia corymbosa*, but the accompanying plate bears the name *Espeletia rigida*.

17. ESPELETIA FUNCKII Schultz Bip.; Wedd. in Cast. Expéd. Amér.
Sud Bot. 1: 64. 1855

TYPE LOCALITY: Andes of Pamplona, Colombia, at an elevation of 3,400 meters. Type collected by Funck and Schlim (no. 1290).

The type locality is near the Venezuelan boundary and the species may be expected to occur in that country. Weddell compares this with *E. corymbosa*, saying that it is a larger plant with a less regular, more open inflorescence, and with more elongate achenes having sharper angles.



Espeletia grandiflora IN THE PÁRAMO DE BUENA VISTA, STATE OF CAUCA, COLOMBIA.
PHOTOS BY MR. H. PITTIER.



Standley, Paul Carpenter. 1915. "The genus Espeletia." *American journal of botany* 2(9), 468–486. <https://doi.org/10.1002/j.1537-2197.1915.tb09424.x>.

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