



A monograph of the genus *Evolvulus*

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A MONOGRAPH OF THE
GENUS EVOLVULUS

S. J. VAN OOSTSTROOM

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A MONOGRAPH OF THE GENUS EVOLVULUS

PROEFSCHRIFT

TER VERKRIJGING VAN DEN GRAAD VAN
DOCTOR IN DE WIS- EN NATUURKUNDE
AAN DE RIJKS-UNIVERSITEIT TE UTRECHT,
OP GEZAG VAN DEN RECTOR-MAGNIFICUS
Dr. C. W. STAR BUSMANN, HOOG-
LEERAAR IN DE FACULTEIT DER RECHTS-
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DEN SENAAAT DER UNIVERSITEIT TEGEN
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DER WIS- EN NATUURKUNDE TE VER-
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DOOR

SIMON JAN VAN OOSTSTROOM
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UTRECHT.

AAN MIJN OUDERS

Aan het einde van mijn academische studie gekomen, wil ik op deze plaats mijn grooten dank betuigen aan allen, die aan mijn wetenschappelijke opleiding hebben medegewerkt en wel in het bijzonder aan mijn promotor, *Prof. Dr. A. Pulle*, bij wien ik het voorrecht heb zoo vele jaren reeds assistent te zijn, en onder wiens leiding dit werk tot stand is gekomen. Voorts breng ik mijn dank aan het bestuur van het Miquel-fonds, dat mij in staat stelde eenige weken te werken in de herbaria te Kew, Londen en Parijs, en ten slotte aan allen, die mij op eenigerlei wijze behulpzaam zijn geweest bij het gereedmaken van dit proefschrift.

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I. INTRODUCTION.

The great difficulties arising in the identification of a number of plants belonging to the genus *Evolvulus*, which plants were found in several recent collections of *Convolvulaceae* and were kindly entrusted to me for study, induced me to submit this genus to a further examination. It soon proved how great the prevailing confusion was, both in literature and in the herbaria. Various species were again and again wrongly interpreted and this especially concerns those which had been described by the older authors. Thanks to the invaluable help of a great number of herbaria I was in a position to bring about some order in the genus. Still numerous questions remain unsolved. A close study of living material, preferably on the habitat itself, will often be of great value here. I had a great quantity of material at my disposal, kindly lent me by the following herbaria. (These herbaria are indicated in the taxonomical part by the abbreviations in parentheses.)

Botanischer Garten und Botanisches Museum, Berlin—	
Dahlem.	(B)
's Lands Plantentuin, Buitenzorg, Java.	(Bog)
Institut de Botanique et Herbar Boissier, Genève.	(Boiss)
Jardin Botanique de l'État, Bruxelles.	(Br)
Instituto Biologico de Defeza Agricola e Animal,	
São Paulo.	(Bu)
Universitetets Botaniske Museum, Copenhagen.	(C)
Royal Botanic Gardens, Sibpur, Calcutta.	(Calc)
Conservatoire et Jardin Botaniques de la Ville, Herbar	
de Candolle, Genève.	(DC)
id., Herbar Delessert, Genève.	(Del)
Field Museum of Natural History, Department of	
Botany, Chicago.	(F)

Botanisches Institut und Botanischer Garten der Universität, Göttingen.	(G)
Gray Herbarium, Harvard University, Cambridge, Mass., U.S.A.	(Gr)
Hortus Botanicus en Botanisch Laboratorium van de Rijksuniversiteit, Groningen.	(Gro)
Botanisches Institut der Universität, Halle a. Saale.	(H)
Herbarium E. Hassler, San Bernardino, Paraguay.	(Hassl)
Royal Botanic Gardens, Kew, Surrey.	(K)
Rijks Herbarium, Leiden.	(L)
Botanischer Garten (Glawnij botanitscheski sad), Leningrad.	(Len)
Linnean Society of London, London.	(Linn)
Botanisches Museum, München.	(M)
British Museum (Natural History), London.	(NH)
New York Botanical Garden.	(NY)
Muséum national d'Histoire naturelle, Herbar et Laboratoire de Botanique, Phanérogamie, Paris.	(P)
Jardim Botanico, Rio de Janeiro.	(R)
Naturhistoriska Riksmuseet, Stockholm.	(S)
Botanic Garden, Singapore.	(Sing)
Musée du Congo Belge, Tervueren.	(T)
Botanisch Museum en Herbarium van de Rijks- universiteit, Utrecht.	(U)
United States National Herbarium, Smithsonian Institution, Washington, D.C., U.S.A.	(US)
Naturhistorisches Museum, Botanische Abteilung, Wien.	(V)

