

NEW CONCEPTS IN STYRAX FROM EASTERN COLOMBIA

BY

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THE identification of a number of plants from the isolated sandstone mountains of the upper Apaporis River basin in eastern Colombia has revealed a collection which represents a species of *Styrax* hitherto apparently undescribed. A distinct form of this species is represented by a collection from the ecologically similar sandstone mesa at Yapobodá at the headwaters of the Cuduyari, in the middle Vaupés River basin.

In the uppermost reaches of the Apaporis River, where the Ajaju and Macaya join, there are a number of grotesquely eroded quartzite mountains which rise abruptly from the flat, extensive Amazonian forest surrounding them. They represent the westernmost remnants of an ancient, now disrupted, mountain-mass which has its center in southern Venezuela and the Guianas. They can be followed westward and southwestward throughout the Colombian Amazonia where, across the Comisariás del Vaupés and Caquetá, there are extensive flat-topped ridges, isolated from each other often by many hundreds of kilometers. These ridges extend west as far as the upper Apaporis basin and San José del Guaviare, and southwest to the Falls of Araracuara on the Caquetá River (famous as Martius' westernmost collecting station and the type locality of many endemics) and La Chor-

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ra on the Igaraparaná River. Yapobodá, part of this broken range, is of special interest because, in the vast and sparsely explored Comisaría del Vaupés, it is located about midway between the westernmost mountains in the Apaporis and the Duida mass in Venezuela.

In many other localities in Amazonian Colombia, one finds distant and very indistinct outliers of this ancient formation in the form of small areas of white sand with a low caatinga-forest or savanna vegetation. So indistinct topographically are some of these formations that it might be difficult geologically to identify them with the ancient Venezuela-Guiana land-mass were it not for the fact that their flora is so strikingly different from that of the surrounding Amazon jungle and so similar to that of a number of analogous areas in southern Venezuela and in the Guianas. It can be shown that these isolated patches have an ancient remnant flora which is most closely allied to the flora of the Duida-Roraima ranges and of other peaks in the same far-distant mountains on the northern rim of the Amazon Valley.

As an example of these indistinct outliers, we may cite the rather extensive caatinga-forest between the headwaters of the Hamacayacu and Cotuhé Rivers in the interior of the *trapécio amazónico* (near Leticia). Similar areas occur near Mishuyacu and at Iquitos in Peru and at São Paulo de Olivença on the upper Amazon River in Brazil.

It is, therefore, apparent that a thorough study of the floras of these isolated mountains in eastern Colombia is of the utmost importance for a complete understanding of the origin and composition of the flora, not only of the Amazonas of Colombia, but also of large sectors of southern Venezuela, the Guianas and northern Amazonian Brazil. There would seem, likewise, to be some connection between this ancient flora rimming the north of the

Amazon Valley and that of the geologically old plateau which gives rise to most of the great southern tributaries of the Amazon. This might explain the apparently anomalous occurrence in northwesternmost Amazonia of rare elements which have their greatest diversification in southeastern Brazil; or, as in the case of the concept herein described, the close relationship of some species known from these two widely separated areas of central South America.

Mount Chiribiquete, the type locality of the *Styrax* which is herein described, has yielded a number of striking endemic plants and numerous species which exhibit a definite relationship with elements known only from Mounts Duida or Roraima. *Styrax rigidifolius* is one of the few species from the shrubby cover of the flat summit of Chiribiquete which does not seem to have a close ally in the northern Amazon region or on the Venezuela-Guiana land-mass. It is not common but grows hidden with the more abundant *Graffenrieda fantastica* Schultes, & Smith, *Ficus chiribiquetensis* Dugand, *Hevea nitida* Muell.-Arg. var. *toxicodendroides* (Schultes & Vinton) Schultes, *Roupala saxicola* Schultes, *Senefeldera chiribiquetensis* Schultes & Croizat, *Bombax coriaceum* Mart. & Zucc., *Vellozia phantasmagoria* Schultes, several *Vochysias*, numerous species of *Clusia*, an interesting *Ternstroemia*, and an undescribed species of *Leitgebia*. All of these plants are completely adapted to xerophytic conditions and high radiation, and, in this connection, it is interesting to note that *Styrax rigidifolius* itself has unusually rigid-coriaceous leaves with a very strongly inrolled margin.

There has been no species of *Styrax* recorded from Mount Duida. The only member of the genus reported from Mount Roraima is *Styrax roraimae* Perk., an endemic of this peak; it bears no relationship to *Styrax*

rigidifolius. *Styrax rigidifolius* would not seem to be closely allied to any known species, but it approaches most closely *S. ambiguus* Seub. of southeastern Brazil. If we are to judge from the description and a photograph of the type, *Styrax ambiguus* is very similar vegetatively to *S. rigidifolius* in having rather coriaceous or thick-papyraceous leaves of a small size with revolute margins, characters not common in the genus. There are, however, very appreciable differences in the size of the flower, the texture and indumentum of the calyx, the shape and size of the corolla lobes, the shape and size of the stamens, the pilosity at the point of union of the filaments with the corolla tube, and the form and pilosity of the ovary.

