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BOTANY.—*The identification of Raddi's Grasses.*¹ AGNES CHASE,
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One of the earliest works treating of the grasses of America is the *Agrostografia Brasiliensis sive Enumeratio Plantarum ad familias naturales Graminum et ciperoidarum spectantium, quas in Brasilia collegit et descripsit* [by] Josephus Raddius, published at Lucca, Italy, in 1823. This little book of 58 pages and one plate is exceedingly rare. In it are described 26 species of Cyperaceae (sedges) and 65 species of Poaceae (grasses). Of the latter five genera and 35 species are proposed as new. A few of these had been described earlier by Bertoloni in a paper in *Opusculi scientifici . . . di Bologna* in 1819. Raddi's work and the specimens on which it is based are of great nomenclatorial importance to agrostology.

Giuseppe Raddi was born in Florence, Italy, February 9, 1770. In 1817, when the Austrian emperor seized the opportunity to send a scientific expedition to Brazil with the escort of the Archduchess Leopoldine on her voyage to Brazil to marry the heir apparent to the Brazilian throne, the Grand Duke of Tuscany sent Raddi to join the expedition. Raddi spent two years in Brazil in the vicinity of Rio de Janeiro. Presumably his work was chiefly that of securing seeds and living plants for the botanic gardens of Tuscany. He published three books based on his work in Brazil, *Synopsis Filicum brasiliensium*, 1819 (19 pages and 2 plates); *Agrostografia brasiliensis*, 1823; and *Plantarum brasiliensium nova genera et species novae vel minus cognitae. Pars. I. Filices*, 1825 (101 pages and 84 plates). Part I is the only one of the projected work ever published.

Raddi was later sent to Egypt and died at Rhodes on his return in 1829.

¹ Received March 9, 1923.

A set of Raddi's Brazilian grasses appears to have been given to the Museum at Florence but his own set is preserved in the University in Pisa.

In May, 1922, I visited the Museo e Laboratorio di Botanica, Florence, and the Istituto ed Orto Botanico della R. Università in Pisa, for the purpose of studying these grasses. I took photographs of all Raddi's own species which I found in Pisa. Six I was not able to find. In the Pisa herbarium (and in Florence also) the visitor does not search the herbarium himself, he asks for the genera wanted and the packages are brought by an attendant. The Raddi grasses are distributed in the herbarium and it is possible that the missing specimens were distributed in genera I failed to guess.

The Raddi grasses in Pisa are unusually ample and well-prepared. They are mounted on the third page of a folder of rather heavy paper. The name is written on the outside of the folder (which could not be made to show in the photograph), and in most of the specimens there is a ticket bearing the name, usually in Raddi's hand, on the page with the specimen. There are no data on the tickets or on the folder, except that on the tickets that are not in Raddi's hand is written "Brasile."

In the Florence Herbarium I found several specimens of *Paspalum* with data on the labels. Among some undetermined grasses that Dr. Pampanini asked me to name were sixteen specimens without names or data other than "In Brasilia legit Cl. Raddi." Later I found a few Raddi specimens in the Delessert Herbarium and in the herbarium of the British Museum.

The following list is based on the Pisa specimens, those in the other herbaria are referred to only when they add some information, or when they differ from the Pisa specimens.

The species (beginning with the sedges) are numbered consecutively throughout the book. These numbers are used in the following list. Except in a few cases, only Raddi's own species are given.

ANNOTATED LIST OF RADDI'S SPECIES

RETTBERGIA, a new genus including one species

27. RETTBERGIA BAMBUSIOIDES. *pl. 1. f. 1.* "Circa verticem Montis Corcovado." The specimen is a single leafy branch with a small rather dense panicle. This is *Chusquea bambusioides* (Raddi) Hack. Hackel² refers *C. gaudichaudii* Kunth to this species. Kunth's plate

² Denkschr. Akad. Wiss. Math. Naturw. (Wien) 79: 81. 1908.

and description agree well with the photograph and notes taken of Raddi's specimen.