Here I wish to express my best thanks to the directors of these herbaria for their great assistance and especially to the directors and staff of the herbaria and libraries I have personally visited, viz. the "Jardin Botanique de l'Etat", Brussels, the Royal Botanic Gardens, Kew, the Linnean Society of London, the British Museum of Natural History, London, the "Muséum national d'Histoire naturelle", Paris and the "Musée du Congo Belge", Tervueren. Further my gratitude to the director and staff of the

"Rijks Herbarium" at Leyden, the collections and library of which I have so often consulted, and finally my most sincere thanks to Professor Dr. A. Pulle, Director of the "Botanisch Museum en Herbarium van de Rijks Universiteit" at Utrecht, under whose direction this work was completed. His great assistance, his continual interest in the work and his advice in the composition thereof have been of inestimable value to me.

II. GENERAL PART.

1. HISTORY OF THE GENUS.

The genus *Evolvulus*¹⁾ was first described by Linnaeus in the second edition of his *Species Plantarum*.²⁾ Linnaeus distinguished 5 species here; three of the five species also occur in the first edition of the *Species Plantarum* (1753), but under the name of *Convolvulus*. They are *C. nummularius*, *C. alsinoides* and *C. tridentatus*.

The description which Linnaeus gave of the genus in 1762 was rather incomplete, and the important characteristic, that of the two 2-cleft styles, is not mentioned in it. A better diagnosis follows in the *Genera Plantarum*, ed. 6 (1764). Here there is a fairly exact description of the styles: "styli 4, capillares, divergentes, longit. staminum. Stigmata simplicia".

To the species Linnaeus described from India, Burman³⁾ added in 1768 two others, neither of which, however, belonged to the genus. Lamarck's *Encyclopédie*⁴⁾ gives a summary of the species known in 1789, 8 in number, 3 of these, however, do not belong to the genus. Persoon⁵⁾ gives 9 species, two of which were described by Ruiz and Pavon in their *Flora Peruviana*. A general view of the Australian forms was given by Robert Brown⁶⁾ in 1810, of the Asiatic forms by Roxburgh⁷⁾ in 1832. Poiret⁸⁾ in the Supplement to Lamarck's *Encyclopédie* gives a summary of the species known in 1813. These are indeed all *Evolvulus* species. After Poiret

1) derived from *evolvo* = to unroll, not twining as in *Convolvulus*.

2) Linnaeus, *Spec. Plant.* ed. 2 (1762) p. 391.

3) Burman, *Flora Indica* (1768) p. 76.

4) Lamarck, *Encycl. Méth.* (1789) p. 573.

5) Persoon, *Syn.* I (1805) p. 288.

6) Brown, *Rob., Prodr. Fl. Nov. Holl.* ed. 1 (1810) p. 489.

7) Roxburgh, *Flora Indica II* (1832) p. 105.

8) Poiret in *Lam. Encycl. Suppl. III* (1813) p. 458.

the number of species described gradually increases. The summary Choisy¹⁾ gave in his Convolvulaceae Rariores followed by his monograph in De Candolle's Prodrômus is of great interest here. Choisy mentions 60 species, six of which are but little known. The most important and extensive work on the genus is Meissner's²⁾ in the Flora Brasiliensis. Meissner gives a general view of the Brazilian species, but also adds a few others, but not Brazilian. The total number he mentions amounts to 62, several new ones being among them. A number of new species have still been described after Meissner, justly or unjustly as new, the greater part from South America, but also from Mexico and the West Indian Islands. However a general revision of the genus did not see the light after Choisy's Monograph.

