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Collections of plants made by the author in northern Mexico in 1939 and by Dr. Ivan M. Johnston with the author in 1940 contain several novelties and other noteworthy species, some of which are here treated. Various items from other sources which have from time to time come to the author's attention are also included. The bulk of the material here presented concerns the genus *Quercus*. The herbaria in which specimens are deposited are designated as follows:

(AA)—Arnold Arboretum, Harvard University.
(ANS)—Academy of Natural Sciences of Philadelphia.
(F)—Field Museum of Natural History, Chicago.
(G)—Gray Herbarium, Harvard University.
(Ill)—University of Illinois, Urbana.
(MBG)—Missouri Botanical Garden, St. Louis.
(Mu)—Author's collection.
(T)—Universtiy of Texas, Austin.
(US)—U. S. National Museum, Washington.
(USNA)—U. S. National Arboretum, Washington.

FAGACEAE

Quercus albaefolia sp. nov.

Arbor parva, ramuli 2-3 mm. crassi, dense vel sparse stellato-pilosi, tarde glabrati, folia decidua, 5-15 cm. longa, 3-8 cm. lata, anguste ovata vel oblonga, apice obtusa, basi cuneata vel rotunda inciso-lobata, lobi utrinque 5-9 rotundi vel rare acuti, utrinque glabra vel sparse minute stellato-puberulenta, venis utrinque 5-9, petioli 12-22 mm. longi, dense villosi, fructus annuus, solitarius vel binus brevipedunculatus, cupula 15-17 mm. lata, 10 mm. alta, glans 15 mm. longa, 12 mm. lata, ½ inclusa.

Small tree to 6 m. in height, the trunk 2.5 dm. in diameter with scaly or furrowed gray bark. Twigs 2 to 3 mm. thick, broadly and shallowly sulcate, tan or grayish-brown, densely tawny-pilose or sparsely stellate-pubescent, becoming glabrous the second year and light gray with a few large but inconspicuous lenticels. Buds 3 to 4 mm. long, 1.5 to 2 mm. broad, oblong or ovoid, shiny light brown, the scales centrally opaque with broad reddish hyaline margins, ciliate and otherwise glabrous. Stipules caducous but rarely persistent at the terminal bud, about 5 mm. long, attenuately awl-shaped, brown, ventrally glabrous, dorsally strigose. Leaves deciduous, membranous, 5 to 10 or rarely 15 cm. long, 3 to 6 or rarely 8 cm. broad, narrowly ovate or oblong in outline, obtuse, cuneate or unequally somewhat rounded, deeply incised with narrow rounded open or rarely closed sinuses forming 5 or 6 or sometimes even 9 oblong entire rounded or rarely acute lobes, the incisions reaching two-thirds or three-fourths the distance to the midrib or those near the base and apex

quite shallow, margins minutely cartilaginous or subrevolute, upper surface lustrous dark green, glabrous or sparsely minute-stellate- or simple-pubescent, lower surface dull, lighter green or somewhat canescent, rather densely minute-stellate or simple-pubescent or subglabrate, densely microscopically raised-white-punctate; veins as many as the lobes and passing into them and with occasional branching intermediates, minutely raised (including the ultimate reticulum) on both surfaces, somewhat more prominent beneath; petioles 12 to 17 or even 22 mm. long, 0.5 to 1.0 mm. thick, red especially toward the bases, densely short-stellate- or simple-pubescent. Catkins? Fruit annual, solitary or paired, subsessile or on peduncles 3 to scarcely 5 mm. long and 2 mm. thick; cups hemispheric, about 15 to 17 mm. broad and 10 mm. high, margins thin and flat, scales oval, acute, basally somewhat thickened, more or less densely puberulent except the apices which are sometimes nearly glabrous and brown; acorns about 15 mm. long and 12 mm. broad, broadly ovoid, dull light brown, glabrous, about one-half included.

CHIHUAHUA: Mun. de Madera, Garabato, Sept. 27, 1939, *C. H. Muller 3535* (USNA—type); *C. H. Muller 3535A* (USNA); west of Chuhuichupa, August 29, 1936, *H. LeSueur 523* (Mu, T); Sept. 30, 1939, *C. H. Muller 3582* (USNA).

Quercus albaefolia is closely related to *Q. Gambelii* Nutt. from which it is distinguished by its larger leaves and much larger fruit.

Quercus albaefolia is rather common in moist arroyos in open or dense pine forest of the Sierra Madre in western Chihuahua. It is not a vigorous or gregarious species and therefore occurs singly or as a few small trees in a natural clearing in the pines. The specific name is purposely spelled with the *ae* connective and does not constitute an orthographic error. The name is intended to call attention to the resemblance of the leaf size and shape to that of *Q. alba* of the Eastern United States.

Quercus derrumbaderoensis nom. nov.

Quercus reticulata f. *pungens* C. H. Muell., Journ. Arn. Arb. **17**:166. 1936.

A low shrub intricately branched and reaching a height of 2 m. Twigs about 1 mm. thick, terete, densely yellow-stellate-tomentose, the second year nearly glabrate or somewhat puberulent, brownish-gray with sparse inconspicuous lenticels. Buds about 1.5 mm. in diameter, subspheroid, shiny reddish-brown, glabrous. Stipules caducous, about 3 or 4 mm. long, ligulate, straw-colored, glabrous on the ventral side and sparsely pilose dorsally. Leaves deciduous, rather thick and leathery, 15 to 30 mm. long, 6 to 14 mm. broad, ovate or elliptic to oblong in outline, acute, obtuse, or rounded at the apex, shallowly cordate at the base, irregularly undulate or pungently toothed especially toward the apex, the teeth mucronate, margins irregularly crisped and cartilaginous-revolute, upper surface dull green, sparsely yellow-stellate with fine crisped hairs, lower surface densely yellow-tomentose with the same type of hairs, the blade smooth beneath the detachable tomentum; veins about 6 to 8 on each side, slightly impressed above and very prominent beneath, the reticulum slightly raised on both surfaces; petioles 3 to 4 mm. long, densely

yellow-tomentose. Catkins? Fruit annual, 1 to 3 on a densely tomentose peduncle 5 to 10 mm. long; cups hemispheric, about 12 mm. broad and 6 mm. deep, the margins thin, scales broadly triangular, the bases thickened and densely woolly (especially those near the base of the cup), the apices thin, appressed, narrowed but rounded, glabrous and reddish-brown except the ciliate margins, the apices especially prominent near the margins of the cup; immature acorns rounded, light straw-brown, glabrate except about the style bases, probably not half included at maturity.

NUEVO LEON: Mun. de Derrumbadero, Hac. San José de Raices, above San Enrique, August 6, 1935, *C. H. Mueller 2417* (AA—type as of *Q. reticulata* f. *pungens*).

Quercus derrumbaderoensis is rather closely related to *Q. microphylla* Née of Guanajuato and Hidalgo on the southern plateau. From that species it is distinguished with difficulty by its cordate leaves with veins less prominent beneath, prominent teeth with obvious mucrones, and its smaller glabrous shiny buds. These differences, though scarcely obvious and requiring close inspection, are nevertheless of considerable importance. This species is of very local occurrence, having been encountered in only one canyon far isolated from any related species. Its tentative reference to *Q. reticulata* has proven wholly unwarranted.

The species occurs abundantly as a constituent of the chaparral in a dry open canyon at about 2,400 m. altitude on the xeric west slope of the Sierra Madre Oriental. It is confined more or less to the rough topography of rocky (limestone) arroyo banks.

Quercus Edwardsae sp. nov.

Ramuli 2 mm. crassi, glabrati vel sparse stellato-furfuracei, folia decidua, 8-10 cm. longa, 3-5 cm. lata, oblonga vel anguste obovata, basi rotunda vel subcuneata, apice acuta, ad apicem paucidentata, ceterum integra, utrinque glabrata, venis utrinque 8-9 subtus prominentibus, petioli 10-15 mm. longi, glabri, fructus annuus, solitarius vel binus brevipedunculatus.