29. *OLYRA PUBESCENS*. "In montosis ubique in Provincia Rio Janeiro." There are two specimens of this, each consisting of a leafy branch with a panicle. The sheaths and blades are puberulent; otherwise the specimens are like *O. latifolia* L. Doell reduces it to a variety of that species, *O. latifolia* var. *pubescens* (Raddi) Doell. It is scarcely worthy of varietal rank. A specimen of typical *O. latifolia* L. is labeled "*Olyra pubescens* var." in Raddi's script. This is evidently the form referred to as having glabrous blades and sheaths. Nees³ cites this as "*Olyra pubescens* var. *glabra* Raddi" under *Olyra scabra* Nees as a doubtful synonym.

In the Delessert Herbarium a specimen labeled "*Olyra pubescens* Raddi. Bresil: Raddi," but not in Raddi's script, is the same as *O. ciliatifolia* Raddi (no. 31).

30. *OLYRA GLABERRIMA*. "In Monte . . . Corcovado." The specimen consists of the summit of a culm with three leaves and an immature panicle. The blades are very large, the largest being 26.5 cm. long and 5.6 cm. wide, short-petioled and with the base very unsymmetrical. The immature fertile lemma is densely bearded at the base and slightly at the summit with short thick hairs. *Olyra semiovata* Trin.,⁴ "Brasil. (Langsdorff)," belongs to this species. Trinius's description applies well to Raddi's specimen, and a fragment from the Trinius Herbarium deposited in the United States National Herbarium shows an immature pistillate spikelet that agrees perfectly with that observed in the Raddi specimen. Raddi's description, "Corolla laevigata, straminea, coriaceo-indurata" is misleading. The lemma and palea are yellow (being very immature, as is the immature one from Trinius's specimen), but the dense pubescence at the base is to be seen by lifting up the sterile lemma. This characteristic fruit is well shown in Trinius's drawing of *O. semiovata*.⁵ This species is well represented by Jardim Botânico do Rio de Janeiro no. 402 (without data other than Brazil) and *Ule* 979, "Pr. St. Catharina, Brazil."

31. *OLYRA CILIATIFOLIA*. "In saltibus montosis, et sepibus prope Rio-Janeiro, nec non in Montibus estrell." The specimen consists of two culms with immature panicles. The fruit shows the loose pubescence characteristic of the species as represented by *Hitchcock* 10133,

³ Agrost. Bras. 307. 1829.

⁴ Gram. Pan. 249. 1826.

⁵ Trin. Gram. Icon. 3: 347. 1836.

Trinidad; *Lindman* A 2597, and *Glaziou* 14397, Brazil; *Hassler* 12444, 13021, and *Rojas* 3071, Paraguay; and *Ekman* 675, Argentina. The blades of the Raddi specimen are shorter in proportion to their width than common, as in *Hassler* 13021. In *Grasses of the West Indies*⁶ the key is misleading in that the fruit of *Olyra ciliatifolia* is said to be "clothed with thick silky hairs at base and summit." The fruit is loosely pubescent throughout.

32. *OLYRA FLORIBUNDA*. "Ad radicem Montis Corcovado." The specimen consists of a tuft of five flowering culms and two sterile ones. Raddi cites "*Raddia brasiliensis*. Bert. Opusc. Scientif. di Bologna 1819. T. III p. 40." Bertoloni's detailed description agrees in every way with Raddi's specimen and was undoubtedly drawn up from a duplicate. (There seems to have been abundant material of this collection; there were two full sheets of it among the unidentified grasses in the herbarium at Florence, as well as a specimen in the Delessert Herbarium.) The distinguishing generic characters given are the distinct staminate and pistillate inflorescences. Bertoloni states that the generic name is given as a just tribute to Raddi and that the specific name commemorates his courageous voyage to Brazil. But Raddi declines the honor conferred on him and renames the species *Olyra floribunda*. He describes the distinct staminate and pistillate inflorescences but states that the style and stigmas are as in the three preceding species, and that they agree with the generic characters assigned by Swartz to *Olyra*. We recognize *Raddia* as a distinct genus, and this species as *R. brasiliensis* Bertol. The valid name under *Olyra* is *O. brasiliensis* (Bertol.) Spreng. I have seen no other collection which agrees exactly with the Raddi specimens. *Glaziou* 4336 and 12265, Brazil, probably belong to this species, but the blades are more than twice as large and the pistillate spikelets are larger and have a longer acuminate tip, but the spikelets are clothed, as in the Raddi specimens, with a dense short retrorse pubescence, with a few long stiff hairs intermixed.

