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POR

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**Supplementary Notes on the American Species
of Strychnos-V.**

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Supplementary Notes on the American Species of *Strychnos*-V.

Extensive collections of *Strychnos*, largely from Brazil and Colombia, recently became available to us. We have also been able to examine specimens deposited in the two European herbaria mentioned below. These collections extend our knowledge of certain species previously known to us from incomplete material or only from descriptions. Extension of ranges are noted for a considerable number of species and *S. Krukoffiana*, recently described by Ducke (1), is reviewed by us. In our previous papers on *Strychnos* (2, 4), in the absence of the type collection, *Strychnos hachensis* was accepted by us as a valid species. With the examination of a portion of the type material, however, it is now obvious that this name is best treated as a *nomen confusum*.

It is particularly satisfactory to extend our knowledge of the species that occur in the basins of Rio Putumayo in Colombia and of Rio Juruá in Brazil, which were up to the present date represented in herbaria only by a very limited number of collections.

A recent trip by R. Froes to the upper Juruá deserves a special, more detailed account. As a field inspector in the service of the Chicle Development Co. of New York, he made a trip to the upper Juruá with the object of exploring that region for gum yielding trees. In addition to his primary object of exploration — trees of the Apocynaceae and Sapotaceae families — Sr. Froes was asked while on this trip to search for collect specimens of *Strychnos*.

Sr. Froes left Manaus on Aug. 22, 1946 and was back on Jan. 5, 1947; thus the time spent on his trip amounted roughly to five months, of which intensive field work was carried on during approximately three months. Sr. Fróes started his field work at Cruzeiro do Sul (approx. 2395 miles distant from Manaus by river) which he left in a canoe with outboard motor on Sept. 29, descending Rio Juruá, and he completed his field investigations at Eirunepé (approx. 1724 miles distant from Manaus by river) on Dec. 20; thus he has covered on this trip the stretch of Rio Juruá, amounting approximately to 671 miles.

Fróes explorations and collections were by no means confined to merely the immediate shores of Rio Juruá. In fact, most of his explorations were carried on in the forests of "terra firme", which as a rule begin at some considerable distance from the river. He made frequent trips inland on the small tributaries of Rio Juruá and Igarapés and on foot, trips ranging roughly from one or two to seven days. His most extensive and interesting trip inland was from Adelia on Rio Juruá (not too distant from the historical place where in the year 1560 Pedro de Ursua was assassinated by his officers) through Natal, Igarapé Condario and Tapiri Comprido to the bank of Rio Itecoahy, a tributary of Rio Javary.

Probably many years will pass before another botanical trip as extensive as Fróes will be made to the upper Juruá. Because of this, and inasmuch as it is now possible to give a fairly complete account of *Strychnos* as it occurs in the region of the upper Juruá — below is presented rather detailed data on types of forests and on exact localities where specimens of *Strychnos* were collected by Sr. Fróes.

Two collections of *S. ramentifera* were made on the low land "of terra firme"; one (*Fdoes 21812*) on Igarapé Tonhon, near Barracão Ituxy (approx. lat. 6° 57'S, long. 71° 17'W), and another (*Froes 21817*) near Adelia (approx. lat. 6° 52'S, long. 71° 6' 30"W).

The flowering specimen of *S. asperula* (Froes 21739) was collected in alta, on the bank of Paraná Tigre, near Assahytuba (approx. lat. 7° 14'S, long. 72°W).

S. rondeletoides was collected on Igarapé Tonhon, near Barracão Ituxy; one collection (Froes 21802) on the low land of "terra firme" and another (Froes 21809) on the low land of igapó.

S. toxifera (Froes 21701) was found on the border of a secondary forest near Barraquinha on the upper Igarapé Branco, a tributary of Rio Campinas (approx. lat. 7° 17'S, long. 72° 8'W).

S. diaboli (Froes 21823) was obtained in high forest on the high land of "terra firme" near Peixoto on Rio Gregorio (approx. lat. 6° 56'S, long. 70° 48'W).

Several collections of *S. javariensis* were made in high forest on the high land of "terra firme" in different places in the basin of Rio Juruá between Salvação (approx. lat. 6° 57'S, long. 71° 28'W) and Igarapé Tonhon.

S. Jobertiana (Froes 21767) was collected on "terra firme" near Barreira do Encarnado (approx. lat. 7° 3'S, long. 71° 43'W).

