

SYNOPSIS OF THE SOUTH AMERICAN SPECIES OF STIPA.

By A. S. HITCHCOCK.

INTRODUCTION.

The United States National Herbarium has the type or duplicate type specimens of a large number of species of *Stipa* from South America. The most important of these are the Hackel types. In 1922 Agnes Chase visited Vienna to examine the Hackel Herbarium which had been acquired by the Museum of Natural History. Through the kindness of Doctor Zahlbruckner, the custodian, Mrs. Chase was permitted to take duplicates of species originally described by Professor Hackel, or, when the material was scant, to take fragments. These specimens were supplemented by notes and photographs when necessary.

Dr. R. Pilger, of the Botanical Museum at Berlin, has very kindly supplied us with portions, more or less complete, of the types of species described by him. So far as they are at Berlin, he has also sent fragments from the types of species described by Mez.

In 1907 the writer visited the Academy of Sciences at St. Petersburg and was allowed by the curator to take fragments from the types of species of grasses described by Trinius. Of these a large number are from Brazil.

The custodians of other herbaria have been courteous in supplying fragments of types of several species of *Stipa* not included in the other collections mentioned. Recently the United States National Herbarium acquired the large collection of Bolivian plants made by Dr. Otto Buchtien, and the National Herbarium has numerous specimens collected by Arechavaleta, Stuckert, Holway, Hassler, Parodi, Macbride, and others, as shown by the citation of specimens in the present paper. In 1923 the writer made collections of grasses in Ecuador, Peru, and Bolivia.

On the other hand, the United States National Herbarium does not contain representatives of all the published species of *Stipa* from South America. The desiderata are chiefly from Argentina and Chile. Spegazzini published a paper on the species of *Stipa* from Argentina,¹ in which he described 51 species, many of them new. Some of these would be referred by agrostologists to the allied genera *Oryzopsis*,

¹ *Stipeae Platenses*, Anal. Mus. Nac. Montevideo 4:1-167. 1901.

Nassella, and *Piptochaetium*, but of the species of true *Stipa* there are several of which no material is at hand. R. A. Philippi published numerous new species of *Stipa* from Chile, in several papers devoted to the botany of that country. Of these many duplicate types or authentic specimens are in the United States National Herbarium, but not all are thus represented.

The material at hand of the genus *Stipa* was abundant enough to warrant its study in connection with the revision of the North American species, but not complete enough to include in a revision of the species of all America. It is for this reason that the results of the study of the South American species are presented separately, as a synopsis of the species in the United States National Herbarium. It is hoped that the key will aid in the identification of the South American species, and will stimulate an interest that will result in the receipt of material to supplement our present collections. It is hoped also that ultimately a complete revision of the South American species of *Stipa* may be made.

North American species of *Stipa* that are found also in South America are included in this synopsis by name only, with the distribution by countries and with a reference to the page in the preceding paper where the species is described.

SYSTEMATIC TREATMENT.

KEY TO SPECIES.

- First segment of awn strongly plumose.
- First segment strongly plumose on the lower two-thirds.
- Terminal segment 15 to 25 mm. long..... 1. *S. speciosa*.
- Terminal segment 50 to 100 mm. long..... 2. *S. patagonica*.
- First segment plumose on the upper half, less so below..... 3. *S. humilis*.
- First segment of awn not strongly plumose (sometimes with scattered long hairs) or not more plumose than the terminal segment.
- Fruiting lemma not over 3 mm. long; panicle long, narrow, dense, silvery.
- Summit bearing a dense ring of ascending or spreading hairs, 3 to 4 mm. long.
- Blades closely involute..... 4. *S. ichu*.
- Blades flat..... 5. *S. milleana*.
- Summit slightly hispidulous, but lacking long hairs.
- Fruit terete..... 6. *S. tenuissima*.
- Fruit obconic, gibbous..... 7. *S. pampagrandensis*.
- Fruiting lemma more than 3 mm. long (if shorter, the panicle not long and dense).
- Upper part of lemma pilose with long hairs (longer than those of the body).
- Culms zigzag, spreading, puberulous..... 8. *S. tortuosa*.
- Culms erect, cespitose, glabrous.
- Panicle loose, pale, the branches and pedicels flexuous; hairs confined to upper millimeter of the lemma..... 9. *S. papposa*.
- Panicle rather compact, often purple, the branches and pedicels erect or ascending.

- Terminal segment of awn 2 cm. long.
- Terminal segment of awn straight..... 10. *S. dusenii*.
- Terminal segment of awn flexuous..... 11. *S. capilliseta*.
- Terminal segment of awn 1 to 1.5 cm. long, straight.
- Throat of sheath villous; ligule short..... 12. *S. nardoides*.
- Throat of sheath glabrous; ligule 2 to 5 mm. long.
- Panicle 5 to 6 cm. long, dense and spikelike. 13. *S. hans-meyeri*.
- Panicle 12 to 20 cm. long, narrow but not dense.. 14. *S. rosea*.
- Upper part of lemma not conspicuously pilose, or the hairs not longer than those of the body.
- Awn plumose, especially the terminal segment.
- Lemma about 5 mm. long; first segment of awn somewhat villous. 15. *S. plumosa*.
- Lemma 9 to 10 mm. long.
- First segment of awn glabrous.
- Terminal segment 7 cm. long, the hairs 4 mm. long; first and second segments each 15 mm. long; callus pubescent..... 16. *S. neael*.
- Terminal segment 5 cm. long, the hairs 3 mm. long; first and second segments each 10 cm. long; callus glabrous. 17. *S. pogonathera*.
- First segment of awn villous..... 18. *S. argentea*.
- Awn not plumose on the terminal segment.
- Summit of lemma smooth, cylindric, forming a crown, usually slightly larger than the neck, often whitish.
- Crown extending upward into a prominent appendage as much as 6 mm. long..... 19. *S. charruana*.
- Crown only slightly or not at all appendaged.
- First segment of awn 7 to 9 cm. long; fruit about 15 mm. long; glumes 3 to 4 cm. long..... 20. *S. melanosperma*.
- First segment of awn less than 5 cm. long; fruit not over 10 mm. long; glumes mostly less than 2 cm. long.
- Pubescence on fruit extending, at least in lines, nearly to the summit.
- Upper part of fruit (4 mm. long) and base of awn loosely long-villous..... 21. *S. depauperata*.
- Upper part of fruit not long-villous.
- Fruit 3.5 to 5 mm. long.
- Callus 0.5 to 1 mm. long; fruit evenly pubescent nearly to summit.
- Lemma 3.5 mm. long; callus 0.5 mm. long. 22. *S. philippii*.
- Lemma 4 to 5 mm. long; callus 1 mm. long.
- Blades flat or loosely rolled, as much as 3 mm. wide.
- Awn glabrous or scaberulous; fruit 4 mm. long..... 23. *S. lenta*.
- Awn short-pilose below; fruit 5 mm. long.
- Blades involute..... 24. *S. karsteni*.
- Branches of panicle glabrous, 1 to 3-flowered; fruit 5 mm. long..... 25. *S. brachyphylla*.
- Branches of panicle scabrous, several-flowered; fruit 4 mm. long..... 26. *S. mexicana*.
- Callus 1.5 mm. long, fruit pubescent in lines above.
- Blades glabrous, flat, mostly over 5 mm. wide. 27. *S. megapotamia*.

- Blades villous, more or less convolute, mostly less than 3 mm. wide.....28. *S. lachnophylla*.
 Fruit 6 to 14 mm. long.
 Fruit 8 to 14 mm. long.
 Awn 7 to 10 cm. long.
 Fruit 12 to 14 mm. long.....29. *S. clarazii*.
 Fruit about 10 mm. long.....30. *S. longiglumis*.
 Fruit 8 mm. long.....31. *S. poeppigiana*.
 Awn 2 cm. long.....32. *S. curicoana*.
 Fruit 6 to 7 mm. long.
 Panicle loose and open, the lower branches drooping, as much as 10 cm. long; fruit somewhat gibbous at summit.....33. *S. laxa*.
 Panicle rather compact, the lower branches short and ascending.....34. *S. mucronata*.
 Pubescence on fruit confined to the callus and lower part of the body.
 Fruit 3 to 4 mm. long.
 Awn 5 to 7 cm. long, the terminal segment long and flexuous.....35. *S. tenuis*.
 Awn 2 to 3 cm. long, the terminal segment 10 to 15 mm. long, slightly flexuous.
 Callus 0.5 mm. long; awn slender, obscurely geniculate.....36. *S. hyalina*.
 Callus 1 mm. long; awn rather stout, twice-geniculate.....37. *S. juergensii*.
 Fruit 5 to 10 mm. long.
 Fruit smooth, very slender, the callus felty-pubescent; blades capillary-involute.....38. *S. trichocaulos*.
 Fruit more or less papillose-roughened, the callus villous-pubescent.
 Blades closely involute, stiff, wiry. Fruit pale, slender.....39. *S. papillosa*.
 Blades flat or involute, not stiff and wiry.
 Fruit papillose at the summit only, the body smooth and minutely striate.....40. *S. hackelii*.
 Fruit papillose on body at least at summit, the body not striate.
 Fruit compressed and asymmetric at summit below crown.
 Fruit 5 mm. long.....41. *S. duriuscula*.
 Fruit 8 mm. long.....42. *S. contracta*.
 Fruit terete toward summit or nearly so.
 Crown indistinct, the fruit 6 to 7 mm. long, narrowed toward summit with no constriction below crown.
 Awn 2 cm. long, the first segment 5 to 8 mm.....43. *S. gilliesii*.
 Awn 7 cm. long, the first segment 3 cm.....44. *S. nutans*.
 Crown distinct, the fruit abruptly narrowed and somewhat constricted below crown.
 Fruit about 1 cm. long.
 Terminal segment of awn 5 to 7 cm. long, flexuous.....45. *S. macrathera*.

- Terminal segment of awn 2 to 3 cm. long,
straight or nearly so. 46. *S. fernandeziana*.
Fruit 7 to 8 mm. long.
Fruit barely roughened at summit,
smooth below. 47. *S. barbinodis*.
Fruit papillose especially toward summit.
48. *S. neesiana*.
- Summit of lemma not differentiated into a smooth cylindrical crown.
Blades involute-filiform, firm.
Awn shorter than body of fruit. 49. *S. saltensis*.
Awn longer than body of fruit.
Awn with scattered long hairs on the first segment; annual.
50. *S. annua*.
- Awn with no scattered hairs; perennials.
Panicle compact, densely flowered, 15 to 20 cm. long; lemma
4 mm. long, narrow; awn 3 cm. long. 51. *S. filifolia*.
Panicle narrow but rather loose.
Lemma villous, the upper hairs 1 to 2 mm. long.
Glumes 1 cm. long. 52. *S. brevipes*.
Glumes 4 to 6 mm. long.
Awn glabrous; fruit 4 mm. long. 53. *S. leptostachya*.
Awn villous; fruit 3 mm. long.
Awn 1.5 to 2 cm. long. 54. *S. dasycarpa*.
Awn about 5 mm. long. 55. *S. violacea*.
- Lemma smooth on upper part or pubescent only.
Awn twisted and geniculate.
Awn once-geniculate, slightly twisted, about 1 cm.
long. 56. *S. litoralis*.
Awn twice-geniculate, evidently twisted, 3 to 8 cm.
long.
Body of lemma pubescent.
Awn villous below with appressed hairs 2 mm.
long. 57. *S. curviseta*.
Awn not villous.
Fruit pubescent on lower part of body.
Fruit 4 mm. long. 58. *S. stuckertii*.
Fruit 6 mm. long. 59. *S. juncoides*.
Fruit 9 mm. long. 60. *S. tenuiculmis*.
Fruit pubescent all over, 3 to 5 mm. long.
Fruit 3 mm. long.
Glumes 4 to 5 mm. long. 61. *S. rupestris*.
Glumes 8 to 9 mm. long.
62. *S. featherstonei*.
Fruit 5 mm. long.
Awn about 15 mm. long. 63. *S. caudata*.
Awn about 40 mm. long. 64. *S. macbridei*.
- Body of lemma glabrous.
Fruit 7 to 8 mm. long, gradually narrowed to
summit.
Terminal segment of awn flexuous, 5 cm.
long. 65. *S. flexibarbata*.
Terminal segment of awn nearly straight, 3 cm.
long.
Fruit 8 mm. long; first segment of awn 2 cm.
long. 66. *S. leucogluma*.