2. MORPHOLOGY.

Roots. Roots annual or mostly perennial, in the former case thin, vertical with slender lateral branches, in the latter thin or mostly thicker and then often a perpendicular tap-root, also oblique or almost horizontal. Towards the top the root generally becomes gradually thicker and lignescent and bears at the crown one or mostly more stems. In *E. pusillus* Choisy adventitious roots often occur at the nodes, in *E. nummularius* L., this is usual.

Stems. In the frutescent and suffrutescent species the stems are mostly erect, are either branched or not, the branches often erecto-patent; the height is generally but small, the largest forms attain a height of about 1.20 metre. In the perennial species the stem or the stems are erect or ascending or also they are often prostrate, branched in more or less degree, often lignescent at the base; in the few annual species the stems are mostly upright; this is often the case in annual specimens of perennial species, at least, in so far as they are known.

¹⁾ Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 69; id. Conv. Rar. (1838) p. 147; id. in DC. Prodr. IX (1845) p. 441.

²⁾ Meissner in Mart. Fl. Bras. VII (1869) p. 329.

Leaves. The leaves are small to fairly large; very large leaves do not occur. Species with large leaves are for example *E. cardiophyllus* and *E. latifolius*; also in *E. glaber* and *E. nummularius* rather large leaves may occur, when growing in a fertile habitat. They are very small to almost scale-like in *E. squamosus*. The leaves are always alternate, with entire margin, their form varies from subulate to linear, lanceolate, oblong, ovate and orbicular with every intermediate transition. They are sessile or short-petiolate; long petioles do not occur. In general the leaves are membranaceous, in some cases they are somewhat thicker. The indumentum is very variable; the kind of pubescence most prevailing consists of appressed, loosely appressed or spreading to patent villose hairs, often long and mostly soft. Sericeous hairs also occur very frequently; these are always strongly appressed, generally more or less shining, straight, all pointing in the same direction. Now and then a woolly indumentum is found, also a short tomentum, the latter often mixed with longer hairs. All kinds of transitions appear in the pubescence and also the density of the hairs is very variable.

The nervation consists of a midrib and one to several pairs of lateral nerves. Often the nervation becomes indistinct owing to the dense hairiness. Generally it is most distinctly to be seen underneath. The lateral nerves arise at different heights in the leaf or they arise quite near the base. This is especially the case in leaves with a broad subcordate or cordate leaf-base. But also it occurs in narrower leaves. Here I refer to *E. sericeus* Sw. in which 1 or more pairs of lateral nerves always arise at the base and are long-ascending.

Inflorescence. The inflorescences are of dichasial character. This is distinctly expressed in the species with developed peduncles and with more-flowered inflorescences, the flowers of which are distinctly pedicellate. At the base of the pedicel of the terminal flower occur 2 bracteoles, each with a lateral branch in their axil. In their turn these branches also bear terminal flowers and bracteoles, with or without developed flowers. The lateral branch or the lateral flower in the axil of

bracteole β is often more strongly developed than that in the axil of bracteole α ("Förderung aus β ", Eichler). If the lateral branches of the dichasium are not developed, then we get a peduncle, which is one-flowered. This has given rise to the fact we sometimes find in descriptions that the pedicel should bear 2 bracteoles in the middle. What is considered here as a pedicel consists indeed of a peduncle and the pedicel of the terminal flower as a continuation thereof. Should the peduncle be missing, then the flowers are situated immediately in the leaf-axils, with or without pedicels. In the case only one axillary flower develops the undeveloped lateral axes of the dichasium are to be seen in the axils of the bracteoles. The species with developed peduncle generally bear inflorescences along a great part of the stem; this is also often the case in a great part of the species lacking peduncles (*Alsinoidei*—*Epedunculati*, *Passerinoidei*). In the *Phyllostachyi*, *Involucrati* and *Lagopodini* the flowers are aggregate in spike-like inflorescences at the end of stem and branches. Then they are situated either in the axils of normal leaves or in the axils of narrower bracts.

