

Britain to the cultivation of timber-trees for profit, in the face of foreign competition, is as hopeless an undertaking as that of fruit or vegetables on a large scale here.

If it could be clearly shown that there is money in timber-growing in Britain there are hundreds of landowners who would plant up their wasted fields with whatever was likely to be in demand. The few who have good timber for sale now can hardly sell it at a profit. The Government may be induced to make the experiment, but without protection it would scarcely clear expenses. All that science can do is powerless so long as the British market, the best in the world we are told, is open to all comers. For the consumer things are best left as they are, but it is futile to invite the broken-down farmer and landowner to plant Pine and Oak and Ash for wood, or Apples and Pears for fruit, in the hope that the prices he will get for his produce will set him on his legs again. I know one clever cultivator who tried hard for many years to make fruit-growing in England pay, but, although his land was good, he lost heavily on what he now calls his insane investment.

London.

W. Watson.

## New or Little-known Plants.

### Some Notes on the Tree Ipomœas of Mexico.

DR. EDWARD PALMER has frequently observed in western Mexico groves of the Tree Ipomœas and has several times collected specimens. He has always believed that there was more than one species, but scanty herbarium material has prevented my giving the subject the proper study.

While at Culiacan in 1891, Dr. Palmer procured a photograph of one of these groves, which is reproduced on page 364. These are among the most beautiful flowering trees of Mexico, and being of no commercial value are allowed to grow while other trees are cut out. They, therefore, form a characteristic feature of the landscape. Curiously enough, none of these trees have yet been cultivated, although they ought to be found in our larger greenhouses and in the open gardens of our warmer southern states. I call attention to them, therefore, with a desire that some effort may be made to introduce them into cultivation. Dr. Palmer will soon visit this region again, and it is to be hoped that some arrangements may be made by which small trees or seeds may be sent to this country. He did procure a few seeds in 1891 at Manzanillo, but not being quite mature they did not germinate.

A careful examination of the material obtained by Dr. Palmer in the last few years seems to show three good species of the group. Add to these the well-known *Ipomœa murucoides*, and the introduced species, *I. fistulosa*, gives us five species for Mexico.

*IPOMŒA FISTULOSA*.—This species\* was originally described from Brazil. It is reported by Mr. Hemsley as native in Guatemala and Panama, but I am not aware that it is found in Mexico outside of cultivation. It seems to be frequently planted in Mexican gardens, and has occasionally been reported from Texas. Several years ago Mr. G. C. Nealley obtained some seed for the Department of Agriculture, which was distributed. Mrs. H. L. T. Wolcott succeeded in growing several plants. One of these, which she turned over to me, is now growing in one of the Department greenhouses. The plant began to flower when

only a foot high, and the species is, doubtless, an abundant bloomer. Our specimen is now about five feet high, and although it has not since bloomed, this is doubtless due to lack of proper conditions.

The tree is known in Brazil under the names of "Canudo" and "Matta-Cabra."

*IPOMŒA MURUCOIDES*.—This species\* is the best known and of the widest distribution of all the Tree Ipomœas. The flower-buds are rather coarse and homely, but the open flowers are large and handsome. I have not been able to learn whether this species is now in cultivation. Kunth, in 1825, speaks of a large tree in cultivation in Spain. The only illustration of the species which I have seen is a colored lithograph in the *Biologia Centrali-Americana*, vol. ii., Tab. 61. The tree is known to the Mexicans by the name of "Guansaguate" or "Cazahute." It seems to be common in Mexico and ranges from northern Mexico to Guatemala.

*IPOMŒA ARBORESCENS*.—The illustration represents the little-known plant first collected by Humboldt in southern Mexico. It was not again reported until Seemann obtained it near Mazatlan. I have seen neither of these specimens, but, through the kindness of Dr. A. Engler, I have had Dr. Palmer's plant compared with the type now at Berlin, who states that "it is identical with *I. arborescens* collected by Humboldt." The plant collected by Seemann is evidently the same as the one obtained by W. G. Wright from Mazatlan in 1888.

Mr. W. Botting Hemsley has also identified Palmer's plant as the *Argyrea* (?) *oblonga*. This plant was collected by Dr. Sinclair some time between the years 1836 and 1842 at Tepic, and described in the *Botany of the Voyage of the Sulphur* under the above name. Our specimens differ somewhat from Mr. Bentham's description, especially as to the habit of the plant, the base of the leaves and the inner surface of the sepals. This may be accounted for by the paucity of his material. Dr. Palmer collected specimens at Alamos in 1890, and both Mr. Hartman and Mr. Lloyd, of Dr. Lumholtz's Archæological Expedition, obtained specimens in the state of Sonora.