- Fruit 7 mm. long; first segment of awn 1 cm. long-----67. *S. filiculmis*.
- Fruit 6 mm. long, abruptly narrowed at summit; terminal segment of awn flexuous, 6 cm. long. 68. *S. hypogona*.
- Fruit 4 mm. long-----69. *S. curamalalensis*.
- Awn untwisted, curved or flexuous, not geniculate.
Awn 1 or 2 cm. long, curved.
Body of lemma flattened, 1 mm. broad. 70. *S. breviculmis*.
- Body of lemma terete, fusiform, 0.5 mm. broad.
Lemma 3 mm. long; awn 1 cm. long.
Glumes obtuse, 3 mm. long-----71. *S. obtusa*.
Glumes acute, 5 mm. long-----72. *S. rigidiseta*.
Lemma 4 mm. long; awn 2 cm. long. 73. *S. peruviana*.
- Awn 3 to 4 cm. long, delicate and flexuous. 74. *S. venusta*.
- Blades flat or loosely involute.
Culms much-branched-----75. *S. polyclada*.
Culms simple.
Awn pilose below.
Body of lemma compressed, glabrous, 1 mm. broad-----76. *S. hirtifolia*.
- Body of lemma terete.
Lemma 7 to 8 mm. long-----77. *S. hirtiflora*.
Lemma about 5 mm. long-----78. *S. ibarrensis*.
- Awn not pilose (sparsely so in *S. arcuata*).
Lemma about 1 cm. long; awn 4 to 8 cm. long.
First segment of awn 4 to 5 cm. long----79. *S. sellowiana*.
First segment of awn about 2 cm. long----80. *S. arcuata*.
First segment of awn about 1 cm. long--81. *S. paniculata*.
- Lemma 2.5 to 6 mm. long.
Fruit obovate, turgid, 3 mm. long----82. *S. inconspicua*.
Fruit oblong or fusiform.
Lemma 2.5 mm. long-----83. *S. airoides*.
Lemma 3.5 to 6 mm. long.
Awn 3 to 5 cm. long.
Lemma 3.5 mm. long, 0.5 mm. wide; awn 3 cm. long. 84. *S. illimanica*.
Lemma 5 mm. long, narrow; awn 4 to 5 cm. long. 85. *S. holwayi*.
- Awn 1 to 2 cm. long.
Leaves strongly distichous-----86. *S. disticha*.
Leaves not distichous.
Blades involute-----87. *S. brachychaeta*.
Blades flat.
Lemma strongly villous all over with ascending hairs 2 to 3 mm. long. 88. *S. calamagrostis*.
Lemma sparsely villous with hairs less than 1 mm. long-----89. *S. pittieri*.

1. *Stipa speciosa* Trin. & Rupr.

Bolivia, Argentina, Chile. See page 221.

2. *Stipa patagonica* Speg.

Stipa patagonica Speg. *Revist. Fac. Agron. Vet.* 3: 581. 1897. "Rio Gallegos * * * Rio Santa Cruz." The type has not been examined.

ARGENTINA: General Roca, Río Negro, *Fischer* 47. Lago General Paz, Chubut, *Gerling* 146. Puerto San Antonio, *Dusén* 5228. Pino Hachado Neuquen, *Parodi* 2387.

3. *Stipa humilis* Cav.

Stipa humilis Cav. *Icon. Pl.* 5: 41. *pl.* 466. *f.* 1. 1799. Described from Deseado, Patagonia. The type, examined at the herbarium of the Madrid Botanic Garden, is labeled "Puerto Deseado. Nee dedet." It differs from *S. speciosa* in having a more slender awn, the first segment scarcely twisted, pilose on the upper half to the bend and much less so on the lower half. Cavanilles's figure exaggerates this.

Stipa chrysophylla Desv. in *Gay, Fl. Chil.* 6: 278. *pl.* 76. *f.* 2. 1853. Desvaux divides *S. chrysophylla* into var. α *minor* and var. β *major*, citing a collection by Gay in "valle de Toro" as var. α . Dr. Lecomte has kindly sent me a fragment from a specimen in the Paris Herbarium, collected in the valle del Toro, Coquimbo, Chile, by Gay, which is undoubtedly the type of *S. chrysophylla* α *minor*, though the name is given on the label as a variety of *humilis*. The first segment of the awn is 12 mm. long, plumose throughout but less so on the lower half, the second segment about the same length, scabrous, bent at an angle of about 45 degrees. Desvaux differentiates *S. speciosa* from *S. chrysophylla* by the more robust awn, larger florets, and shorter palea.

Stipa speciosa gymnostachya Hauman, *Anal. Soc. Cienc. Argentina* 86: 240. 1918. High Cordillera of Mendoza. Dr. Parodi has kindly sent a portion of the type specimen.

Stipa kurtzii Mez, *Repert. Nov. Sp. Fedde* 17: 204. 1921. "Argentina, Mendoza, Cordillere von Malalhué (Kurtz)." The type has been examined in the Berlin Herbarium.

ARGENTINA: Coast of Patagonia, *Eights*. Northern Chubut, *Acosta* in 1914. Bahía Cracker, *Pennington* 33. Río Santa Cruz, *Dusén* 5569, 5861. San José, *Dusén* 5341. Mendoza, *Malme* 2855. Río Tupungato, *Hauman* in 1910. Peninsula Valdés, *Ferro* 5053. Las Cuevas, Province Mendoza, *Spegazzini* 2389. Puente del Inca, *Spegazzini* 2388. Río Gallegos, *Dauber* 2572, 2574.

CHILE: Coquimbo, *Philippi*. Santiago, *Wilkes Expl. Exped.* Juncal, *Buchtien* in 1903. Talca, *Philippi*.

4. *Stipa ichu* (Ruiz & Pav.) Kunth.

Colombia, Ecuador, Peru, Bolivia, Argentina. See page 259.

5. *Stipa milleana* Hitchc., sp. nov.

Perennial; culms erect, puberulent, especially below the nodes, rather stout, several-noded (nodes as many as 6), as much as 1 meter tall; sheaths glabrous or slightly retrorsely roughened, the collar more or less puberulent; ligule a very short membrane (less than 1 mm. long); blades flat, 30 to 40 cm. long, as much as 8 mm. wide, glabrous beneath, more or less puberulent on the upper surface, long-acuminate; panicle greenish or somewhat tawny, narrow, rather dense, 20 to 40 cm. long, interrupted below, the branches appressed or ascending,

2 to 5 cm. long, overlapping and densely flowered, the main axis glabrous; pedicels slender, scabrous, the lateral shorter than the spikelet; glumes narrow, thin, acuminate and short-aristate, 3-nerved, about 6 mm. long, scaberulous on keels; lemma elliptic, 2 mm. long, greenish or brownish, villous with long hairs about 1 mm. long, the callus short and rather blunt (0.3 mm. long), the summit bearing several hairs 2 to 3 mm. long; awn slender, minutely scaberulous, reflexed by a semicircular bend, the first section loosely twisted, a little longer than the hairs, the second section nearly straight, 7 to 10 mm. long.

Type in U. S. National Herbarium, no. 1,188,857, collected on Mount Pichincha, near Quito, Ecuador, by L. Mille, S. J. (no. 256).

Other specimens, are: Near Quito, *Mille* 259, 392; *Sodi* in 1893 (2 specimens). *Alausí*, *Hitchcock* 20698, 20727.

This species is allied to *S. ichu*, but differs in the broad flat blades (somewhat rolled in drying), the scarcely silvery inflorescence, the shape of the fruit and the recurved awn.

6. *Stipa tenuissima* Trin.

Argentina. See page 258.

7. *Stipa pampagrandensis* Speg.

Stipa pampagrandensis Speg. Anal. Mus. Nac. Montevideo 4: 158. f. 48. 1901. "In pratis collinis et montanis prov. Córdoba et Salta." The type has not been examined.

BOLIVIA: Tarija, *Fries* 1308.

ARGENTINA: Andalgalá, *Jørgensen* 1256. Capilla del Monte, *Estrada* 18997.

8. *Stipa tortuosa* Desv.

Stipa tortuosa Desv. in Gay, Fl. Chil. 6: 281. 1853. "Cordilleras de Doña Ana (Gay)." Dr. Lecomte has kindly sent a fragment from the type in the Paris Herbarium.

Culms zigzag at base, puberulent; fruit 5 to 6 mm. long, long-pilose toward summit.

CHILE: Atacama, *Philippi*; *Morong* 1133. Antofagasta, *Rose* 19415. Monte Amargo, *Philippi* 107. Morro de Caldera, *Philippi* 542.

9. *Stipa papposa* Nees.

Calamagrostis plumosa Spreng. Syst. Veg. 1: 253. 1825. Not *Stipa plumosa* Trin. "Monte Video. Sello." The type specimen (or a duplicate) is in the U. S. National Herbarium, having been received among duplicates from the Berlin Herbarium. It is labeled in Sprengel's hand, the name being followed by an asterisk, as was his custom in indicating new species. The specimen came originally from the Kurt Sprengel Herbarium.

Stipa papposa Nees, Agrost. Bras. 377. 1829. "Ad Monte-Video. (Sellow.—Vidi in Herb. Reg. Berol.)." The type in the Berlin Herbarium, has been examined. It is another specimen of the same collection as the type of *Calamagrostis plumosa* Spreng.

This species can be distinguished by the long hairs on the upper third of the slender fruit. The awn is naked.

URUGUAY: Montevideo, *Arechavaleta* 15, 186; *Sellow*.

ARGENTINA: Sierra de la Ventana, *Dusén* in 1904. Buenos Aires, *Parodi* 320.

Without locality, *Stuckert* 14068.

CHILE: Cueva, *Philippi* 97. Valparaíso, *Wilkes Expl. Exped.* 3.

10. *Stipa dusenii* Hitchc., sp. nov.

Culms erect, cespitose, glabrous, 40 to 80 cm. tall; sheaths glabrous, somewhat villous at the throat; blades closely conduplicate, rigid and wiry, terete, about as long as the culm or some of them longer, 0.5 to 1 mm. thick when rolled, glabrous on the back, more or less pilose with scattered hairs along the margin, pungently pointed; panicle narrow, 10 to 20 cm. long, the branches erect or ascending, floriferous from base, the shorter pedicels about 1 mm. long; glumes equal, thin, pale or purplish, gradually acuminate to a soft slender point, 8 to 9 mm. long, 3-nerved; lemma fusiform, pale, 5 to 6 mm. long, appressed-villous, the hairs about 1 mm. long, those at the apex as much as 3 mm. long, the callus short and thick, less than 1 mm. long, acute; awn twisted, twice-geniculate, slender, minutely scabrous 3 to 3.5 cm., the first segment about 7 mm. long, the second about 6 mm. long, the third straight, about 2 cm. long.