Calyx. The calyx consists of 5 equal or slightly unequal sepals, with quincuncial aestivation. In the majority of the species they are lanceolate or narrow-lanceolate, sometimes, however, they are broader, then the inner ones often have a scarious margin. In general the hairiness corresponds approximately with that of the stems and leaves, but is often somewhat more spreading. The calyx is generally persistent in fruit and not or very slightly enlarging.

Corolla. The 5-merous corolla is rotate, funnel-shaped or salver-shaped; the limb¹⁾ is subentire, superficially lobed or deeply lobed; on the outside 5 distinct, hairy, midpetaline areas are always to be perceived, on the inside the corolla remains glabrous. The corolla is generally small, in most cases longer than the calyx, sometimes as long or somewhat shorter (*E. simplex*,

¹⁾ It is quite possible, that the margin of the corolla might be of importance with living material in distinguishing the species; the delicacy of the corolla in dried material frequently admits of no close examination.

E. ovatus); the greatest occurs in *E. speciosus*, where the diameter amounts to 30 mm. The colour of the corolla is as a rule pale- or dark-blue or pale-violet or white, according to the collectors the colour is yellow in *E. paniculatus*. In *E. sericeus* fading sometimes takes place in drying, the corolla then becomes bright yellow.

Stamens. There are 5 stamens and they are alternate with the corolla-lobes; the filaments are developed, they are situated at the mouth of the generally very short, sometimes longer corolla-tube, they are glabrous, filiform and not enlarged at the base or very little so. In some species a small tooth occurs on each side of their bases. The anthers are ovate to oblong or linear, 2-celled, introrse, each cell dehiscing by a longitudinal slit. Pollen globular, dodecaedrical (according to Hallier).

Pistil. The ovary is globular, ovoid or occasionally cylindrical in species with salver-shaped corolla, glabrous or seldom pilose, 2-celled, each cell with 2-ovules, occasionally 1-celled, 4-ovuled. There are two styles, these are totally free or slightly united at the base, each style is divided into 2 branches; the stigmas are long, terete, filiform or slightly clavate. The ovules are erect, anatropous, apotropous and spring from the inner angle of each cell or from the base of the ovary.

Fruit. The fruit is a capsule, globose or ovoid, and generally opens with 4 valves. It is 4-seeded or by abortion less to 1-seeded; in the latter case it is sometimes more or less oblique and only 3 or 2-valved. The seeds are small, smooth or minutely verrucose, generally of brown or black colour; the cotyledons are almost flat, the radicle is incurved, the endosperm is cartilaginous and surrounds the embryo.

3. RELATIONSHIPS.

Hallier¹⁾ in his "Versuch einer natürlichen Gliederung der Convolvulaceen etc." places the genus *Evolvulus* in the *Dicranostyleae* just as Meisner did. As to the limits in respect to the other genera of this group they are very distinct. The two

¹⁾ Hallier f. in Engl. Bot. Jahrb. XVI (1893) p. 453—591.

styles, both 2-cleft, make an interchange with other genera practically impossible. Hallier justly speaks of "die grosse, schon von der Natur vorzüglich abgegrenzte, leicht an ihren 2 gabelspaltigen Griffeln kenntliche Gattung *Evolvulus*."

According to Hallier there exists a distinct relationship to various other genera, to *Stylisma*, to which the pollen shows a resemblance; further to *Seddera*, *Cressa*, *Cladostigma* and *Hildebrandtia*, all of which have the small flowers in common with *Evolvulus* and, moreover, possess the same glabrous filaments, scarcely enlarged at the base, and seldom provided with a tooth on either side. Anatomical resemblance to *Stylisma* and *Bonamia* also exists.