Twigs rather slender (2 mm.), hardly fluted, transiently sparse-stellate, light brown with numerous very salient white lenticels, becoming grayish the second year with the lenticels even more prominent. Buds ovoid, obtuse, scarcely 3 mm. long, 2 mm. broad, dull brown, sparsely pubescent, the linear pubescent stipules caducous. Leaves deciduous, 8 to 10 cm. long and 3 to 5 cm. broad, oblong to very narrowly obovate, the base rounded to usually subcuneate, the apex acute, entire save for several irregular mucronate-tipped antrorse teeth near the apex, glabrous on both surfaces or very sparingly stellate near the midrib beneath, the upper surface shiny, the lower dull green; veins about 8 or 9 on each side with few intermediates, passing into the teeth when those are present, irregularly branched and occasionally looping, quite prominent beneath, scarcely impressed above, the reticulum very prominent beneath; petioles 10 to 15 mm. long, 1 to 1.5 mm. thick, glabrous. Catkins? Fruit annual, solitary or paired, subsessile or usually subterminal on densely

short-hairy peduncles 1 cm. long or more; young cups hemispheric, the tightly appressed scales narrowly rounded, minutely dense-hairy save the smooth margin; acorns?

NUEVA LEON: near Lampazos, June 27, 1937, *M. T. Edwards 435*. (Mu—type).

Quercus Edwardsae is closely related to *Q. porphyrogenita* Trel. from which its large oblong leaves with antrorse mucronate teeth distinguish it.

Quercus filiformis sp. nov.

Frutex parvus, procumbens, ramuli 0.4-1 mm. crassi, sparse stellato-pubescentes vel glabrati, folia decidua, 10-45 mm. longa, 4-15 mm. lata, oblonga, apice acuta vel obtusa, basi cuneata vel rotundata, integra vel crasse dentata, supra glabra et nitida, subtus minute puberulenta, venis utrinque 6-8 anastomosantibus atque prominentibus, petioli 1.25-2.5 mm. longi, sparse stellato-pubescentes vel glabrati.

Low sprawling shrub to 3 dm. tall and twice as broad, irregularly and openly branched. Twigs 0.4 to 0.6 or rarely 1 mm. in diameter, minutely fluted or subterete, brown, sparsely short-stellate or glabrate, becoming gray the second season with few relatively large raised lenticels. Buds 1 to 2 mm. long, broadly to narrowly ovoid, light brown and sparsely pubescent about the apex. Stipules caducous except those about the terminal bud, about 2 or 3 mm. long, ligulate but strongly concave ventrally especially toward the obtuse apex, brown, glabrous except the ciliate and dorsally pubescent apical end. Leaves deciduous, thin and hard, 10 to 25 or on vigorous branches 45 mm. long, 4 to 7 or rarely 15 mm. broad, oblong, acute or obtuse, mucronate-tipped, unequilaterally rounded or sometimes subtruncate or subcuneate, entire or an occasional mucronate tooth near the apex or profoundly toothed or lobed particularly near the apex, margins somewhat crisped, slightly cartilaginous, scarcely revolute, upper surface rather shiny green, glabrous, lower surface dull glaucous green with minute sparse simple hairs and microscopically abundantly white-punctate; veins about 6 to 8 on each side with some intermediates, much branched and obviously anastomosing, the principal branches passing into the mucronate teeth where those are present, somewhat prominent (even to the reticulum) on both surfaces or only the principal secondaries raised; petioles 1.25 to 2.5 mm. long, 0.2 to 0.5 mm. thick, red or brown especially toward the bases, sparsely short-stellate or glabrate. Catkins and fruit?

Quercus filiformis is an off-shoot of the series *Opacae* with rather extreme characters to be included in that series. The nearly procumbent habit and exceedingly slender twigs and petioles very clearly distinguish *Q. filiformis* from *Q. Pringlei* v. Seem. to which it is most closely related.

Q. filiformis occurs very sparsely in densely shaded moist canyons in pine-oak forest. Probably no other clearly distinct species of oak is so utterly insignificant in any but a phylogenetic sense. It apparently produces no stems as much as a centimeter in diameter and grows so openly and so sparsely as

to be of practically no watershed control value, and it is clearly restricted to the dense shade of well forested arroyos.

COAHUILA: Mun. de Cuatro Cienegas, Sierra de la Madera, Cañon del Pajarito, Sept. 5, 1939, *C. H. Muller 3150* (USNA—type).

Quercus Gentryi sp. nov.

Arbor grandis, ramuli 1-2.5 mm. crassi, glabrati; folia tarde decidua, 5-11 cm. longa, 1.5-2.5 cm. lata, anguste lanceolata, apice acuta vel longe acuminata, basi rotunda vel subcuneata, integra, supra glabra et nitida, subtus minute puberulenta, venis utrinque 15-25 anastomosantibus, supra impressis, subtus prominentibus, petioli 5-11 mm. longi, fructus annuus, solitarius, brevipedunculatus, cupula 15 mm. lata, 10 mm. alta, margine invaginata, glans 2/3 inclusa.

Large tree. Twigs 1 to 1.5 or even 2.5 mm. thick, distinctly fluted, dull reddish-brown, glabrous or sparingly stellate-pubescent about the ends, the small light lenticels quite prominent, becoming grayish with more and larger lenticels. Buds about 4 mm. long and 2 mm. broad, acute, narrowly ovoid, shiny brown, glabrous or the scales markedly ciliate; stipules caducous. Leaves persistent at least until spring, thin, 5 or usually 8 to 11 cm. long, about 1.5 to 2.5 cm. broad, narrowly lanceolate, the apex long-acuminate or simply acute, the base unequally rounded to subcuneate, entire, the margins minutely cartilaginous, flat or minutely revolute, upper surface somewhat shiny, dark green, glabrous except at the base of the midrib, lower surface dull, inconspicuously bullate-granular, apparently glabrous except for the tomentose midrib but the lamina microscopically puberulent with appressed simple hairs; veins about 15 to 20 or 25 on each side and sometimes with secondary intermediates, much branched and obviously anastomosing toward the margin, not prominent above and the principal ones slightly impressed, very prominent beneath but the reticulum merely raised; petioles 5 to 10 or 11 mm. long, sparsely stellate-pubescent or glabrous, yellowish- or reddish-brown. Catkins? Fruit biennial, solitary, peduncles 2 to 4 or 5 mm. long, about 3 mm. thick, glabrous, with prominent lenticels; cups about 15 mm. broad, 10 mm. high, hemispheric or deeper, the bases rounded, margins thickened and inrolled, the scales narrow, rounded, thin, appressed, minutely puberulent, light brown; acorns broadly ovoid to round, about 1 cm. broad and scarcely longer, light brown, minutely puberulent, two-thirds or more included.

SINALOA: summit of Sierra Tacuichamona [Techuichama], Feb. 19, 1940, *H. S. Gentry 5686* (USNA—type); *H. S. Gentry 5686a*, with the more narrow and longer-acuminate leaves (USNA).

Quercus Gentryi is suggestive of the series *Salicifoliae* Trel. and particularly *Q. salicifolia* Née. From this series it is amply distinguished by its biennial fruit with thick coarsely inrolled cup margins, its leaves granular beneath, and the much more numerous principal veins. No other species in northern Mexico could possibly be confused with *Q. Gentryi* unless it be *Q. ignaciensis* whose short petioles and leaves much narrowed basally clearly indicate its relationship to the series *Acatenangenses* rather than to *Q. Gentryi*.

Quercus ignaciensis sp. nov.

Ramuli 1-1.5 mm. crassi, flavi-stellato-pubescentes, glabrati, folia semper-virentia, 11-13 cm. longa, 2.5-3.5 cm. lata, anguste oblongo-oblanceolata, acuminata, basi anguste rotundata vel cordulata, integra, glabrata, venis utrinque 15-20 anastomosantibus, supra impressis, subtus prominentibus, petioli 2-3 mm. longi, glabrati.

