

SEVEN SMALL PLANT COLLECTIONS IN COSTA RICA
AND NEIGHBORING PANAMA

William A. Dayton

At varying intervals between February and July, 1943, under a grant from the Office of the Coordinator of Inter-American Affairs, six members of the U. S. Forest Service, Messrs. Arthur Bevan, Clarence A. Merker, William R. Barbour, John A. Scholten, Elbert L. Little, Jr., and I, were assigned to give technical advice to engineers of the Pan American Highway, chiefly in Costa Rica, and other United States officials and agencies working in that region. Two formal reports on this assignment were issued (12,13). Large numbers of wood samples, under the supervision of Mr. Scholten, timber engineer, were collected and a set submitted to the late Dean Samuel J. Record of the Yale University School of Forestry for identification. The main set of wood samples was deposited at the Forest Products Laboratory, Madison, Wisconsin.

Botanical material was collected from the timber trees from which the wood samples were made. The party, mostly as a sideline, collected (largely in multiple sets) 264 plant specimens, mostly of trees, in Costa Rica, including 31 specimens collected in the neighboring Chiriquí Province, Panama. In addition, Mr. William R. Barbour, the only member of the party to spend this entire period in Costa Rica, later (on two other missions) submitted to the Forest Service 34 additional specimens (chiefly timber trees) from that country.

The handling of all this botanical material and its distribution to various herbaria was entrusted to the writer, who served as dendrologist of this party during the last two and a half months of the period mentioned. The bulk of the identification work was done by Dr. Paul C. Standley of the Field (Chicago) Natural History Museum. Mrs. Agnes Chase, the late Dr. William R. Maxon, Dr. E. S. Luttrell, Prof. A. LeRoy Andrews, Mr. Edwin B. Bartram, and Dr. Hugh O'Neill have identified the (relatively few) grasses, ferns and fernworts, lichens, sphagnums, mosses, and sedges, respectively. Dr. Caroline K. Allen later checked the Lauraceae. The hearty thanks of our party are extended to these botanists for their generous and invaluable cooperation.

The main collection is deposited in the Field (Chicago) Natural History Museum, but a set of specimens correlated with wood samples has gone to Yale University. Other partial sets are deposited in the U. S. National Herbarium, the Forest Service Herbarium in Washington, the Museo Nacional in San José, the Tropical Forest Experiment Station at Rio Piedras, P. R., and several prominent herbaria in this country.

Evidently the flora of Costa Rica and of much of Panama is still imperfectly known. Costa Rica, with an area smaller than that of West Virginia, has well over 1,000 species of trees -- or about as many as the whole of the United States, and several hundred of these are economically important. Three-fourths of this Central American republic are in virgin, trackless and almost impenetrable forest and it is likely that members of our party were able to visit certain areas where no forester or botanist had hitherto traveled, so that our relatively small collections have, we believe, more than average scientific interest.

These seven collections, consisting of 298 specimens, are as follows:

1. The "1st (Forest Service) Costa Rica Collection," Forest Service serial nos. 95011 to 95024, incl.; Barbour's nos. 1001 to 1014, incl. Collected by William R. Barbour in February and March, 1943; 14 specimens, all trees.

2. The "2d (Forest Service) Costa Rica Collection," Forest Service serial nos. 95025 to 95069, incl.; Little's nos. 6001 to 6045, incl. Collected by Elbert L. Little, Jr., in February, 1943; 45 specimens, all trees or shrubs.

3. The "3d (Forest Service) Costa Rica Collection," Forest Service nos. 95070 to 95240, incl., including 2 intercalary numbers; Dayton's nos. 3001 to 3161, incl., including 12 intercalary numbers. Collected by William A. Dayton in whole or in part in May and June, 1943; 173 specimens, chiefly trees, shrubs or woody vines. Thirteen of these numbers were collected by Dayton jointly with William R. Barbour; 6 specimens were collected jointly by Dayton with C. A. Merker and J. A. Scholten; and 3 numbers were collected jointly by Dayton with C. A. Merker.

4. The "1st (Forest Service) Panama Collection," Forest Service nos. 95241 to 94271, incl.; Little's nos. 6046-8; 6051-63, and 6068-82. Collected in March, 1943, by Elbert L. Little, Jr., in Chiriquí Province, Panama; 31 specimens, all but 1 trees or shrubs.

5. The "4th (Forest Service) Costa Rica Collection," Forest Service nos. 95742 to 95758, incl.; Barbour's nos. 1015 to 1031, incl. Collected by William R. Barbour in the San Isidro Valley and in a paramo of the Sierra de la Muerte in September and October, 1943; 17 specimens, 5 of them timber trees.

6. The "5th (Forest Service) Costa Rica Collection," Forest Service no. 97100; no collector's no. Collected on behalf of the Forest Service by Sr. Amada Aguilar, Jan., 1945, in the vicinity of Turrialba.

7. The "6th (Forest Service) Costa Rica Collection," Forest Service nos. 98080 to 98093, incl. (with three intercalary nos.); Barbour's nos. 1032 to 1051, incl. (except 1035-1037). Collected by William R. Barbour (on furlough from the Forest Service) Jan.-Feb., 1946.

These seven small collections include 6 species new to science and 7 others possibly or probably new; 2 specimens of "campana," a tree which cannot yet be definitely placed botanically; and 1 family (Humiriaceae) and 2 genera new to North America. In addition to the new species, 15 species are not in Standley's Flora of Costa Rica (21) and several of the Panama plants may be first records for Panama. Quite a number appear to be range extensions, and many trees were observed much larger than Standley's Flora indicates. The list that follows is annotated briefly in cases where it is believed that our collections and notes have added something of interest to the record. The identifications, unless otherwise indicated, are by Dr. Standley. The left-hand numbers are those of the collectors (the 1000 sequence being Mr. Barbour's, the 3000 sequence those of the writer, and the 6000 sequence those of Dr. Little). The right-hand numbers are U. S. Forest Service Herbarium numbers. A prefixed "P" indicates a Panama plant; all others are Costa Rican. A prefixed asterisk (*) indicates that the species is not listed in Standley's Flora of Costa Rica. Abbreviations include: D.B.H., diameter breast high; fl., flowering; fr., fruiting; m., meters.

C R Y P T O G A M S

As Standley's Flora of Costa Rica (21) does not include cryptogams none of the cryptogams named below are starred.

L I C H E N E S

(Identified by Dr. E. S. Luttrell)

3143.	<u>Peltigera canina</u> (L.) Willd.	95105
3070.	<u>Stereocaulon</u> sp.	95096
3032.	<u>Sticta amplissima</u> (Scop.) Rabenh.	95116
3031.	" <u>sylvatica</u> (Huds.) Ach.	95117

B R Y O P H Y T A

MUSCI

SPHAGNACEAE

(Identified by Prof. A. LeRoy Andrews)

3060.	<u>Sphagnum meridense</u> (Hampe) C. M.	95128 -- mixed with a
		(little <u>S. magellanicum</u> Brid.
3038.	" "	95129 -- do.

DICRANACEAE

(Identified by Edwin B. Bartram)

3034.	<u>Dicranum frigidum</u> C. M.	95107
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ORTHOTRICHACEAE

(Identified by Edwin B. Bartram)

3066. Macromitrium serrulatum Mitt. 95113 --syn. M. verrucosum Bartr.

THUIDACEAE

(Identified by Edwin B. Bartram)

3057. Thuidium delicatulum (Hedw.) Mitt. 95112

SEMATOPHYLLACEAE

(Identified by Edwin B. Bartram)

- 3121a. Sematophyllum caespitosum (Swartz) Mitt. 95121

HEPATICA

3033. An unnamed hepatic 95087

P T E R I D O P H Y T A

(Identified by the late Dr. William R. Maxon)

FILICALESCYATHACEAE and Other Tree Ferns

The tree fern flora of Costa Rica is a rich one, but our party collected no material of these. A characteristic specimen is shown in Fig. 1. Fern tree trunk sections are used commonly in Costa Rica for growing orchids.

HYMENOPHYLLACEAE

3036. Hymenophyllum sp. 95099 --"sterile; not recognized" (W.R.M.).

POLYPODIACEAE

3120. Anogramma leptophylla (L.) Link 95132
 3121. Cochlidium rostratum (Hook.) Maxon 95102 --intermixed
 (with a depauperate sterile specimen
 of Elaphoglossum.
 3037. Dryopteris denticulata (Sw.) Kuntze 95100 --"very depau-
 perate" (W.R.M.).
 3083. Polypodium moniliforme Lag. 95120 --"mixed with
 (a small species of Jamesonia" (W.
 (R.M.).
 3047. " myriolepis Christ 95119
 3022. " percussum Cav. 95118

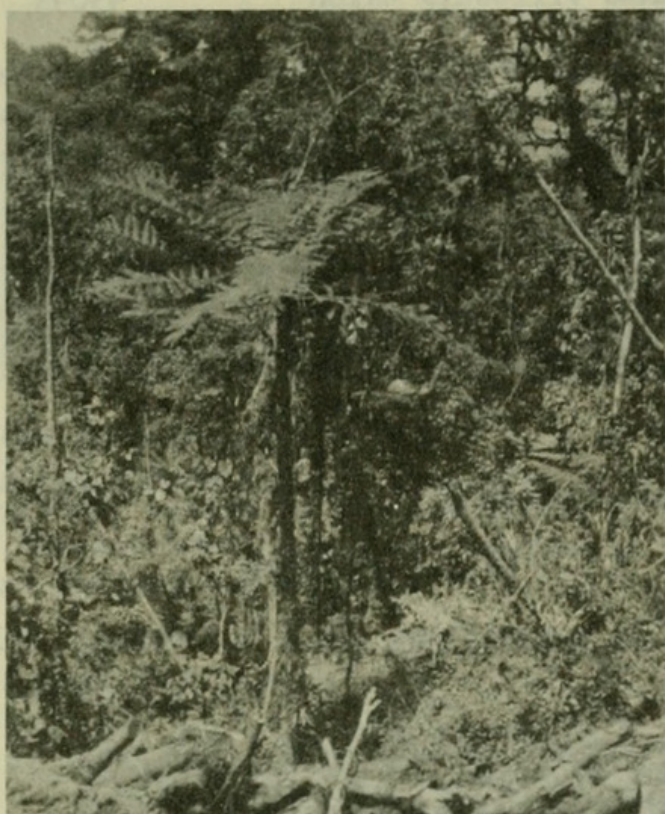


Fig. 1. A characteristic tree fern near route of Pan American Highway, Costa Rica. Photo by Wm. R. Barbour, 1943.

