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PRIMEIRA PARTE

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STRYCHNOS,

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Our revision of the American *Strychnos* (3) appeared in 1942. Since then five supplements and two regional treatments on the genus have been published, and we are currently engaged in further studies on the group.

Work on *Strychnos* was begun by the senior author in 1936 when he received a commission from the Merck Research Laboratory to investigate and to obtain authentic material of plants entering the curare of the Tecuna Indians in Brazil. Studies in the taxonomy of the genus were commenced late in 1936 and have continued intermittently with increasing interest. Our initial efforts were inspired by N. Y. Sandwith, who has continued rendering aid most generously.

With the forementioned monograph the basic principles for the understanding of this group, a method of approach which had been slowly formulating for half a dozen years, were set in print. Much, however, remained to be desired in clearing the multitudinous details regarding various species.

As large loans from numerous herbaria and the types became available, the proper disposition of certain species was made possible. *S. macrophylla, S. glabra,* and *S. albiflora* were removed from synonymy and given valid status (4, 6), at least for reconsideration purposes. *S. marginata* and *S. brasiliensis* var. *rigida* were shifted to the synonymy of *S. parvifolia,* and *S. Solerederi* to *S. Mitscherlichii* (6). The type of *S. hachensis* proved that

the skeptical attitude held for this species from the very beginning of its study was not unwarranted; *S. hachensis* is a nomen confusum (8).

These loans, and particularly the new collections by field men, also extended our knowledge of the distributional ranges of *Strychnos* species to a considerable measure. J. Cuatrecasas in Colombia, L. Williams, Killip, and Felix Cardona in Venezuela, R. Fróes in the states of Pará and Amazonas, particularly in the upper Juruá, and A. Ducke in the Amazonas, Brazil, contributed most in recent collections. To the efforts of Dr. Ducke alone are due the discovery of three of the four new species of *Strychnos* described since 1942, namely *S. pachycarpa, S. Krukoffiana,* and *S. Duckei. S. Torresiana* is to be credited to the kind cooperation of Dr. Heloisa A. Torres who made possible the examination of the extensive collection of *Strychnos* made in the basin of Rio Doce, Espírito Santo. *S. pachycarpa* Ducke is especially noteworthy because of its relatively long corolla-tube which is anomalous in *Breviflorae.* Not only as a keen collector, but also as an acute student of the genus has Dr. Ducke, in his frequent personal correspondence with the present authors and in his published articles (1, 2), made invaluable contributions.

Rapid advances in our knowledge of the genus have been made since the publication of "The American Species of Strychnos". There is, however, ample justification for a continued interest. Many are the problems concerning the known species, and it still is a question how many undescribed novelties may yet be present in the Amazonia. The more outstanding problems in *Strychnos* will be discussed very briefly below.

One of the most important taxonomic problems in *Strychnos* concerns the species of southern Brazil. Here difficulty is encountered even in evaluating the morphological criteria employed. Variation in the species surpasses all bounds experienced with those found in the Amazonia. This was early detected in *S. brasiliensis,* and

its many forms, sometimes of very distinct appearance, were happily referred to the species. Concerning *S. brasiliensis,* however ,it should be noted that a very large collection of its forms from the entire range, coupled with intensive field studies, may discover good geographic varieties or races or other subspecific entities deserving taxonomic consideration.

The understanding of *S. rubiginosa* and its relationship to *S. parvifolia,* and also the true status of the poorly collected *S. acuta* and *S. albiflora,* need a thorough field investigation. The specimens collected by Luiz Emygdio, Ernani Bueno, and Oswaldo Vital Brasil in the basin of Rio Doce, Espirito Santo, Brazil, have demonstrated this problem in a very striking way. A field survey of *Strychnos* in the Rio Doce area should yield much in solving the problem. It is necessary that extensive collections backed by flowering material of *S. rubiginosa, S. parvifolia, S. acuta,* and *S. albiflora* be made in their type localities and adjacent areas, in as many diverse habitats as possible, with a view of linking variational forms so as to prove the precise delimitations of the species.

A similar variation problem, but a much less serious one, involves *S. guianensis* and *S. glabra,* found in the basin of the Amazon in the Guianas and Venezuela. These two are too closely allied and intergrade too freely for satisfactory specification. In our first paper on *Strychnos* the available material of *S. glabra* was discussed under *S. guianensis* and noted as presenting difficulty in aligning it with the species (3, p. 297). With the examination of the type of *S. glabra* it was decided to accept the species as a convenient nomenclatural unit, so that the accumulation of collections referred to it might eventually define the limits of morphological variation. The floral structure of *S. glabra* leaves no doubt of its intimate affinity with *S. guianensis;* its foliage sometimes differs greatly from, the former, often simulating that of *S. Mitscherlichii.* The question, however, has not

yet been definitely answered whether or not the broad limits of variation in *S. glabra* necessitate for it a subspecific position under the equally variable *S. guianensis*. Present evidence seems to indicate such a relationship.