Styrax rigidifolius belongs to the section *Eustyrax*, series *Valvatae*. In the key to the species in Perkins' monograph (Pflanzenr. IV, 241 (1907)), the specimen which is here described as new traced out to the vicinity of *Styrax calvescens* Perk., an East Indian species with no relationship to *S. rigidifolius*.

***Styrax rigidifolius* Idrobo & R. E. Schultes sp. nov.**

Frutex parvus, usque ad octo pedes altus. Rami teretes, cortice griseo, juniores fusco-pulverulenti, demum glabrescentes, usque ad 5-6 mm. in diametro. Folia petiolata, oblongo-elliptica, longe acuminata, apice ipso acuta, basi subrotundata vel saepe rotundato-cuneata, rigide coriacea, integra, fusco-pulverulenta, maturitate 6-7 cm. longa, 2.3-3 cm. lata, margine valde revoluta, supra glabra (ochraceo-viridia in siccitate) vel in nervo centrali basim versus paulo sordide pulverulenta, nitida, subtus cinnamomea, juniora rufidula, dense et molliter praecipue nervos versus tomentosa, pilis albis minutissimis stellatis remotius brunneis cum pilis aloëformibus intermixtis vestita, supra nervo centrali immerso, subtus valde elevato,

venis lateralibus sex ad novem, leviter arcuatis, minoribus subparallis et obscure reticulatis; petioli in vivo sulcati ut videtur, 6-10 mm. longi. Inflorescentiae racemosae, axillares, brevissimae, usque ad octoflorae, rhachide minute ferrugineo-tomentosa, bracteis caducis, minutis, linguiformibus, 2 mm. longis. Flores (specimine viso) 15 mm. longi, pedicello 5 mm. longo; calyx cupuliformis, coriaceus, margine truncatus, minutissime quinque-denticulatus, extus asper, valde minutissime stellato-tomentosus, 5 mm. altus, 4 mm. latus, margine obscure subundulato; corolla quinquepartita, tubo 3 mm. longo, quam lobi multo brevior, lobis in aestivatione valvatis ut videtur, vivo recurvis, membranaceis, apice utrinque densissime albo-stellato-tomentosis, apice paulo subcuspidatis, leviter marginatis, 13 mm. longis, 2.5 mm. latis; stamina decem, filamentis parte libera aliquid planis corollae tubo conniventibus et pilis fasciculatis albis grossiuscule atque dense obstita; antherae 7 mm. longae, 0.7 mm. latae, dorsaliter glabrae, ventraliter thecas versus albobilosae; ovarium superum, pyriforme, dense albo-tomentosum, 2 mm. in diametro; stylus stamina longitudine aequans. Fructus maturitate cinereo-viridis, quadrangulato-ovoideus, 8-10 mm. longus, 4-5 mm. in diametro, minute aspero-tomentellus, apice truncatus, breviter mucronatus, calyce persistenti; semen unum, interdum duo (?), rufo-brunneum, glabrum, oblongo-ovoideum, 7 mm. longum, 4 mm. in diametro.

COLOMBIA: Comisaría del Vaupés, Macaya-Ajaju River confluence, Mount Chiribiquete. Quartzite base. Summit 800-1200 feet above forest floor; 1700-2100 feet above sea-level. "Low shrub. Flowers: petals white, recurved, anthers yellow. Fruit cupped, green." May 15-16, 1943, *Richard Evans Schultes 5468* (TYPE in U.S. Nat. Herb.; DUPLICATE TYPE in Herb. Nac. Colomb.).

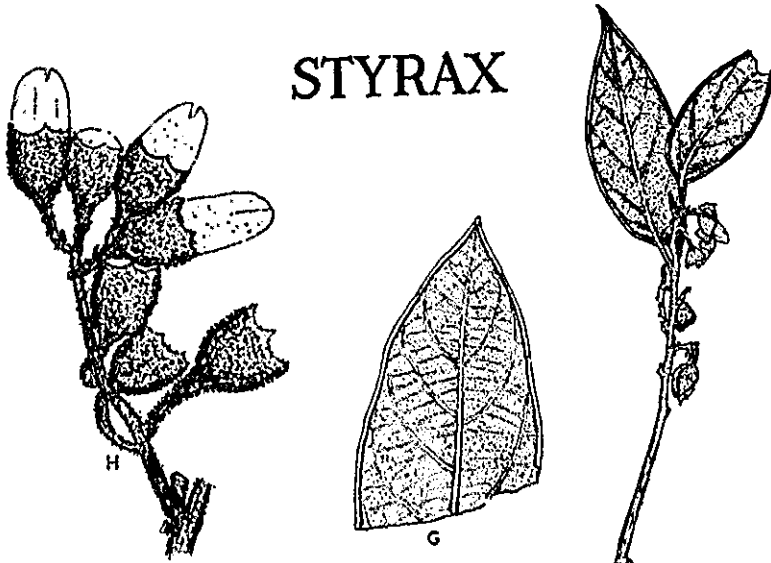
EXPLANATION OF THE ILLUSTRATION

PLATE XXXVIII. *STYRAX RIGIDIFOLIUS* *Idrobo & R. E. Schultes*. A. Flowering branch, one half natural size. B. Bud, twice natural size. C. Open flower, twice natural size. D. Dissection of flower, twice natural size. E. Young fruit, twice natural size. F. Young fruit showing embryo, twice natural size.