Twigs very slender (1-1.5 mm.), markedly fluted, from sparingly yellow-stellate glabrescent the second year, gray, with scarcely evident lenticels. Buds?, the shedding scales brown and glabrous save the stellate apices and ciliate margins, the stipules persistent. Leaves evergreen, 11 to 13 cm. long, 2.5 to 3.5 cm. broad, narrowly oblong-oblanceolate, the apex very acute or very narrowly rounded, basally narrowed, unequally rounded or subcordate, entire or very obscurely wavy-margined and crisped, minutely but markedly cartilaginous-revolute, red and very sparingly short-stellate on both surfaces when unfolding, soon glabrous, the upper surface green and somewhat shining, the lower more dull; veins 15-20 on each side, often with intermediates, much-branched and obviously looping, impressed above but the midrib and reticulum slightly prominent, the midrib, veins, and reticulum very prominent beneath; petioles 2 to 3 mm. long, from short-stellate soon glabrate. Flowers and fruit?

SONORA: La Silla Mts., Sierra Madre, 25 mi. S. E. of San Ignacio, at 3,700 feet elevation, February 26, 1938, *H. T. Green without number* (ANS—type).

Quercus ignaciensis is suggestive of *Q. flagellifera* Trel. of Guatemala to which it is quite apparently related. The presence as far north as Sonora of a representative of this markedly tropical group is rather surprising since apparently no members of the series are known in the intervening tropical areas of southern Mexico. *Q. ignaciensis* may be distinguished from *Q. flagellifera* by its entire, somewhat broader, basally less attenuate, and apically shorter-pointed leaves with reticulum very prominent beneath. The character of the venulation is probably the most fundamental distinction.

Quercus Knoblochii sp. nov.

Arbor mediocris, ramuli 1.5-3 mm. crassi, tomentulosi, folia tarde decidua, 6 cm. longa, 2 cm. lata, coriacea, oblonga, apice acuta, basi cordata, ad apicem crasse dentata, puberulenta, supra nitida, venis utrinque 8-9, fructus annuus, brevipedunculatus, parvus.

Moderate-sized tree to 10 m. tall with a trunk diameter of 0.3 m. Twigs 1.5 to 2 or rarely 3 mm. thick, coarsely fluted, reddish-brown, minutely fulvous-tomentulose and tardily glabrate with numerous rather prominent pale lenticels. Buds about 3 mm. long, narrowly lance-elliptic, acute, tan, sparsely scurfy or glabrate, the stipules early caducous. Leaves deciduous, somewhat thick and leathery, 4 to usually 6 or sometimes 12 cm. long, 1.5 to 2.5 or even 4 cm. broad, oblong, broadest above the middle, acute at apex, deeply cordate or auriculate at base or exceptionally rounded, subentire to coarsely and aristately few-toothed above the middle, margins minutely cartilaginous-revolute, upper

surface shiny and apparently glabrous but minutely and sparsely simple- or stellate-puberulent especially along the midrib, lower surface usually obviously fulvous-puberulent or the simple hairs gray and then less apparent, often with gray stellate tufts in the axils of the veins, somewhat shining; veins about 8 or 9 on each side, issuing from the midrib at an angle of 20 to 30 degrees, branching and anastomosing near the margin but eventually passing into the teeth where those are present, moderately raised (including the reticulum) on both sides; petioles 4 to usually 7 or even 9 mm. long, persistently stellate-scurfy. Catkins? Fruit annual, solitary or paired, subsessile or short-stalked, the peduncle 5 to 15 mm. long, stellate-scurfy, the few lenticels scarcely conspicuous; cups about 6 to 8 mm. broad, 5 mm. high, obconic to deeply cup-shaped, the scales broadly ovate to rounded, flat and very closely appressed, very sparsely pubescent or glabrate, light brown to straw-colored; acorns about 10 mm. long (rarely 9 or 11), 6 or 7 mm. broad, elliptic, rounded to subacute at the apex, brown, rather persistently silky-pubescence, about one-third included.

CHIHUAHUA: Mun. de Madera, 25 mi. southwest of Chuhuichupa, on the west slope of the Sierra Madre Occidental, October 2, 1939, *C. H. Muller 3600* (USNA—type); Mojarachic, November 14, 1939, *I. Knobloch 6057* (USNA); February 8, 1940, *I. Knobloch 6062* (USNA).

SONORA: Mun. de Nácore Chico, 32 mi. southwest of Chuhuichupa, Chihuahua, on the west slope of the Sierra Madre Occidental, October 2, 1939, *C. H. Muller 3603* (USNA); 35 mi. southwest of Chuhuichupa, October 3, 1939, *C. H. Muller 3607* (USNA).

Quercus Knoblochii is most closely related to *Q. Endlichiana* Trel., and particularly to certain forms of that species in the Sierra Madre Oriental. It is clearly distinguished by its elongate oblong leaves.

Quercus LeSueuri sp. nov.

Ramuli 1-2 mm. crassi, dense stellato-villosi et tarde glabrati, folia decidua, 4-7 mm. longa, 1.5-3 mm. lata, ovata, utroque rotundata, undulato-lobata, utrinque dense stellato-villosa, venis utrinque 6-8, subtus prominentibus, petioli 3-7 mm. longi, villosi, fructus annuus, brevi- vel mediocri-pedunculatus, parvus.

Twigs slender (1-2 mm.), fluted, densely short-stellate-villous, the second year glabrate and gray with inconspicuous lenticels. Buds round, obtuse or slightly acute, glabrous, dark brown and shiny, the short awl-like stipules often persistent. Leaves deciduous, 4 to 7 cm. long, 1.5 to 3 cm. broad, usually rounded at both ends or the base truncate, rounded, or rarely cuneate, margins undulately shallow-lobed, the sinuses directed obliquely backward, dull green above, lighter beneath, both surfaces densely short soft stellate-pubescent with no especial concentation of pubescence in sheltered places; veins 6 to 8 on each side, much branched and occasionally looping, quite prominent beneath; petioles 3 to 5 or rarely 7 mm. long, 1 mm. thick, stellate like the leaves. Staminate catkins? Pistillate catkins 1- to 3-flowered on a hairy peduncle 5 to 20 mm. long and 1 to 1.5 mm. thick or subsessile. Fruit annual, young

cups with obtuse basally thickened and puberulent scales. (Mature fruit not seen.)

CHIHUAHUA: "West of Babicora Station about 35 miles," Salto de Babicora, July 18, 1937, *H. LeSueur 1498* (Mu—type).

A small tree of 2.5 to 3 m. "growing in clumps of 3 to 4 trees" on the north exposure of a very moist canyon, altitude 7,500 feet, *Q. LeSueuri* is very similar to *Q. Gambelii* Nutt. from which it differs in its leaves densely pubescent and in its shallow sinuses and shorter petioles.

Quercus pablillensis sp. nov.

Arbor parva, ramuli circa 1.5 mm. crassi, tomentosi vel glabrati, folia decidua, 4-7 cm. longa, 1-2 cm. lata, oblonga, integra, apice acuta vel obtusa et mucronata, basi rotundata vel cordata, sparse stellato-puberulenta, subtus non bullata, venis utrinque 10-15 anastomosantibus, petioli 5-6 mm. longi, fructus biennis, brevipedunculatus, parvus.

Small tree. Twigs about 1.5 mm. thick, fluted, from short-stellate-tomentose glabrate or rather persistently pubescent, reddish-brown with scarcely prominent lenticels. Buds about 2 mm. long, narrowly ovate, acute, glabrous, glossy-brown; stipules caducous. Leaves deciduous, about 4 to 7 cm. long, 1 to 2 or sometimes 3 cm. broad, oblong, mucronately obtuse to acute, rounded to cordulate at base, entire, the margins revolute, upper surface glabrate or sparsely minute-stellate-puberulent, somewhat shining, lower surface persistently minute-stellate, the hairs peculiarly spaced in a stipple effect, the surface rather glossy, not bullate but the ultimate reticulum minutely impressed in the flat surface; veins 10 to 15 on each side, rather irregular and with occasional evanescent intermediates, much branched and anastomosing, slightly impressed above but the reticulum minutely raised, prominently raised beneath, the coarser reticulum slightly so, and the ultimate reticulum (visible only with a lens) minutely impressed; petioles 5 or 6 mm. long, from densely short-tomentose persistently somewhat pubescent. Staminate catkins 3 to 4 cm. long, rather loosely flowered with a densely tomentose rachis, the anthers exserted from the glabrous perianth. Pistillate catkins 5 to 10 mm. long, the tomentose peduncle 1- to 3-flowered. Fruit biennial, subsessile to evidently stalked, the peduncle 2 to 5 or 10 mm. long and 2 mm. thick; cups small, about 10 mm. broad, hemispheric, the base somewhat constricted, scales ovate to oblong, truncate, flat and tightly appressed, puberulent, light brown, acorns (immature) from puberulent becoming glabrate, probably two-thirds included at maturity.