This species† ranges along the foot-hills of the Sierra Madre from Tepic to Alamos. The rarity of the species in our collections has been due, therefore, not to the rarity of the species itself, but to the fact that so few collectors have visited this region. The tree grows to the height of six to nine meters (twenty to thirty feet), with a trunk three centimeters (one foot) in diameter. It has a smooth gray bark and numerous branches; the leaves are ovate, slightly cordate at base and more or less pubes-

\* *Ipomœa murucoides*, Roem et Schult. *Syst.*, iv., 248 (1810); DC. *Prod.*, ix., 358 (1845); Hemsl. *Biol. Cent.-Amer.*, ii., 290 (1882); Smith, *Pl. Guatm.*, Pt. 2, 50 (1891); *Index Kew*, Pt. 2, 1246 (1894).

*Convolvulus macranthus*, H. B. K., *Nov. Gen. et Spec.*, iii., 95 (1818).

*I. macrantha* G. Don. *Gen. Syst.*, iv., 267 (1838).

Large tree; leaves oblong to linear-lanceolate, 7.5 to 12.5 cm. (3 to 7 inches) long, rounded at base, long acuminate, tardily glabrate; petioles 12 to 36 mm. (6 to 18 lines) long; flowers either axillary or in cymose clusters; peduncles, 2.5 to 6.2 cm. (1 to 2½ inches) long; calyx deeply five-parted, clothed externally with white wool; sepals somewhat unequal, 18 to 25 mm. (9 to 12 lines) long; corolla white, large, 7.5 cm. (3 inches) long, with broad throat; stamens included; carpels oblong, 25 mm. (1 inch) long, glabrous; seeds triangular, 10 mm. (5 lines) long, light brown, the angles clothed with long hairs.

Specimens have been examined from the following places:

Guadalupe (Bilimex, September, 1860; September, 1867, No. 273; Bourgeau, September, 1865-6, No. 790). Mexico, locality uncertain (Dr. J. Gregg, 1848-9, No. 592; Berlandier, November, 1827, No. 1229); Guatemala (Captain John Donnell Smith, February, 1890, No. 1863); Cannibal (W. C. Shannon, December, 1891, No. 417).

† *Ipomœa arborescens*, Don. *Gen. Syst.*, iv., 267 (1838); DC. *Prod.*, ix., 358 (1845); Hemsl. *Biol. Cent.-Amer.*, ii., 383 (1882); Seemann, *Bot. Her.*, 319 (1856).

*Convolvulus arborescens*, H. B. K., *Gen. et Spec.*, iii., 94 (1818).

*Argyrea* (?) *oblonga*, Benth. *Bot. Voy. Sulph.*, 133 (1844).

*Ipomœa oblonga*, Hemsl. *Biol. Cent.-Amer.*, ii., 391 (1882).

*Ipomœa murucoides*, var. *glabrata*, Rose (not Gray), *Contr. Nat. Herb.*, i., 107 (1891). A tree 9 meters (30 feet) high; leaves ovate, 5 to 10 cm. (2 to 4 inches) long, cordate at base, acute, very pubescent at first, but becoming nearly glabrate; petioles 5 to 7.5 cm. (2 to 3 inches) long; sepals oval, obtuse, 6 to 10 mm. (3 to 15 lines) long, pubescent both within and without, in age becoming glabrate without; corolla white, yellowish below, about 5 cm. (2 inches) long, with rather narrow, funnel-formed throat; capsule 20 mm. (10 lines) long; seeds 10 mm. (5 lines) long.

Specimens from the following places have been examined:

Sonora, Alamos (Palmer, March 20th to April 8th, 1890, No. 316); Tourbabi (C. E. Lloyd, November 19th, 1890, No. 268); Bacadehuachi (C. V. Hartman, November 19th, 1890, No. 268); Las Durasmillas (T. S. Brandegee, 1892); Mazatlan (W. G. Wright, January, 1889, No. 268).

The following specimens, which I have not seen, belong here:

Humboldt and Bonpland type of *Convolvulus arborescens* collected between Acaquisotla and Chilpancingo. Seemann's No. 459 collected on the "road from Mazatlan to Sebastian." The type of *Argyrea oblonga* collected by Sinclair at Tepic.

\* *Ipomœa fistulosa*, Mart. in DC. *Prod.*, ix., 349 (1845); Seem. *Bot. Her.*, 171 (1854); Meissn. in Mart. *Fl. Bras.*, vii., 239, t. 81 (1869); Hemsl. *Biol. Cent.-Amer.*, ii., 387 (1882); Coult. *Contr. Nat. Herb.*, ii., 292 (1892).

*Batatas crassicaulis*, Benth. *Bot. Voy. Sulph.*, 134 (1844).

*Ipomœa Texana*, Coult., *Contr. Nat. Herb.*, i., 45 (1890).