Type in the U. S. National Herbarium, no 1,161,165, collected on plains, Sierra de la Ventana, Province of Buenos Aires, Argentina, November 11, 1904, by P. Dusén. The only other specimen seen is from Peninsula de Valdés, Chubut, *Parodi* 5054.

This species was described under "*Stipa caudata* Trin." by Spegazzini² in *Stipae Platenses*, but is not *S. caudata* Trin. (see page 283).

11. *Stipa capilliseta* Hitchc., sp. nov.

Culms erect, cespitose, glabrous, slender, 50 cm. tall; sheaths glabrous, sparsely long-villous at the throat; ligule less than 1 mm. long; blades involute, long and slender, much narrower than the summit of the sheath, scabrous, erect, 10 to 20 cm. long, 0.5 mm. thick when rolled; panicle narrow, dense and almost spikelike, 10 to 15 cm. long, the branches appressed; glumes subequal, 5 to 6 mm. long, thin and hyaline, narrow, acuminate, faintly 3-nerved, minutely scabrous, sometimes purplish-tinged; lemma 5 mm. long, the callus sharp but very short, scarcely 0.5 mm. long, the body fusiform, narrowed above into a slender neck about 1 mm. long, rather sparsely villous all over, the hairs appressed below, those toward the summit ascending and longer, as much as 2 mm. long; awn very slender, scaberulous, about 2 cm. long, slightly twisted below, flexuous above, scarcely geniculate.

Type in the U. S. National Herbarium, no. 1,099,305, collected at Chiguana, Bolivia, altitude 3,700 meters, March 23, 1921, by Dr. E. Asplund (no. 6566). The type is the only specimen seen.

12. *Stipa nardoides* (Phil.) Hack. in herb.

Danthonia nardoides Phil. Anal. Mus. Nac. Chile Bot. 8: 84. 1891. "Inter Amincha et Paroma lecta [Philippi, Tarapacá, Chile]." In the Hackel Herbarium at Vienna there is a portion of the type, bearing the name in Philippi's hand. On this Hackel has written, *Stipa nardoides* Hack.

Stipa pachypus Pilger, Bot. Jahrb. Engler 56: Beibl. 123: 25. 1920. "Peru: Mollendo * * * Weberbauer n. 1487." The type has been examined in the Berlin Herbarium.

The leaves are woolly at base of the involute blades and around the throat of the sheaths. In the type of *S. nardoides* the glumes are purple; they are greenish or tawny in the type of *S. pachypus* and in all the other specimens cited.

BOLIVIA: Uyuni, alt. 3,700 meters, *Asplund* 6539.

PERU: Mollendo, *Rose* 19535; *Weberbauer* 1487; *Hitchcock* 22350.

² Anal. Mus. Nac. Montevideo 4: 109. 1901.

13. *Stipa hans-meyeri* Pilger.

Stipa nivalis Steud.; Lechl. Berb. Amer. Austr. 56. 1857. Nomen nudum. Based on *Lechler* 1978 from Peru, which has been examined in the Vienna Herbarium.

Stipa hans-meyeri Pilger, Bot. Jahrb. Engler 56: Beibl. 123: 24. 1920. "Ecuador: Chimborazo, Paramo-Region, 4500 m. ü. m. (Hans Meyer n. 139. Juni 1903)." Dr. Pilger has kindly sent a fragment from the type specimen.

PERU: Sandía, *Weberbauer* 1025. Cuyo Cuyo, *Weberbauer* 940. Río Blanco, *Macbride & Featherstone* 803. Cerro de Pasco, *Hitchcock* 22241.

BOLIVIA: Between La Cumbre and Yungas, alt. 4,650 meters, *Asplund* 6513, 6515. Comanche, Berg Miriquiri, alt. 4,200 meters, *Asplund* 6544. Sorata, *Mandon* 1272 bis. Pongo, Nor-Yungas, *Hitchcock* 22777.

14. *Stipa rosea* Hitchc., sp. nov.

Culms erect, cespitose, glabrous, 50 to 60 cm. tall; sheaths glabrous; ligule firm, 3 to 4 mm. long; blades firm, closely involute, glabrous, 20 to 30 cm. long, less than 1 mm. in diameter; panicles narrow, rose-tinged, 12 to 20 cm. long, rather loosely flowered, the branches ascending, not much overlapping, slender, terete, glabrous, the pedicels terete, scaberulous under a lens; glumes about 7 mm. long, acuminate, rose-tinged in the middle part, the nerves obscure; lemma about 3 mm. long including the pubescent (0.5 mm. long) callus, fusiform, somewhat flattened, pilose on the keel, glabrous on the sides above, the summit bearing a dense tuft of hairs about 3 mm. long; awn flexuous or obscurely twice-geniculate, scarcely twisted, minutely scaberulous, about 1 cm. long.

Type in the U. S. National Herbarium, no. 1,197,850, collected in open ground, between San Lucas and Oña, Province of Loja, Ecuador, September 7, 1923, by A. S. Hitchcock (no. 21523). The type collection is the only one seen.

15. *Stipa plumosa* Trin.

Stipa plumosa Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 2¹: 37. 1836. "V. sp. Chil." The type, in the Trinius Herbarium, was collected by Cuming.

Stipa plumosula Nees; Steud. Syn. Pl. Glum. 1: 127. 1854. "Cuming legit in Chili." The type has been examined in the Berlin Herbarium.

The panicle is rather dense, the awns plumose from base.

PERU: Obrajillo, *Wilkes Expl. Exped.* Ollantaytambo, *Hitchcock* 22557; *Cook & Gilbert* 684. Matucana, *Macbride & Featherstone* 137.

BOLIVIA: Comorapa, *Herzog*, 1855. Summit of railroad east of Oruro, *Hitchcock* 22870.

ARGENTINA: Andalgalá, *Jørgensen* 1710.

CHILE: Santiago, *Philippi* in 1888, 596; *Claude Joseph* 116; *Hastings* 131. Atacama, *Philippi* 541. Coquimbo, *Philippi* 74. San Felipe, *Claude Joseph* 2339.

16. *Stipa neaei* Nees.

Stipa neaei Nees; Steud. Syn. Pl. Glum. 2: 126. 1854. "In Berkeley Sound ad Portum Desideratum, Patagonia." [Falkland Islands.] The type has been examined in the Berlin Herbarium.

ARGENTINA: Puerto San Antonio, *Dusén* 5228 in part.

17. *Stipa pogonathera* Desv.

Stipa pogonathera Desv. in Gay, Fl. Chil. 6: 277. 1853. "Provincia de Coquimbo, en los Patos, à 2,377 m. (Gay)." The type has not been examined but the description identifies the species.

Stipa uspallatensis Hack. Oesterr. Bot. Zeitschr. 54: 289. 1904. Not *S. uspallatensis* Speg. 1901. "Juncal (2400 m. s. m.) am Uspallata-Pass der chilenischen Hoch-Cordillere (33 S. B.), gesammelt von Dr. Otto Buchtien (I-II. 1903)". The type has been examined in the Hackel Herbarium at Vienna.

Stipa buchtienii Hack. Oesterr. Bot. Zeitschr. 54: 382. 1904. Based on *S. uspallatensis* Hack.

This species differs from *S. plumosa* in the longer sickle-shaped awns, glabrous or nearly so below the bend.

CHILE: Santiago, *Hastings* 547; *Claude Joseph* 617. Juncal, *Buchtien* in 1903. Coquimbo, *Philippi* in 1888. Tulahuen, *Philippi* 73. Quebrada Ramón, *Claude Joseph* 1783, 2341. Tiltel, *Philippi* 86. San Felipe, *Claude Joseph* 2501.

18. *Stipa argentea* Hitchc., sp. nov.

Plants perennial; culms erect, closely cespitose, puberulent at least below, 20 to 40 cm. tall; sheaths more or less retrorsely roughened, the lowermost sometimes puberulent, villous at the throat and in a line across the collar, the upper 1 or 2 inflated; ligule short on the innovations, as much as 4 mm. long on the culms; blades involute, firm, sharp-pointed, puberulent or glabrate on the outer surface, 3 to 5 cm. long (vigorous innovations not seen), less than 1 mm. thick when rolled; panicles narrow, inclosed at base in the uppermost sheath, less than 10 cm. long; the branches ascending, villous; glumes thin, hyaline, narrow, gradually acuminate into a soft awnlike point, 2 to 2.5 cm. long, the upper a little longer, 3 to 5-nerved; lemma about 1 cm. long, the callus sharp, 2 mm. long, white, pubescent with stiff white hairs, the body somewhat fusiform, brown, loosely villous with white hairs about 1 mm. long, the narrowed summit whitish and glabrous for about 1 mm.; awn sickle-shaped, the first segment about 2 cm. long, twisted, loosely plumose with ascending hairs about 3 mm. long, the second segment arcuate, about 6 cm. long, silvery, plumose like the first segment but more densely so, the hairs progressively shorter toward the glabrous apex.

Type in the U. S. National Herbarium, no. 1,126,751, collected "in campo," Puerto San Julián, Argentina, December 19, 1904, by P. Dusén (no. 5383A).

The type specimen was obtained in exchange from the Vienna Herbarium. It is a single culm about 30 cm. tall.

Two other specimens, both from Argentina, belong to this species. One, collected by Nicolás Illin (no. 244) in Chubut, region of the Río Corcovado, is mixed with a plant of *Stipa humilis*. The second was collected by L. Dauber (no. 2573 in herb. Parodi) along the Río Gallegos.

19. *Stipa charruana* Arech.

Stipa charruana Arech. Anal. Mus. Nac. Buenos Aires 4: 181. f. 3. 1895. "Muy común en la República, en terrenos arcillosos, bajos y húmedos."

Characterized by the prominent membranous appendage extending beyond the summit of the fruit and embracing the base of the awn.

URUGUAY: Montevideo, *Arechavaleta*; *Parodi* 4778.

20. *Stipa melanosperma* Presl.

Stipa melanosperma Presl, Rel. Haenk. 1: 226. 1830. "Hab * * *" See page 232 for notes on this species.

Stipa melanosperma var. *erythrina* Hack. Repert. Nov. Sp. Fedde 6: 345. 1909. "Paraguay: * * * fluminis Yhú. * * * Hassler no. 9469."

BRAZIL: Paraná, *Dusén* 10874.

PARAGUAY: Sierra de Amambay, *Hassler* 12090. Alto Paraná, *Fiebrig* 6012.

21. *Stipa depauperata* Pilger.

Stipa leptothera var. *atroviolacea* Hack. Repert. Nov. Sp. Fedde 6: 154. 1908. "Bolivia: La Paz, * * * Buchtien (no. 855)."

Stipa depauperata Pilger, Bot. Jahrb. Engler 56: Beibl. 123: 23. 1920. "Peru: Südlich von Sumbay * * * 4000 m (Weberbauer n. 6903)."

Stipa depauperata var. *glabrata* Pilger, Bot. Jahrb. Engler 56: Beibl. 123: 23. 1920. "Peru: Cordillera negra über Caraz, Dep. Ancachs * * * 4200 m ü. m. (Weberbauer n. 3076)."

Stipa depauperata var. *humilis* Pilger, Bot. Jahrb. Engler 56: Beibl. 123: 23. 1920. "Peru: Dep. Junin, La Oroya; * * * 4300 m ü. m. (Weberbauer n. 2615)."

Stipa pumila Mez, Repert. Nov. Sp. Fedde 17: 205. 1921. "Bolivia, Palca-La Paz (Pflanz)." The type has not been examined.

PERU: Sumbay (Arequipa-Puno), *Weberbauer* 6903. Caraz (Ancash), *Weberbauer* 3076. La Oroya (Junín), *Weberbauer* 2615.

BOLIVIA: La Paz, *Buchtien* 855; *Holway* 492. Calacota, *Asplund* 6565.