This species was reported as *Quercus mexicana* f. *Bonplandii* Trel. (Mueller, Journ. Arn. Arb. 17:172. 1936) which it superficially resembles very closely. However, the flat lower leaf surface of *Q. pablillensis* distinguishes it from *Q. mexicana* and the series *Mexicanae* Trel. which are characterized by leaves strongly bullate-granular beneath. The affinity of *Q. pablillensis* is with the *Mexicanae* rather than any other series.

NUEVO LEON: Mun. de Galeana, Hac. Pablillo, Cañon San Francisco, May 11,

1934, *C. H.* and *M. T. Mueller 308* (AA, Mu); July 19, 1934, *C. H.* and *M. T. Mueller 1100* (AA, Mu—type); August 11, 1936, *M. Taylor 141* (Mu); August 21, 1936, *M. Taylor 199* (Mu).

Quercus palustris Muench., f. **Nuttallii** (Palmer) comb. nov.

Quercus Nuttallii Palmer, Journ. Arn. Arb. **8**:52. 1927.

Few of the widespread species of *Quercus* in the Eastern United States do not exhibit forms which at one time or another have been taken for distinct species. These variants can be referred to one of three categories as follows: (1) segregates which maintain themselves geographically, ecologically, and morphologically distinct—such entities may be regarded as varieties or species, depending upon the degree of their differentiation and the sympathies of the taxonomist; (2) constant site variants without geographic distinctness—such plants are merely forms of their species; and (3) miscellaneous variations which follow no rule and apparently can be correlated with no cause—such plants are worthy of no names but have frequently been the bases of extravagant claims for hybridization in the oaks.

Quercus georgiana Curtis is a geographically and ecologically distinct aberrant of *Q. palustris* which is restricted to the granite outcrops of Georgia and Alabama. In the writer's opinion it represents a sufficient divergence from typical *Q. palustris* to warrant specific segregation and illustrates the first category of variants. *Q. Nuttallii,* representative of the second category, exhibits no geographic or ecological segregation since it occurs with the parent species throughout a large part of the latter's southern range (Mississippi to eastern Texas and southeastern Missouri). The fruit characters which distinguish the form are very striking, but, unfortunately, almost every species in the Eastern United States exhibits similar fructal polymorphism. Taxonomy can hardly be called upon to furnish names for all the genetic segregates of a highly heterozygous oak population. The third class of aberrants scarcely merits discussion. A little more assiduous application on the part of the casual students of *Quercus* would greatly decrease the number of so-called hybrids which are perennially being stillborn on herbarium labels.

Quercus sierramadrensis nom. nov.

Quercus tenuiloba f. *gracilis* C. H. Muell., Journ. Arb. Arb. **17**:178. 1936.

Twigs slender (1-2 mm.), fluted, quickly glabrate and dull reddish-brown with few inconspicuous lenticels, the second year still prominently fluted, gray. Buds ovoid, 2 to 3 mm. long, 1 to 2 mm. thick, straw-colored, glabrous and shiny; the stipules caducous. Leaves deciduous, 10 to 15 or 18 cm. long and 2 to 4 cm. broad, oblanceolate, the apex acute, the base cuneate or somewhat rounded, the margins minutely cartilaginous-revolute, rather saliently aristate-dentate with moderate rounded sinuses save at the entire base, glabrate and glossy save a slight stellate pubescence along the midrib beneath particularly in the axils of the principal veins, the lower surface somewhat coppery; veins about 8 or 10 on each side with occasional intermediates, passing into the teeth where those are present, slightly impressed above and prominent

beneath, the reticulum very prominent beneath; petioles about 3 to 4 mm. long, 1.5 mm. thick, glabrate. Catkins and fruit unknown.

NUEVO LEON: Mun. de Villa Santiago, Las Adjuntas, in the Sierra Madre Oriental, June 25, 1935, *C. H. Mueller 2048* (AA—type as of *Q. tenuiloba* f. *gracilis*).

Quercus sierramadrensis is a slender, rather small tree reaching about 10 m. in height, growing in moist, densely shady situations at an altitude of about 1,500 m. This species probably has a very local distribution since it was not found in any other of the many canyons of the Sierra Madre in the course of intensive field study of the oaks both to the north and to the south. This species is undoubtedly related to *Q. tenuiloba,* but it now seems that the relationship cannot be conspecific. *Q. sierramadrensis* is distinguished by its narrowed leaf bases (neither truncate nor cordate) and very short petioles.

Quercus supranitida nom. nov.

Quercus revoluta f. *acuta* C. H. Muell., Journ. Arn Arb. **17**:166. 1936.

Twigs slender (1 to 1.75 mm.), from densely yellow-stellate-tomentose glabrate the second year and gray with few scarcely evident lenticels. Buds ovoid, obtuse, scarcely over 1.5 mm. long and 1 mm. broad, reddish-brown, the scales glabrous save the markedly ciliate margins; the short subulate stipules soon caducous. Leaves deciduous (?), small (3 to 5 cm. long and 1 to 2 cm. wide), oblong to lance-elliptic, acute, the base truncate, rounded, or subcuneate, entire or shallowly few-toothed and mucronate above the middle, the margin decidedly revolute but irregular or slightly crisped, upper surface somewhat shining, sparsely roughened with short stellate hairs, the principal veins slightly impressed but the reticulum raised, lower surface yellow-stellate-tomentose with the veins quite prominent, the midrib tending to be glabrous; veins about 8 or 10 on each side, much branched and anastomosing or simple if passing into the teeth; petiole 2 or 3 mm, densely tomentose. Staminate catkins? Pistillate catkins of 1 to 4 or 5 flowers subsessile or on a peduncle about 5 mm. long. Young cups subsessile, the scales reddish-brown, ciliate or puberulent on the back. Mature fruit not seen.

NUEVO LEON: Mun. de Galeana, Puente de Diós, July 12, 1935, *C. H. Mueller 2169* (AA—type as of *Q. revoluta* f. *acuta*).

The tardily glabrate twigs, somewhat smaller leaves, only slightly impressed veins, and subsessile cups of *Q. supranitida* distinguish it from *Q. revoluta* Trel. under which it was described as a form. It is now quite clear that the two plants are not conspecific, and it seems that they can scarcely be referred to the same series.

Quercus supranitida is related to *Q. microphylla* Née from which it may be distinguished by its larger and less tomentose leaves. Née's description of *Q. microphylla* characterizes that species so as to suggest quite strongly the more northerly *Q. intricata* Trel. The description of *Q. microphylla* in Trelease's monograph is much more suggestive of *Q. supranitida* which clearly

is unlike either *Q. intricata* or *Q. microphylla* in size and texture of leaves and pubescence.

Quercus tamiapensis sp. nov.

Ramuli 1.5-2.5 mm. crassi, tomentosi, tarde glabrati, folia tarde decidua, coriacea, 6-9 cm. longa, 2-4 cm. lata, oblonga vel sublanceolata vel oblanceolata, ad apicem undulata vel crasse dentata, apice subacuta, basi rotundata vel subcordata, supra sparse stellato-puberulenta vel glabrata, subtus stellato-tomentosa vel glabrata, venis utrinque 10-12 anastomosantibus, subtus prominentibus, petioli 5-7 mm. longi, stellato-tomentosi, fructus annuus, solitarius vel binus, brevipedunculatus, cupula 18 mm. lata, 12 mm. alta, glans ½ inclusa.