33. *PHARUS BRASILIENSIS*. "Prope Rio-Janeiro." The specimen is a complete plant with a very immature panicle. The name on the folio is not "brasiliensis" but one that was not published. The plant agrees with Raddi's description, and as but one species of *Pharus* is given there can be no doubt that this is the type of *P. brasiliensis*. It agrees with rather narrow-leaved specimens of *Pharus glaber* H. B. K., such as *Blanchet* 1018, *Mosén* 1778, and *Dusén* 91, from

⁶ Hitchcock & Chase, Contr. U. S. Nat. Herb. 18: 357. 1917.

Brazil. The last, from Rio Janeiro, has a very immature panicle and is an excellent match for Raddi's specimen.

34. *SPARTINA BRASILIENSIS*. "In inundatis prope Rio-Janeiro." There are two sheets of this, consisting of the upper part of a thick culm with inflorescence exceeded by the blades. The specimen is well represented by Doell's plate⁷ except that the Raddi spikelets have a few hairs, as in *Glaziou* 22412, Brazil.

36. *PASPALUS OBTUSIFOLIUS*. "In herbosis et humidiusculis locis prope Rio-Janeiro." The specimen consists of four plants of one flowering culm each, the two racemes not conjugate. No stolons are present but the base of one suggests a stoloniferous habit. This species belongs to the genus *Axonopus*, which differs from *Paspalum* in the reversed position of the spikelets,⁸ *Axonopus obtusifolius* (Raddi) Chase. Doell⁹ refers this species to *Paspalum furcatum* Flügge (*Axonopus furcatus* (Flügge) Hitchc.), but it is very different from that species, especially in the inflorescence. In that the racemes are conjugate and the spikelets glabrous while in *Axonopus obtusifolius* one raceme is from 0.5 to 2 cm. below the other, and the spikelets are silky-villous at the base and with a narrow stripe of silky pubescence on the marginal internerves. *Ule* 975, from Brazil, agrees perfectly with Raddi's specimen and shows, besides, a leafy stolon.

39. *PASPALUS ACUMINATUS*. No locality is cited. The specimen consists of two leafy culms lacking the base, each with three racemes. This belongs to section *Ceresia* of *Paspalum* with broadly winged rachis, together with *P. dissectum* L., *P. serratum* Hitchc. & Chase, and *P. repens* Berg. It is the species given as *P. acuminatum* Raddi in Hitchcock's Mexican Grasses¹⁰ and is well represented by *Brother Arsène* 3132, Mexico, and *Hassler* 10784, 11930 and 12471 from Paraguay.

40. *PASPALUS LONGIFLORUS* P. Beauv. Fl. de Ow. II 46. t. 85?—an Sp. nova. No locality is given. While Raddi does not here name a new species, "*Paspalum longiflorum* Raddi" has been given in synonymy by Doell and others. The specimen in the Pisa Herbarium consists of two culms of *Paspalum vaginatum* Swartz, both exceptional in the number of racemes, one having three, the other five. The specimen in the Florence Herbarium is *P. distichum* L.

41. *PASPALUS FISSIFOLIUS*. "Cum *Paspalo obtusifolio*." (See above.) There are five plants on the sheet, one of two flowering culms

⁷ Fl. Mart. Bras. 2³: pl. 23. f. 2. 1878.

⁸ See Chase, Proc. Biol. Soc. Washington 24: 129. 1911.

⁹ Fl. Mart. Bras. 2²: 103. 1877.

¹⁰ Contr. U. S. Nat. Herb. 17: 230. 1913.

joined by a long stolon, three single flowering plants of the same, and a sterile tuft that is probably *Stenotaphrum secundatum* (Walt.) Kuntze. The flowering plants agree with the description. The apex of several of the blades is split. This splitting of the blades is not uncommon in *Axonopus*, the genus to which this species belongs. This species, ***Axonopus fissifolius*** (Raddi) Chase, is allied to *A. compressus*¹ (Swartz) Beauv. It is much smaller than that, with narrower blades, 3 to 4 racemes, and smaller spikelets with longer less delicate pubescence. The Pisa specimens and those seen in Florence and Delessert are about 12 cm. tall, or less; the one in the British Museum has a culm 18 cm. tall. I have seen no other collection of this species.