ECUADOR: Alausí, *Hitchcock* 20708, 20712. Cotapaxi Station, *Hitchcock* 20774.

22. *Stipa philippii* Steud.

Stipa philippii Steud. Syn. Pl. Glum. 1: 125. 1854. "Festuca nr. 97. Hrbr. chil. Dr. Philippi. Ad. Osorno Chili." In the U. S. National Herbarium there is a fragment from Lechler's no. 97.

The species appears to be allied to *S. illimanica* Hack. but differs in having a distinct crown to the fruit. Awn twice-geniculate, glabrous, 2.5 cm. long.

CHILI: Valdivia, *Philippi*.

23. *Stipa lenta* Hitchc., sp. nov.

Culms erect, slender and wiry, glabrous, 60 to 80 cm. tall; sheaths glabrous, much shorter than the internodes; ligule obtuse, glabrous, about 1 mm. long; blades erect, flat or loosely involute, glabrous or nearly so, 15 to 20 cm. long, about 2 mm. wide; panicle narrow, about 15 cm. long, the glabrous axis and ascending scaberulous branches slender, the pedicels 1 to 2 mm. long, scabrous, enlarged toward summit; glumes thin, narrow, equal, long-acuminate, pale, 3-nerved, about 6 mm. long; lemma 4 mm. long, the callus sharp but short, a little less than 1 mm. long, pubescent, the body brownish, rather sparsely villous all over, narrowed into a short smooth ciliate crown about 0.3 mm. long; awn twice-geniculate, twisted below, glabrous or nearly so, slender, about 2.5 cm. long.

Type in the U. S. National Herbarium, no. 825,103, collected at Valdivia, Chile, by R. A. Philippi. The type is the only specimen seen.

24. *Stipa karsteni* Hitchc., sp. nov.

Culms loosely caespitose and somewhat spreading at base, erect, glabrous, rather stout, about 3-noded, 50 to 60 cm. tall; sheaths glabrous, pubescent at the throat, shorter than the internode; ligule very short, about 0.3 mm. long; blades flat or loosely involute, slightly cordate at base, glabrous beneath, scabrous-pubescent on the upper surface, 10 to 15 cm. long, 2 to 4 mm. wide; panicle narrow, loose, 8 to 15 cm. long, the axis terete, glabrous, the lower internode as much as 7 cm. long, the branches ascending, angled, scabrous, the longest as much as 8 cm. long, naked at base, with several shorter spikelet-bearing ones at base, the lateral pedicels 1 to 2 mm. long, enlarged at summit, scabrous, pubescent; glumes subequal, rather firm, glabrous, acuminate, 3-nerved, tinged with violet below, about 9 mm. long; lemma about 4.5 mm. long, the callus 1 mm. long,

sharp, pubescent, the body pale, short-villous, sparingly so near summit, somewhat narrowed into a glabrous neck about 0.3 mm. long, ciliate with a few erect hairs nearly 1 mm. long; awn twice-geniculate, short-villous with ascending hairs below, about 1.5 cm. long, the first segment about 3 mm. long.

Type in the U. S. National Herbarium, no. 1,126,745, collected at Bogotá, Colombia, by H. Karsten. The type is the only specimen seen.

25. *Stipa brachyphylla* Hitchc., sp. nov.

Culms cespitose, erect, glabrous, 20 to 40 cm. tall; the uppermost node mostly near the base; sheaths glabrous; ligule very short on the innovations, 2 to 5 mm. long on the culms, firm; blades involute, firm, sharp-pointed, glabrous on the under surface, scabrous on the upper surface, the basal cluster mostly 5 cm. long or less, the uppermost culm-blade usually shorter; panicle well-exserted, narrow, rather loose, 3 to 10 cm. long, the axis glabrous, the branches glabrous, ascending, the lowermost as much as 4 cm. long, 1 or 2 naked on the lower half with 1 or 2 spikelet-bearing branches at base, the nodes sometimes obscurely villous; glumes subequal, about 1 cm. long, purple with hyaline tips, broad, rather abruptly acuminate, glabrous, the first 3-nerved, the second 5-nerved; lemma 6 mm. long, the callus sharp, 1.5 mm. long, pubescent with appressed hairs, the body oblong-fusiform, brownish, sparsely villous to summit, rather abruptly contracted to a crown 0.3 mm. long; awn twice-geniculate, about 2 cm. long, the first segment 5 mm. long, twisted, pubescent with short hairs, the second segment about as long as the first but less pubescent, the third straight, scabrous, 1 cm. long.

Type in the U. S. National Herbarium, no. 1,099,323, collected on mountain slopes, at La Paz, Bolivia, altitude 3,800 meters, March 28, 1907, by Dr. Otto Buchtien (no. 858).

The type specimen is labeled by Professor Hackel, *S. leptothera* Speng. var. *atroviolacea* Hack., but is not the same as the type specimen of that variety (Buchtien 855. See page 274.)

The other specimens of this species examined are:

ECUADOR: Between Oña and Cuenca, *Hitchcock* 21590.

PERU: Río Blanco, *Macbride & Featherstone* 669. Cerro de Pasco, *Hitchcock* 22226, 22243. Oroya, *Hitchcock* 22183. Tarma, *Hitchcock* 22161. Between Juliaca and Cuzco, *Hitchcock* 12444.

BOLIVIA: Isla del Sol (Titicaca), alt. 3,850 meters, *Asplund* 6557. La Paz, *Buchtien* 858; *Holway* 433.

ARGENTINA: Salta, Nevada del Castillo, *Hieronymus & Lorentz* 74 (a).

The last cited specimen (labeled *Nassella caespitosa* Griseb.) is different from the no. 74 cited under *S. inconspicua*.

26. *Stipa mexicana* Hitchc.

Colombia, Venezuela, Peru. See page 247.

27. *Stipa megapotamia* Spreng.

Stipa megapotamia "Sprgl. ms."; Trin. Mém. Acad. St. Pétersb. VI. Math. Phys. Nat. 1: 77. 1830. "V. sp. Brasil. merid." The type, in the Trinius Herbarium, is labeled "*Stipa megapotamia* Spr. Montevideo." It is from Otto and determined by Sprengel. The fruit is about 5 mm. long.

Stipa latifolia Hack. & Arech. Anal. Mus. Nac. Buenos Aires 4: 183. f. 4. 1895. Not *S. latifolia* Rasp. 1825. "En peñascales de Independencia [Uruguay]." The type has been examined in the Hackel Herbarium.

URUGUAY: Montevideo, *Arechavaleta*.

28. *Stipa lachnophylla* Trin.

Stipa lachnophylla Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 2¹: 39. 1836. "V. sp. Chil." The type, in the Trinius Herbarium, is marked "Chili Cuming an Prescott 1832" and "(*Stipa Cumingiana* β)."

Stipa cumingiana Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 2¹: 40. 1836. "V. sp. Chil." The type, in the Trinius Herbarium, was collected by Cuming and sent to Trinius by Prescott in 1832.

Stipa cumingiana β *lachnophylla* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 29. 1842. Based on *S. lachnophylla* Trin.

CHILE: Salto de Conchali, *Reiche* 96. Santiago, *Philippi* 95, 544. Catapilco, *Philippi* 78.

29. *Stipa clarazii* Ball.

Stipa clarazii Ball, Journ. Linn. Soc. Bot. 21: 237. 1884. "Bahia Blanca (No. 21, M. Georges Claraz)." The type has not been examined.

URUGUAY: Montevideo, *Arechavaleta* 278.

ARGENTINA: Puerto Grande, *Stuckert* 15449. Sierra de la Ventana, *Dusén* 6035. Buenos Aires, *Parodi* 3975.

30. *Stipa longiglumis* Phil.

Stipa longiglumis Phil. Linnaea 33: 286. 1864. "Prope 'Llico' in parte litorali prov. Colchaguae ab orn. Landbeck lectum vidi." In the U. S. National Herbarium is a specimen from the Philippi Herbarium which appears to be a duplicate type. It is from Llico, no. 79, and is dated December, 1861, but the collector is not given.

31. *Stipa poeppigiana* Trin. & Rupr.

Stipa poeppigiana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 29. 1842. "Chile australis andina pr. Antuco (Pöppigl pro St. eminente Cav. missa)." The type, in the Trinius Herbarium, is labeled "Pl. Chil. III. 20 (46)" in addition to the other data.

Stipa julieti Phil. Anal. Univ. Chile 93: 719. 1896. "Ad flumen maullin in provincia Llanquihue legit orn. Dr. Carolus Juliet." The type, in the Philippi Herbarium, has been examined.

Stipa montana Phil. Anal. Univ. Chile 93: 723. 1896. "In Andibus provinciae Valdivia loco dicto Pirihoaico invenit Otto Philippi." The type, in the Philippi Herbarium, has been examined.

Stipa latifolia var. *grandiflora* Hack.; *Stuck.* Anal. Mus. Nac. Buenos Aires 21: 76. 1911. The type, *Stuckert* no. 17982, collected by Illin (no. 193) at Cholila, Chubut, Argentina, was examined in the Hackel Herbarium. The fruit is like that of *S. mucronata*, but is about 8 mm. long; the awn is about 4.5 cm. long; the blades about 8 mm. wide.

Resembling *S. neesiana*; fruit about 8 mm. long, sparingly villous, at least in lines, nearly to summit; crown rather indistinct, not constricted at base, the body gradually narrowed into the crown.

CHILE: Cordilleras bajas de Carico, *Reiche* 94 in 1897.

32. *Stipa curicoana* Phil.

Stipa curicoana Phil. Anal. Univ. Chile 93: 726. 1896. "In provincia Curicó [Chile] invenit Man. Vidal, 1892." In the U. S. National Herbarium is a photograph of the type in the Philippi Herbarium, and a fragment of the inflorescence. No other specimen has been seen.

33. *Stipa laxa* Desv.

Stipa laxa Desv. in Gay, Fl. Chil. 6: 283. 1853. "Chile (Cl. Gay)." Doctor Lecomte has kindly sent from the Paris Herbarium a fragment of the type, labeled "Chili (Gay)." It is a good match for *Hastings* 177.

CHILE: Santiago, *Hastings* 177.

34. *Stipa mucronata* H. B. K.

Colombia, Venezuela, Ecuador, Peru, Bolivia, Argentina, Chile. See page 223.

35. *Stipa tenuis* Phil.

Stipa tenuis Phil. Anal. Univ. Chile 36: 204. 1870. "Mendoza." A specimen of the type collection was examined at the Vienna Herbarium.

ARGENTINA: Puerto Martyn, Chubut, *Pennington* 60.

36. *Stipa hyalina* Nees.

Stipa hyalina Nees, Agrost. Bras. 378. 1829. "Habitat ad Monte Video (Sellow.—Vidi in Hb. Reg. Berol.)." The type, *Sellow* 636d, in the Berlin Herbarium, bears the name in Nees' script. In the U. S. National Herbarium are two sheets from the Berlin Herbarium marked "Brasilia. Sello." These may be from the type collection, and should be credited to Uruguay.

URUGUAY: Montevideo, *Sellow*; *Arechavaleta*.

ARGENTINA: Córdoba, *Stuckert* 12675, 12924, 16115; *Hieronimus* 278. San Teodoro, *Stuckert* 13666.

37. *Stipa juergensii* Hack.

Stipa juergensii Hack. Repert. Nov. Sp. Fedde 7: 314. 1909. "Brasilia, Rio Grande do Sul, Municipio Rio Pardo, Fazenda Soledade, 70 m s. m. leg. C. Jürgens, an. 1905." The type in the Hackel Herbarium is numbered G110.

BRAZIL: Rio Grande do Sul, *Jürgens*.