Similar wide variations appear in *S. Mitscherlichii*. Once it is studied in detail in the field, with the assistance of ecologists and geneticists, this species will likely be split into several varieties. Like *S. Mitscherlichii* var. *pubescentior* these, however, will be weak varieties. In the senior author's collection of *Strychnos* four group numbers (5, 18, 41, 42) were at first provisionally assigned to the material now referred to *S. Mitscherlichii*. Recent collections of fine flowering specimens corresponding to the so-called "group 18" have been examined. The flowers of these are much reduced in size. As is the case with the closely knit *S. macrophylla* and *S. rondeletioides*, and also *S. guianensis* and *S. glabra*, the small-flowered form of *S. Mitscherlichii* is confined to terra firme, whereas *S. Mitscherlichii* var. *pubescentior* is found principally on the immediate shores of creeks and small rivers.

There is dificulty in ascertaining whether *S. Barnhartiana* is specifically distinct from *S. rondeletioides*. The former is distinguished primarily by the indumentum on the inside of the corolla lobes being greatly concentrated, beard-like, to their base instead of covering the whole surface as in typical *S. rondeletioides*. Specimens have been recently examined in which this pubescence character is somewhat intermediate between the two. Additional collections of specimens showing transitional features will resolve the problem.

The evidence that *S. macrophylla* is a good entity is better than that for *S. Barnhartiana*. Yet the characters which separate the terra firme *S. macrophylla* from the varzea land *S. rondeletioides* are rather weak, and one wonders whether a specific distinction is entirely warranted. Up to the present time, the former has been collected

only in the basin of the Rio Negro in the vicinity of the type locality (Manaos).

The flowering specimen of *S. javariensis*, which recently became available to us (5, p. 64) justified the position this species was given next to *S. diaboli* in our first paper, a conclusion originally derived from the examination of the vegetative features of the species. This flowering material, so reassuring the taxonomic juxtaposition of *S. javariensis* and *S. diaboli*, evinces an extremely close affinity of the two; it raises the problem of what might be the true signficance of their vegetative differences.

Flowers of *S. solimoesana* are still a desideratum. Placed next to *S. javariensis* in our revision, the discovery of its flowers may raise a problem similar to that noted above.

Also a desideratum is a good series of flowering specimens verifying the differences advanced for separating *S. Smithiana* from *S. Erichsonii*, two species very closely allied.

S. tabascana might well be considered a variety of *S. panamensis*, from which it differs mainly in the presence of pubescence on the outside of the corolla-tube. *S. pubiflora* likewise differes from *S. Gardneri* merely in pubescence. Many flowering collections in the critical zones of distribution are needed to correctly place *S. tabascana*. The necessity of additional material is particularly felt for *S. pubiflora*, which is at present known from only the type collection.

There would be considerable satisfaction in tying up the Central American specimens of *S. darienensis* with the material from South America which has been referred to this species. A specimen from Colombia (Valle del Cauca) has been examined, but collections of flowering representatives from the entire range of the species, particularly from the type locality and from northern South

America, would be reassuring in definitely characterizing the type and furnishing the desired geographic continuity of distribution.

Collections in the critical zone of southeastern Colombia likely will prove that *S. brachistantha* cannot be maintained as a separate species from *S. nigricans*. The latter will then have the widest distribution-range in the genus in the New World ,extending from Mexico to southern Brazil. Second in range will be *S. Peckii*.

A long series of flowering specimens of *S. longisepala* and *S. Poeppigii* from as many localities as possible encompassing the range of the two may eventually amass numerous transitional forms and consequently suggest a revaluation of these. There is already evidence that *S. longisepala* approaches *S. Poeppigii*. Note should also be made of *S. tarapotensis*, the shortest-sepaled species in the triad, which should be considered the opposite extreme from *S. longisepala*.

Mention has already been made that *S. publiflora* is known from only the type collection. The following are likewise known from only the type collections: *S. Krukoffiana, S. xinguensis, S. Duckei, S. pachycarpa. S asperula* has been collected only twice. The two specimens cited for *S. Torresiana* were probably collected in a single locality. This species was described from sterile material. The satisfactory understanding of its position must remain in abeyance until the discovery of its flowers.

Additional collections of even the best known species will be valuable ,in some respect or other, for their better understanding. Most of those discussed above require further material and studies for settling many taxonomic problems in *Strychnos*.

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