42. **PASPALUS CURVISTACHYUS.** "In sylvestribus non procul ab urbe Rio Janeiro." There are two sheets of this, one with a ticket with the name in Raddi's script and two plants, the other with three plants. Both sheets contain two species, one, the left-hand plant on the first sheet and the left and middle plants on the second sheet, is the same as *Paspalum nutans* Lam., the type of which was examined in the Paris Herbarium. The description was evidently drawn up from both species, but two characters given, "glumis calycinis corolla brevioribus" (glume and sterile lemma shorter than the fruit), and "nodes rooting" apply to the specimens of *P. nutans* and not to the right-hand plant on each sheet. The left-hand plant of the second sheet, being the best specimen, is selected as the type. This specimen has four racemes in the terminal inflorescence and one on each of two branches. It is well matched by *Hitchcock* 10301, Trinidad, with three racemes in the terminal inflorescence.

The right-hand specimens on each sheet are over-mature single plants of *Paspalum arenarium* Schrad.

In the Delessert Herbarium a specimen of this collection "E Brasilia, Raddi" bears a name that was not published. It agrees with the type. The specimen in the Florence Herbarium is *P. arenarium*. Doell¹¹ refers *Paspalum curvistachyum* Raddi to *Panicum decumbens* Roem. & Schult. (*Paspalum decumbens* Swartz). That is an allied species with smaller spikelets in which the first glume is developed.

43. **PASPALUS CORCOVADENSIS.** "Monte Corcovado." The specimen consists of one entire plant and a second lacking the base. These agree perfectly with the description. They are well matched by *Gardner* 138, and *Mosén* 3512, from Brazil. Trinius¹² figures a different species with shorter broader blades and more numerous and

¹¹ Mart. Fl. Bras. 2²: 183. 1877.

¹² Gram. Icon. 2: 153. 1829.

denser racemes under the name *P. corcovadense* Raddi. Doell¹³ reduces *P. corcovadense* Raddi to a variety of *P. laxum* Lam., changing the name to *P. laxum* β *Raddianum* Doell. The type specimen of *Paspalum laxum* Lam., examined in the Paris Herbarium, however, proves to be a very different species, closely allied to *P. glabrum* Poir.

I should take *Paspalum corcovadense* for the valid name of this species, through the description of *Paspalum lanceolatum* Mikan¹⁴ is evidently drawn up in part from a specimen of this species. Dr. A. S. Hitchcock, who examined the Trinius Herbarium in 1907, found the specimen collected by Mikan in Brazil and bearing the name "*Paspalum lanceolatum*" to consist of two species, one of which is the same as Raddi's species, but the other a species not closely related. Trinius's description of the vegetative part applies much better to the latter, as does also the number of the racemes ("12-15"), but the description of the spikelets applies to *P. corcovadense* and not to the acute spikelets of the plant otherwise described. Neither of the specimens belongs to the species figured in the Icones as *P. corcovadense* (which Doell¹⁵ names *P. densiflorum* Doell). Trinius later¹⁶ reduces *P. lanceolatum* Mikan (described by himself in 1821) to *P. corcovadense* Raddi (1823), and cites his own plate also. The description is adjusted to cover the three species. For the type of *P. lanceolatum* Mikan; Trin., I select the plant with the acute spikelets, leaving *P. corcovadense* Raddi the valid name for the species represented by *Gardner* 138 and *Mosén* 3512, from Brazil.

44. PASPALUS INAEQUIVALVIS. "In sylvestribus prope Mata-Cavillos, non procul ab urbe Rio de Janeiro." The specimen consists of two plants, one lacking the base. This belongs to the species figured under this name by Kunth,¹⁷ and is well represented by *Hassler* 12401 and *Rojas* 96 from Paraguay, and *Ekman* 569, from Misiones, Argentina.

The specimen in the Delessert Herbarium bears a name that was not published.

45. PASPALUS COMPRESSICAULIS. "In graminosis prope Rio-Inhumirim." The specimen consists of a complete plant of the common *Paspalum paniculatum* L.

48. *Piptatherum annulatum*. "An var *Piptatherii punctati* P. B.? . . . ad Fossas udas prope Rio-Janeiro." On the specimen is

¹³ Mart. Fl. Bras. 2²: 85. 1877.

¹⁴ Trin. in Spreng. Neu. Entd. 2: 48. 1821.

¹⁵ Mart. Fl. Bras. 2²: 51. 1877.

¹⁶ Mem. Acad. St. Petersb. VI. Sci. Nat. 1: 155. 1834.