38. *Stipa trichocaulos* Phil.

Stipa trichocaulos Phil. Anal. Univ. Chile 93: 718. 1896. "In praedio meo San Juan (provinciae Valdiviae)." The type was examined in the Philippi Herbarium.

CHILE: Valdivia, *Philippi* 98. Peumo, *Claude Joseph* 1413. San Fernando, *Claude Joseph* 2340.

39. *Stipa papillosa* (Hack.) Hitchc.

Stipa tenuis var. *papillosa* Hack. in Stuck. Anal. Mus. Nac. Buenos Aires 21: 83. 1911. Of the six specimens cited the only one in the Hackel Herbarium is *Stuckert* no. 18996, which is the type. This was collected by Estrada at Capilla del Monte, Córdoba. The fruit is 7 mm. long.

ARGENTINA: Córdoba, *Stuckert* 19003 (fruit 9 mm. long), 18996.

40. *Stipa hackeli* Arech.

Stipa neesiana var. *ligularis* Griseb. Abh. Ges. Wiss. Göttingen 24: 298. 1879. Province of Entrerios. The type, *Lorentz* 1158, was examined in the Grisebach Herbarium.

Stipa hackeli Arech. Anal. Mus. Nac. Buenos Aires 4: 173. f. 2. 1895. "Cerro de Montevideo, cerca de la cumbre." In the Hackel Herbarium is a specimen, probably a part of the type, with the name in Arechavaleta's hand.

Oryzopsis napostaensis Speg. Anal. Mus. Nac. Montevideo 4: 15. 1901. (Stipeae Platenses). "In aridis australioribus prov. B. Aires inter Sierra de Curá-malal

et Río Negro." The type has not been examined, but the figure and full description identify the species. The terete, glabrous, minutely striated fruit, papillose at apex, is characteristic.

Stipa sublaevis Speg. Anal. Mus. Nac. Montevideo 4: 82. 1901. "Hab. In campis graminosis prope Mar del Plata * * * et Sierra Curá-malal * * *". The type has not been examined.

Stipa ligularis Speg. Anal. Mus. Nac. Montevideo 4: 91. f. 21. 1901. Based on *S. neesiana* var. *ligularis* Griseb.

Stipa capillifolia Hack. in Stuck. Anal. Mus. Nac. Buenos Aires 11: 95. 1904. "Stuckert: Herb. arg. no. 13,803 et no. 14,082." The two specimens cited, of which the first may be considered the type, are in the Hackel Herbarium, both from the Province of Córdoba.

Piptochaetium napostaense Hack.; Stuck. Anal. Mus. Nac. Buenos Aires 11: 103. 1904. Based on *Oryzopsis napostaensis* Speg.

URUGUAY: Montevideo, *Osten* 5648; *Arechavaleta* in 1894.

ARGENTINA: Andalgalá, *Jørgensen* 1111. Mendoza, *Gillies*. Pergamino, *Parodi* 80. Mercedea, *Parodi* 491. Choele-Choel, *Parodi* 2550. Córdoba, *Stuckert* 13803, 14082, 15223.

There is some diversity in the specimens referred to this species. The type of *S. hackeli* is more robust, the fruits are larger (about 1 cm.), and the awns are longer (the first section 5 to 6 cm.) The type of *S. capillifolia* is a slender plant, with fruits about 7 mm. long and the first section of the awn about 1.5 cm. long. The others are intermediate, but all have brown fruits densely pilose on the slender callus, smooth and striate on the cylindrical body, and papillose-scabrous on the rounded summit. Dr. L. R. Parodi, who has studied the species in the vicinity of Buenos Aires, considers *S. hackeli* and *Oryzopsis napostaensis* to be distinct species and sends the following field notes: "The first has a few-flowered inflorescence with the first glume 22 to 30 mm. long, the robust almost black fruit 11 to 12 mm. long; the second has an inflorescence with more spikelets, the first glume about 18 mm. long, and the light brown softer fruit 8 to 9 mm. long."

41. *Stipa duriuscula* Phil.

Stipa duriuscula Phil. Linnaea 33: 282. 1864. "In prov. Colchagua [Chile] ab orn. Landbeck lecta sunt." The type has been examined in the Philippi Herbarium.

Stipa hirta Phil. Linnaea 33: 283. 1864. "In colli prope Santiago inveni." The type has been examined in the Philippi Herbarium.

CHILE: Lampa, *Philippi* 103. Peumo, *Claude Joseph* 1428.

42. *Stipa contracta* Phil.

Stipa contracta Phil. Linnaea 33: 285. 1864. "E Colchagua [Chile] attulit orn. Landbeck." The type has been examined in the Philippi Herbarium. No other specimen has been seen.

43. *Stipa gilliesii* Hitchc., sp. nov.

Culms erect, glabrous, slender, 40 to 50 cm. tall; sheaths glabrous, minutely pubescent at the throat and on the margin; ligule obtuse, about 1 mm. long; blades loosely involute (only the culm leaves seen), glabrous beneath, scabrous-pubescent on the upper surface, 3 to 5 cm. long or the uppermost shorter; panicle narrow, rather loose, 15 to 30 cm. long, the axis glabrous, villous at the lower nodes, the branchlets scabrous on the angles, the pedicels mostly glabrous, the branches rather loosely appressed, the longer ones naked at the base; glumes equal, purple except the hyaline tip and margin, glabrous, broad, abruptly nar-

rowed to an acute point, 3 or faintly 5-nerved, about 1 cm. long; lemma 6 to 7 mm. long, the callus sharp, about 1 mm. long, villous-hispid, the body glabrous, slender, pale, villous about halfway up on one side, smooth below, minutely papillose toward summit, narrowed into a rather indistinct hispid-ciliate crown 0.3 mm. long; awn about 2.2 cm. long, twice-geniculate, the first segment 8 mm. long, villous with ascending hairs 1 mm. long, the second segment 4 mm. long, the third 1 cm. long.

Type in the U. S. National Herbarium, no. 993,517, collected at Mendoza, Argentina, by Gillies (no. 1825). The type is the only specimen seen.

44. *Stipa nutans* Hack.

Stipa nutans Hack. Repert. Nov. Sp. Fedde 7: 315. 1909. "Brasilia, Rio Grande do Sul, Municipio Rio Pardo, Fazenda Soledade (70 m s. m.), Dec., 1905, leg. C. Jürgens." The type has been examined in the Hackel Herbarium. BRAZIL: Rio Pardo, Rio Grande do Sul, Jürgens in 1905.

45. *Stipa macrathera* Phil.

Stipa fernandeziana Phil. Anal. Univ. Chile 48: 560. 1873. Not *S. fernandeziana* Steud. 1854. "Isla de Juan Fernandez." The type (*Philippi* 87) has been examined. It differs from *S. neesiana* in the slender flexuous terminal segment of the awn. The fruit is 10 mm. long, glabrous, except for a line of hairs on one side, and is roughened on the body.

Stipa macrathera Phil. Anal. Univ. Chile 93: 720. 1896. "In collibus de Renca dictis prope Santiago semel inveni." The type has been examined in the Philippi Herbarium.

No specimens besides the types have been seen.

46. *Stipa fernandeziana* (Trin. & Rupr.) Steud.

Stipa neesiana γ *fernandeziana* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 28. 1842. "Ins. Juan Fernandez (Prescott)." The type has been examined in the Trinius Herbarium.

Stipa fernandeziana Steud. Syn. Pl. Glum. 1: 124. 1854. Based on *S. neesiana* var. *fernandeziana* Trin. & Rupr.

URUGUAY: Montevideo, *Arechavaleta* 20. Without locality, *Lorentz* 485.

ARGENTINA: Puerto Grande, Córdoba, *Stuckert* 15449.

CHILE: Panamavida, *Holway* 211. Province Maule, *Philippi* 548. Juan Fernández, *Skottsberg* 19, 28; *Hastings* 242. San Rosendo, *Claude Joseph* 1943.

47. *Stipa barbinodis* Phil.

Stipa barbinodis Phil. Anal. Univ. Chile 93: 721. 1896. "Habitat in provincia Valdivia [Chile] (in praedio S. Juan, etc.)." The type was examined in the Philippi Herbarium. No other specimen has been seen.

48. *Stipa neesiana* Trin. & Rupr.

Stipa neesiana Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 27. 1842. "Monte Video (Sellow!)." This is *S. eminens* as described by Nees,³ but not *S. eminens* Cav. The type, in the Trinius Herbarium, has been examined. The fruit, including the callus (3 mm.), is 8 mm. long, glabrous above the callus except for a line of pubescence extending upward on the keel about half-way, the crown distinct, 1 mm. long, sharply toothed rather than hispid-ciliate, the

³ Agrost. Bras. 374. 1829.

body somewhat constricted below the crown, papillose, especially toward the crown; awn about 5 cm. long, scaberulous-hispidulous or nearly glabrous.

Stipa neesiana β *chilensis* Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 28. 1842. "Chile. Lindley." The type, in the Trinius Herbarium, is marked "Chile misit Lindley."

Stipa manicata Desv. in Gay, Fl. Chil. 6: 288. 1853. "En los peñascos de Santiago, Setiembre 1829 (Gay)." Dr. Lecomte has kindly sent me a fragment from the type specimen in the Paris Herbarium, collected "ad rupas, Santiago, September 1829 (Gay)," Chile. Glumes 10 and 12 mm. long, awn-pointed, scabrous on the keel; fruit 7.5 mm. long, the densely pubescent callus about 2 mm. long, the body somewhat fusiform, pubescent on the keel about halfway up, otherwise glabrous, papillose-roughened, especially toward the summit, the neck about 1 mm. long, purplish, not very distinct, not constricted below, ciliate at summit with hairs 1 mm. long; awn slender, twice-geniculate but the bend weak, the awn as a whole nearly straight, the first segment 12 mm. long, scabrous-pubescent, the second segment about 1 cm. long, scaberulous, the third segment 2.5 cm. long. The type of *S. manicata* differs from the type of *S. neesiana* in having longer hairs on the crown and a somewhat shorter weaker awn, but other specimens are intermediate.

Stipa longiflora Steud. Syn. Pl. Glum. 1: 124. 1854. "Urachne longiflora Steud. Hrbr. Bert. nr. 800." *Urachne longiflora* Steud. is listed⁴ as a nomen nudum and "Andropogon. nr. 800. Bert. Herb." is cited. A duplicate of this is in the U. S. National Herbarium.

Stipa trachysperma Phil. Linnaea 33: 284. 1864. "In collibus prope Santiago [Chile] inveni." The type has been examined in the Philippi Herbarium.

Stipa hispida Phil. Anal. Univ. Chile 93: 719. 1896. "Prope Valparaiso in praedio Curauma legi." The type, in the Philippi Herbarium, has been examined.

Stipa setigera glabrata Arech.; Speg. Anal. Mus. Nac. Montevideo 4: 97. 1901.

Stipa setigera hispidula Speg. Anal. Mus. Nac. Montevideo 4: 97. 1901. Foliage pubescent. Spegazzini describes here three forms of this variety, *pallida*, *purpurascens* and *versicolor*.

Stipa neesiana f. *contorta* Hack.; Stuck. Anal. Mus. Nac. Buenos Aires 11: 100. 1904. "Stuckert: Herb. arg. no. 12044." The type, in the Hackel Herbarium, has been examined.

Stipa neesiana var. *virescens* Hack.; Stuck. Anal. Mus. Nac. Buenos Aires 11: 100. 1904. "Stuckert: Herb. arg. no. 12064." The type, in the Hackel Herbarium, has been examined.