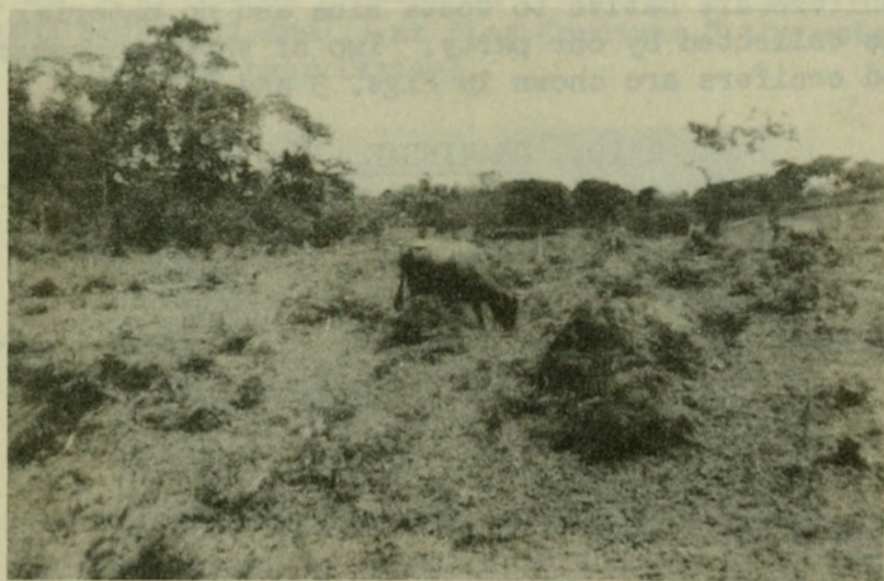


Fig. 2. Cleared pasture land near San Isidro del General. The bracken (Pteridium sp.) is mostly unmolested by the cattle, the palatability being low, as in the United States.

3035. Psilogramme villosula Maxon 95098
Pteridium sp.

Bracken was abundantly observed on cleared pasture land near San Isidro del General. Its palatability is low, as in the United States, and it is mostly unmoles-
 ted by cattle. (Fig. 2).

- 3120a. Rhipidopteris peltata (Sw.) Schott 95101
 3055. Vittaria filifolia Fée 95131

LYCOPODIALES

LYCOPODIACEAE

3074. Lycopodium contiguum Kl. 95111

SELAGINELLACEAE

3009. Selaginella poeppigiana (H. & G.) Spring 95124½ --"sens.
 (lat." (W.R.M.).

PHANEROGAMS

5. TAXACEAE

6030. Podocarpus montanus (Willd.) Lodd. 95045 --"Cipresil-
 lo"; "Cobola."

6. CONIFERAE

No conifers are native to Costa Rica and no material of this family was collected by our party. Two of the most commonly cultivated conifers are shown in Figs. 3 and 4.

19. GRAMINEAE

(Identified by Mrs. Agnes Chase)

Bambuseae

3075. Chusquea subtessellata Hitchc. 95070 --"particu-
 (larly fine specimen" (A. Ch.)

Festuceae

3140. Festuca tolucensis H. B. K. 95072
 Abundant in patches near summit of Irazú, 3400 m.
 3051. Poa annua L. 95078
 Abundant in clearing, near Ojo de Agua, Copey oak forma-
 tion, Cartago Province, 2900 m.



Fig. 3. San José housetops, with a pair of Norfolk-Island-pine trees (Araucaria excelsa R. Br.) to left of center. These stately evergreens, native to Norfolk Island (between New Zealand and the New Hebrides) are often planted in Costa Rican city parks and in front of churches.



Fig. 4. A windbreak of Bentham ("Mexican") cypress (Cupressus benthamii Endl.) at "Las Concavas," the estate of Mr. C. H. Lankester near Cartago.

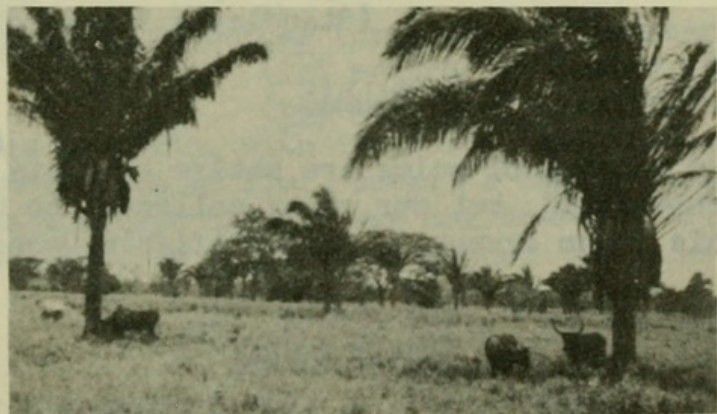


Fig. 5. Pasture land in Guanacaste. The Coyol palms (Acrocomia vinifera Oerst.) are left standing, furnishing shade for cattle, which also greedily devour the fruits. Note the survival of the blood of the old Spanish "longhorns" in the animal at the right. Photo by John A. Scholten, 1943.

A v e n e a e

3139. Trisetum irazuense (Kuntze) Hitchc. 95081 --"exception-
(ally robust specimen" (A. Ch.).
Near summit of Irazú, 3400 m.

A g r o s t i d e a e

3138. Agrostis tolucensis H.B.K. 95070
One of the most characteristic plants near summit of
Irazú, 3400 m.

P a n i c e a e

3130. Ichnanthus pallens (Swartz) Munro 95076 (= Panicum pal-
lens Swartz)
3013a. Panicum maximum Jacq. 95074 --"Zacate de
Guinea"
----. " polygonatum Schrad. 95073
----. " xalapense H.B.K. 95075
3110. Paspalum paniculatum L. 95077
3013b. Pennisetum purpureum Schumacher 95079 --"Yerba ele-
fante."
3013c. Pseudechinolaena polystachya (H.B.K.) Stapf 95080

20. CYPERACEAE

(Identified by Dr. Hugh O'Neill)

- 3013d. Cyperus diffusus Vahl, var. tolucensis 95082 --"a com-
(H.B.K.) Kükenthal (mon species on the edges of the
(mahogany forests in British Hon-
(duras and Guatemala" (H.O.). The
(species, not the var., is in
(Standley's "Flora of Costa Rica."

21. PALMAE

Nearly 100 species of palms are native to Costa Rica and many others are cultivated, but our party collected no botanical material of this group except an unidentifiable Geonoma. See Fig. 5.

32. BROMELIACEAE

3079. Puya dasylirioides Standl. 95122 --"still very
(rare in herbaria" (P.C.S.).

This bizarre plant, somewhat suggesting a cross between a century plant and a mullein, was collected by me on May 14 in a paramo near Dos Burros Peaks, Cerro de la Muerte, 3400 m. The dried fruiting stalks of the past season were still persistent,

and the great, succulent, clublike thyrses of the present year were sufficiently advanced to show that the flowers (which, so far as I know, have not been described), when they emerge, would have a rich larkspur-blue hue.

36. JUNCACEAE

3142. Luzula gigantea Desv. 95083

38. LILIACEAE

3030. Smilacina paniculata Mart. & Gal. 95126
Near Ojo de Agua Camp, Cartago Prov., 2900 m. May 13,
fl. Not epiphytic here.
3135. Same as no. 3030. 95127
1023. do. 95745

40. AMARYLLIDACEAE

- P 6081. Agave sp. 95241 --held person-
(ally by Dr. Little for further
(study. Possibly new.
3141. Bomarea acutifolia (Link & Otto) Herb. 95138
Near summit of Irazú, 3400 m.
3146. Same as no. 3141 95139 --"these
(two collections are somewhat dif-
(ferent and may represent distinct
(species, but I cannot find any
(other name for either" (P.C.S.).
1021. Bomarea acutifolia (Link & Otto) Herb. 95742

50. ORCHIDACEAE

(Identified by Prof. Oakes Ames)

- P 6082. Pachyphyllum muscoides (Kraenzl.) Schlechter 95263 --
(1st record for Panama. (=Orchidoty-
(pus muscoides Kraenzl.)

This specimen, with its notes, is, I presume, now in the possession of Prof. Ames. I have no record here of the data except that it was collected by Dr. Little Mar. 7, fl., in Chiriquí Province.

53. PIPERACEAE

6021. Piper irazuanum C. DC. 95044
Macho Gap Camp, 39 kilom. s. of Cartago, 2500 m.,
cloud (oak) forest. Dr. Little reports it as a small
tree 4.6 m. high with a 5-cm. D.B.H., the flowers
whitish green.

56. SALICACEAE

The Humboldt willow (Salix humboldtiana Willd.) is the only willow in Costa Rica. It is difficult to believe it is not native to the country; if not native, it is thoroughly naturalized. Dr. C. R. Ball tells me that Salix chilensis Molina (to which this species is sometimes referred) is a nomen ambiguum and that it is doubtful if it is a willow at all. We collected no botanical material of this willow. See Fig. 6.

57. MYRICACEAE

6018. Myrica pubescens Willd. 95037
Macho Gap Camp, 39 kilom. s. of Cartago and 5 kilom. n. of Copey, 2500 m., cloud (oak) forest, 6 m. high, 1 dm. D.B.H. Dr. Little reports the bark as whitish. Feb. 18, fl.

61. BETULACEAE

6037. Alnus acuminata H.B.K. 95026 --"Jaul." Dr.
(Little reports this tree, collected (near summit of Cerros de Escazú, (San José Province, as 15 m. high, (with a D.B.H. of 4.5 dm.

62. FAGACEAE

- * 6010. Quercus aaata C. H. Mull. 95046 --"Roble." Leaves (3 to 5 cm. long, oblong type, somewhat glaucous, rather coriaceous, (apices rounded.
6035. Quercus aaata C. H. Mull. 95054
Leaves of a lanceolate type, acuminate, about 7.5 cm. long.
6038. Quercus aaata C. H. Mull. 95060
Leaves oblong-lanceolate, mostly conspicuously toothed, acuminate, about 9 cm. long, relatively thin.
3153. Quercus aaata C. H. Mull. 95224
Just above Robert's finca, road up Irazú, 2900 m., assoc. with Q. irazuensis and Buddleia alpina. Tree 22 m. high, 4.5 dm. D.B.H., no acorns found (June 20).
6009. Quercus borucasana Trel. 95052
- * 6001. Quercus copeyensis C. H. Mull. 95048 --"Roble."
6002. " " 95049
6003. " " 95057
6004. " " 95058
6005. " " 95050
6008. " " 95051
6039. " " 95053
3084. " " 95223 --Near Ojo de Agua.

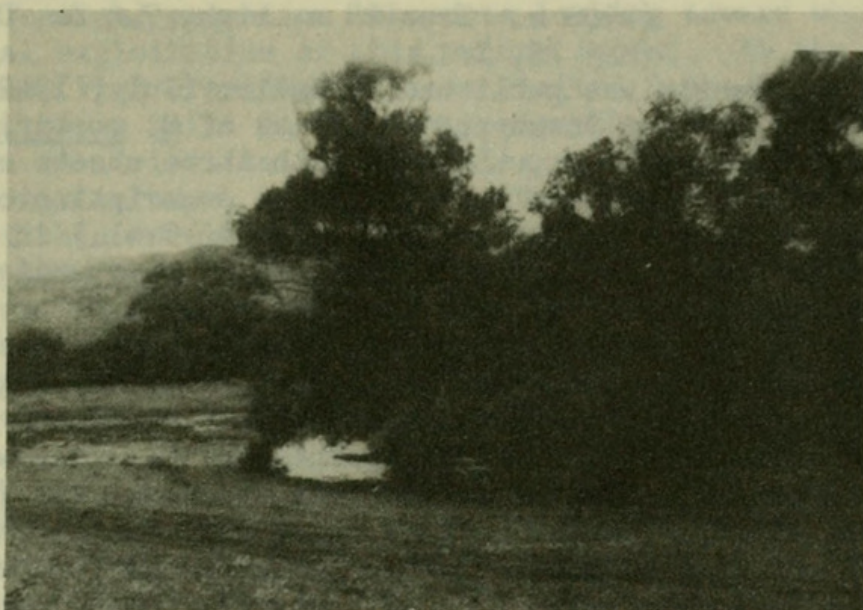


Fig. 6. Humboldt willow (Salix humboldtiana Willd.) at Las Concavas, the estate of Mr. C. H. Lankester near Cartago.