¹⁷ Rév. Gram. 2: pl. 207. 1829.

written "Pipt. punctatum P de Beauv. Roem. et Schult. II 328?" The specimen belongs to *Eriochloa punctata* (L.) Desv.

ACICARPA, a new genus with a single species.

49. ACICARPA SACCHARIFLORA, *pl. 1. f. 4.* No locality is given. *Milium hirsutum* Beauv. *pl. 5, f. 5.*, and Sloane Hist. Jam. 1: 43. *pl. 14. f. 2.* are cited. The specimen consists of two panicles and four leafy shoots of *Valota insularis* (L.) Chase. The Beauvois and Sloane figures cited also represent this species.

AGROSTICULA, a new genus with a single species.

51. AGROSTICULA MURALIS. *pl. 1. f. 2.* "In veteribus muris prope Rio-Janeiro." The specimen consists of a tuft with mature panicles half the length of the entire plant. The species belongs in *Sporobolus*, *S. muralis* (Raddi) Hitchc. & Chase, as described in the Grasses of the West Indies.¹⁸

59. AIRA BRASILIENSIS. "In veteribus muris prope Rio Janeiro." No specimen of this could be found. The description agrees in every way with the plants referred by Hackel¹⁹ to *Sporobolus brasiliensis* (Raddi) Hackel, based on *Aira brasiliensis* Raddi. Other specimens representing this species are *Sellow*, Brazil, the type collection of *Eragrostis airoides* Nees, and *Hassler* 11560, Paraguay. This species is peculiar in having a second floret in about half the spikelets of most of the specimens. Because of these 2-flowered spikelets it has been placed in *Eragrostis*, but the lemmas are 1-nerved, not 3-nerved as in *Eragrostis*.

ARUNDINELLA, a new genus with a single species.

60. ARUNDINELLA BRASILIENSIS. *pl. 1. f. 3.* "In collibus apricis prope Rio Janeiro." No specimen of this could be found. Raddi's figure of the spikelet indicates unmistakably the genus recognized under this name. The description points to the common species of Brazil, *A. hispida* (Willd.) Kuntze (*Andropogon hispidus* Willd. 1805), to which it has been generally referred.

NAVICULARIA, a new genus including three species, the third of which, *N. lanata*, being figured, is taken as the type. The three species belong in *Ichnanthus* Beauv. (1812).

Raddi says the genus is distinguished by the peculiar and constant structure of the spikelet, which has three valves of the corolla as well as three of the calyx. The three valves of the corolla are the fertile lemma, its well-developed wings (characteristic of the genus *Ichnanthus*) and the palea; the three valves of the calyx, the two glumes and the sterile lemma.

¹⁸ Contr. U. S. Nat. Herb. 18: 368. 1917.

¹⁹ Bull. Herb. Boiss. II. 4³: 278. 1904.

61. NAVICULARIA HIRTA. "In saltibus montosis prope Rio-Janeiro." (The locality of this is given with that of *N. glabra*.) The specimen could not be found in Pisa but in the British Museum is a specimen bearing the name in Raddi's script. The plant agrees with Raddi's description and also with that of *Panicum loliaceum* Bertol.,²⁰ (not Lamarck, 1791) which Raddi cites, having pilose glumes and well-developed wings on the lemma, pubescent sheaths, and blades puberulent beneath. Bertoloni refers to the wings of the lemma as nectaries. This species was referred by Nees²¹ to *Panicum candidicans* Nees, but in that the appendages of the fertile lemma are reduced to scars.

Doell²² reduces *Navicularia hirta* to "*Ichnanthus planotis* Trin." making it var. β *pilosus* Doell. Doell gives Trinius as the author of *I. planotis*, but Trinius²³ published it as *Panicum planotis*.

Trinius's description (including three varieties) seems to include more than one species. A specimen in the Trinius Herbarium named "*Panicum planotis* m. var β " by Trinius and labeled "Rio Janeiro 86" is like the Raddi specimen. Trinius's brief description of β agrees with this plant. A specimen named "*Panicum planotis* m. var. α ," "Rio Janeiro 269" is a species of *Panicum*. This agrees with "Append. nullis" given in the diagnosis of var. α . Raddi's specific name is the earliest tenable one of this species: ***Ichnanthus hirtus*** (Raddi) Chase.