Moderate-sized tree with gray bark. Twigs 1.5 to 2.5 mm. thick, scarcely fluted, grayish-yellow with felt-like tomentum, glabrous and gray the second year with scarcely evident lenticels. Buds about 2 mm. in diameter, round or broadly and obtusely ovoid, brown, glabrous or the scales finely ciliate; stipules caducous or persistent about the terminal bud, 5 or 6 mm. long, narrowly ligulate, brown, pubescent. Leaves persistent, at least until spring, thick-chartaceous, about 6 to usually 8 or 9 cm. long and 2 to usually 3 or 4 cm. broad, oblong, sublanceolate, or oblanceolate, acute or finally obtuse, rounded or unequally subcordate at base, undulate or coarsely toothed particularly above the middle, margins minutely cartilaginous-revolute, upper surface glabrous except along the midrib toward the base or minutely and sparsely stellate, somewhat shining, lower surface from loosely stellate-tomentose becoming glabrous except along the midrib and principal veins or occasionally the blade persistently tomentose, dull light green; veins about 10 or 12 on each side, branching and obviously anastomosing or passing into the teeth where those are present, very prominent beneath including the obvious reticulum, scarcely raised above, the principal veins even slightly impressed; petioles about 5 to 7 mm. long and 1 to 1.5 mm. thick, rather persistently stellate-tomentose or yellowish-brown where abraded. Catkins? Fruit annual, solitary or paired on a hoary peduncle about 1 cm. long; cups about 18 mm. broad and 12 mm. high, hemispheric or deeper, the bases perfectly rounded, margins coarse and thick but smooth, scales much thickened below, obtuse but narrowed at the thin appressed apices, densely puberulent, grayish-brown; acorns not seen, half or more included, judging by the cups.

It is difficult to assign *Q. tamiapensis* to the series *Laxae* without reservations, for the thick coarse rather large cups are not suggestive of that group. Yet the species bears a much greater resemblance to the *Laxae* than to any other series. From all other species in the series *Q. tamiapnsis* may be distinguished by its coarse cups with much thickened scales, its short peduncles, and by the obviously toothed oblong leaves.

Q. tamiapensis forms a small or moderate tree on openly wooded, sunny slopes at elevations of approximately 4,000 feet. The type was growing in deep soil.

SINALOA: Puerto á Tamiapa, March 8, 1940, *H. S. Gentry 5863* (USNA—type).

Quercus Tinkhami sp. nov.

Arbor parva, ramuli dense stellato-tomentosi, folia decidua, 2-4 cm. longa, 1-2 cm. lata, apice rotunda, basi rotunda vel cuneata, subintegra vel crispo-denticulata, supra sparse stellato-puberulenta et nitida, subtus dense breviter stellato-tomentosa, venis utrinque 6-8 anastomosantibus, utrinque prominentibus, petioli 2-3.5 mm. longi, dense tomentosi, fructus annuus, solitarius, cupula 10 mm. lata, hemispherica.

Small tree. Twigs about 1.5 mm. thick, coarsely fluted, densely gray-stellate-tomentose and rather persistently pubescent the second year or glabrate and gray with few raised but scarcely conspicuous gray lenticels. Buds about 2 to 2.5 mm. long, scarcely 1.5 mm. broad, round-ovoid, obtuse, sparsely pubescent, brown, the stipules persistent for a time, about 3 mm. long, subulate, dorsally strigose or glabrate. Leaves deciduous, 2 to usually 3 (or sometimes 4) cm. long, 1 to usually 1.5 or 2 cm. broad, thin but rather hard, ellipsoid to usually narrowly obovate or oblong, broadly rounded at apex, basally rounded or sometimes cuneate, subentire to usually remotely mucronate or low-undulate, margins cartilaginously thickened but not revolute, irregularly crisped, upper surface shiny-bright-green, very sparsely stellate-puberulent near the midrib, lower surface persistently short-stellate-tomentose, the tomentum usually spreading and gray but on vigorous shoots often tightly appressed and exposing the light green leaf surface which then appears nearly glabrate; veins 6 to 8 on each side, branching and anastomosing toward the margins, quite prominent and (with the reticulum) forming a pale raised network on the upper surface, similarly raised on the lower surface but obscured by the tomentum; petioles 2 to 3.5 mm. long, densely gray-stellate-tomentose. Catkins? Fruit annual, solitary, subsessile; the cups about 10 mm. broad, 6 or 7 mm. high, deeply cup-shaped, the scales lanceolate, prominently keeled, the thin appressed apices narrowed and russet-brown in color, the bases canescent-tomentose; acorns (immature) densely silky-pubescent about the apex, probably ovoid and one-half included at maturity.

NUEVO LEON: near Doctor Arroyo, August 25, 1940, *F. Shreve* and *E. R. Tinkham 9686* (AA—type).

Quercus Tinkhami is apparently most closely related to *Q. potosina* Trel. from which its subentire leaves with raised pale reticulum on the upper surface and its smaller cups with prominently keeled scales amply distinguish it.

The pale reticulum is rather suggestive of *Q. alveolata* Trel., but the large leaves of that species with their prominently revolute margins would exclude *Q. Tinkhami*. The polymorphism of the pubescence on the under surface of the leaves is rather confusing, but the spreading tomentum of the smaller leaves is obviously typical rather than the appressed pubescence of vigorous shoots which to a certain extent suggests the unrelated *Q. Vaseyana* Buckl.

Quercus trinidadensis sp. nov.

Frutex, ramuli 1-2 mm. crassi, tomentosi vel glabrati, folia sempervirentia, coriacea, 2-8 cm. longa, 1-4 cm. lata, oblonga vel elliptica vel obovata, apice

obtusa vel rotundata, basi cordata, subintegra vel mucronato-dentata, glabra, venis utrinque 7-8, subtus prominentibus, petioli 2-4 mm. longi, stellato-tomentosi vel glabrati, fructus annuus, pedunculatus, cupula 10 mm. lata.

Shrub 0.3 to 1 or rarely 2 m. tall forming dense colonies by rhizome propagation. Twigs slender (1 or sometimes 2 mm.), fluted, from minutely gray-stellate-tomentose early glabrate and gray or brown with scarcely prominent lenticels, the second year with more salient lenticels. Buds about 1.5 mm. long, broadly rounded, brown, glabrous; stipules caducous or persisting through 2 seasons, 3 to usually 5 mm. long, spathulate, light brown, glabrous. Leaves persistent 2 or 3 seasons, rather thick and leathery, 2 to 8 (usually about 5) cm. long, 1 to 4 (usually about 2 or 2.5) cm. broad, oblong to elliptic or somewhat broader above the middle, obtuse or rounded at apex, cordate at base, subentire to usually repandly or mucronately toothed especially toward the apex, the teeth tipped by blunt callous mucrones, margins cartilaginous but scarcely revolute, upper surface dull green, glabrous except along the midrib toward the base, lower surface similar but glaucescent; veins 7 or 8 on each side, irregularly branching and inconspicuously anastomosing, passing into the teeth where those are present, scarcely evident above but quite prominent beneath, the reticulum scarcely raised; petioles about 2 to sometimes 4 mm. long, strongly depressed in the basal sinus, dark reddish-brown, yellowish-stellate-tomentose or glabrate. Catkins? Fruit annual, solitary, paired, or several on a stellate or glabrate peduncle 5 to 25 mm. long and 1 mm. thick; cups about 10 mm. in diameter and 5 mm. deep, cup-shaped, the scales moderately thickened basally with short narrow rounded apices, densely canescent except the glabrous red or brown apices; acorns (immature) ovoid, about half included.

NUEVO LEON: La Trinidad, Mun de Montemorelos, on open slopes or in open forests, August 18, 1939, *C. H. Muller 2803* (USNA—type—, AA); August 19, 1939, *C. H. Muller 2823* (USNA). TAMAULIPAS: San Lucas, June 1930, H. W. *Viereck 601* (US).