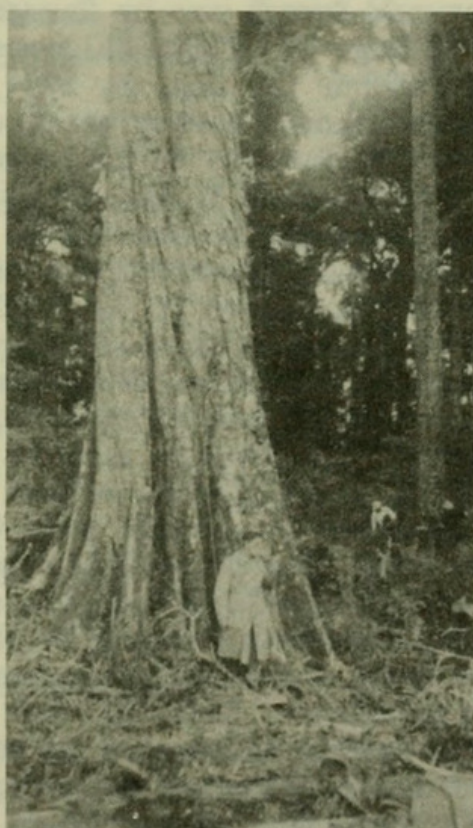


Fig. 7. A stand of veteran Copey oaks (Quercus copeyensis C. H. Mull.). Mr. Arthur Bevan, former Director, Tropical Forest Expt. Sta., U. S. Forest Service, stands at base of tree in foreground. Photo by Wm. R. Barbour, 1943.

((Mills Co.) Camp, Pan American Highway,
(2900 m. Tree 28 m. high, 7.6 dm. D.B.H.
(May 15, fr.

Quercus copeyensis was published by Muller (July, 1942) to cover the type (but not "isotype") material of Q. costaricensis Liebm., forma kuntzei Trel., together with three sheets of Costa Rica and one sheet of Panama material. The description of Q. costaricensis (and possibly also of Q. endresi Trel.) in Standley's Flora of Costa Rica probably embraces Q. copeyensis as well. Muller describes this tree as "15 m. in height or taller." It seems likely that, until the U. S. Army engineers extended the route of the Pan American Highway into the high elevations in Costa Rica where this oak occurs in an almost pure stand and reaches its optimum development, this species was known only from a few scattered botanical specimens and from outlying locations. Certainly there is no hint in the references mentioned that this is, in some ways, one of the most remarkable oaks in the world (14,21). Messrs. Bevan, Barbour and Little were probably the first foresters and botanists to see this unique forest (2,5,7,8). I proposed in 1943 the English name "Copey oak" for this species; the Spanish equivalent would, I presume, be roble de Copey or, simply, roble Copey. So far as I have been able to ascertain the first published references to this Copey oak forest are by Thompson (24) Aug. 15, 1943, and by Carter (6) Aug. 26, 1943, followed shortly by more detailed accounts by Barbour (2) Sep. 1, 1943, and by Bevan (5) October, 1943. Barbour reports having measured a Copey oak 36.5 m. high with a 2.5 m. D.B.H. He indicates that extensive areas will run 20,000 board feet to the acre, and that individual acres will run at least 60,000 board feet each. Bevan refers to this Costa Rican Copey oak forest as "perhaps the largest single stand of oak timber in the world." The largest specimens he says are 38 m. or more tall, heavily buttressed at their bases to a height of 3 to 4 m. above ground, with a diameter of from 2 to 2.5 m. above the buttresses, and extending 25 m. to the first limb. The immense size of the individual trees in a veteran stand of this sort is hard to realize unless one sees a man or some other comparable object beside one of these giant oaks (see Fig. 7). Bevan aptly dubs this forest "the ancestral home of the gremlins," an illusion to the weird light effects and swirling mists which give this type of cloud forest an almost unearthly and "spooky" appearance. Thompson (op. cit.) refers to my opinion that this oak may prove to be the largest oak in the world, surpassing in size the valley oak of California and the white oak of eastern North America.

Miss Waterman (26) found the extractive of the heartwood toxic to two wood-decay fungi. The Forest Products Laboratory, Madison, Wisc., placed the wood intermediate between that of white and live oaks in hardness. The wood is durable (19).

Vogt (25) has guardedly alluded to the subject of selfish (mostly foreign) promotion interests looking toward wholesale commercial exploitation of this unique forest. At the time when former Vice President Wallace visited Costa Rica in March, 1943, Mr. Bevan tells me that he personally accompanied the Vice President in a visit to Sr. Montealegre, the Costa Rican Ministerio de Agricultura, at which time the subject of preserving a screen of this forest along the Highway, in the form of a national park, was discussed. I have a letter, dated Oct. 22, 1943, from Dr. Jorge León, Botanist of the Museo Nacional in San José, in which he states that Sr. Montealegre has appointed him a member of a commission of six conservation-minded persons "para estudiar las formas y medios necesarios para conservar nuestros bosques." It is to be hoped that some effective measures may be adopted to preserve a part of this unique forest from destruction, including at least a fringe of these oaks where the Pan American Highway transects the forest. Fig. 7.

6011. Quercus eugeniaefolia Liebm. 95055

6045. " " 95056

3154. " irazuensis Kuntze 95225

Above Roberts' finca, road up Irazú, 2900 m., assoc. with Q. aáata and Buddleia alpina. Tree 15 m. high, 3 dm. D.B.H.; no acorns found (June 20).

1013. Quercus oocarpa Liebm. 95021

6036. " " 95059

P 6055. " " 95267

The leaves of this sp. somewhat suggest that of the U. S. Q. mühlenbergii. Mr. Barbour reports that this species is locally considered the best of the oaks; wood durable and extremely hard, suitable for general construction.

P 6054. Quercus seemannii Liebm. 95268

Wood sample taken. Tree 30 m. high, 8 dm. in diameter above the buttresses.

63. ULMACEAE

P 6060. Chaetoptelea mexicana Liebm. 95243 (syn. Ulmus mexicanus (Liebm.) Planch.). "Cenizo"; ("Tirra"; "Mexican elm.")

P 6074. Chaetoptelea mexicana Liebm. 95244

P 6076. " " 95245

This species is so thoroughly elmlike in all respects except as to the wingless nutlets, that I personally would prefer to keep it in Ulmus. Miss Waterman (26) found the heartwood extractive very toxic to the growth of two wood-decay fungi.

64. MORACEAE

- 3019.
- Coussapoa donnell-smithii
- Mildbr. 95166

95. MAGNOLIACEAE

- 3050.
- Drimys winteri
- Forst. 95162 --"Quiebra-
-
- (muelas"; "Muelo"; "Wintersbark."

The silvery under-surfaces of the leaves make this tree a conspicuous object in the dark highland forests it inhabits; the pungent reddish inner bark is also highly diagnostic. Collected in cloud (oak) forest type, 2900 m., near Ojo de Agua (Mills Co.) Camp, Pan American Highway.

- 6029.
- Drimys winteri
- Forst. 95043 --"Quiebra-
-
- muelas."

Near Camp Empalme, along Pan American Highway, Cartago Province. The material, collected February 15, is in immature fruit. Dr. Little reports this tree as 15 m. high, 3 dm. D.B.H.

- 6028.
- Magnolia poasana
- (Pittier) Dandy 95041

Lt. Childs, Medical Corps, U.S.A., informs me that Dr. León, of the Museo Nacional, San José, states that use of the vernacular name "Candelillo" for this single native Costa Rican magnolia is erroneous.

98. ANNONACEAE

- 3044.
- Rollinia microsepala
- Standl. 95226 --"the second
-
- (collection" (P.C.S.). "Anona."

Hills 5 miles s. of Siquirres, Limón Province, 152 m. Tree 28 m. high, 7 dm. D.B.H., 14 m. usable length; wood sample taken.

99. MYRISTICACEAE

- 3160.
- Compsonura sprucei
- (A. DC.) Warb. 95208

The nutmeg-like fruits are reported to be used locally as a substitute for nutmeg, but they seem to me to lack aromatic properties.

- 3003.
- Virola koschnyi
- Warb. 95238 --"Fruta dura-
-
- da."

Hills above Las Palomas, Limón Province, 730 m.; wood sample taken. May 6, fl. Third collection record?

- 1015.
- Virola sebifera
- Aubl. 95758

1042. " " 98091

102. LAURACEAE

(Identification by Dr. Caroline K. Allen)

6012. Aiouea costaricensis (Mez) Kostermans 95038 (syn. Bellota costaricensis Mez); "Ira (rosa." Near Camp Empalme, along Continental Divide 29 kilom. s. of Cartago. Dr. Little reports this a tree 18 m. high, with 2.5 dm. D.B.H.
6023. Aiouea costaricensis (Mez) Kostermans 95040
3126. Beilschmiedia austin-smithii (Standl.) Allen (?) 95218-
("Bolador." (Syn. Persea austin-smithii Standl.). About 5 kilom. from San Isidro del General, San José Province, 825 m. Large tree; bark smooth, light gray; wood sample taken. "Need flowers or fruit" (C.K.A.). (This species known hitherto only from the type locality, Palmira, Alajuela Province (1,21). Apparently a range extension and a second record for the species.
- * 1032. Licaria excelsa Kostermans 98084 $\frac{1}{2}$ --apparently 2d (Costa Rica record. Specimen deposited in U.S. National Herbarium.
1040. Nectandra brenesii (Standl.) Allen 98085 (syn. Ocotea brenesii Standl.)
3123. Nectandra concinna Nees 95211 --"Colorado."
- * 1012. Nectandra cufodontisii (O.C.Schmidt) Allen (?) 95017--
("possibly" (C.K.A.) or "possibly" N. sinuata Mez (as Standley identified it). "Quizarrá (zopilote." About 915 m., 6.5 kilom. east of Turrialba. Mr. Barbour reports this a tree 15 m. high, 2.5 dm. D.B.H. May 21, fl.; flowers yellowish white. Wood sample taken; wood (first quality for general use.
- P 6047. Nectandra whitei (Woodson) Allen 95253 (syn. Ocotea whitei Woodson). "Bambito"; "Bambito colorado." Eight kilom. n. of Camp El Volcán, Chiriquí Province, 1830 m. Dr. Little reports (this a tree 28 m. high, 4.5 dm. D.B.H., 18 m. clear. March 2, fl. Fruit greenish, 32 mm. long, including the cup. Wood reddish; sample taken.
- P 6056. Nectandra whitei (Woodson) Allen 95254
Three kilom. n. of Camp El Volcán, Chiriquí Province, 1310 m. Dr. Little reports it a large tree 37 m. high, 9 dm. D.B.H. March 3, immature fruit.
- P 6062. Nectandra whitei (Woodson) Allen 95252 --"Sigua amarilla."
Same location as above. Reported by Dr. Little to be a tree 37 m. high, 9 dm. in diameter above the buttresses 3 m. above the ground; 18 m. clear. March 3, immature fruit.