A high shrub, perhaps sometimes arborescent; younger parts puberulent, early becoming glabrate; leaves sagittate, acuminate, strongly cordate or sometimes nearly truncate at base, 3.7 to 15 cm. (2½ to 6 inches) long; petioles slender; peduncles shorter than the leaves; cymes single or compound; sepals oval, 6 to 7 mm. (3 to 3½ lines) long, obtuse or retuse, glabrous within, puberulent without; corolla pink, pubescent without, 5 to 7.5 cm. (2 to 3 inches) long; seeds 8 mm. (4 lines) long, covered with long black hairs. Native in Brazil and Peru and extending into Central America; cultivated in Mexico and Texas. Specimens have been examined from the following places:

Texas, Brownville (G. C. Nealley, 1891); Santa Maria (G. C. Nealley, 1889); Mexico, Monterey (Charles K. Dodge, April, 1891); Nicaragua (C. Wright, 1853-6).



cent. The flowers, which are white, are produced in great profusion, and appear before the leaves. The following note has been furnished me by Dr. Palmer :

This tree is one of the most noticeable features of the landscape between Alamos, Sonora, and Sinaloa, Culiacan, especially about the latter place, where it is the tree of all trees seen. A stranger may ask, why there are so few other trees and so many of this. The answer is : This tree cannot be used as timber or for fuel, since it burns like straw. The ashes are sometimes used in soap-making. Thus the tree is left to beautify the country ; its smooth gray-white body, without any leaves in winter, is quite noticeable. It is then an object of attraction to all domestic and wild animals, for it produces an immense supply of buds and flowers, which are very sweet, all of which are eagerly devoured. The tops are often cut off so that animals may feed upon them, since in winter other vegetation is of the driest kind, and these fresh buds and flowers are a welcome relish. The ground underneath is well tramped by the animals looking after the individual interests of their stomachs. It is next to impossible to make botanical specimens so as to show the number of buds and flowers on the branches, for they readily drop off. When a group of trees are in bloom it forms a beautiful sight. No green leaves obscure their glory. At the time of the full bloom no other plant competes with it in number of beautiful flowers. This is the more interesting because if the tree was like most other trees, useful for timber and fuel, it would be scarce. As a compensation nature has made it a food for animals at the time of scarcity and given it an abundance of beautiful flowers.

*IPOMŒA INTRAPILOSA*.—Very little is known regarding this species.\* It has probably a much less limited range than *I. arborescens*. It was first collected by Dr. Palmer in 1886 and by Mr. Pringle in 1889. It is described as "an irregular-growing tree, twenty to thirty feet high." The corolla is larger than in *I. arborescens*, and with the branches and leaves completely glabrous. This tree was first considered as a variety of *murucoides* by Dr. Gray, but a study of more material seems to justify me in raising it to specific rank.

This species, like the others, would, doubtless, be a very attractive plant in cultivation.

*IPOMŒA WOLCOTTIANA*.—This species † (see p. 365) has only been reported from Manzanillo, in the state of Colima. Here Dr. Palmer obtained specimens in 1891. It is undoubtedly the most graceful species of the group. The tree has a very large top, and the branches are long and nearly pendent, covered with an abundance of flowers and buds. As stated above, Dr. Palmer obtained seed of this species, and although every effort was made to germinate them, it was without avail. Not only was I unsuccessful in growing the seeds, but a part were sent to Mrs. H. L. T. Wolcott, at Halifax, Massachusetts, who gave them the most careful attention, but without success. Not only in her efforts in attempting to raise this tree, but for her success in growing a number of interesting Mexican plants, I have named the above species in her honor.

\* *Ipomœa intrapilosa*, Rose.

*Ipomœa murucoides*, var. *glabrata*, Gray, *Proc. Amer. Acad.*, xxii., 440 (1887). "A large irregular-growing tree, twenty to thirty feet high," nearly glabrous throughout ; leaves triangular, shortly acuminate or sometimes nearly oval and obtuse, truncate or a little rounded at base, 5 to 10 cm. (2 to 4 inches) long, petioles 5 to 7.5 cm. (2 to 3 inches) long ; calyx deeply five-parted, glabrous without, hairy within ; sepals oval, acutish, 12 to 16 mm. (6 to 8 lines) long ; corolla white, "with yellow shading at the base of the tube," glabrous without, about 7.5 cm. (3 inches) long ; carpels and seeds not seen. Rocky hillsides ; only known from the state of Jalisco.

Dr. Gray, after describing the variety, made the following remark, "Palmer's specimens are glabrous or very early glabrate, even to the calyx ; indeed, even the corolla is almost glabrous in the bud. The calyx is short, the leaves acuminate, and the petioles elongated (two or nearly three inches long)." Except as to the acumination of the leaves, these characteristics are opposed to *I. murucoides*. The very inappropriate name, *glabrata*, has not been used, as it has previously been employed by Meissner in *Flora Brasiliensis*, iii., 226.