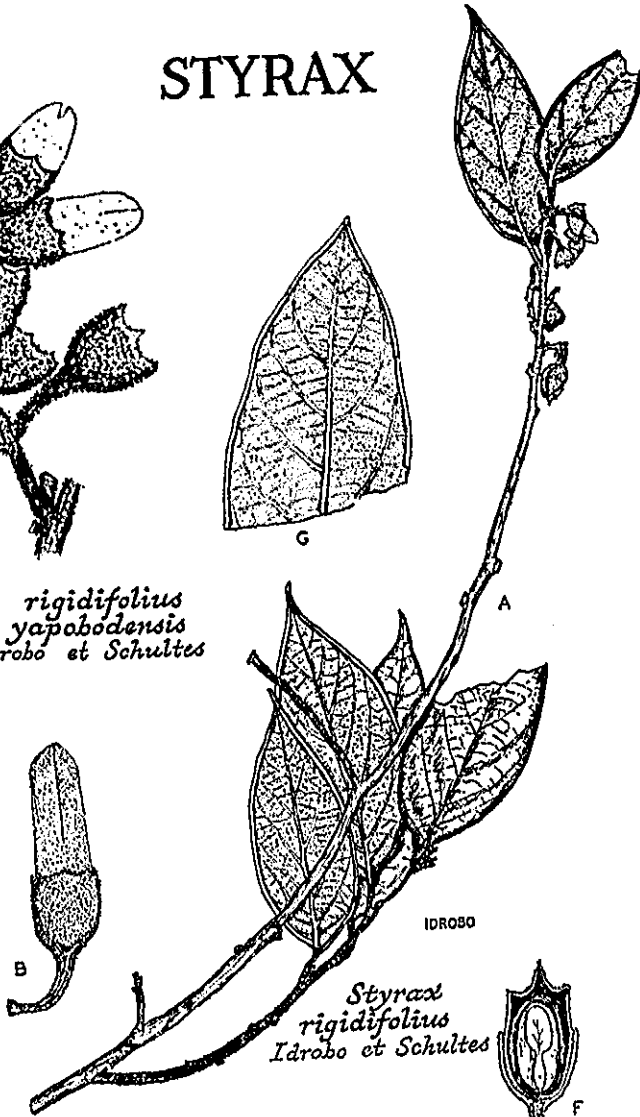
S. RIGIDIFOLIUS forma *YAPOBODENSIS* *Idrobo & R. E. Schultes*. G. Portion of leaf, one half natural size. H. Inflorescence with bud, twice natural size.

Drawn by JESUS M. IDROBO

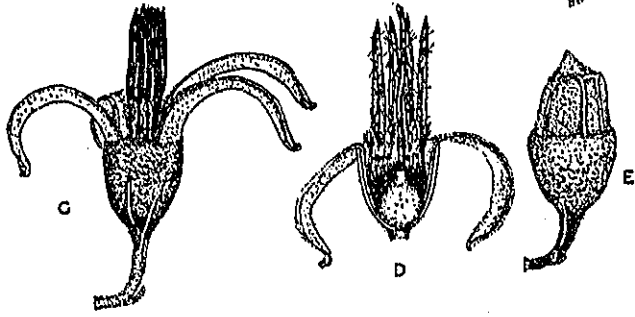
STYRAX



Styrax rigidifolius
fma. yapobodensis
Iárobo et Schultes



Styrax rigidifolius
Iárobo et Schultes



C

D

E

F

Styrax rigidifolius forma ***yapobodensis*** *Idrobo*
& *R. E. Schultes* forma *nova*.

A *Styrace rigidifolio* foliis majoribus, marginibus revolutioribus, cum apice acuto non longe acuminato, supra opacioribus, subtus rufioribus; alabastris minoribus; calycibus grossiuscule quinque-sinuato-denticulatis; atque foliorum et calycum indumento asperiorio et rufiore differt.

This *forma* appears to be an ecological adaptation to the extreme xerophytism of the sandstone mesa at Yapobodá. An examination of the interesting plants collected at Yapobodá by Allen and a comparison of them with those of Mount Chiribiquete indicates that an even more severe xerophytism exists at the former than at the latter locality. As an example, the collection *Allen 3190*, referable to *Bombax coriaceum* Mart. & Zucc. but with extraordinarily reduced leaves, may be cited.

The differences enumerated above in the description of the form would, for the most part, seem to be related to adaptation to extreme xerophytism and radiation.

COLOMBIA: Comisaría del Vaupés, [Cuduyari River], Yapobodá. "Tree 5 m. Flowers white." December 10, 1943, *Paul H. Allen 3232* (TYPE in U.S. Nat. Herb. 1951988).