- P 6069. Nectandra whitei (Woodson) Allen 95259 --same site as above.
1019. ? Nectandra sp. 95753 --"Arenillo."
(Material sterile. "Probably Nectandra sp., but I am unable to place it (definitely" (P.C.S.).
- * 3124. Ocotea atirrensis Mez & J.D. Smith 95214 --"Tiquis-saró." About 5 kilom. toward La (Division from San Isidro del General, (825 m. Large tree with smooth gray bark; wood sample taken. Associated (with bolador, chanco blanco, colorado, comenegro, etc. Flowers and (fruit not seen.
- * 6007. Ocotea austinii Allen (1) 95042
Near Camp Empalme, about 29 kilom. s. of Cartago, San José Province. Fruit about 2 cm. long; leaves distinctly petiolate. Reported by Dr. Little as a tree 18 m. high, 3 dm. D.B.H. Wood sample taken.
1011. Ocotea palmana Mez & J.D. Smith 95018 --"Ira zopilote."
About 6.5 kilom. east of Turrialba, over 915 m. Mr. Barbour reports this a tree 18 m. high, 2.5 dm. D.B.H., 9 m. clear. Wood sample taken; first-quality wood for general use.
3093. Ocotea veraguensis (Meissn.) Mez 95212 --"Quizzará."
("This is one of the few Central American Lauraceae that can be named with (complete confidence" (P.C.S.).
- P 6078. Ocotea sp. 95261 --"Sigua canel-la."
Three kilom. north of Camp El Volcán, Chiriquí Province. Uncommon. Dr. Little reports this a tree 40 m. high, 11.7 dm. in diameter above buttresses (2.5 m. above the ground). Wood sample taken. "Need flowers or fruit" (C.K.A.).
- P 6057. Persea rigens Allen 95255 --"Pizarra."
Leaves much larger (about 3 dm.) and differing in form (oblong-lanceolate and acuminate) from those of no. 6058. Three kilom. north of Camp El Volcán, Chiriquí Province, 1310 m. Dr. Little reports this a tree 12 m. high, with a 1.5 dm. D.B.H. Previously determined by Standley as P. pallida Mez & Pittier.
- P 6058. Persea rigens Allen 95256
Same site as above. Leaves coriaceous, crisp, oblong, acute, 3.5 cm. long. A larger tree than no. 6058, 9 dm. in diameter above buttresses (2.5 m. above ground); 12 m. clear. March 3, immature flowers. Previously determined by Standley as P. pallida Mez & Pittier.

- P 6075. Persea rigens Allen, sp. nov. 95265 --THE TYPE (1).
"Pizarra."

Same site as above. Dr. Little reports it a tree 27 m. high; wood sample taken. March 5; no flowers nor fruit seen.

- P 6059. Persea rigens Allen 95257 --"Bambito Colorado."

About 3 kilom. north of Camp El Volcán, Chiriquí Province, 1310 m. Dr. Little reports it a tree 34 m. high, 6 dm. in diameter above the buttresses at 2 m. March 3, immature flowers.

- * 1033. Phoebe amplifolia Mez & J.D. Smith 98085½ --apparent-
(ly a second Costa Rica record. Spe-
(cimen deposited in U.S. National
(Herbarium.

105. CRUCIFERAE

3150. Lepidium costaricense Thell. 95109

117. SAXIFRAGACEAE

1025. Ribes ciliatum Humb. & Bonpl. 95754

The leaves of Mr. Barbour's material (all of which is at the Chicago Museum) are, as I recall, considerably larger than the maximum of "2 cm. long" indicated in Standley's Flora of Costa Rica.

119. BRUNELLIACEAE

6031. Brunellia costaricensis Standl. 95069

6032. " " 95035

Near Camp Empalme, along Pan American Highway, at 2225 m., cloud forest (oak) type. Dr. Little reports this tree to be about 18 m. high, with a 3 dm. D.B.H.

120. CUNONIACEAE

6006. Weinmannia pinnata L. 95067 --"Lorito";
("Arrayán"; "Mora."

Near Camp Empalme, about 29 kilom. south of Cartago, San José Prov., 2225 m. Dr. Little reports this tree to be 26 m. high, 3.5 dm. D.B.H.; usable length 14 m.; Wood sample taken. The maximum height indicated for this sp. in the Flora of Costa Rica is 6 meters.

6014. Weinmannia pinnata L. 95068 --"Arrayán
mora."

126. ROSACEAE

ROSOIDEAE

S a n g u i s o r b e a e

3061. Acaena cylindrostachya Ruiz & Pavon 95084
 3088. Alchemilla pascuorum Standl. 95124
 3151. " " 95085

R u b e a e

3063. Rubus glaucus Benth. 95123 --"the fruit of
 (this is, I think, the best of its
 (genus" (P.C.S.).

PRUNOIDEAE (family AMYGDALACEAE of some authors)

- P 6080. Prunus annularis Koehne 95262 --"Mamey." 1st
 (record for Panama? 3 kilom. north of Camp
 (El Volcán, Chiriquí Prov., 1310 m. Dr.
 (Little reports this as 33.5 m. high, with
 (4.5 dm. D.B.H., 18 m. clear. Wood sample
 (taken. March 5, no flowers nor fruit. The
 (maximum known height of this species in
 (Costa Rica noted in the Flora of Costa Rica
 (is indicated as 9 m.

128. LEGUMINOSAEMIMOSOIDEAE (family MIMOSACEAE of some authors)I n g e a e

3097. Albizia adinocephala (Donn. Smith) Britt. & Rose 95134
 About 5 kilom. south of Nicoya, Guanacaste Prov.,
 245 m. Tree 9 m. high, 2 dm. D.B.H. Wood sample
 taken. The generic name is ordinarily spelled Albiz-
ia. Although Durazzini definitely states that the
 eponym of this genus is the Chevalier Filippo degl'
 Albizzi, his original spelling of the genus is consis-
 tently Albizia and he evidently preferred that ortho-
 graphy.
- * 1008. Inga barbourii Standl., n. sp. (23) 95013 --"Guaba."
 (About 6.5 kilom. east of Turrialba, over
 (915 m. Mr. Barbour reports this a tree
 (32 m. high, with 4 dm. D.B.H., 14 m.
 (clear.
1010. Inga biolleyana Pittier 95014
 Same locality as no. 1008 above. Mr. Barbour re-
 ports this a tree 37 m. high, 3.5 dm. D.B.H., 18 m.
 clear.
- P 6053. Inga leptoloba Schlecht. 95240 --"Guaba." Wood
 sample taken.
1045. " " 98084

3128. Inga multijuga Benth. 95188 --"Guaba."
Near San Isidro del General, 760 m. Tree 15 m.
high, with smooth gray bark; size up to 6 dm. D.B.H.
Leaflets shiny above; pod about 18 cm. long, flat-
tened, septate, with sharply raised margins.
3018. Inga pittieri Micheli (?) 95186 --sterile; "un-
(certain in this condition" (P.C.S.).
3114. Inga spectabilis (Vahl) Willd. 95187 --"no uncertainty
(about this one, for no other species
(has leaves like these" (P.C.S.).
3099. Lysiloma desmostachys Benth. 95203 --1st definite
(record for Costa Rica? This tree
(was in full bloom when collected
(May 25; limestone formation about
(5 kilom. south of Nicoya, 245 m.).
(The tree deserves cultivation as an
(ornamental. The flowers, in profuse
(spiciform clusters, have a rich
(aniselike scent, a matter I do not
(recall having seen mentioned in lit-
(erature. Wood sample taken.
3017. Pithecellobium longifolium (Humb. & Bonpl.)
Standl. 95185
3113. " " 95220
Along stream near Wunderlich Camp, San Isidro del
General, San José Prov., 610 m. June 9, fr., the pods
strongly falciform.
1014. Pithecellobium racemiflorum Donn. Smith 95019 --"Cha-
perno."
About 6.5 kilom. east of Turrialba, over 915 m.
Mr. Barbour reports this a tree 28 m. high, with 4.5
dm. D.B.H., 9 m. clear. May 21, fl.; flowers white.
Wood sample taken; wood second-quality for general
uses.
3024. Pithecellobium saman (Jacq.) Benth. 95130 --"Ceníce-
(ro." (syn. Samanea saman (Jacq.)
(Merrill)
The name of this genus is usually misspelled Pithe-
colobium or Pithecollobium, both of which forms are
contrary to the original spelling and obscure the ety-
mology (10).

A c a c i e a e

- * 3002. Mimosa (?) 95207 --"Cascha." "I
(cannot run this down in Standley's key in his
(Flora of the Panama Canal Zone (20) nor match
(it with descriptions in his Flora of Costa
(Rica (21). Does Leucaena ever have bipinnate
(leaves" (W.A.D., 5/22/43). "I have checked
(this carefully against all the Central

(American Mimoseae, and it is not any species known from the region. It is no known species of Leucaena, and the flowers are racemose, not capitate as in that genus. By exclusion it is (almost necessary for it to be placed in Mimosa, but pods are necessary for complete determination" (P.C.S., 8/19/43). Of the wood the late Prof. Record says (6/7/44), "I cannot match it." Near Siquirres, Limón Prov., 65 m. Unarmed tree; white flowers, the 10 stamens with free filaments.

A d e n a n t h e r e a e

1048. Stryphnodendron excelsum Harms 98089
El General Valley. Third collection known? The late Prof. Record intimates that this is the first time a wood sample of this genus and species has been obtained.

CAESALPINOIDEAE (family CAESALPINIACEAE of some authors)

3098. Caesalpinia eriostachys Benth. 95142 --"Saena."
Near Nicoya, Guanacaste Prov., on limestone ridge.
Furnishes a hard wood.
1006. Cassia grandis L. f. 95011 --"Carao."
1051. Prioria copaifera Griseb. 98086 --"Cativo."

PAPILIONATAE (family FABACEAE of some authors)

S o p h o r e a e

- * 3127. Ormosia toledoana Standl. (?) 95215 --"probably"
(P.C.S.).
About 1.6 kilom. north of San Isidro del General, 760 m. Tree with smooth gray brown bark (larger trees with cinnamon-colored bark). Tree 22 m. high, with 2.5 dm. D.B.H., 6 m. clear; sizes up to 1.2 m. D.B.H. No flowers nor fruit seen. Wood sample taken. The late Prof. Record (6/7/44) reported: "No. 3127 is not Ormosia, but so far I have not been able to place it."
1003. Sweetia panamensis Benth. 95022 --"Guayacan";
"Carboncillo."
Puntarenas Province, highway west of Buenos Aires, 275 m. Mr. Barbour reports this a tree 15 m. high, 3 dm. D.B.H., 6 m. clear; sizes up to 6 dm. D.B.H.; wood very strong, hard, durable, suitable for general construction; wood sample taken.
3092. Sweetia panamensis Benth. 95237
Five kilom. northwest of Nicoya, 275 m. May 24 (no flowers nor fruit). Tree 12 m. high, 2.5 dm. D.B.H.