S. amazonica (Froes 21822) was found in high forest on the low land of "terra firme" near Peixoto on Rio Gregorio.

Three collections of *S. Peckii* were made in the high forest on the high land of "terra firme"; one (Froes 21773) on Paraná do Bom Lugar (approx. lat. 7° 5'S, long. 71° 40'W), another (Froes 21784) near Salvação and still another (Froes 21798) near Barracão Ituxy on Igarapé Tonhon.

S. Erichsonii (Froes 21744) was found in high forest on low land of "terra firme" near Assahytuba, on Igarapé Folguedo.

Several collections of *S. darienensis* were obtained on the low land either of "terra firme" on igapó (*Froes 21698*) was collected near Valparaíso on Rio Campinas, (*Froes 21797*) on Igarapé do Dauro (approx. lat. 6.º 48'S, long. 71º 20'W), (*Froes 21805*) on Igarapé Tonhon, near Barracão Ituxy, and (*Froes 21832*) on Igarapé Mucambinho, near Rivaliza (basin of Rio Gregório).

The common *S. guianensis* was collected in several localities (on Igarapé Branco, which is a tributary of Rio Campinas, on Igarapé do Dauro, on Igarapé Tonhon and on Igarapé Mucambinho) on the low as well as on the high land of "terra firme".

Four collections of *S. panurensis* were made; one (*Froes 21704*) on varzea of Paraná do Ouro (approx. lat. 7.º 10'S, long. 72º 8'W), another (*Froes 21733*) on the high land of "terra firme" near Assahytuba, on Igarapé Folguedo, another (*Froes 21738*) in "restinga alta" on the margin of Paraná Tigre, near Assahytuba, and still another on the high land of "terra firme" on Paraná do Bom Lugar.

Two collections of *S. parviflora* were made on the low land of "terra firme"; one (*Froes 21744*) near Sacado do Ouro Preto, on Igarapé Grande, and another (*Froes 21732*) near Assahytuba, on Igarapé Folguedo.

Three collections of *S. nigricans* were made on the low land of "terra firme"; and of "restinga" one (*Froes 21804*) on Igarapé Tonhon, another (*Froes 21820*) near Adelia, and still another (*Froes 21828*) near Peixoto on Rio Gregório..

Two collections of *S. longisepala* were made; one (*Froes 21740*) on the bank of Rio Juruá near Assahytuba, and another (*Froes 21825*) on the low land of "restinga" near Peixoto on Rio Gregório.

Previous to Fróes trip seven species of *Strychnos* were known from the basin of Rio Juruá. Of these, five species,

namely *S. asperula*, *S. darienensis*, *S. guianensis*, *S. subcordata* and *S. longisepala*, were collected by Ule, whereas the two other species, namely *S. toxifera* and *S. tarapotensis*, by Krukoff. Of the seven species referred to above, Fróes failed to collect only *S. subcordata* and *S. tarapotensis*, whereas *S. ramentifera*, *S. rondeletiioides*, *S. diaboli*, *S. javariensis*, *S. Jobertiana*, *S. amazonica*, *S. Peckii*, *S. Erichsonii*, *S. panurensis*, *S. parviflora*, and *S. nigricans* represent new records for the basin of Rio Juruá. Seventeen species were collected by Fróes on his trip to the upper Jurua, including a puzzling sterile specimen, (Fróes 21765), which resembles *S. brachiata* but which we cannot name with any certainty.

Of other interesting collections under present study should also be mentioned those by R. E. Schultes, which include three new records of *Strychnos* for Colombia, namely *S. brachiata*, *S. Jobertiana* and *S. Erichsonii*.

The species noted in this supplement are arranged in the same order and the place of deposit of specimens is shown by the same abbreviations as in our previous papers on *Strychnos* (2, 3, 4, 5, 6). The following additional abbreviations are used:

LE: V. L. Komarov Botanical Institute, Academy of Sciences of the USSR, Leningrad.

MPU: Institut Botanique de l'Université de Montpellier, France.

2. *Strychnos ramentifera* Ducke.

Brazil: Amazonas: basin of the upper Juruá, munic. Eirunepé, Fróes 21812, 21817.

The first record of the species from the basin of Rio Juruá.

3. *Strychnos asperula* Sprague & Sandw.

Brazil: State of Amazonas: basin of the upper Juruá, munic. Eirunepé, Assahytuba, Paraná tigre, *Froes 21739*.

The species was previously known only from the type collection.

4. *Strychnos rondeletiioides* Spruce.

Colombia: Amazonas: Rio Caraparaná entre las bocas y El Encanto, *Schultes 3829*. Brazil: Amazonas: basin of the upper Juruá, munic. Eirunepe, near Ituxy on Igarapé Tonhon, *Froes 21802, 21809*.