Quercus trinidadensis is most closely related to *Q. depressipes* Trel. with which it shares the marked depression of the petioles within the basal leaf sinus. It is distinguished from that species by its much larger leaves and distinctly evergreen habit.

QUERCU: WISLIZENI A. DC., DC. Prodr. 16(2):67. 1864.

The circumstances under which the type locality of this species was determined have never been clearly explained. In the original description De Candolle locates the type as follows: "In montibus mexicanis ad occid. Chihuahuae prope Cosiquiriachi, alt. 7,000 p." Sargent in the Silva and Trelease in his monograph both state that the Mexican locality is erroneous and that the type was collected in California. Neither offers any explanation of the correction, but it obviously relates to a remark by Engelmann (Trans. Acad. Sci. St. Louis 3:396. 1877) in which he says of *Q. Wislizeni*, "With his usual acumen, A. DeCandolle discovered this species in a small fruiting specimen, brought by Dr. Wislizenus in 1851 from the American Fork of

the Sacramento River, but through a mistake of mine, he located it near Chihuahua."

DeCandolle's description of the leaves of *Q. Wislizeni* strongly suggests another species which grows commonly about Chihuahua, and for that reason Dr. Engelmann's generous assumption of fault seemed in error. Furthermore, not all contemporary botanists appeared willing to accept the Engelmann-Sargent-Trelease disposition of the case. For these reasons the type of *Q. Wislizeni* in the herbarium of the Missouri Botanical Garden was examined together with all other material which might have figured in the original description. The individual peculiarities of the type specimen readily explained the resemblance of the description to another species. There is no doubt that the type is correctly labelled, for it is clearly the Californian species and not the Chihuahuan one. A post-publication annotation, presumably by Engelmann, locates the collection as "near Auburn" on the Sacramento River. The greater part of the label is in De Candolle's script and is signed by him, and he recorded the locality as "California." It therefore seems that Engelmann was not responsible for De Candolle's error in citing the locality but that De Candolle himself made the error, citing a locality from which a large part of Wislizenus' collections were taken.

ULMACEAE

Ulmus monterreyensis sp. nov.

Arbor mediocris, ramuli puberulenti, folia coriacea, 2-5 cm. longa, 1-2.3 cm. lata, anguste elliptica vel anguste ovata vel late lanceolata, apice acuta vel rare obtusa, basi rotundata vel subcordata, duplicati-serrata, supra pilis brevibus rigidis asperata, subtus pilosa, venis utrinque 8-10, supra valde impressis, petioli 2-3 mm. longi, flores vernales, inflorescentia paniculata, 1 cm. longa, glanduloso-puberulenta et pilosa, sepala anguste-obovata vel lanceolata, acuta, integra vel apice divisa, ovarium dense canescens, stigmatibus reflexis.

Twigs 0.8 to 1.2 mm. thick, distinctly fluted, reddish-brown, puberulent and sparsely pubescent. Terminal vegetative buds 2.5 to 3 mm. long and 1 to 1.5 mm. thick, lanceolate to subovoid, acute, the scales dark reddish-brown, sparsely ciliate, minutely puberulent; stipules caducous. Leaves thick and hard, 2 to 4 or even 5 cm. long, 1 to 1.8 or even 2.3 cm. broad, narrowly elliptical to narrowly ovate or broadly lanceolate, markedly acute or a rare individual obtuse, unequilaterally rounded or subcordate, the margins low-serrate with each tooth again obscurely notched, upper surface shiny and dark green, apparently glabrous except along the sunken midrib but scabrous with minute pustules and forward-directed minute harsh hairs, lower surface dull light green, minutely pilose especially on the veins, minutely bullate; veins about 8 or 10 on each side, passing directly into the teeth or branching and passing into two adjacent teeth, markedly impressed above and very prominent beneath; petioles 2 to 3 mm. long, puberulent and pilose like the midrib. Axillary flower buds ovate, at first acute, about 3 mm. long and 1.5 to 2 mm. broad, the scales dark reddish-brown, sparsely ciliate, minutely puberulent or glabrous

and shiny, opening in late summer. Inflorescence a simple panicle about 1 cm. long at anthesis, peduncle and pedicels glandular-puberulent and sparsely pilose, pedicels articulated above or below the middle. Calyx divided nearly to the base into six erect brown sepals, sepals oblanceolate, narrowly obovate or lanceolate, acute, entire or the apices divided into two acute lobes, 1 to 1.5 mm. long and 0.5 mm. broad, sparsely ciliate about the apex. Stamens about 2.5 mm. long. Ovary about 2 mm. long at anthesis, elliptic, densely glandular-puberulent and white-hirsute; stigmas reflexed and adpressed to the young samara margins. Fruit not seen.

NUEVO LEON: Mun. de Monterrey, lower Cañon Diente along arroyo banks, August 11, 1939, *C. H. Muller 2670* (USNA—type).

Ulmus monterreyensis is a moderate-sized tree reaching a height of 12 m. with a trunk 0.3 m. in diameter. Although the species is very rare in the type locality, two other specimens were observed growing in small stream valleys between Monterrey and Villa Santiago, and it is said to be quite common in nearby localities. The occurrence of the tree near habitations (at the mill and buildings of a mining company) at first suggested cultivation, and it was suspected that the species might prove to be *U. parvifolia* Jacq. Its close resemblance to *U. crassifolia* Nutt. was also noted. From *U. parvifolia* the new species is clearly distinguished by its white-hirsute ovaries and veins impressed above as opposed to the merely puberulent ovaries and veins not impressed in the Asiatic species. From *U. crassifolia* the new species may be distinguished by its densely hirsute ovary, acute and often acutely bifid sepals, and characteristically acute leaves.

This is the fourth species of *Ulmus* described from Mexico and the third in the eastern mountain ranges. *U. LeSueurii* Standl. is known only in the Rio Bonito area of Sonora (erroneously cited as Chihuahua under the original description). It was described from sterile material, and it is difficult to judge if it may belong to the autumn-flowering group or not. Its generally larger leaves with subulate-mucronate teeth definitely distinguish it from *U. monterreyensis*. *U divaricata* C. H. Muell., also from Cañon Diente in Nuevo Leon, and *U. multinervosa* C. H. Mull. from Coahuila are both spring-flowering and rather closely related in vegetative characters to *U. americana* L. This, then, is the first definite record of an autumn-flowering species in Mexico, although Standley has surmised with good reason that *U. crassifolia* crosses the border into Tamaulipas from Texas.

BERBERIDACEAE

Berberis eutriphylla (Fedde) comb. nov.

Mahonia eutriphylla Fedde, Bot. Jahrb. Engl. **31**:91. 1902.

Fedde's material *(Ehrenberg 1109)* is not now available, and his citation of the type locality as "Kaukando (?) bei la Encarnacion" is not very illuminating. It is impossible to say if the collection of this species in central Coahuila represents an appreciable extension of range or not.

The type collection is completely sterile, and in the recently collected

material only dried peduncles remain. These may be dscribed as simple, 1.5 to 3 cm. long, the bracts much crowded along the distal two-thirds of the axis, ovate, obtuse, rounded or minutely pointed or toothed about the apex, about 1.5 to 2 mm. long. This species occurs as a shrub 2 to 5 dm. tall in moist, shady arroyos. COAHUILA: Mun. de Cuatro Cienegas, Sierra de la Madera, Cañon del Agua, September 9, 1939, *C. H. Muller 3244* (USNA).

Fedde's distinction of *Mahonia* from *Berberis* consists principally of unfavorable criticism of the separating characters which have been proposed. It is difficult to understand why in the face of this evidence he continues to maintain *Mahonia* as generically distinct from *Berberis*.

Berberis pinifolia (Lundell) comb. nov.

Mahonia pinifolia Lundell, Carn. Inst. Wash. Pub. **478**:209. 1937.