G e n i s t e a e

3137. Lupinus aschenbornii Schauer 95110
Near summit of Irazú, 3400 m. June 20, both in
flower and in pod.

D a l b e r g i e a e

3096. Dalbergia retusa Hemsl. 95160 --"Cocobola."
"Specimens of these important trees are still very
much to be desired from Central America. They accum-
ulate so slowly and the taxonomy is still unsettled"
(P.C.S.).
3106. Dalbergia retusa Hemsl. 95161
----. Dipteryx panamensis (Pittier) Record ----- (syn. Cou-
marouna panamensis Pittier). See
(Fig. 8. This tree (positively
(identified for us by Dr. Standley
(on the basis of notes, old fruit,
(and photographs) was observed by
(our party near Siquirres. None of
(us being steeplejacks we were un-
(able to get foliage for botanical
(purposes. The local people say
(these trees have to be "burned
(down" to get rid of them. Standley
(1928) has an excellent natural-
(size photograph (20, pl. 39) of the
(pods and part of a pinnate leaf of
(this species.
3095. Lonchocarpus minimiflorus Donn. Smith 95192 --"Cha-
perno."
Five kilom. south of Nicoya, 245 m. Tree 9 m.
high, with 1 dm. D.B.H. May 25, fl.
3023. Platymiscium pinnatum (Jacq.) Dugand (?) 95222 --(syn.
(P. polystachyum Benth.). "Sangril-
(lo." Material very fragmentary, -
(all that could be obtained with the
(wood sample.
3043. Platymiscium pinnatum (Jacq.) Dugand (?) 95221 --"San-
(grillo." Material sterile ("prob-
(ably" this sp., fide P.C.S.). Five
(kilom. south of Siquirres, Limón
(Prov., 125 m. Tree 23 m. high,
(6 dm. D.B.H.; 9 m. clear; wood
(sample taken.
Under the name "cristobal" the wood of this tree is
much used in San José and elsewhere for flooring and
interior finishing.
1005. Pterocarpus hayesii Hemsl. 95020
1 kilom. north of Las Cañas, Guanacaste Province.



Fig. 8. Giant "Almendo" tree (Dipteryx panamensis (Pitt.) Rec.) near Siquirres, Costa Rica, elev. about 60 m., tropical rain forest. Members of the party standing at base of tree. To the right (stooping over) is a peon searching for the hard, nut-like pods of this tree, which contain coumarin (a vanilla substitute). This tree, and another one similar to it, have been left in this cleared pasture, as the wood is reported to be so hard it is impracticable to cut or saw the tree down. Photo by John A. Scholten. May 7, 1943 (U.S.F.S. For. Prod. Lab. no. M48387F).

Mr. Barbour reports this as a tree 12 m. high, with 2.5 dm. D.B.H., "loaded with waferlike fruits" (collected Apr. 14).

P 6048. Pterocarpus hayesii Hemsl. 95266 --"Pizarro."

P h a s e o l e a e

----. Erythrina spp. -----

These shrubs and trees are very common in Costa Rica. See Figs. 9 and 10.

129. GERANIACEAE

* 3082. Geranium bolivarianum Dayton, nom. nov. 95086 --1st
(record for North America.)

Geranium cucullatum H.B.K., Nov. Gen. Sp. Pl. 5:
231. 1821.

Not G. cucullatum L. (Sp. Pl. 677. 1753) which
is a synonym of Pelargonium cucullatum (L.)
Ait. (Hort. Kew. 2: 426. 1789).

"When I first saw this (specimen) I was sure it was a new species, but now I am unable to separate it from Geranium cucullatum H.B.K. of the Colombia Andes. At any rate, it is a remarkable addition to the flora of North and Central America - another of the characteristic paramo plants" (P.C.S.).

Near summit of Dos Burros Peaks, Cerro de la Muerte, over 3400 m. (see Fig. 14). May 14, fl. A small spreading herb with rather showy purplish flowers. Collected in intermittent rains; I had no place to put the plants at the time except a pocket and, unfortunately, all but one of my specimens had to be discarded.

Geranium cucullatum H.B.K. is a homonym and needs a new name. The type locality of this species is from the Colombian Andes near the famous Bolivarian battle-grounds of Jenay (Feb. 2, 1821) and Bombona (Apr. 7, 1822), which battles occurred about the time this species was published. I have thought it not inappropriate to rename the plant after the illustrious "Libertador," Gen. Simon Bolivar, the founder of Nueva Granada (now Colombia) and who lies buried in that country.

130. OXALIDACEAE

3056. Oxalis vulcanicola Donn. Smith 95115

133. HUMIRIACEAE



Fig. 9

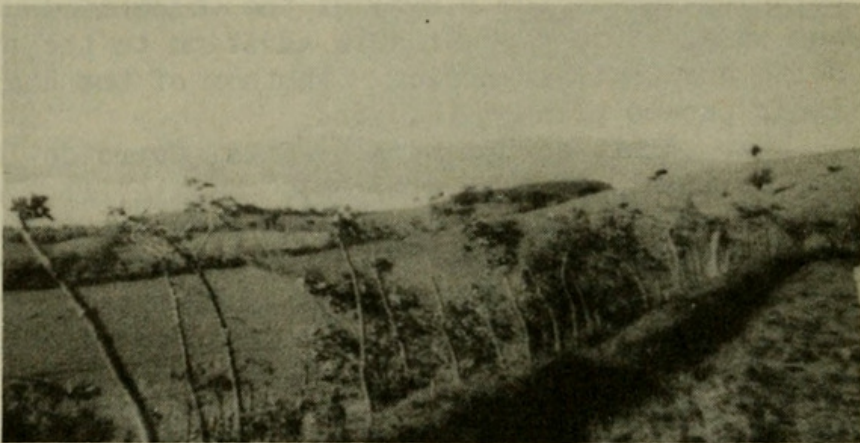


Fig. 10

Figs. 9 and 10. Poró (Erythrina rubrinervia H. B. K.).
Used commonly as "living fenceposts." Fig. 9 (photo by John
A. Scholten) taken in the city of San José near airport.
Fig. 10 taken on road up Irazú.

- * 3004. Humiria sp. 95189 --"Campana." Ori-
(ginally identified by Standley as "Lapla-
(cea? or Theaceae?"

Hills above La Florida, Limón Province, 230 m.
Tree 18 m. high, with 3 dm. D.B.H.; wood sample taken.
Assoc. with bernabé, pejiballito, pilón, and plomillo.
See note on next specimen (3041).

3041. Humiria sp. 95190 --"Campana." Ori-
(ginally identified by Standley as "Lapla-
(cea? or Theaceae?"

Hills 6.5 kilom. south of Siquirres, Limón Province,
150 m. Tree 25 m. high, with 7 dm. D.B.H.; 12 m.
clear; wood sample taken. This specimen, apparently
identical with the preceding number (3004), both of
which are unfortunately sterile, represents an impor-
tant timber of Costa Rica. On preliminary examination
of the wood, Prof. Record thought it is of Theaceae,
but Dr. Standley says: "I still am unable to place
this" and states that he knows of nothing in Theaceae
to match it. Later (May 25, 1944) Dean Record wrote
me: "Dayton & Barbour 3004 (F.S. No. 95189) and Merker,
Scholten & Dayton 3041 (F.S. Ser. No. 95190) are both
Humiria! Standley says: 'Both of the specimens are
sterile and can't be described as new, which I presume
they are.'" (18).

- * 3129. Vantanea barbourii Standl. (22) 95235 --"Ira chiricana."

See Standley (22) and Barbour (3,4); also Figs. 11
and 12. I recognized this as a Vantanea and requested
Mr. Standley, if it proved new (as I suspected), to
name it in honor of Mr. Barbour, who had been interes-
ted in it for some months. This important bridge tim-
ber of the San Isidro valley, hitherto unknown to sci-
ence, represents a genus and family new to the North
American flora.

Type locality: 1.6 kilom. north of San Isidro del
General, 0.8 kilom. west of Pan American Highway right-
of-way, San José Province. Gentle southern slope, 760
m., rain forest type, clayey loam; growing in patches
with alasán, guaba, etc. Tree 22 m. high, 3 dm. D.B.
H.; 12 m. clear; sizes up to over 30 m. Bark brownish
gray with longitudinal fissures. Strongest wood in
this locality (apparently getting scarcer), used for
heavy construction; pits in scalariform arrangement;
wood sample taken. June 11, late fl. and early fr.

1018. Vantanea barbourii Standl. 95756 --in fruit. "The
(name 'níspero' was given locally, and
(seems to be used south of Rio Hermosa"
((W.R.B., Oct., 1943)).