The first record of the species from the basin of Rio Juruá, Brazil and from Amazonas, Colombia.

5. *Strychnos Barnhartiana* Krukoff.

Brazil: Amazonas, basin of the Upper Solimões, *Krukoff 7827*.

6. *Strychnos brachiata* Ruiz & Pav.

Colombia: Putumayo: Rio San Miguel ó Sucumbios, Santa Rosa y los alrededores, *Schultes 3602*.

Local name: Se-he-pa (Kofán Indians, Putmayo, Colombia).

The first record of the species from Colombia. The collector states on the label: "root used in preparation of arrow-poison".

8. *Strychnos trinervis* (Vell.) Mart.

Brazil: *Herb. J. E. Planchon s. n.* (MPU). Bahia: coll. *undesignated 169* (MPU).

- 11a. *Strychnos Krukoffiana* Ducke, Trop. Woods 90: 27. 1947.

Macroscopic: petioles 3-8 mm. long; blades ovate to ovate-lanceolate or rarely ovate-oblong, 4-9 cm. long and 3-5 cm. broad, rounded or slightly subcordate at base, acuminate and mostly pointed at apex, somewhat shining or dull above, markedly pale or cinereous beneath, chartaceous to subcoriaceous, 3-5-plinerved with the inner pair opposite or subopposite and diverging at 0-8 mm. from base, basal-marginal nerves rather conspicuous, reticulation faint beneath, prominulous above. *Microscopic*: branchlets and petioles puberulent with short erect hairs; blades essentially glabrous and smooth on both surfaces.

Inflorescences in terminal cymes, corymbose and compactly flowered, puberulent with short erect pale hairs, bracts ovate to lanceolate, puberulent outside, ciliate; pedicels short; calyx-lobes lanceolate, about 1.5 mm. long, acute at apex, puberulent outside particularly toward base, ciliate; corolla-tube about 1.5 cm. long, papillose and with spreading subsetulose hairs of varying lengths without, pilose within from about middle upward and glabrous at throat, corolla-lobes pubescent like the tube without, papillose and glabrous within, not bearded at base; anthers on long filaments (filaments more than twice as long as anthers), greatly exserted; style glabrous.

S. Krukoffiana is related to *S. divaricans* and *S. Tabascana* but is easily distinguishable from these as well as others. In the key to the species of Longiflorae in our previous paper (1) it belongs at the bottom of p. 263:

Filaments much longer (twice or more) than anthers, these greatly exserted; corolla-lobes glabrous within; infl. subsetulose in streaks, puberulent, or glabrous; pedicels up to 3 mm. long.

Leaf-blades not markedly pale beneath; infl.
glabrous or with subsetulose adpressed hairs.

Etc.

Leaf-blades cinereous beneath; infl. puberulent
with microscopic erect hairs; calyx-lobes
lanceolate, about 4-5 mm. long; corolla
pubescent without 11a. *S. Krukoffiana*.

13. *Strychnos toxifera* Rob. Schomb.

Colombia: Comis. del Vichada: Caño Sama, *Nicolino
Mattar 1*.

Brazil: Amazonas: basin of the upper Juruá, munic.
Eirunepé, near Barraquinha, along Igarapé Branco,
Froes 21701.

The first record of the species from Colombia. According
to the collector the plant is used by Indians in preparation
of Curare.

14. *Strychnos tomentosa* Benth.

Brazil: State of Pará: "Catu", *Ducke s. n.*

15. *Strychnos diabolii* Sandow.

Brazil: Amazonas: basin of the lower Rio Negro, near
Manáos, *Ducke s. n.* (17-9-46); basin of Rio Maués,
Murça Pires 62; basin of the upper Juruá, munic.
Eirunepé, Peixoto on Rio Gregorio, *Fróes 21823*.

The first record of the species from the basin of Rio
Juruá and Rio Maués.

16. *Strychnos javariensis* Krukoff.

Brazil: Amazonas: basin of the upper Juruá, several
localities, *Fróes 21766, 21769, 21771, 21787, 21810*.

The first record of the species from the basin of Rio Juruá.

18. *Strychnos Jobertiana* Baillon.

Colombia: Putumayo: Rio San Miguel ó Sucumbios, *Schultes 3523*. Amazonas: Loretoyaco, *Black & Schultes 46-262*. Brazil: Amazonas: basin of the upper Juruá, munic. Eirunepé, *Fróes 21767*.

Local name: Ir-ró-chee (Kofán Indians, Putumayo, Colombia).