This species presents an interesting illustration of evolutionary trend. The narrow, revolute leaflets are clearly derived from the broader leaflets of the *Aquifoliatae*. Although the leaves are in some measure suggestive of those of *B. trifoliolata* Moric, the presence of dense cylindrical papillae on the under surfaces clearly denies that relationship. Lundell failed to mention this character although it is clearly evident in an isotype deposited in the Shreve Herbarium at Tucson. In addition to the type collection by Lundell from Charcas, San Luis Potosi, the following are clearly referable here:

ZACATECAS: road 4 mi. south of Cardona toward Sierra Hermosa, September 3-4, 1938, *I. M. Johnston 7375* (G); 4 mi. northeast of Villa de Cos on road from Sierra Hermosa to Zacatecas, September 4-5, 1938, *I. M. Johnston 7423* (G).

The Zacatecas material agrees with the type collection in having acicular leaflets 3- to 5-palmately arranged on short petioles and the under surfaces densely papillose whenever visible. It differs, however, in one feature of considerable importance in establishing its relationships within the genus. On young, vigorous, basal shoots the leaves are long-petioled, pinnately 5-foliate, and the leaflets are broad and copiously spinosely incised-toothed. This reversion to ancestral form occurs only on what may be termed juvenile material and is a clear case of recapitulation. A similar but clearly different tendency is seen in the following new variety.

Berberis pinifolia var. **coahuilensis** var. nov.

A specie recedit foliis semper palmato-3-foliolatis.

Differs from the species in its leaves always 3-foliate and palmate; leaves on vigorous shoots with slightly longer petioles, palmately 3-foliate, papillose beneath like the species.

COAHUILA: Cañon del Pajarito, Sierra de la Madera, Mun. de Cuatro Cienegas, September 6, 1939, *C. H. Muller 3171* (USNA—type).

This collection, which appears to be a northerly extension of the range of the species, represents a somewhat more advanced stage of evolution from the ancestral pinnate leaf form. The absence of 4- and 5-foliate leaves

and of pinnate leaves even on vigorous young shoots exhibiting broad leaflet blades is taken as indicative of greater advancement in the reduction of leaf surface. The type of this variety was found in sterile condition. It is entirely possible that additional flowering and fruiting material of both it and the typical form of the species will reveal greater differences.

ROSACEAE

CERCOCARPUS MACROPHYLLUS C. Schneid., Handb. Laubh. 1:530. 1905.

This species is known from Jalisco to Veracruz and Querrero. It is recorded here for the first time from NUEVO LEON: top of Sierra de la Cebolla, line between Mun. de Rayones and Mun. de Montemorelos, common in oak scrub on both sides of the ridge, August 21, 1939, *C. H. Muller 2930* (USNA).

ANACARDIACEAE

RHUS MICROPHYLLA Engelm. ex Gray in Smithsonian Contr. 3(5):31. 1852.

This species is common throughout western Texas and northeastern Mexico, reaching Arizona, Chihuahua, and Baja California. However, there have been no records from the state of Sonora except the following: Cañon Pulpito (near the Chihuahua line), Mun. de Agua Prieto, October 11, 1939, *C. H. Muller 3727* (USNA).

RHUS MUELLERI Standl. & Barkl., Ann. Mo. Bot. Gard. 24:359. *pl. 19, fig. 1.* 1937.

Heretofore this shrub was known only from the type collection in the mountains above Monterrey, Nuevo Leon. The following record extends its range to COAHUILA: Puerta de San Lazaro, Sierra de San Lazaro (Sierra de la Gavia), Mun. de Castaños, August 31, 1939, *C. H. Muller 3089* (USNA).

AQUIFOLIACEAE

ILEX DECIDUA Walt., Fl. Carol. 241. 1788.

Ilex berberidifolia Standl., Field Mus. Bot. Ser. 4:221. 1929.

The type of Standley's species differs in no perceptible degree from *I. decidua* as it occurs along the waterways of southern Texas and in the plateau country of central Texas. It is not remarkable that the species should be found also in the mesic uplands of adjacent Tamaulipas where the type of *I. berberidifolia* was taken. Clearly referable here is a collection from the moist, forested mountain of central NUEVO LEON: between Potrero Redondo and La Trinidad, Mun. de Villa Santiago, August 23, 1939, *C. H. Muller 2948* (USNA).

SABIACEAE

MELIOSMA ALBA (Schlecht.) Walp., Repert. Bot. 2:816. 1843.

This tree was known only from the vicinity of the type locality, Jalapa,

Veracruz. A sterile specimen identified by Mr. Paul C. Standley of the Field Museum extends its range to NUEVO LEON: arroyo below Potrero Redondo, Mun. de Villa Santiago, August 15, 1939, *C. H. Muller 2710* (USNA, F).

Meliosma alba is locally an important timber tree, but it is rapidly being depleted. Specimens up to 50 feet in height and 4 feet in diameter were observed in several moist canyons in the vicinity of Potrero Redondo. Felled trees are sawed by hand into timbers about 8 by 10 inches and about 5 feet in length. As late as 1935 these were hauled a distance of 15 miles over narrow mountain trails on miniature four-wheeled carts drawn by oxen. In 1939 the timbers were being packed over the same trails on burros. The wood is used in Villa Santiago in the manufacture of furniture for which it is said to be highly prized. The tree is known locally as *ayón*.

LOASACEAE

Eucnide xylinea sp. nov.

Herba perennis, omnino albo-viscido-villosa, floribus exceptis, ramuli 15-18 cm. longi, ascendentes vel appressi, folia 8-11 mm. longa, 4-7 mm. lata, apice obtusa, basi cuneata, 2- vel 4-rotundato-lobata, petioli 5-12 mm. longi, pedunculi 10 mm. longi, accrescentes, flores solitarii, hypanthium subhemisphericum, 5 mm. latum, sepala 7-9 mm. longa, lineari-lanceolata, acuta, petala 15 mm. longa, 5 mm. lata, oblanceolata, apice rotundata, partim puberulenta vel villosa, flava, stamina circa 30, filamenta 12-25 mm. longa, glabra, stylus 30 mm. longus, gracillimus, stigma capitatum, capsula rotunda, 6-7 mm. crassa, semina oblonga vel pyriforma, 0.6-0.7 mm. longa, 0.3 mm. lata, longitudinaliter vix spiraliter 7- vel 9-sulcata.

Perennial herb forming mats on vertical cliffs; densely viscid-white-villous throughout except the lignified bases of old stems and the flowers as described below, the simple hairs completely obscuring the minutely glochidiate pubescence. Stems 15-18 cm. long, more or less erect but appressed to the cliff-face, very brittle. Leaves petioled throughout, the petioles 5 to 12 mm. long; blades ovate, 8 to 11 mm. long, 4 to 7 mm. broad, obtuse, cuneate, roundly 2- to 4-lobed. Flowers solitary, lateral or terminal; peduncles about 10 mm. long at anthesis, accrescent to 18 or 25 mm. in fruit; hypanthium cup-shaped, about 5 mm. in diameter; sepals 7 to 9 mm. long, linear-lanceolate, acute, less densely villous than the vegetative parts; petals about 15 mm. long, about 5 mm. broad, oblanceolate, rounded at the apices, puberulent or scantily villous, particularly on the outer surface above the middle, and glabrate below, lemon-yellow fading to white; stamens about 30, glabrous, the filaments 12 to 25 mm. long, anthers round, about 0.6 mm. in length and breadth; style about 30 mm. long, very slender, glabrous, stigma capitate, scarcely swollen. Capsule globular, about 6 or 7 mm. in diameter, the calyx lobes withering with the petals but the hypanthium remaining green until dehiscence. Seeds oblong or pyriform, 0.6 or 0.7 mm. long, about 0.3 mm. in diameter, longitudinally 7 to 9 grooved and sharply ridged, the grooves scarcely if at all spiralled.

COAHUILA: Mun. de Sierra Mojada, Cañon de San Salvador (above Esmeralda) in the Sierra Mojada, September 14, 1939, *C. H. Muller 3311* (USNA—type).

The strictly solitary flowers, small leaves, densely villous-canescent herbage, and the inconspicuousness of the armed hairs so markedly set off *E. xylinea* from any other species of that genus that some doubt was felt in placing it there. However, the lack of any floral scales definitely excludes this species from *Loasa,* the only other genus which seems at all possible for it. Its habit, floral structure, and seed characters are so definitely those of *Eucnide* that no practical purpose would be served by segregating it as a distinct genus.