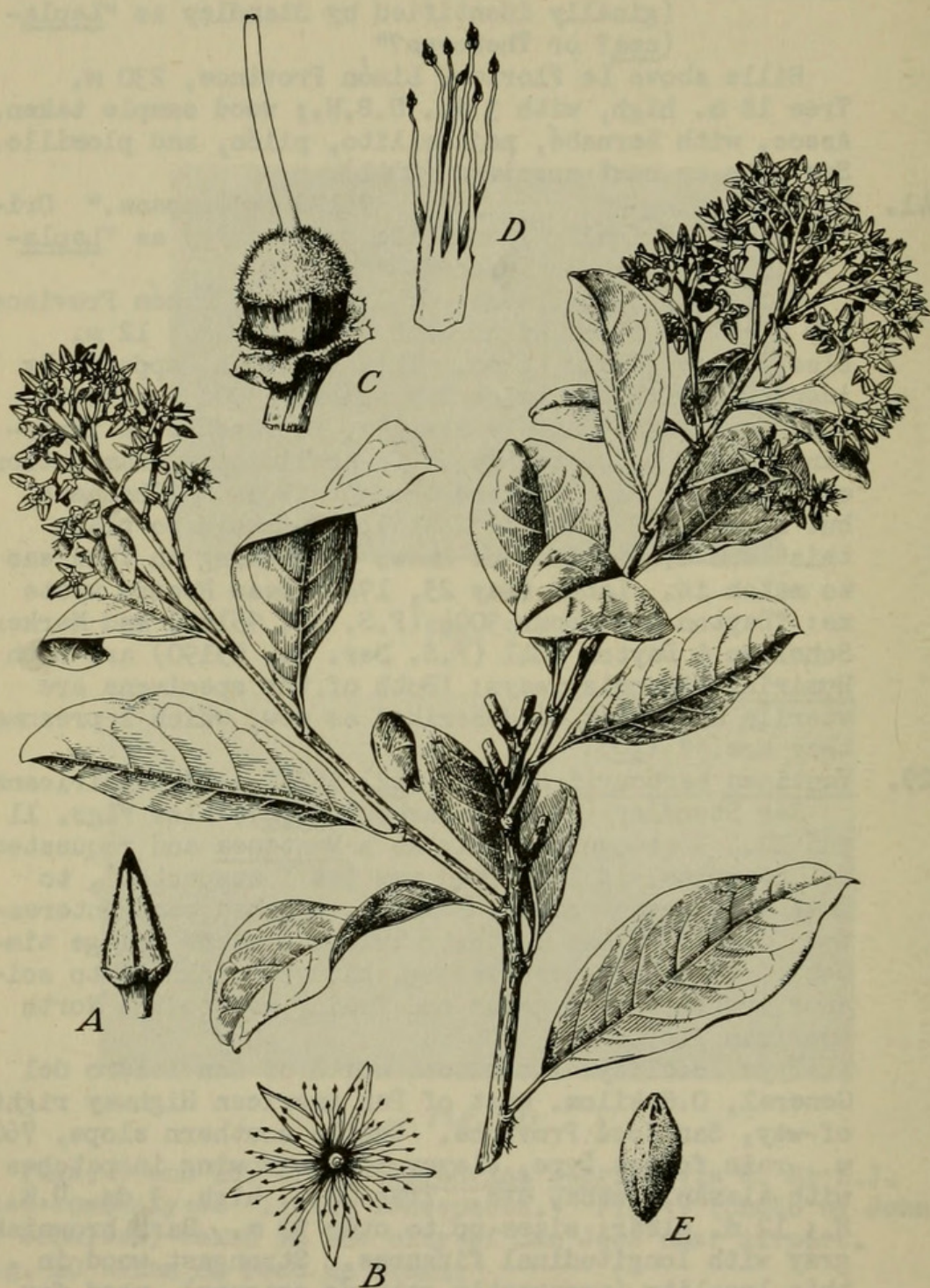


Fig. 11. Vantanea barbourii Standl. Habit drawing, $\frac{1}{2}$ natural size. A, flower bud, $\times 3$; B, flower, $\times 2\frac{1}{2}$; C, calyx, receptacle, ripening ovary, and style, after caducous petals have fallen, $\times 2\frac{1}{2}$; D, group of stamens with basal connective, $\times 2\frac{1}{2}$. E, fruit, about $\times \frac{2}{3}$. Drawing by Miss Leta Hughey, U.S. Forest Service. All but "E" based on isotype in U. S. Forest Service Herbarium.

139. BURSERACEAE

3025. Protium sessiliflorum (Rose) Standl. 95171
Hills above La Florida, Limón Province, 230 m.
Height of tree 12 m., 5 dm. D.B.H.
1047. Simaruba glauca DC. 98088

140. MELIACEAE

3042. Carapa guianensis Aubl. 95144 --"Cedro macho."
Above Siquirres, Limón Province.
1049. Carapa slateri Standl. 98081 --"Cedro macho."
P 6077. Cedrela tonduzii C. DC. 95242 --"Cedro"; "Span-
(ish-cedar." "The best material I have
(seen of this very distinct species" (P.C.
(S.). 1st record for Panama?
Three kilom. north of Camp El Volcán, Pan American
Highway, Chiriquí Prov., 1310 m. Dr. Little reports
it a tree 43 m. high, 11 dm. D.B.H., crown 25 m. high
and 15 m. wide. Wood sample taken. March 5; flowers
white.
6024. Guarea excelsa H.B.K. 95032
Near Camp Empalme, Cartago Province, 2225 m. Dr.
Little reports this a tree 21 m. high, with a 38 cm.
D.B.H.; wood sample taken.
3100. Trichilia hirta L. 95172
1050. Trichilia propinqua (Miq.) C. DC. 98090 --fr.

143. VOCHYSIACEAE

1038. Vochysia ferruginea Mart. 98092 --fr.
1043. " " " 98093 --fr.
3001. Vochysia hondurensis Sprague 95240 --"Chancho"; "Mag-
nolia."
1007. Vochysia (?) 95024 --"no species known
(to Central America" (P.C.S.). "Chancho
(colorado." Mr. Barbour reports this a
(tree 31 m. high, 7 dm. D.B.H., 15 m.
(clear; size up to 7 dm. D.B.H. Wood
(sample taken; "second-quality general
(timber."

147. EUPHORBIACEAE

3158. Croton gossypifolius Vahl 95175 --"Tagua."
Reported as a balsa substitute. Wood sample taken.
Up to 15 m. high.
3119. [??Croton --W.A.D.] 95205 --a very striking
(and rather common low forest shrub, with
(leaves brilliantly bluish on the under
(surfaces. "I am disgusted that I am un-

- (able to place this, but I can't imagine
(where it is to be referred" (P.C.S.).
1004. Hieronyma alchorneoides Allemão 95012 --"Zapatero."
On highway west of Buenos Aires, Puntarenas Province, 275 m. Mr. Barbour reports this a tree 28 m. high, 6 dm. D.B.H., 15 m. clear, "good general-utility wood."
3006. Hieronyma alchorneoides Allemão 95178 --"Pilón."
(Wood sample taken.
3122. Hieronyma oblonga (Tulasne) Muell. Arg. 95179 --"Come-
(negro." About 5 kilom. from San Isidro
(del General, 825 m. Tree 18 m. high,
(with 25 cm. D.B.H. and usable length of
(6 m. Wood dark reddish brown, utilized
(locally. Sample taken.
6040. Hieronyma poasana Standl. 95027
Near summit of Cerros de Escazú, 2165 m. Dr.
Little reports the tree as 12 m. high.
6042. Sapium pachystachys Schum. & Pitt. 95030
Near summit of Cerros de Escazú, 2165 m.; tree 11
m. high with 3 dm. D.B.H. Dr. Little reports the
flowers as greenish. Pittier (15) has called atten-
tion, chiefly as a result of his Costa Rican experi-
ences, to the desirability of studying the Central
American species of Sapium as possible sources of
rubber.
1034. Sapium thelocarpum Schum. & Pitt. 98087

165. SAPINDACEAE

3094. Cupania guatemalensis Radlk. 95158
Dr. Jorge León, formerly of the Museo Nacional in
San José, tells me this tree is sometimes known by the
vernacular name "Tarzana."
3104. Cupania guatemalensis Radlk. 95159

174. TILIACEAE

3046. Belotia panamensis Pittier 95170 --2d record
(for Costa Rica? Ojo de Agua (Mills Co.)
(camp, Pan American Highway, about 2900 m.
3125(95169) and 1016(95749). Originally determined by Stand-
ley as Goethalsia meiantha (Donn. Smith) Burret. See
under Flacourtiaceae.
3156. Heliocarpus appendiculatus Turcz. 95176 --"Burío."
Reported as a balsa substitute. Wood sample taken.
- . Heliocarpus appendiculatus Turcz. 97100 --collected
near Turrialba.
3157. Heliocarpus donnell-smithii Rose 95177 --"Burío."
Prof. Record wrote me June 7, 1944 as regards no.
3157 (95177): "It is not Heliocarpus neither is it

anything else I recall having ever seen, and I have considered every possibility that I can think of. I shall write to Standley about it."

3105. Luehea candida (DC.) Mart. 95194 --"Guacimo";
"Molinillo."
P 6079. Sloanea macropoda Standl. (?) 95270 --"perhaps"
((P.C.S.). "Abroja."
Three kilom. north of Camp El Volcán, Chiriquí
Province, 1310 m. Dr. Little reports this a tree 21
m. high, 4.5 dm. D.B.H. March 5, in bud; leaves not
fully unfolded.
P 6051. Sloanea microcephala Standl. (?) 95269 --"Abroja."
Eight kilom. north of Camp El Volcán, Chiriquí
Province, 1830 m. Dr. Little reports this a tree 25 m.
high, 5 dm. D.B.H., 12 m. clear. He says the leaves
are up to 65 cm. long and 28 cm. wide, the petioles up
to 12.5 cm. long. March 2; no flowers nor fruit.
Wood sample taken.
3102. Sloanea quadrivalvis Seem. 95228 --"Terciopelo."
(N. B. Some prefer to place Sloanea
(in Elaeocarpaceae).

177. BOMBACACEAE

1041. Ceiba pentandra (L.) Gaertn. 98082

186. THEACEAE

6044. Freziera candicans Tulasne 95065 (syn. Eurya
(seemanniana Pittier)
Near summit of Cerros de Escazú, 2165 m. Dr. Little
reports this tree as 12 m. high, with 3.8 dm. D.B.H.
The rough twigs are beset with small papilliform whit-
ish lenticels. The many, parallel-veined leaves have
a satiny sheen beneath. Dr. Little states that the
corollas are white and the calyces green.
1001. Laplacea semiserrata (Mart. & Zucc.) Cambess. 95015
About 1.6 kilom. northwest of San Isidro del Gen-
eral, San José Province, 610 m. Mr. Barbour reports
this a tree 25 m. high, 8 dm. D.B.H., 15 m. clear;
sizes up to 11 dm. D.B.H. Wood sample taken; "fair to
good quality general construction lumber." These
sprout leaves are much larger, more acuminate, and
more conspicuously toothed than the presumably more
normal leaves shown in the next specimen (1009).
1009. Laplacea semiserrata (Mart. & Zucc.) Cambess. 95016
About 6.5 kilom. east of Turrialba, Cartago Prov-
ince, 925 m. Mr. Barbour reports this a tree 28 m.
high, 4 dm. D.B.H., 15 m. clear; sizes up to 9 dm.
D.B.H.; wood sample taken.

- P 6061. Laplacea semiserrata (Mart. & Zucc.) Cambess. 95250--
("Mangle." Wood sample taken. March
(25, fr.
3004 (95189) and 3041 (95190). See under Humiria, Humiria-
ceae.

187. GUTTIFERAE

1039. Calophyllum brasiliense Camb. var. reko Standl. 98080
3069. Hypericum silenoides Juss. 95183
Near summit of Dos Burros peaks, Cerro de la Muerte,
over 3400 m., above timberline.
3076. Hypericum silenoides Juss. 95184 --"these two collec-
(tions look different, and I may be wrong
(in referring them to the same species,
(but we have material matching both, and
(some intermediate between them" (P.C.S.).
1029. Hypericum silenoides Juss. 95751
3062. Hypericum strictum H.B.K. 95181
Dos Burros Peaks, Cerro de la Muerte, over 3400 m.,
above timberline.
N. B. Some prefer to place the St. Johnsworts (Hyper-
icum spp.) in a distinct family, Hypericaceae.
P 6046. Tovomitopsis psychotriaefolia Oerst. 95246 --"Uvito."
(1st record for Panama?
Eight kilom. north of Camp El Volcán, Chiriquí Prov-
ince, 1830 m. Dr. Little reports this a tree 18 m.
high, with 2.5 dm. D.B.H., and 6 m. clear. Wood sample
taken --"an attractive red." The maximum height hith-
erto known of this tree, as shown by Standley (21) is
indicated as 7 m.
P 6068. Tovomitopsis psychotriaefolia Oerst. 95258 --"Uvito."
Same site as above (6046). Tree 15 m. high, 23-25
cm. D.B.H.
P 6070. Tovomitopsis psychotriaefolia Oerst. 95248 --"Uvito."
Same site as nos. 6046 and 6068 above. March 2, fr.
Dr. Little reports the berries as "big, 1- to 5-seeded,
orange coat around seed." Wood reddish; sample taken.
3015. Vismia guianensis (Aubl.) Pers. 95239
P 6052. " " " " 95271 --"Achote."
Eight kilom. north of Camp El Volcán, Chiriquí Prov-
ince, 1830 m. Dr. Little reports this a tree 15 m.
high, 25 cm. D.B.H., 9 m. clear, the bark with a yellow
juice; wood sample taken.