The first record of the species from Colombia and from the basin of Rio Juruá in Brazil. The collector states on the label (*Schultes 3523*): "bark of root used in curare formula".

21. *Strychnos amazonica* Krukoff.

Brazil: Amazonas: basin of Rio Maués, *Murça Pires 29, 30, 31, 104, 707*; basin of upper Juruá, munic. Eirunepé, Peixoto on Rio Gregorio, *Fróes 21822*.

The first record of the species from the basin of Rio Juruá.

22. *Strychnos Peckii* B. L. Robinson.

Colombia: Putumayo: Rio San Miguel ó Sucumbios, Santa Rosa y los alrededores, *Schultes 3601*. Brazil: Amazonas: basin of the upper Juruá, munic. Eirunepé, *Fróes 21773, 21784, 21798*, basin of the Lower Rio Negro, Rio Jahú, Igarapé das Onças, *Ducke 402*.

Local name: Se-he-pa (Koffán Indians, Colombia).

The first record of the species from the basin of Rio Juruá, Brazil and from the basin of Rio Putumayo, Colombia. The collector states on the label (*Schultes 3601*): "root used in curare preparation".

24. *Strychnos Erichsonii* Rich. Schomb.

Colombia: Putumayo; Rio San Miguel ó Sucumbios, Conejo y los alrededores, en fruenta de la Quebrada Conejo, *Schultes* 3524. Brazil: State of Amazonas: basin of the upper Juruá, munic. Eirunepé, Assahytuba, Igarapé Folguedo, *Fróes* 21744.

Local name: Ir-ró-chee (Kofán Indians).

The first record of the species from Colombia and from the basin of Rio Juruá in Brazil. According to Mr. Schultes the plant is used in the preparation of Curare in Colombia.

28. *Strychnos Mitscherlichii* Rich. Schomb.

Brazil: Pará: Catú, *Ducke* 2032.

29. *Strychnos darienensis* Seem.

Brazil: Amazonas: basin of the upper Juruá, several localities in munic. Eirunepé, *Fróes* 21698, 21797, 21805, 21832.

30. *Strychnos guianensis* (Aubl.) Mart.

Brazil: Amazonas: basin of the upper Juruá, several localities in munic. Eirunepé, *Fróes* 21697, 21795, 21807, 21831, 21833.

33. *Strychnos pamurensis* Sprague & Sandw.

Brazil: Amazonas: basin of the upper Juruá, munic. Eirunepé, *Fróes* 21701, 21733, 21738, 21779.

The first record of the species from the basin of Rio Juruá.

37. *Strychnos parviflora* Spruce.

Brazil: Amazonas: basin of Rio Javary, *Ducke 399a*; basin of the upper Juruá, munic. Eirunepé, *Fróes 21714* and *21732*.

The first record of the species from the basins of Rio Javary and Rio Juruá.

45. *Strychnos nigricans* Prog. in Mart. Fl. Bras. 6 (1): 280. 1868. *Strychnos hachensis* Karst. Fl. Columb. 2: 75. 1863. (as to leaf).

Colombia: Magdalena: Tomarrazón, Rio Hacha, *Karsten s. n.* (type coll. pro part of *S. hachensis*) (LE). Brazil: Amazonas: basin of the upper Juruá, munic. Eirunepé. *Proes 21804, 21820, 21828*.

We have now seen a portion of the type material of *S. hachensis* consisting of a leafy branch and seeds. The specimen bears the original Karsten label and was sent to us through the kindness of the Director of the Leningrad Herbarium, at which institution is deposited the original set of Karsten's Colombian collection. The leafy material examined by us unquestionably is referable to *S. nigricans*. Thus the description and plate of *S. hachensis* are based on the vegetative element of *S. nigricans*, a member of the Breviflorae, and the flowers of a species of Longiflorae, probably *S. panamensis* Seem. As the name *S. hachensis* is thus based on at least two entirely discordant elements we propose to consider it as a nomen confusum. We also think that the name *S. hachensis* cannot replace the latter name *S. nigricans* as Karsten in his original description compared his species with *S. brachiata*, a member of the Longiflorae, thus stressing the importance of the flowers of the material that he had before him rather than of the vegetative material of the branch that has been examined by us and referred to *S. nigricans*.

The Froes specimens are the first record of the species from the basin of Rio Juruá in Brazil.

47. *Strychnos longisepala* Krukoff.

Brazil: Amazonas: basin of the upper Juruá, munic. Eirunepé, *Fróes* 21710, 21825.

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