Stipa neesiana f. *depauperata* Hack.; Stuck. Anal. Mus. Nac. Buenos Aires 21: 78. 1911. "St[uckert] no. 19606. * * * Los Cocos Punilla, Argentina." The type, in the Hackel Herbarium, has been examined.

The species is related to *S. leucotricha* and *S. mucronata*, having a smooth cylindrical neck, differentiated from the body of the lemma. In habit it resembles *S. mucronata*, but the awns are more robust and longer (mostly 5 to 8 cm.). The fruiting lemma is 7 to 8 mm. long, including the slender callus (3 mm.). The body is glabrate above the callus or pubescent in lines for a short distance, the upper part being roughened with minute points, the crown distinct.

ECUADOR: Quito, *Holmgren* 537. La Rinconada, *Hitchcock* 20809.

PERU: Cuzco, *Hitchcock* 22502, 22510.

URUGUAY: Montevideo, *Arechavaleta* 37a, 500a.

BOLIVIA: Cochabamba, *Holway* 328; *Hitchcock* 22850. Sorata, *Rusby* 237.

⁴Steud. Nom. Bot. ed. 2. 2: 731. 1841.

ARGENTINA: Azul, *Osten* 237. Sierras del Tandiel, *Parodi* 47. Río Segundo, *Stuckert* 12032. Córdoba, *Stuckert* 3965, 11951; *Holway* 2020. Estancia San Teodoro, *Kneucker Gram. Exs.* 199; *Stuckert* 14064. Concepción, *Parodi* 2571. Escuela Santa Catalina, *Parodi* 324. Colonia Margarita, *Stuckert* 19229. Los Cocos, *Stuckert* 19606. Concordia, Entre Ríos, *Parodi* 3951.

CHILE: Santiago, *Claude Joseph* A149, 550; *Philippi* 599. Papudo, *Holway* 25. Constitución, *Holway* 134. Concepción, *Holway* 140. Viña del Mar, *Holway* 8. San Antonio, *Claude Joseph* 1774. Valparaíso, *Bertero* 800. Llico, *Philippi* 92. Zapillar, *Holway* 310.

49. *Stipa saltensis* Kuntze.

Stipa saltensis Kuntze, *Rev. Gen. Pl.* 3: 372. 1898. "Argentina: Alrededores del Nevado del Castillo, Pro. Salta (73 *Lorentz & Hieronymus*)."
A specimen of the type collection was examined in the Vienna Herbarium.

ARGENTINA: Salta, *Lorentz & Hieronymus* 73; *Fries* 720.

CHILE: "Chile-Bolivia," *Philippi* 151.

50. *Stipa annua* Mez.

Stipa annua Mez, *Repert. Nov. Sp. Fedde* 17: 204. 1921. "Peru, Berge bei Chosica (*Weberbauer*)."
The type has been examined in the Berlin Herbarium. No specimen except the type has been seen.

51. *Stipa filifolia* Nees.

Aristida megapotamica Spreng. *Syst. Veg.* 4: Cur. Post. 31. 1827. Not *Stipa megapotamia* Spreng.; *Trin.* 1830. "Rio grande. Sello." The description applies to a species of *Stipa* and not to a species of *Aristida*. The type, in the Berlin Herbarium, has been examined.

Stipa filifolia Nees, *Agrost. Bras.* 379. 1829. "Habitat ad Monte Video. (*Sellow*.—V. in *Herb. Reg. Berol.*)."
The type, in the Berlin Herbarium, *Sellow* 803d, bears the name in Nees' script.

URUGUAY: "Brasilia meridionalis," *Sellow*. Montevideo, *Arechavaleta*.

52. *Stipa brevipes* Desv.

Stipa brevipes Desv. in *Gay, Fl. Chil.* 6: 282. 1853. "Se halla en las provincias centrales de la República (*Gay*)."
Dr. Lecomte has kindly sent a fragment from the type in the Paris Herbarium. No other specimen has been seen.

53. *Stipa leptostachya* Griseb.

Stipa leptostachya Griseb. *Abh. Ges. Wiss. Göttingen* 24: 299. 1879. "S [alta]: Nevado del Castillo." The type *Lorentz & Hieronymus* 70, in the Grisebach Herbarium, has been examined.

ARGENTINA: Nevada del Castillo, Salta, *Lorentz & Hieronymus* 70.

54. *Stipa dasycarpa* Hitchc., sp. nov.

Culms erect, closely cespitose, glabrous, slender, 30 to 40 cm. tall; sheaths glabrous, puberulous at the throat; blades closely involute, glabrous beneath, puberulent on the upper surface, 8 to 15 cm. long, about 0.3 mm. thick when rolled; panicles narrow, 10 to 15 cm. long, the branches appressed or ascending, rather loosely flowered, the longer ones naked below; glumes equal, narrow, acuminate, purplish below, 3-nerved, 5 mm. long; lemma about 3 mm. long, the callus 0.5 mm. long, the body pale, loosely villous all over, narrowly fusiform;

awn about 2 cm. long, easily deciduous, slender, twice-geniculate, villous with appressed hairs on the first two segments, the first segment 5 mm. long, the second a little shorter, the third about 1 cm. long.

Type in the U. S. National Herbarium, no. 1,099,337, collected at Chiguana, Bolivia, altitude 3,700 meters, March 22, 1921, by Dr. E. Asplund (no. 6562). No specimens besides the type have been seen.

55. *Stipa violacea* Hitchc., sp. nov.

Culms erect, closely cespitose, glabrous, slender, 30 to 40 cm. tall; sheaths glabrous, a little villous at the throat; ligule about 0.5 mm. long; blades closely involute, glabrous, firm, erect, sharp-pointed, mostly less than 10 cm. long, about 0.5 mm. wide when rolled; panicles narrow, violet or purple, 5 to 10 cm. long, the branches erect or ascending, the axis, branches, and pedicels glabrous; glumes equal, rather broad, purple except the tips, abruptly narrowed to an acute point, rather firm, obscurely 3 to 5-nerved, 4 mm. long; lemma 3 mm. long, the callus 0.5 mm. long, the body brownish, villous all over, somewhat fusiform, the summit bearing an obscure crown 0.2 mm. long; awn early deciduous, twice-geniculate, scaberulous, 5 to 7 mm. long.

Type in the U. S. National Herbarium, no. 922,078, collected at Aconquija, Catamarca, Argentina, altitude 4,200 meters, April 12, 1907, by P. Jørgensen (no. 1763). No other specimens have been seen.

56. *Stipa litoralis* Phil.

Stipa litoralis Phil. Anal. Univ. Chile 93: 717. 1896. "In litore arenoso insulae Quiriquinae [Chile] inveni." There is a duplicate type in the U. S. National Herbarium. No other specimen has been seen.

57. *Stipa curviseta* Hitchc., sp. nov.

Plant perennial; culms erect or somewhat geniculate at base, glabrous, 30 to 60 cm. tall; sheaths glabrous, or the lower puberulous, villous at the throat, especially on the innovations, nearly glabrous on the culm; ligule thin, decurrent, 1 to 3 mm. long; blades involute, glabrous or sometimes scaberulous on the outer surface, scabrous-ciliate on the margin, scabrous pubescent on the upper surface, 10 to 20 cm. long, the culm blades shorter, about 1 mm. wide when rolled, rigidly sharp-pointed, the base with a bowed-out callus on each side; panicle pyramidal, nodding, loose, 15 to 20 cm. long, the axis glabrous, the branches in distant verticils, slender, flexuous, more or less pubescent or scabrous, naked below, spikelet-bearing in the upper half, the lowermost about 5, as much as 10 cm. long, the lower internode of axis as much as 10 cm. long; spikelets appressed and somewhat crowded along the branches, the lateral pedicels about 2 mm. long; glumes narrow, nearly equal, about 1.5 cm. long, purple with hyaline long-acuminate tips; lemma slender, terete, about 8 mm. long, the callus slender and sharp, about 3.5 mm. long, villous with appressed hairs, the body loosely villous with somewhat appressed short hairs, or finally glabrate, at first pale, later brownish, the obscure crown ciliate; awn 5 to 7 cm. long, early deciduous, twice-geniculate, the first segment about 1 cm. long, twisted, villous with ascending hairs about 2 mm. long, the second segment like the first but shorter and less villous, the third segment 3 to 5 cm. long, flexuous, angled, gradually less villous toward the scabrous tip.

Type in the U. S. National Herbarium, no. 1,099,338, collected at Uyuni, Andean region of Bolivia, altitude 3,700 meters, March 24, 1921, by E. Asplund (no. 6551).

Other specimens, all collected in the vicinity of the type locality, are: Atocha, *Asplund* 6547, 6550; Chiguana, *Asplund* 6554.

58. *Stipa stuckertii* Hack.

Stipa stuckertii Hack. in Stuck. Anal. Mus. Nac. Buenos Aires 21: 81. pl. 3. f. A. B. C. a-f. 1911. Collected at Quebrada de la Oyada, Estancia "Pampa de San Luis," Province Córdoba, Argentina (*Stuckert* no. 20737). The type has been examined in the Hackel Herbarium.

ARGENTINA: Córdoba, *Stuckert* 20737.

59. *Stipa juncoides* Speg.

Stipa juncoides Speg. Contr. Estud. Fl. Sierra Ventana 68. 1896. Described from Sierra Ventana, Province of Buenos Aires, Argentina. The type has not been examined.

URUGUAY: *Arechavaleta*.

ARGENTINA: Sierras del Tandil, *Parodi* 3144. Sierra de la Ventana, *Dusén*, 1904.

60. *Stipa tenuiculmis* Hack.

Stipa tenuiculmis Hack. Verh. Zool. Bot. Gess. Wien 1915: 75. 1915. "Rio Grande do Sul: in campis prope Lagão. Município Soledade, C. Jürgens." The type was examined in the Hackel Herbarium.

BRAZIL: Soledad, Rio Grande do Sul, *Jürgens* in 1910.

61. *Stipa rupestris* Phil.

Stipa rupestris Phil. Anal. Mus. Nac. Chile Bot. 8: 81. 1891. "In rupibus inter Amincha et Paroma c. 3800 m. s. m. reperta." The type, collected by Philippi in Province Tarapacá, has been examined.

CHILE: Province Tarapacá, *Philippi* 108.

62. *Stipa featherstonei* Hitchc.

Stipa featherstonei Hitchc. Proc. Biol. Soc. Washington 36: 196. 1923. "Type in the herbarium of the Field Museum of Natural History, No. 517, 331 (in part), collected on upland slope, about 4,500 meters altitude, Río Blanco, Peru, May 8 to 19, 1922, by Macbride and Featherstone (No. 803a)." No other specimen seen.

63. *Stipa caudata* Trin.

Stipa caudata Trin. Mém. Acad. St. Pétersb. VI. Math. Phys. Nat. 1: 75. 1830. "V. spp. Chilens." The type, in the Trinius Herbarium, sent to Trinius by Lindley, bears no other data. No other specimen has been seen.

64. *Stipa macbridei* Hitchc.

Stipa macbridei Hitchc. Proc. Biol. Soc. Washington 36: 197. 1923. "Type in the herbarium of the Field Museum of Natural History, No. 561,986, collected on disintegrating rock slopes, at about 2,500 meters altitude, Matucana, Peru, April 12 to May 3, 1923, by Macbride and Featherstone (No. 452)."

PERU: Matucana, *Macbride & Featherstone* 452. Ambo, *Macbride* 3176.

65. *Stipa flexibarbata* Mez.

Stipa flexibarbata Mez, Repert. Nov. Sp. Fedde 17: 208. 1921. "Argentina, Sierra Achala de Cordoba (Hieronymus)." The type, in the Berlin Herbarium, has been examined. No other specimen has been seen.

66. *Stipa leucogluma* Steud.