199. FLACOURTIACEAE

- * 1044. Casearia belizensis Standl. 98081 $\frac{1}{2}$
Apparently a first Costa Rica record and the second
for the species. Barbour's tree was 34 m. high, as
contrasted with "12 m." for Standley's type tree (21).

Specimen deposited in U. S. National Herbarium.

3111. Hasseltia floribunda H.B.K. 95213
 P 6063. Hasseltia panamensis Standl., n. sp. 95247 --"Cocobolo."

Three kilom. north of Camp El Volcán, Chiriquí Province, 1310 m. Reported by Dr. Little as a tree 30 m. high, with 5.5 dm. D.B.H., usable length 16 m.

- * 3125. Gen. nov. (?) 95169 --originally re-
 (ported by Standley as "probably" Goethalsia
 (meiantha (Donn. Smith) Burret (syns. Luehea
 (meiantha Donn. Smith; G. isthmica Pittier).
 (Material sterile. "Chanco blanco.")

About 5 kilom. up the right-of-way, Pan American Highway, toward La Division from center of San Isidro del General, 825 m., rain forest type, assoc. with bolador, colorado, comenegro, tiquissaró, etc. Smooth light gray bark; wood hard, heavy, almost white. Record and Hess (17) describe the wood of this species as light and soft, which has led Mr. Barbour to question the identification. No flowers nor fruit seen. However, the leaf characters, including venation, correspond with the botanical descriptions of this species, and I am satisfied the material perfectly matches U.S. National Herbarium specimens thus labeled. See note under no. 1016 below.

1016. Same as no. 3125 (95169) above. 95749

Goethalsia is placed in Tiliaceae by Standley (20) and Record and Hess (17). Gleason (9) amended Pittier's description of the genus Goethalsia and placed it in Flacourtiaceae. M. Burret ("Goethalsia Pitt. doch eine Tiliaceae, keine Flacourtiaceae." Repert. Spec. Nov. 36: 195. 1934) disagrees with Gleason's family disposition of Goethalsia, as does Record ("Note on the classification of Goethalsia." Trop. Woods 40: 18. 1934) citing his own wood and twig examinations and the opinions of Pittier, Donnell Smith, Burret and Standley. In a later article ["Note on Goethalsia (Tiliaceae)." Trop. Woods 42: 21. 1935] Record mentions Rehder and Ducke as additional authorities in favor of placing this genus in Tiliaceae. In a letter to me dated May 25, 1944, Dean Record reports as follows:

"Barbour 1016 (F.S. Ser. No. 95749) and Dayton 3125 (F. S. Ser. No. 95169) are not Goethalsia but one of the Flacourtiaceae. Standley says: 'Now that you place them in Flacourtiaceae, I checked our material and find this same tree was collected twice by Skutch and that I determined each collection as a n. sp. of Hasseltia. The two are somewhat different, but I now believe they are one species because I do not believe the tree belongs to Hasseltia.

The general appearance is that of Hasseltia, but I don't believe it can be placed there. I should hate to describe a new genus in that family, but it may be necessary.At any rate, I shall be glad to give the plant further study, for evidently it is something quite new for Central America, at least." Later (June 7, 1944) Dean Record wrote me as follows: "Standley and I agree that Barbour 1016 and Dayton 3125 are flacourtiaceous, but not Hasseltia. I have suggested Hasseltiopsis as a possibility, but it may prove to be a new genus."

208. BEGONIACEAE

3048. Begonia luxii C. DC. 95088

210. CACTACEAE

3012. Rhipsalis cassutha Gaertn. 95219

221. COMBRETACEAE

- * 1002. Terminalia amazonia (J.F. Gmel.) Exell 95023 --"Amarillón."

About 5 kilom. southeast of Buenos Aires, Puntarenas Province, 430 m.; abundant. Tree 30 m. high, 5 dm. D.B.H., 19 m. clear; sizes up to 12 dm. D.B.H. Mr. Barbour reports that the wood splits badly but is being sawed for camp construction, etc. March 30, fr.

222. MYRTACEAE

3107. Eugenia sericiflora Benth. 95163 --"Escobo."
A small tree, 6 m. high, in trap-rock formation about 5 kilom. north and east of Nicoya, 305 m. May 26, fr. The berrylike drupes, about the size of a common chokecherry, topped by the persistent 4-lobed calyx, contain a grooved, 2-lobed, stony seed.
3147. Myrtus oerstedii (Berg.) Hemsl. 95210 --"Arrayán."

223. MELASTOMACEAE

3059. Chaetolepis cufodontisii Standl. 95180
Dos Burros Peaks, above timberline, acid soil. May 14, fl. This low, slender-stemmed, small- and slim-leaved, woody trailer is very different from most other Costa Rican melastomes.
3115. Henriettella fascicularis (Swartz) Triana 95206
Near Wunderlich Camp, San Isidro del General, 610 m. June 9, fr. This species has been "reported" hitherto from Costa Rica, and this may be the first

definite collection. The shiny black berries are edible.

224. ONAGRACEAE

6016. Fuchsia arborescens Sims 95033

3029. Fuchsia splendens Zucc. 95169

A somewhat vinelike plant in this locality (Ojo de Agua Camp, near Cartago - San José Province border, 2900 m.) which did not appear to be epiphytic here; its upper leaves are ovate but not cordate. Mr. Barbour made a water-color painting of the plant. May 13, fl.

3148. Oenothera multicaulis var. tarquensis 95114 (syn. O. cuprea Schlecht.)

225. HALORHAGIDACEAE

----. Gunnera insignis (Oerst.) A. DC. ----

A conspicuous, rhubarblike plant. See Fig. 13.

227. ARALIACEAE

3085. Didymopanax pittieri March. 95137

6025. Gilibertia sessiliflora Standl. & A.C. Smith 95031 --
("Manteco?")

Near Camp Empalme, Pan American Highway, Cartago Province, 2225 m. Dr. Little reports this a tree 28 m. high, with 6 dm. D.B.H.; wood sample taken. Collected Feb. 19, the greenish flowers in globular clusters.

6019. Oreopanax pycnocarpus Donn. Smith 95026

The large oval leaves (some of them over 30 cm. long) and the somewhat conelike fruits make this material rather distinctive. Oreopanax should be treated as a masculine noun; see my note under Panax on p. 452 of "Standardized Plant Names" (10).

228. UMBELLIFERAE

3027. Myrrhidendron donnell-smithii Coult. & Rose 95209

Ojo de Agua, near Cartago - San José Province line, 2900 m. May 13, fl. The habit of this plant, about 4.5 m. high and with a D.B.H. of 12.5 cm., was distinctly treelike; an arborescent umbellifer is something of a novelty! Coulter and Rose (Bot. Gaz. 19: 465. 1894) report that it is "the only arborescent (umbelliferous) species that we have seen from North America."



Fig. 12. Type locality of Vantanea barbourii Standl. Mr. Wm. R. Barbour and Sr. Valverde seated on an "ira chiricana" squared timber, about 0.6 x 0.6 x 12 m., probably destined for a bridge on the Pan American Highway. The darkness of the forest, rain and overcast skies were not conducive to photographic clarity!

Fig. 13. Gunnera insignis (Oerst.) A. DC., near road up Irazú. Photo by Wm. R. Barbour, June 20, 1943. Mr. John A. Scholten at right. Plant in immature flower.

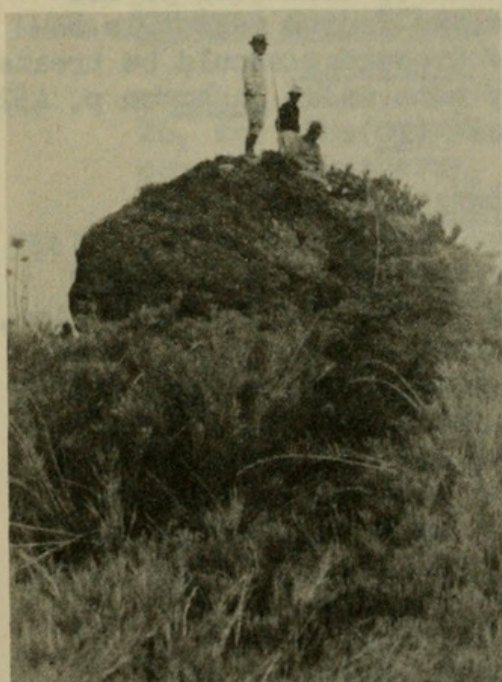


Fig. 14. One of the twin peaks of Dos Burros, Cerro de la Muerte, over 3400 m. Photo by John A. Scholten May 14, 1943. Mr. Barbour and a peon standing and the writer sitting on top. Senecio andicola and Hypericum silenoides are prominent among the shrubs in the foreground.

230. CLETHRACEAE

3073. Clethra gelida Standl. 95156 --"very rare" (P.
C.S.).
3086a. " " " 95157

233. ERICACEAE

3134. Arctostaphylos rubescens (Bertol.) Hemsl. 95136
3145. Cavendishia costaricensis Hoerold 95147
Near summit of Irazú, 3400 m. June 20, fl. A
showy shrub or small tree.
3045. Cavendishia smithii Hoerold 95146
Ojo de Agua (Mills Co.) camp, Pan American Highway,
2900 m. May 13, in bud and flower. A small tree 4.5
m. high.
3087. Disterigma humboldtii (Klotzsch) Niedenzu 95201
Near Ojo de Agua (Mills Co.) camp, San José Prov-
ince, 2900 m.
6033. Macleania glabra (Klotzsch) Hoerold 95066
Near Camp Empalme, along Pan American Highway,
2225 m. Epiphytic on Quercus.
3053. Pernettya coriacea Klotzsch 95193 --"Arrayán."
3054. " " " 95196
3064. " " " 95197
3073a. " " " 95216
3077. " " " 95198
3086. " " " 95199
3131. " " " 95202
3133. " " " 95217
P 6072. " " " 95264
Northwest side of Volcán Chiriquí, Chiriquí Prov-
ince, 1375 m. March 4, fl. and fr.
1020. Pernettya coriacea Klotzsch 95752
Standley (21) says of the fruits of this species
"Pittier believes that they may be poisonous." I do
not know whether this was an oral or published remark,
as I have been unable thus far to trace it in Dr.
Pittier's works accessible to me. Of the related P.
pentlandii DC. of Venezuela Pittier (16) remarks "fru-
tas sospechosas." The writer knows of no fleshy-
fruited ericaceous plants that are poisonous, and is
inclined to be skeptical that the berries of Pernettya
coriacea are toxic.
3064a. Pernettya prostrata (Cav.) Sleumer, var.
purpurea (Don) Sleumer 95195
3077a. " " " " 95200
This was not recognized by Standley in 1938 (21) as
distinct from P. coriacea.
3040. Vaccinium consanguineum Klotzsch 95233 --"Arrayán."
3052. " " " 95232

3132. Vaccinium consanguineum Klotzsch 95234
 1022. " " " 95755 --apparently
 (of the var. "irazuense Sleumer" type (W.A.
 (D.).