OLEACEAE

FORESTIERA NEOMEXICANA A. Gray, Proc. Amer. Acad. 12:63. 1876.

Although this species is quite common in New Mexico and Trans-Pecos Texas, it apparently is known in Mexico only from the following records in COAHUILA: Cañon del Agua, Sierra de la Madera, Mun. de Cuatro Cienegas, September 9, 1939, *C. H. Muller 3231* (USNA); Sierra del Pino, Mun. de Ocampo, August 22, 1940, *I. M. Johnston* and *C. H. Muller 593* (AA, USNA).

Fraxinus Greggii A. Gray, f. **nummularis** (M. E. Jones) comb. nov

Fraxinus nummularis M. E. Jones, Contr. West. Bot. **12**:59. 1908.

In a previous paper[1] the author concurred with Standley[2] in his statements concerning *F. nummularis:* "It seems probable that this is a form of *F. Greggii,* bearing the same relation to the latter that *F. dipetala trifolioliata* does to *F. dipetala.* In the type collection of *F. nummularis* all the leaves are simple and oval. A specimen from Sierra de Parras *(Purpus 5064)* shows leaves of the same kind, but some of the leaves are trifolioliate, and some of the simple ones are exactly like the leaflets of *F. Greggii.*" This concurrence was prompted by the examination of a series of specimens of *F. Greggii* Gray from the Chisos Mountains of western Texas in which simple, trifolioliate, and 5- to 7-foliolate leaves occurred on a single specimen.

Recently a large series of collections has been made in western Coahuila (including the type locality of *F. nummularis*), adjacent Chihuahua, and western Texas. This series contains some specimens clearly representative of Jones' form and a great many intermediates between that form and *F. Greggii.* It seems that the f. *nummularis* is a response to xeric conditions resulting in reduced leaf segments and shorter, relatively broader, and much thicker blades. The extreme form is found in the vicinity of Sierra Mojada, Coahuila, while radiating out from this the plants became progressively more like *F. Greggii* as it occurs in Nuevo Leon. The western Texas plant is an intermediate with much the aspect of typical *F. Greggii.* The following specimens are representative of the series:

1 Mueller, C. H., Torreya **34**:40. 1934.

2 Standley, P. C., Contr. U. S. Nat. Herb. **23**:1135. 1924.

Typical of the species—NUEVO LEON: Mun. de Villa Santiago, between Potrero Redondo and Las Adjuntas, August 24, 1939, *C. H. Muller 2596* (USNA).

Intermediate—TEXAS: Terrel Co., 4 miles east of Sanderson, September 25, 1940, *I. M. Johnston* and *C. H. Muller 1451* (AA, USNA). COAHUILA: Sierra del Pino, August 20, 1940, *I. M. Johnston* and *C. H. Muller 387* (AA, USNA).

Typical of f. *nummularis*—COAHUILA: "Sierra Mojada Mts.," April 19, 1892, *M. E. Jones without number* (US—type); Mun. de Sierra Mojada, Sierra Mojada, Cañon de San Salvadór (above Esmeralda), September 14, 1939, *C. H. Muller 3309* (USNA); Sierra Almagre, above Rancho El Almagre, September 11, 1940, *I. M. Johnston* and *C. H. Muller 1218* (AA, USNA).

POLEMONIACEAE

COBAEA PRINGLEI (House) Standl., Contr. U. S. Nat. Herb. 17:457. 1914.

This species has been known heretofore only from the type collection near Monterrey, and the following collection extends its range only about 50 miles south along the Sierra Madre Oriental of NUEVO LEON: trail from La Trinidad up the Sierra de la Cebolla, Mun. de Montemorelos, August 20, 1939, *C. H. Muller 2876* (USNA). The plant is quite common trailing over shrubs and climbing moderate-sized trees. It was observed also on the opposite (southwest) side of the Sierra.

LOGANIACEAE

EMORYA SUAVEOLENS Torr., U. S., & Mex. Bound. Bot. 121. *pl. 36.* 1859.

The type of this rare species was collected in the canyons of the Rio Grande below Presidio del Norte, and the species is recorded from Nuevo Leon. It is therefore not surprising to find it also in COAHUILA: Mun. de Castaños, Puerta de San Lazaro, Sierra de San Lazaro (Sierra de la Gavia), August 30, 1939, *C. H. Muller 3035* (USNA).

BORAGINACEAE

CORDIA PODOCEPHALA Torr., U. S. & Mex. Bound. Bot. 135. 1859.

This species was described from the vicinity of San Antonio, Texas, and ranges south through Tamaulipas and Nuevo Leon. Its occurrence in Coahuila is to be expected, but apparently it has not been reported. The following collections have been seen from COAHUILA: Soledád, low mountains 25 mi. southwest of Monclova, September 9 to 19, 1880, *E. Palmer 1024* (US); in approximately the same area, Mun. de Castaños, Cañon Bocatoche, September 2, 1939 *C. H. Muller 3112* (USNA); Mun. de Muzquiz, Sierra de Puerta Santa Ana, Hac. Mariposa, June 23, 1936, *F. L. Wynd* and *C. H. Mueller 240* (US).

SOLANACEAE

PHYSALIS MICROPHYSA A. Gray, Proc. Amer. Acad. 21:402. 1886.

Physalis campanulata Brandeg., Univ. Calif. Pub. Bot. 4:278. 1912.

The type of *P. microphysa* was collected by Pringle in the hills about Santa Eulalia, Chihuahua, while the type of *P. campanulata* comes from the

vicinity of San Luis Potosí, S.L.P. Wilkinson's collection of *P. microphysa,* also from the type locality and shortly prior to Pringle's collection of the type, apparently was the only other specimen available at the time of Gray's publication. The great distance between the type localities and Brandegee's emphasis on the campanulate calyx and deflexed fruiting pedicel of the San Luis Potosí form tended to maintain the distinctness of the two proposed species. However, the fruiting calyx of *P. microphysa* is equally as inflated-campanulate, and its pedicels are quite as apt to be deflexed even though Gray failed to mention these points. The dehiscence mentioned by Brandegee is not a true dehiscence but a mere fragmentation and therefore scarcely significant. Duplicates of all three of the above mentioned collections are deposited in the United States National Herbarium.

Another collection clearly referable here was made in COAHUILA: Mun. de Cuatro Cienegas, Cañon del Pajarito, Sierra de la Madera, September 6, 1939, *C. H. Muller 3158* (USNA).

ORCYTES NEVADENSIS S. Wats. in King, Geol. Expl. 40th Par. 5:274. *pl. 28, f. 5-10.* 1871.

Watson described the capsule of this species as "membranous," but he said nothing of its dehiscence. Subsequent authors either overlooked Watson's designation of the fruit as a capsule or disbelieved his description. Wettstein (in Engler and Prantl, Die Natürlichen Pflanzenfamilien, Teil 4, Abt. 3b, pp. 10-15. 1895) describes *Orcytes* fruit as a berry. He is followed in this by Tidestrom (Contr. U. S. Nat. Herb. 25:470. 1925) who keys the genus out on the basis of its fruit being a berry.

A collection from Nevada, north of Wadsworth, Washoe County, June 29, 1938, *W. A. Archer 6201* (USNA), has an abundance of both young and mature 2-celled fruits. All of the fully grown capsules are thin-membranous-walled, and most of them are dehiscing in a vertical plane perpendicular to the plane of the partition. In a few instances in immature fruits the dehiscence is replaced by a rough fragmentation, but by far the greater number of fruits are mature and dehiscing along a well defined line. *Orcytes,* then, should be keyed out in the family as having a 2-celled capsular fruit, loculicidal or occasionally irregularly fragmenting. In the same material there are a few flowers with six corolla lobes and six functional stamens instead of the usual five of each.

PLANT EXPLORATION AND INTRODUCTION,
BUREAU OF PLANT INDUSTRY,
WASHINGTON, D. C.