Schultes²⁴ changes *Panicum loliaceum* Bertoloni, not Lamarck, to *Panicum Bertolonianum* Schult.

Except the two specimens mentioned I have seen none which belong to this species.

62. NAVICULARIA GLABRA. "In saltibus montosis prope Rio-Janeiro." No specimen of this could be found. Hitchcock²⁵ interprets Raddi's description and publishes the name *Ichnanthus glaber* (Raddi) Hitchc. The specimen cited by Hitchcock, *Rose* 20181, "on Corcovado, Rio de Janeiro," agrees perfectly with Raddi's description.

63. NAVICULARIA LANATA. *pl. 1. f. 5.* "In herbidis prope Rio-Inhumirim." The specimen is an immature plant of *Ichnanthus leiocarpus* (Spreng.) Kunth (*Panicum leiocarpum* Spreng. 1820), the

²⁰ Opusc. Sci. Bologna 3: 408. 1819.

²¹ Agrost. Bras. 133. 1829.

²² Mart. Fl. Bras. 2²: 280. 1877.

²³ Mem. Acad. St. Petersb. VI. Sci. Nat. 1: 322. 1834.

²⁴ Mant. 2: 240. 1824.

²⁵ Contr. U. S. Nat. Herb. 22: 10. 1920.

panicle branches ascending instead of spreading as at maturity. This species is represented by *Botanic Garden Herb.* 3318, Trinidad, and *Riedel* 183, Bahia, Brazil.

64. *OPLISMENUS BRASILIENSIS*. "In montanis prope Tejucco, necnon in Monte Corcovado." The specimen consists of four simple plants of *Oplismenus hirtellus* (L.) Beauv. The sheaths are pubescent as in *Regnell* III 1373, from Brazil, and *Pittier* 5976, from Venezuela, as well as in numerous tropical North American specimens. The pubescence is rather soft, not stiff and bristly as in *Wright* 751, *Pringle* 76, and *Shafer* 3011, from Cuba; *Harris* 11465, 11607, from Jamaica; and *Hitchcock* 10222 and 10252, Tobago.

66. *PANICUM UNCINATUM*. "In sylvaticis prope Catumby, non procul ab Urbe Rio de Janeiro." No specimen of this could be found in Pisa, but in the herbarium of the British Museum is a specimen so named in Raddi's script. The upper spikelets are mature, showing the hooked, spine-like hairs. The plant is the same as the type of *Echinolaena polystachya* H. B. K., which was examined in the Berlin Herbarium. It is represented by the specimens cited under this name in Hitchcock's *Mexican Grasses*²⁶ and those cited under *Pseudechino-laena polystachya* (H. B. K.) Stapf in his *Grasses of British Guiana*.²⁷

67. *PANICUM PULCHELLUM*. "In sylvaticis prope Catumby; non procul ab Urbe Rio de Janeiro." The specimen consists of a creeping plant with four flowering culms and another flowering culm without base. It belongs to the species described under this name in Hitchcock and Chase's *North American Species of Panicum*.²⁸

68. *PANICUM OLYRAEFOLIUM*. *pl. 1. f. 6*. "In sepibus prope fossas udas in viciniis Rio-Janeiro" (the locality given with that of *P. donacifolium*). The specimen, consisting of two branching plants rooting at the nodes, and two additional flowering culms, belongs to *Panicum frondescens* Meyer, as described by Hitchcock and Chase.²⁹

69. *PANICUM CONDENSATUM*. "In sepibus prope fossas udas in viciniis Rio-Janeiro." The specimen consists of a flowering culm, lacking the base, with sterile branches. Among the unidentified grasses in the Florence Herbarium were three sheets of this collection, the largest with a stout culm and blades reaching to 20 cm. long and 2.6 cm. wide. Raddi cites "Bert. Op. Sc. di Bol. An 1819. T. III p. 408." Bertoloni's description agrees well with Raddi's specimens.

²⁶ *Contr. U. S. Nat. Herb.* 17: 223. 1913.

²⁷ *Contr. U. S. Nat. Herb.* 22: 469. 1922.

²⁸ *Contr. U. S. Nat. Herb.* 15: 123. 1910.

²⁹ *Contr. U. S. Nat. Herb.* 15: 121. 1910.