Specimens from the following places have been examined : Jalisco, Chapala (Palmer, October-November, 1886, No. 703) ; near Guadalajara (Pringle, December 14th, 1889, No. 2443).

† *Ipomœa Wolcottiana*, Rose, sp. nov. A tree nine meters (thirty feet) high, with a trunk sometimes three dm. (one foot) in diameter ; branches slender, somewhat drooping ; leaves ovate to ovate-lanceolate, 7.5 to 12.5 cm. (3 to 5 inches) long, 3.7 to 8.7 cm. (1½ to 3½ inches) broad, rounded or truncate at base, acuminate, glabrous on petioles, 5 to 10 cm. (2 to 4 inches) long ; flowers in numerous short racemes or corymbs, mostly naked ; pedicels jointed near the base, little if at all thickened upward, 8 to 12 mm. (4 to 6 lines) long ; calyx 10 to 12 mm. (5 to 6 lines) long, glabrous ; sepals nearly equal, oblong or oval rounded at apex ; corolla white, broadly campanulate, 6.2 cm. broad, with a short thick tube 3 cm. long ; capsule oblong, 18 mm. (9 lines) long, glabrous, two-valved, four-seeded, separating into four carpels ; seeds oblong, 8 mm. (4 lines) long, with margins covered with a long reflex coma longer than the seed. Rocky hills. Manzanillo, Colima (Dr. Edward Palmer, March 2d to 18th, 1891, No. 1342).

The following dichotomous key seems to contain the most usable characters :

- A. Seeds covered with short black hairs.  
*Ipomœa fistulosa*.
- AA. Seeds with long white hairs only on the angles.  
B. Calyx large, clothed externally with white wool ; corolla woolly without.  
*Ipomœa murucoides*.
- BB. Calyx small, not woolly externally ; corolla glabrous without.  
C. Leaves slightly cordate at base, young parts of stems and leaves (especially beneath) pubescent ; sepals pubescent without, at least when young, and tardily glabrate.  
*Ipomœa arborescens*.
- CC. Leaves rounded at base, glabrous ; young parts of stems minutely pubescent and early glabrate ; sepals glabrous without.  
D. Sepals hairy within, larger than the next, acutish ; pedicels elongated, sometimes one and a half inches long, thickened above ; branches erect ; corolla, with broad funnel-formed throat, two inches long ; stamens at length exerted ; filament broad, with a tuft of long hairs near the base.  
*Ipomœa intrapilosa*.
- DD. Sepals glabrous both within and without, small, obtuse ; pedicels short, slender ; corolla salver-formed, with broad throat ; proper tube very short ; stamens included ; filament narrow, with a small tuft of short glandular hairs.  
*Ipomœa Wolcottiana*.

I wish to express my gratitude for aid received in the preparation of this paper from the following gentlemen : Professor A. Dugés, Dr. A. Engler, Mr. W. Botting Hemsley, Dr. B. L. Robinson, Capt. John Donnell Smith.

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## Plant Notes.

*GERARDIA PURPUREA*.—It seems a pity that plants with such beautiful flowers as some of our *Gerardias* should have the habit of attaching their rootlets to the bark of the roots of neighboring plants and living on their sap. True, they are not entirely parasitic, but they can hardly get along without robbing some other plant, and this depraved tendency is enough to banish them from gardens. Nevertheless, there are places in wild gardens where they are most effective. In the low grounds of some of our southern states the Purple *Gerardia* often covers entire acres, and becomes a very distinct feature in the landscape. It is naturally a low, spreading plant, not much more than a foot high, with very slender stems and linear leaves, with flowers about the size of a *Maurandya*-blossom, and quite as handsome. When growing in tall grass the support thus received lifts it up considerably higher, and it is among the grasses and strong-growing plants along water borders, where natural effect is desired, that these plants are very useful. When Mr. Nash reclaimed his swamp in Clifton, New Jersey (see vol. v., page 494), he took pieces of sod from different places in the neighborhood and set them along the borders of his Lily-ponds. Among these were plants of this *Gerardia*, and they have a lightness and grace which adds much to the fringe of wild beauty along the bank. Wherever any natural planting is wanted along the banks of a stream or pond this Purple *Gerardia* should not be neglected.

*CYTISUS NIGRICANS*.—We have none too many dwarf flowering shrubs, especially such as flower in midsummer and later, and it is, therefore, somewhat surprising that this old plant, which was introduced into English gardens more than a hundred and fifty years ago, and which is perfectly hardy in this country, is not more generally used. If it is cut back for a few years when it is young, until it becomes somewhat stocky, it will make a rather broad bush not more than two feet high, but of much neater habit than if left to itself, when it is apt to be twiggy. Its pea-shaped flowers are a bright yellow, and are borne in long upright racemes. It is a desirable plant all the season