Stipa leucogluma Steud. Syn. Pl. Glum. 1: 420. 1854. "R. A. Philippi pl. Chil. nr. 312. Valdivia." A specimen of the type collection has been examined

in the herbarium of the St. Petersburg Botanic Garden. A fragment is in the U. S. National Herbarium. No other specimen has been seen.

67. *Stipa filiculmis* Del.

Stipa filiculmis Del. Ind. Sem. Hort. Monsp. 7. 1849; Ann. Sci. Nat. III. 12: 367. 1849. Described from plants cultivated in the Botanic Garden at Montpellier. The type has not been examined.

The blades are filiform, as in *S. filifolia*, but the panicle is loose and few-flowered.
URUGUAY: Montevideo, *Arechavaleta* 213.
ARGENTINA: San Francisco, *Parodi* 991.

68. *Stipa hypogona* Hack.

Stipa hypogona Hack.; Stuckert, Anal. Mus. Nac. Buenos Aires 21: 73. 1911. "Stuckert, Herb. Arg. no. 17,397 * * * Estación Tornquist, F. C. S. Prov. Buenos Aires * * * Mario Estrada." The type in the Hackel Herbarium.

ARGENTINA: General Roca, *Fischer* 47. Bahía Blanca, *Clary*. Estación Tornquist, *Estrada* (*Stuckert* 17397). Cacheuta, *Spegazzini* 2391, 2393. Colonia Alvear, *Parodi* 4844.

CHILE: Valdivia, *Philippi* 80.

69. *Stipa curamalalensis* Speg.

Stipa curamalalensis Speg. Anal. Mus. Nac. Montevideo 4: 160. f. 49. 1901. "Ad basin montis Curámatal grande."

Stipa tenuissima curamalalensis Hack.; Stuck. Anal. Mus. Nac. Buenos Aires 21: 83. 1911. Based on *S. curamalalensis* Speg.

ARGENTINA: Balcarce, *Hauman* 5761.

70. *Stipa breviculmis* Hitchc., sp. nov.

Culms erect, closely cespitose, slender, glabrous, 10 to 20 cm. tall; sheaths glabrous, broader at summit than base of rolled blade, the throat glabrous; ligule firm, ovate, less than 1 mm. long; blades closely involute, capillary, stiff, more or less flexuous, scabrous, 5 to 10 cm. long, about 0.3 mm. thick when rolled; panicles narrow, 5 to 10 cm. long, the branches appressed, few-flowered, the axis, branches, and pedicels (about 2 mm. long), strongly scabrous; glumes 7 to 8 mm. long, subequal, purplish, 3-nerved, acuminate, awn-tipped, the nerves scabrous; lemma about 3.5 mm. long, the callus sharp, nearly 1 mm. long, hispidulous with white hairs, the body somewhat flattened, glabrous and shining, oblong, nearly 1 mm. wide, abruptly narrowed and asymmetric at summit; awn slender, about 2 cm. long, slightly twisted and obscurely twice-geniculate, scaberulous.

Type in the U. S. National Herbarium, no. 1,163,388, collected at Concepción, Chile, by R. A. Philippi (no. 106). Besides the type there is a specimen from Province Maule, *Philippi* 547.

71. *Stipa obtusa* (Nees & Mey.) Hitchc.

Piptatherum obtusum Nees & Mey. Act. Acad. Caes. Leop. Carol. 19: Suppl. 1: 18. 1841 (advance separate), 150. 1843. Arequipa, Meyen in 1831.

Urachne obtusa Trin. & Rupr. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5¹: 22. 1842. Based on *Piptatherum obtusum* Nees & Mey.

Stipa boliviensis Hack. Repert. Nov. Sp. Fedde 11: 21. 1912. "Bolivia: In planitie alta prope La Paz (alt. 4100 m s. m.), Mart. 1910, leg. Dr. O. Buchtien no. 2489." The type has been examined in the Hackel Herbarium.

BOLIVIA: La Paz, *Buchtien* 2489. Palca, *Pflanz* 2539.

72. *Stipa rigidiseta* (Pilger) Hitchc.

Oryzopsis rigidiseta Pilger, Bot. Jahrb. Engler 56: Beibl. 123: 26. 1920. "Peru: Depart. Puno, Azangaro; (Weberbauer n. 475.—Februar 1902)." Dr. Pilger has kindly contributed a part of the type to the U. S. National Herbarium. No other specimen has been seen.

73. *Stipa peruviana* Hitchc., sp. nov.

This species is allied to *S. boliviensis* Hack., but has larger fruits and longer awns. In the U. S. National Herbarium are fragments of Lechler's no. 1735, one from the Grisebach Herbarium and one from the Vienna Herbarium. This appears to be an undescribed species. The description appended is taken from the inflorescence only, but should identify the species. Steudel applied a name⁵ to this, but gave no description.

Panicle narrow, the branches appressed, this and the axis and pedicels (the shorter ones 1 mm. long) puberulous or scabrous-puberulous; glumes somewhat unequal, 4 to 5 mm. long, purplish, rather firm, broad, rounded or acutish at apex, obscurely nerved, glabrous; lemma 4 mm. long, the callus sharp, about 0.5 mm. long, the body pale, fusiform, glabrous for the most part, sparingly pilose toward summit and along the ventral face; awn not twisted, falcate, scabrous or scabrous-pubescent, 1 to 2 cm. long, the base gradually widened and as wide as the summit of the lemma.

Type in the U. S. National Herbarium, no. 1,163,387, collected in Peru by Lechler (no. 1735). No other specimen has been seen.

74. *Stipa venusta* Phil.

Stipa venusta Phil. Anal. Mus. Nac. Chile Bot. 8: 81. 1891. "De Socaire allata," collected by Philippi in Tarapacá. The type was examined in the Philippi Herbarium.

CHILE: Atacama Desert, Reiche 9 in 1901. Socaire in Desierto Atacama Philippi.

75. *Stipa polyclada* Hack.

Stipa polyclada Hack.; Stuck. Anal. Mus. Nac. Buenos Aires 21: 80. 1911. The name appeared earlier without description.⁶ The specimen in the Hackel Herbarium with this name is Stuckert 17118. Stuckert cites Schickendantz 315, Stuckert 17118 and 17615. Stuckert's no. 17118, which may be accepted as the type, is from "Quebrada del río de oro, Cerro de minas, Sierra de Ulapes, Dep. San Martín, Prov. Rioja."

ARGENTINA: San Martín, Kneucker Gram. Exs. 681; Schickendantz 315. Andalgalá, Jörgensen 1707. Catamarca, Estrada (Stuckert 17615).

BOLIVIA: Uyuni, Asplund 6563.

76. *Stipa hirtifolia* Hitchc., sp. nov.

Culms erect, caespitose, slightly scaberulous, 30 to 50 cm. tall; sheaths of the lower leaves, especially of the innovations, puberulent, the upper glabrate; ligule of the culm leaves about 1 mm. long, of the innovations very short; blades flat or loosely involute, hispid or villous, 5 to 10 cm. long, as much as 2 mm. wide; panicle narrow, rather loose, about 8 cm. long, the branches ascending, very scabrous or scabrous-pubescent; glumes subequal, rather broad, gradually acuminate to a slender point, purplish below, strongly 3-nerved, scaberulous on the keel, about 9 mm. long; lemma about 4 mm. long, the callus less than 1 mm.

⁵ Lechler, Berb. Amer. Austr. 56. 1857.

⁶ Allg. Bot. Zeitschr. 14: 77. 1908.

long, broad, pilose, the hairs extending over the lower third of the body, pale, the body oblong, somewhat compressed, glabrous and shining, pale, abruptly narrowed and asymmetric at summit, over 1 mm. wide; awn nearly straight, twisted below, obscurely geniculate, about 2 cm. long, pilose at base, scabrous-pubescent and finally scaberulous toward tip.

Type in the U. S. National Herbarium, no. 825,118, collected at Santiago, Chile, by R. A. Philippi. No other specimen has been seen.

77. *Stipa hirtiflora* Hack.

Stipa hirtiflora Hack. in Dusén, Ark. för Bot. 7: 5. pl. 3. 4. 1908. "In valle rivuli Arroyo Pelque." The type, in the Hackel Herbarium, is Dusén 5640, Territory of Santa Cruz, Patagonia.

ARGENTINA: Santa Cruz, Dusén 5640. Lago Argentino (Santa Cruz), Dusén in 1905.

78. *Stipa ibarrensii* H. B. K.

Stipa ibarrensii H. B. K. Nov. Gen. & Sp. 1: 125. 1816. "Crescit ad muros urbis Quitensis, Villa de Ibarra." Dr. H. Lecomte has kindly sent a spikelet from the type specimen in the Paris Herbarium, labeled in Bonpland's script, "prope urbem Ibarra."

ECUADOR: Quito, Holway 907; Rose 24066. Riobamba, Mille 254. Cotopaxi, Sodiro in 1890. Ambato, Hitchcock 21709, 21716, 21719, 21745. Baños, Hitchcock 21913. Malchingui to Pomasqui, Hitchcock 20898.

79. *Stipa sellowiana* Nees.

Stipa sellowiana Nees; Trin. Mém. Acad. St. Pétersb. VI. Sci. Nat. 5^t: 38. 1842. "Brasilia merid. (Sellow!)." The type, in the Trinius Herbarium, has been examined. A specimen in the Berlin Herbarium is the same and bears the name in Nees' handwriting.

This species has the habit of *S. neesiana*, but the fruit is villous all over and the callus is shorter. There is no cylindrical neck.

BRAZIL: Paraná, Dusén 1136a, 13369. Jordão, Holway 1803.

80. *Stipa arcuata* Fries.

Stipa arcuata R. E. Fries, Nov. Act. Soc. Sci. Upsal. IV. 1: 172. 1905. "Prov. Jujuy: Moreno * * * Fr. 944." A specimen of the type collection is in the U. S. National Herbarium.

ARGENTINA: Jujuy, Fries 944.

81. *Stipa paniculata* Hitchc., sp. nov.

Culms erect, stout, glabrous, puberulent below the nodes, 1 to 1.5 meters tall; sheaths glabrous, slightly hispidulous at the throat; ligule truncate, about 1 mm. long; blades flat, glabrous beneath, scaberulous on upper surface, as much as 50 cm. long and 6 mm. wide, tapering to a slender point; panicle large and open, as much as 50 cm. long, the branches in rather distant fascicles, spreading, naked below, spikelet-bearing toward the extremity, as much as 15 cm. long, glabrous below, scaberulous toward the end, the axis glabrous, the lower node pubescent; spikelets pale, appressed along the branches, the pedicels scabrous-pubescent; glumes subequal, narrow, thin, acuminate, 3-nerved, 11 to 12 mm. long; lemma 8 to 9 mm. long, the callus sharp, pilose, 1 mm. long, the body pale, nearly terete, villous all over but sparsely so toward the somewhat narrowed hispid-ciliate summit; awn twice-geniculate, slightly twisted below, scaberulous, about 4 cm. long.

Type in the U. S. National Herbarium, no. 921,934, collected at El Candado, Province of Catamarca, Argentina, by P. Jörgensen (no. 1393). The type is the only specimen seen.

82. *Stipa inconspicua* Presl.

Stipa inconspicua Presl, Rel. Haenk. 1: 227. 1830. "Hab. in Peruvia?" The type, in the German University at Prague, bears no data to indicate its origin.

Nassella caespitosa Griseb. Abh. Ges. Wiss. Göttingen 19: 258. 1874. "Tucuman, in pascuis alpinis S. de Aconquija, supra Cienega." The type, in the Grisebach Herbarium at Göttingen, is *Lorentz & Hieronymus* 78.