If we compare the representatives of the genus *Evolvulus*, as to the inflorescence, with the average type of the family *Convolvulaceae*, that is the type with dichasial pedunculate inflorescences in the leafaxils, spread over the stem, then it appears that the species of the subsection *Pedunculati* of the *Alsinoidei* show the greatest resemblance hereto. The development of the peduncles may differ very much; they are often longer, but often also shorter than the leaves. In a few species, possessing mostly a peduncle, this may completely disappear by way of exception. In the subsection *Epedunculati* immediately connected with the *Pedunculati* this absence of the peduncle is the rule. Here too the flowers appear spread over the stem, they are direct axillary, and usually provided with a short pedicel. If we consider the corolla of the *Pedunculati*, then it appears that this is rotate in most cases and provided with a very short tube. In the majority of the *Epedunculati* too the rotate corolla is found, but in a few species the tube is longer and a funnel-shaped or even a hypocrateriform corolla appears; the former in *E. frankenioides* and two closely allied species, viz. *E. Riedelii* and *E. villosissimus*, the latter in *E. aurigenus* and a number of species closely related to it, viz. *E. macroblepharis*, *barbatus*, *cressoides*, *rariflorus* and *cardiophyllus*. The two subsections of the *Alsinoidei* show a great similarity in habit.

The species composing the subsection *Pedunculati* are un-

doubtedly closely related to each other. The distinction of the species causes great difficulties. The greater part group themselves immediately round *E. alsinoides* and the South American *E. tenuis*.

Next to the *Pedunculati* is the section *Linoidei*, but the majority of the species differ in the stiff, erect habit. This group, which undoubtedly contains a number of very closely allied species, was already distinguished by Meissner next to the *Alsinoidei*, and he was certainly right in doing so. This section is well defined by a group of characteristics some of which are the habit, the frequent deeply-lobed rotate corolla, the frequent obtuse sepals.

The section *Paniculati* might be united with the *Linoidei*, but it is better to keep them separate in order not to disturb the unity of the latter too much.

Next to the *Epedunculati* there is a section, that of the *Passerinoidei*, which is also characterized by the axillary flowers with rotate corolla, but the habit is generally different here too. The Brazilian representatives of this section we may divide into two groups, the one with plants possessing a not or slightly lobed corolla, viz. *E. Maximiliani*, *passerinooides*, *jacobinus*, *Luetzelburgii*, *scopariooides* and *thymiflorus*, the other with a distinctly 5-lobed corolla, *E. genistoides*, *diosmoides*, *daphnoides*, *phyllanthoides* and *latifolius*. Each group possesses a number of closely related species. There are two species connected with the former viz. *E. Weberbaueri* and *E. peruvianus*, both of which are limited to Peru. Besides these inhabitants of Continental South America three species appear on the West Indian Islands, *E. arbuscula*, *bahamensis* and *squamosus*, which are undoubtedly closely allied to each other, also however showing a great degree of similarity with the Brazilian forms. They are low shrubs with an erect habit and generally small leaves.

Meissner combines the groups treated thus far, under the name of *Sparsiflori*, in contradistinction to the *Spicati*, which show a strong specialization in the inflorescence. We may distinguish three sections here, all characterized by the fact that

the flowers are approximate and sessile at the end of the stems and the branches, whilst moreover the corolla is salver- to funnel-shaped, which characteristic is also found in some species of the *Epedunculati*.

The section nearest to the *Sparsiflori* is that of the *Phyllostachyi*, with flowers all of which are situated in the axils of normal leaves, closely approximate at the end of stems and branches. Among the representatives of this group there is one showing a funnel-shaped corolla with a rather short tube, viz. *E. Glaziovii*; the others mostly show more distinctly developed tubes. The species are rather easily distinguished from one another.

In the *Involucrati* the undermost bracts in the inflorescence are still leafy, but towards the top appear smaller and narrower ones.

Finally in the well defined section of *Lagopodini* all bracts have become small and narrow, the inflorescence is more distinctly separated than in the two preceding ones, the corolla is distinctly salver-shaped, whilst, as a further specialization, the leaf-bases are decurrent on the stems. This characteristic especially is very singular and unique in the family.