Gaudichaud 288, Rio Janeiro, the type of *Panicum auriculatum* β *fasciculosum* Doell³⁰ and of *Panicum Januarium* Mez, and *Pabst* 706, from Brazil, both in the Berlin Herbarium, belong to *Panicum condensatum* Bertol. Of the eight collections cited by Mez³¹ under *P. Januarium*, *Gaudichaud* 288, Rio de Janeiro, is taken as the type, because Mez cites "*Panicum auriculatum* var. *fasciculatum* Doell" (error for *fasciculosum*), and this is the only specimen Doell cites for the variety. The specimen in the Berlin Herbarium bears this name in Doell's script. The name in Mez's writing is not *Januarium* but one that was not published. The species belongs in *Hymenachne* Beauv. as described by Chase,³² ***Hymenachne condensata*** (Bertol.) Chase. The species is represented in the U. S. National Herbarium by *Wilkes Expl. Exped.* 6, Rio Janeiro.

70. PANICUM DONACIFOLIUM. "In sepibus prope fossas udas in viciniis Rio-Janeiro." The specimen consists of two flowering culms, both lacking the base, with auriculate-clasping blades. It belongs to the species at present known as *Hymenachne auriculata* (Willd.) Chase,³³ or *Panicum auriculatum* Willd.,³⁴ the type specimen of which, labeled "Amer. merid. Humboldt," was examined in the Willdenow Herbarium in the Berlin Herbarium. Since Raddi's name is earlier it must replace that of Willdenow, ***Hymenachne donacifolia*** (Raddi) Chase. This species is represented in the U. S. National Herbarium by *Smith* 2748, Santa Marta, Colombia; *Eggers* 14633, Balao, Ecuador; *Goeldi* 52, Para, Brazil; and *Morong* 693, Paraguay.

Panicum cordatum Doell,³⁵ the type of which, *Glaziou* 4326, Rio de Janeiro, so named in Doell's script, was examined in the Berlin Herbarium, belongs to this species.

71. PANICUM PASPALOIDES. "Ad fossas udas prope Rio-Janeiro." The specimen belongs to *Panicum geminatum* Forsk. as described by Hitchcock and Chase,³⁶ North American Species of Panicum.

72. PANICUM DIVARICATUM. "In sepibus proximus Rio Janeiro, ut etiam alibi, praecipue ad fossas udas." Raddi does not publish this as his own species, but gives Linnaeus as author. The specimen is *Lasiacis ligulata* Hitchc. & Chase.³⁷

³⁰ Mart. Fl. Bras. 2³: 238, 1877.

³¹ Bot. Jahrb. Engler 56: Beibl. 125: 4. 1921.

³² Proc. Biol. Soc. Washington 21: 1. 1908.

³³ Proc. Biol. Soc. Washington 21: 5. 1908.

³⁴ Spreng. Syst. Veg. 1: 322. 1825.

³⁵ Mart. Fl. Bras. 2³: 239. 1880.

³⁶ Contr. U. S. Nat. Herb. 15: 30. 1910.

³⁷ See Hitchcock's revision of *Lasiacis*, Contr. U. S. Nat. Herb. 22: 18. 1920.

73. PANICUM MACROPHYLLUM. "Juxta torrentes in vicinis Mandioccae, et in Montibus Estrellensibus." The specimen is mounted on two sheets, one of three leaves, the sheaths overlapping, the blades 30 cm. long and 8.8 cm. wide; the other (evidently the summit of the same culm) with two leaves, the upper blade much reduced and split to the base, and a panicle 18 cm. long and 7.5 mm. wide. The spikelets are crowded, 2.3 mm. long, the glumes and sterile lemma subequal, the lemma slightly longer, acute, scabrous on the nerves and pubescent near the margins, the sterile palea nearly as long as its lemma; the fruit is elliptic, subacute, smooth and shining, 1.8 mm. long, 0.6 mm. wide. The species is allied to *Panicum latissimum* Mikan and *P. secundum* Trin. It differs from the first in the strict panicle branches and the equal glumes, and from the latter in the much broader blades. I have seen nothing like Raddi's specimen except Jardim Botânico do Rio Janeiro no. 575 (no locality but "Brasil") in the U. S. National Herbarium. This differs from the type in having sheaths sparsely appressed-pilose, and somewhat firmer blades, which are split as is the upper blade in Raddi's specimen.