Stipa caespitosa Speg. Anal. Mus. Nac. Montevideo 4: 117. f. 31. 1901. Based on *Nassella caespitosa* Griseb.

Stipa sodiroana Hack. Oesterr. Bot. Zeitschr. 52: 10. 1902. "Quito, in muris vetustis, rara; leg. Sodiro."

Nassella flaccidula Hack. in Repert. Nov. Sp. Fedde 6: 154. 1908. "Bolivia: La Paz, Bergabhänge, 3700 m, 18. I. 1907, leg. Dr. O. Buchtien (no. 157 ex p.)." The type has been examined.

ECUADOR: Riobamba, *Mille* 258. Between La Toma and Loja, *Hitchcock* 21381. Between Loja and San Lucas, *Hitchcock* 21455. Between Oña and Cuenca, *Hitchcock* 21605.

PERU: Obrajillo, *Wilkes Expl. Exped. Baños, Wilkes Expl. Exped.* Rio Blanco, *Macbride & Featherstone* 648. La Quinhua, *Hitchcock* 22258; *Macbride & Featherstone* 2033. Gollarisquisca, *Hitchcock* 22292, 22295, 22311. Cuzco, *Hitchcock* 22452, 22514. Juliaca, Dept. Puno, alt. 4000 meters, *Harlan* in 1914.

BOLIVIA: Lake Titicaca, *Buchtien* 2550; *Asplund* 6555, 6558. La Paz, *Buchtien* 855; *Holway* 461, 600. Pongo, *Hitchcock* 22771. Sorata, *Holway* 508. Unduavi, *Buchtien* 4257. Pasña, *Buchtien* 1188, 1189. Cochabamba, *Holway* 398; *Hitchcock* 22800, 22833, 22854. Atocha, *Hitchcock* 22880. Oro Ingenio, *Hitchcock* 22926. Ingenio de Oro, *Rusby* 247. Oruro, *Rose* 18925. Chiguana, *Asplund* 6553.

ARGENTINA: Without locality, *Lorentz & Hieronymus* 74.

83. *Stipa airoides* Ekman.

Stipa airoides Ekman, Ark. för Bot. 11⁴: 31. pl. 4. f. 2. 1912. Collected by Ekman in Misiones, Argentina, "prope 'La Granja' praedium, * * n. 688." A specimen of the type collection is in the U. S. National Herbarium.

ARGENTINA: Posadas, *Ekman* 688.

84. *Stipa illimanica* Hack.

Stipa illimanica Hack. Repert. Nov. Sp. Fedde 11: 22. 1912. "Bolivia: in declivibus montis Illimani prope Cotaño, 2450 m * * * Buchtien (no. 3134)." The type has been examined in the Hackel Herbarium.

BOLIVIA: Cotaña, *Buchtien* 3134.

85. *Stipa holwayi* Hitchc., sp. nov.

Culms erect, glabrous, about 4-noded, 60 to 80 cm. tall; sheaths glabrous, sparsely villous at the throat; ligule acute, 1 to 2 mm. long on the culm-leaves, shorter on the innovations; blades flat or loosely involute, glabrous beneath, scabrous-puberulent on the upper surface, 20 to 40 cm. long, 1 to 3 mm. wide; panicle rather open, 10 to 20 cm. long, the axis glabrous, with long internodes between the clusters of slender spreading scabrous branches; spikelets pale, crowded toward the upper part of the branches; glumes somewhat unequal, narrow, acuminate, thin, glabrous, obscurely 3-nerved, about 1 cm. long; lemma 5 to 6 mm. long, the callus sharp, slender, over 1 mm. long, appressed-pubescent, the body finally dark gray, narrow, somewhat fusiform, appressed-villous all over, the upper hairs as much as 1.5 mm. long, the summit obscurely crowned; awn 3.5 to 4.5 cm. long, rather easily deciduous, twice-geniculate, twisted and scabrous-pubescent below, the first and second segments each about 8 mm. long, the third segment, 2 to 3 cm., very slender, somewhat flexuous.

Type in the U. S. National Herbarium, no. 1,108,419, collected at Cochabamba, Bolivia, March 8, 1920, by E. W. D. and Mary M. Holway (no. 380).

The only other specimen seen was collected at Challapata, Bolivia, altitude 3,900 meters, March 31, 1921, by Dr. E. Asplund (no. 6546).

86. *Stipa disticha* Hitchc., sp. nov.

Culms erect or nearly so, stout, rigid, woody, glabrous, 20 to 40 cm. tall, bearing stiffly appressed branches from the middle and upper nodes, the lower part clothed with overlapping sheaths, the blades having fallen, the upper bearing closely distichous leaves; sheaths closely overlapping, glabrous, striate, with a few stiff deciduous hairs at throat; ligule a short truncate membrane about 0.5 mm. long; blades flat or loosely involute, ascending, stiff, glabrous beneath, puberulent and sulcate on the upper surface, sharp-pointed, mostly 2 to 6 cm. long, 1 to 3 mm. wide; panicle narrow, compact, about 10 cm. long, the branches appressed, the axis, branches, and pedicels scabrous; glumes subequal, narrow, pale and hyaline, acuminate or awn-pointed, 3-nerved, scaberulous, 7 to 8 mm. long, lemma 4 mm. long, the callus 0.5 mm. long, the body villous all over, grayish, narrowed toward the summit; awn loosely twisted and scaberulous below, 1.5 to 2 cm. long, the first bend sometimes obscure.

Type in the U. S. National Herbarium, no. 1,060,373, collected in the closed zone on San Gallan Island, Peru, altitude about 350 meters, November 27, 1919, by Robert Cushman Murphy (no. 3478). The type is the only specimen seen.

87. *Stipa brachychaeta* Godr.

Stipa brachychaeta Godr. Mem. Acad. Montpellier 1: 450. 1853. "Patria ignota." The article is on the "Florula Juvenalis seu Enumeratio et Descriptio Plantarum à seminibus exoticis inter lanas allatis enatarum in campestribus Portus Juvenalis, propè Monspelium." I have not seen the type, but the description applies to the Argentine specimens which Professor Hackel has referred to that species. It differs from *S. clandestina* in having involute blades and somewhat smaller fruit and smaller awns.

Stipa bertrandi Phil. Linnaea 33: 283. 1864. "Ornat. Bertrand, horticultor intelligentissimus, hanc Stipam in radice Andium prope Santiago lectam pro pabulo colit." The type has been examined in the Philippi Herbarium. This and the Chilean specimens cited below under the distribution are taller and stouter, with somewhat more compact panicle, somewhat larger spikelets and less villous fruit. They may represent a distinct species.

Stipa lorentziana Griseb. Abh. Ges. Wiss. Göttingen (Symb. Fl. Arg.) 24: 298. 1879. "C [Province Córdoba]: pr. Córdoba." The type, in the Grisebach Herbarium at Göttingen, has been examined.

Stipa amphicarpa Phil. Anal. Univ. Chile 93: 726. 1896. "In Araucania prope Angol [Chile]." The type was examined in the Philippi Herbarium.

ARGENTINA: Colonia Ruiz Videla, Río Segundo, *Kneucker Gram. Exs.* 371; *Stuckert* 62. Estancia San Teodoro, Córdoba, *Kneucker Gram. Exs.* 371a. Capilla del Monte, Córdoba, *Stuckert* 18992. Buenos Aires, *Lillo* 8014. Córdoba, *Stuckert* 10171, 11710, 13655. La Plata, *Parodi* 58. El Caudada, *Jørgensen* 1391.

CHILE: Santiago, *Philippi*; *Claude Joseph* 1100, 2342. San Antonio, *Claude Joseph* 1770.

88. *Stipa calamagrostis* (L.) Wahl.

Agrostis calamagrostis L. Syst. Nat. ed. 10. 2: 872. 1759. Described from Europe.

Stipa calamagrostis Wahl. Veg. Helv. Sept. 23. 1813. Based on *Agrostis calamagrostis* L.

Stipa (Lasiagrostis) longifolia Phil. Anal. Univ. Chile 93: 725. 1896. "Exstat in herbario specimen a Cl. Gay prope Quillota [Chile], 1831, lectum sub nr. 173." The only specimen in the Philippi collection under this name is from Quillota, but the collector and date are not given. It probably is the type.

This species is probably introduced.

89. *Stipa pittieri* Hitchc., sp. nov.

Culms somewhat geniculate at the rather slender base, loosely cespitose or single, glabrous, about 4-noded, 60 to 100 cm. tall; sheaths glabrous, pubescent at the throat and hispidulous on the collar; ligule truncate, as much as 1 mm. long on the uppermost leaf, very short on the lower; blades flat, rather lax, sparsely hispidulous on both surfaces, 15 to 25 cm. long, 2 to 3 mm. wide; panicle narrow, loose, 15 to 25 cm. long, the axis scaberulous, the branches slender, scabrous, ascending or spreading, as much as 10 cm. long, fascicled, the longer ones naked below; glumes subequal, narrow, pale, rather thin, acuminate, 3-nerved, about 7 mm. long; lemma about 6 mm. long, the callus sharp, villous, pubescent, 1 mm. long, the body pale, somewhat fusiform, rather sparsely villous all over with short hairs, the obscure crown ciliate; awn twice-geniculate, loosely twisted below, scabrous, about 2 cm. long.

Type in the U. S. National Herbarium, no. 531,634, collected below Pitaió, Río Palo Basin, Tierra Adentro, State of Cauca, Colombia, altitude 2,400 meters, February, 1906, by H. Pittier (no. 1438).

The only other specimen seen was collected at Las Escaleretas, Moras Valley, Río Paez Basin, Tierra Adentro, altitude 2,500 to 3,000 meters, Pittier 1334.

LIST OF NEW SPECIES AND NEW NAMES

	Page
<i>Stipa argentea</i> Hitchc., sp. nov.....	273
<i>Stipa brachyphylla</i> Hitchc., sp. nov.....	275
<i>Stipa breviculmis</i> Hitchc., sp. nov.....	284
<i>Stipa capilliseta</i> Hitchc., sp. nov.....	271
<i>Stipa curviseta</i> Hitchc., sp. nov.....	282
<i>Stipa dasycarpa</i> Hitchc., sp. nov.....	281
<i>Stipa disticha</i> Hitchc., sp. nov.....	288
<i>Stipa dusenii</i> Hitchc., sp. nov.....	271
<i>Stipa gilliesii</i> Hitchc., sp. nov.....	278
<i>Stipa hirtifolia</i> Hitchc., sp. nov.....	285
<i>Stipa holwayi</i> Hitchc., sp. nov.....	287
<i>Stipa karsteni</i> Hitchc., sp. nov.....	274
<i>Stipa lenta</i> Hitchc., sp. nov.....	274
<i>Stipa milleana</i> Hitchc., sp. nov.....	269
<i>Stipa nardoides</i> (Phil.) Hack.....	271
<i>Danthonia nardoides</i> Phil.	
<i>Stipa obtusa</i> (Nees and Mey.) Hitchc.....	284
<i>Piptatherum obtusum</i> Nees and Mey.	
<i>Stipa paniculata</i> Hitchc., sp. nov.....	286
<i>Stipa papillosa</i> (Hack.) Hitchc.....	277
<i>Stipa tenuis papillosa</i> Hack.	
<i>Stipa peruviana</i> Hitchc., sp. nov.....	285
<i>Stipa pittieri</i> Hitchc., sp. nov.....	289
<i>Stipa rigidiseta</i> (Pilger) Hitchc.....	285
<i>Oryzopsis rigidiseta</i> Pilger.	
<i>Stipa rosea</i> Hitchc., sp. nov.....	272
<i>Stipa violacea</i> Hitchc., sp. nov.....	282