236. MYRSINACEAE

6020. Ardisia glanduloso-marginata Oerst. 95061
 6027. Parathesis storkii Standl. 95063

239. SAPOTACEAE

3016. Chrysophyllum cainito L. 95153 --"Caimito"; star-
 apple.

241. STYRACACEAE

6043. Styrax argenteus Presl 95064
 Near summit of Cerros de Escazú, about 10 kilom.
 southwest of San José, 2165 m., cloud forest type
 partly cleared for pasture. Dr. Little reports this a
 tree 15 m. high, with 3 dm. D.B.H.

245. LOGANIACEAE

3152. Buddleia alpina Oerst. 95140

246. GENTIANACEAE

3026. Halenia rhyacophila Allen 95106
 Near Ojo de Agua (Mills Co.) camp, Pan American
 Highway, Cartago Province, 2900 m. May 13, fl.

247. APOCYNACEAE

3091. Stemmadenia obovata (Hook. & Arn.) Schum. 95230
 Five kilom. southwest of Nicoya, 275 m., slatey
 loam. May 24, fl. The flowers, when fresh, were very
 showy, over 6 cm. broad, bright yellow, the lobes with
 a distinct twist.

252. BORAGINACEAE

- * 3005. Cordia bicolor DC. 95154 --"Bernabé." "New
 (to Costa Rica" (P.C.S.). Hills above La
 (Florida, Limón Province. Size up to 18 m.
 (high and 7.5 dm. D.B.H.; bark fibrous.
 (May 7, in bud.
 1041. Cordia bicolor DC. 98083
 3103. Cordia toqueve Aubl. 95155 --3d record for
 (Costa Rica? Five kilom. south of Nicoya,
 (245 m.; limestone formation.

253. VERBENACEAE

- P 6073. Citharexylum donnell-smithii Greenm. 95260 --1st rec-
(ord for Panama?)

Northwest side of Volcán Chiriquí, Chiriquí Province, 1375 m., in island of xerophytic forest surrounded by lava alluvial fan; volcanic dust, pumice and lava boulders. Dr. Little reports this a tree 15 m. high, with 4.5 dm. D.B.H. March 4, the flowers just shed from the naked catkin axes.

3112. Cornutia grandifolia (Schlecht. & Cham.) Schauer 95141
P 6071. Lippia oxyphyllaria (Donn. Smith) Standl. 95251 --1st
(record for Panama?)

Northwest side of Volcán Chiriquí, Chiriquí Province, 1375 m. Dr. Little reports this as common in groves at edge of savanna. March 4, fr.; fruit hop-like.

6015. Lippia torresii Standl. 95036 --"Caragua."
Macho Gap camp, 39 kilom. south of Cartago and 5 kilom. north of Copey, 2500 m.

256. SOLANACEAE

3014. Cestrum baenitzii Lingelsh. 95229
3155. Cestrum warscewiczii Klotzsch 95151
6022. Solanum dotanum Morton & Standl. 95062

Macho Gap camp, 5 kilom. north of Copey, Cartago Province, in cloud (oak) forest type, 2500 m. February 19, fl. Tree 6 m. high, 7.5 cm. D.B.H. Dr. Little reports that this occurs also as a climber.

3020. Solanum sanctaeclarae Greenm. 95150
1026. Solanum storkii Standl. 95748

257. SCROPHULARIACEAE

3072. Castilleja irasuensis Oerst. 95093
Near summit of Dos Burros Peaks, Cerro de la Muerte, 3400 m., above timberline. May 14, fl.
3136. Castilleja irasuensis Oerst. 95094
Near summit of Irazú, 3400 m. One of the most conspicuous herbaceous plants. June 20, fl.
1031. Castilleja irasuensis Oerst. 95743
3068. Castilleja quirosii Standl. 95092

Near summit of Dos Burros Peaks, 3400 m. Largely ericaceous type, above timberline. May 14, fl. Much larger plant than C. irasuensis, the habit suggesting somewhat a western U. S. Cordylanthus.

258. BIGNONIACEAE

- W-1. Jacaranda copaia (Aubl.) D. Don 95227 --"Gallinazo."

A famous ornamental tree of Costa Rica and Panama, but collected in the wild by Mr. Julian A. Weston, of the International Balsa Corporation, San José, and turned over to our party, under the local name, "Aceituno," with a wood sample, as a possible substitute for balsa.

- * 3008. Tabebuia guayacan (Seem.) Hemsl. (?) 95145 --"at
(least I cannot find a better place for
(it" (P.C.S.). "Plomillo."

Hills above La Florida, 230 m., associated with bernabé, campana, pejiballito, and pilón. Wood sample taken. Wood, which has a mild vinegar odor, is reported to be durable and to hold nails well. May 7; neither flowers nor fruit seen.

262. GESNERIACEAE

1024. Alloplectus ichthyoderma Hanst. 95747
6034. Columnnea hirta Klotzsch & Hanst. 95034
3011. Columnnea tomentulosa Morton 95204 (syn. C. to-
(mentosa Oerst., not Roxb.)

266. ACANTHACEAE

3065. (Genus ?) 95097 --"sterile, and I
(cannot place it" (P.C.S.).
Small herb; Dos Burros Peaks, Cerro de la Muerte,
over 3400 m., above timberline.

270. RUBIACEAE

3067. Arcytophyllum lavarum Schum. 95182
3101. Calycophyllum candidissimum (Vahl) DC. 95143 --"Surá";
"Madroño."
3118. Cephaelis elata Swartz 95149
Near Wunderlich Camp, San Isidro del General, 610
m. Involucral bracts tawny orange. Not so handsome
as the next species.
3117. Cephaelis tomentosa (Aubl.) Vahl 95148 --"the most
(collected rubiaceous plant of tropical
(America, and with a vast range" (P.C.
(S.).
3007. Chimarrhis parviflora Standl. 95152 --"Pejiballi-
(to." 1st definite record for Costa
(Rica?
Hills above La Florida, Limón Province, 230 m. May
7, immature fl. The hard, golden-yellow to orange-
color wood is among the handsomest of Costa Rican lum-
bers; it would undoubtedly be a choice interior finish
if better known.
3021. Hamelia nodosa Mart. & Gal. 95173

1017. Ladenbergia sericophylla Standl. 95750

3116. Palicourea triphylla DC. 95174

Near Wunderlich Camp, San Isidro del General, 610 m. Small tree 4.5 m. high, with reddish flowers in a lilac-like thyrses. The ternately whorled leaves are a conspicuous feature.

271. CAPRIFOLIACEAE

6017. Viburnum costaricanum (Oerst.) Hemsl. 95028

273. VALERIANACEAE

* 3071. Valeriana woodsonii Standl. 95130 --"des-
(cribed from Chiriquí; new for Costa Rica"
(P.C.S.).

Dos Burros Peaks, Cerro de la Muerte, 3400 m. May 14, fl.

1028. Valeriana woodsonii Standl. 95746

In paramo, Cerro de la Muerte, October 10.

276b. LOBELIACEAE

3049. Centropogon gutierrezii (Planch. & Oerst.) 95090

Wimmer

3028. Centropogon valerii Standl. 95095 --"known

(previously from only 2 collections.
(McVaugh calls this C. grandidentatus var.
(Valerii McV., in which very likely he is
(right. The leaves are quite different
(from those of the typical variety" (P.C.
(S.).

Ojo de Agua (Mills Co.) camp, 2900 m. May 13, fl.; very showy.

3011a. Lobelia irasuensis Planch. & Oerst. 95091 (syn. Lau-

(rentia irasuensis (Planch. & Oerst.)

(Wimmer)

May 3, fl. Under the name Laurentia irazuensis, Standley (21, p. 1415. 1938) describes this species as an annual, and, under the name Lobelia irasuensis (op. cit., p. 1416), a perennial. My specimen seems to be annual.

280. COMPOSITAE

V e r n o n i e a e

6041. Vernonia stellaris Llave & Lexarza 95029

Near summit of Escazú, 2165 m. February 27, fl.
Dr. Little reports this as 5.5 dm. high, growing along fence-rows, uncommon.

Eupatorieae

- * 3080. Eupatorium sp. nov. 95164 -- "I cannot place (it with any species known from Central America, although one would suppose there (were already names enough to include any- (thing. The plant appears to be a well (marked species" (P.C.S.). Standley's de- (termination, E. daytonii Standl., appears (never to have been published and to be a (nomen only.
- * 3080a. Eupatorium sp. nov. 95165 -- "this one is not (so outstanding, but I can't refer it sat- (isfactorily to any of the known Costa (Rican species" (P.C.S.). Standley's de- (termination, E. maestum Standl. does not (appear to have been published and hence is (a nomen only.

Both the above eupatoriums were collected near sum-
mit of Dos Burros Peaks, Cerro de la Muerte, about
3400 m., acid ericaceous site. May 14, fl.

Astereae

3149. Bellis perennis L. 95089
3039. Laestadia costaricensis Blake 95103 -- "a rare plant"
(P.C.S.).

Inuleae

3089. Gnaphalium spicatum Lam. 95104

Heliantheae

3162. Wedelia acapulcensis H.B.K. 95133
3010. Zexmenia frutescens (Mill.) Blake 95236
3161. " " " " 95237

Showy tree, 16 m. high, with 15 cm. D.B.H., growing
wild on bank of Rio Reventazón, grounds of Inter-Amer-
ican Institution of Agricultural Sciences, Turrialba.
June 29, fl.

Senecioneae

3081. Senecio andicola Turcz. 95191 -- material sterile;
(somewhat suggests a Ledum in appearance.
Near summit of Dos Burros Peaks, Cerro de la Muerte,
over 3400 m., above timberline. See Fig. 14.
1027. Senecio andicola Turcz. 95757
- * 1030. Senecio mortuosus Standl., sp. nov. 95744 -- "the plant
(is undoubtedly different from any other

(species known from Central America, but (it is very desirable to describe the (characteristic leaves, whose nature can (not be guessed from the upper ones" (P.C. (S.). It is doubtful that this name has (been published.

3078. Senecio oerstedianus Benth. 95125

C i c h o r i e a e

3144. Hypochaeris radicata L. 95108

S U M M A R Y

Of the 298 specimens collected by members of the party 5 species from Costa Rica and 1 species from Panama have been named by Dr. Standley as new to science; 7 others (from Costa Rica) appear to be new and of these 4 cannot now be positively placed even to genus; Miss Allen has described one Panaman species as new; 15 species (besides the novelties) are not listed in Standley's "Flora of Costa Rica" and an additional one appears to be new to that country; 1 family (Humiriaceae), 1 genus (Vantanea), and 1 species of Geranium are new to the Central and North American flora; 5 species appear to be first records for Panama; also there are several second and third records and numerous additions to information as regards size, distribution, phenology, characteristics, values, etc. All in all, therefore, the collections appear to have a scientific interest disproportionate to their relatively small size.

This report, besides the above features, takes occasion to correct a few common misspellings of names; to publish a large number of vernacular names not appearing hitherto in literature; one new scientific name is also published.

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