75. PANICUM PURPURASCENS. Raddi states that it grows with the preceding (*Panicum maximum* Jacq.) which is cultivated throughout the province of Rio Janeiro and is also found growing spontaneously. The specimen consists of a flowering culm, lacking the base, of *Panicum barbinode* Trin., as described by Hitchcock & Chase.³⁸ The panicle is somewhat purplish.

77. PANICUM RUDGEI (β) BRASILIENSE. "Species rarissima observata tantum in vicinis fluminis Inhumirim, in locis silvosis et herbosis." The specimen consists of two pieces, one of four panicles, three axillary and a terminal one close together, each exceeded by its blade; the other of a single panicle and leaf. The specimen belongs to *Panicum Rudgei* Roem. & Schult. as described by Hitchcock and Chase.³⁹ The nodes are slightly geniculate as noted by Raddi.

83. SETARIA SULCATA. "In marginibus fossarum udarum prope Catumby, non procul ab urbe Rio de Janeiro." The specimen is an entire rather small plant, the nodes and junction of sheath and blade yellowish hirsute, the broadest blade 18 mm. wide, deeply pleated, the panicle scarcely 2 cm. wide. It belongs to *Chaetochloa poiretiana* (Schult.) Hitchc. as described in Hitchcock's recent revision of *Chaetochloa*.⁴⁰ On the ticket is written in Raddi's script "*Setaria sulcata* nob., *Panicum sulcatum* Bert."

³⁸ Contr. U. S. Nat. Herb. 15: 33. 1910.

³⁹ Contr. U. S. Nat. Herb. 15: 139. 1910.

⁴⁰ Contr. U. S. Nat. Herb. 22: 159. 1920.

Raddi cites "Bert. Excerpta de Re Herb. 14." This paper is not in the library of Washington. In another paper the same year⁴¹ Bertoloni published *Panicum sulcatum* Bertol., citing Raddi's collection from Brazil. This is apparently described independently of *P. sulcatum* Aubl. 1775. *Glaziou* 17396, Rio Janeiro, though a larger plant, is very like Raddi's specimen.

86. POA BRASILIENSIS. "In sepibus prope Rio de Janeiro." The specimen could not be found. The description is as follows: "panicula elongata stricta, ramis alternis adpressis, spiculis lineari-lanceolatis subdecemfloris, valvula corollae interiore margine brevissime ciliata; foliis bi-aut tripollicaribus, acuminatis, rigidis, margine involutis, ligula nulla. nob. Gramini tremulo affine, paniculatum elegans majus, spicis minoribus et longioribus. *Sloan, H. J. p. 113. t. 71. fig. 1?* (mala)."

The original of the Sloane figure in the British Museum of Natural History was examined by Dr. A. S. Hitchcock in 1907. It is *Eragrostis cubensis* Hitchc., which is not found in Brazil.

Nees⁴² transfers *Poa brasiliensis* Raddi to *Eragrostis* "excl. synonym. Sloanei." and refers *E. bahiensis* Schrad.⁴³ to it as a form with blades ciliate at base. Short-leaved specimens of this species, such as *Capanema* 5379, and 5386, Brazil, agree well with Raddi's description. The ligule is not wanting as stated by Raddi, but is very minute.

89. MEGASTACHYA SWAINSONI. "Species rarissima, quam mihi benevole communicavit D. Swainson red. ex itinere Pernambucano ad Urbem Rio-janeiro." The specimen is a small tuft of *Eragrostis maypurensis* (H. B. K.) Steud., with small, somewhat capitate panicles, as in Jardim Botânico do Rio de Janeiro no. 5535, collected by Luetzelburg; 3742, collected by Löfgren, and 5382 collected by Capanema.

BOTANY.—Opsandra, a new genus of palms growing on Maya ruins in Petén, Guatemala. O. F. Cook, Bureau of Plant Industry.

A palm that grows in the ruined Maya cities of Petén apparently has not been described. The ruins are buried in the forest, with palms and other trees often growing upon the terraces, walls, or roofs of the buildings. The chief center of the early Maya civilization, in the district of Tikal, Uaxactun, Nakum, and Naranjo, is supposed to have been abandoned about fifteen centuries ago, and now is completely

⁴¹ Opusc. Sci. Bologna 4: 230. 1820.

⁴² Agrost. Bras. 497. 1829.

⁴³ In Schult. Mant. 2: 318. 1824.