4. GEOGRAPHICAL DISTRIBUTION.

All species of the genus *Evolvulus* are found in America, only two of these extend their area over the Old World. One, the polymorphous *E. alsinoides*, covers the greatest area and is also found in Africa, in South and South-East Asia, on the islands between Asia and Australia as well as in the latter continent. In America the species reaches its northerly limits in the South of the United States and is further found in Central America, on the West Indian Islands and in the north-western states of South America, in Colombia, Venezuela, Guiana and the northern part of the Brazilian state of Amazonas; the most northern localities in West Africa are the Cape Verde Islands and Senegal, and Nubia in East Africa. In the south the area extends to the Transvaal and Natal, further the species is found on

Madagascar and neighbouring islands, and on Socotra. The African area is continued to Jemen in Arabia. Further it occurs in the whole of British India to the Himalayas, in Ceylon, in Further India, the Malay Peninsula, in Indo-China and reaches its northern limit in China at 31° N. L. (Hupeh). The Philippines and Formosa, besides the islands of the Netherlands Indies connect the area in Asia with that of Australia. In West Australia the species is known only in Kimberley and the N. W. Division, in the east it even reaches New South Wales. In Oceania it is found on New Caledonia and the Fiji Islands.

The second species, *E. nummularius*, also found in the Old World, seems to have been introduced into British India in recent times; I am not sure whether its appearance in Africa is also due to a similar recent introduction. In the southern U. S. and Argentina we find *E. arizonicus* closely allied to *E. alsinoides*, whilst the closely related *E. tenuis* is found in South America. The latter species with its various subspecies inhabits a great part of the South American continent. Of the remaining *Alsinoidei*—*Pedunculati*, *E. filipes* and *E. glaber* extend over great parts of tropical and subtropical America. Besides these species a number are found in the west of South America as well as in Brazil and Paraguay, each covering a much smaller area; to the former belong the species, undoubtedly closely allied, *E. villosus*, *helianthemoides*, *piurensis*, *boliviensis*, *incanus* and *bogotensis* whilst *E. magnus*, *argyreus*, *Herrerae*, and *Fieldii*, which presumably closely belong to each other also inhabit the Andine region; to the second the closely allied *E. linarioides*, *saxifragus* and *vimineus* which are also related to *E. tenuis*, and further the group to which *E. flexuosus* and *anagalloides* belong. To this latter group also belongs the W. Indian *E. Grisebachii*.

In the *Alsinoidei*—*Epedunculati* *E. sericeus* and *E. nummularius* are the species which cover the greatest area, the former appearing with its different varieties from the Southern United States of America to Argentina, and also on the West Indian Islands; the latter occupies about the same area in America but however does not reach so far north and south.

Of the remaining species belonging to this subsection, most inhabit a more limited area; of all *Evolvulus* species *E. pilosus* is the one which is found most northerly in America to Montana and N. Dakota, it is limited to the United States. Three species very closely allied to *E. sericeus*, viz. *E. rotundifolius*, *prostratus* and *Purpusii* are found in Mexico; a fourth species *E. arenicola*, has so far been collected only on the Venezuelan island Margarita. In contradistinction to the *Pedunculati* only two of the species with limited area of this subsection are found in the west of South America, viz. *E. cardiophyllus* and *E. simplex*. The latter of these two was originally considered as an endemic form of the Galapagos Islands, but, however, was also met with in Peru in later times. Several other species with a small area occur in Brazil. Here belong *E. cordatus*, *speciosus*, *gnaphalioides* and *chrysotrichos*. The related *E. Hallierii* was found in Mexico. Very peculiar is the distribution of *E. Pohlii*, which species occurs in central Brazil and in Mexico. Of *E. villosissimus*, *frankenioides* and *Riedelii* the first is confined to Venezuela, the second has been collected in Venezuela, but also occurs in Bolivia and in N. E. and C. Brazil, the third was only found in São Paulo. Further *E. aurigenius* and allied species specialized as concerns the possession of a well-developed corolla tube belong here; all, except the above-mentioned *E. cardiophyllus* are confined to the central and southern parts of Brazil. The West Indian Islands contain three closely allied species of this subsection, *E. Bracei*, *minimus* and *siliceus*.

The *Linoidei* are confined to Brazil and neighbouring Paraguay and Bolivia; only one species, *E. elegans*, also occurs in Venezuela.

The only species of the *Paniculati* is found in Colombia and Venezuela.

The *Passerinoidei* are Brazilian for the greater part (16 species, 11 Brazilian). Two species, *E. Weberbaueri* and *E. peruvianus*, occur in Peru; three very closely allied, *E. arbuscula*, *squamosus* and *bahamensis* are found on the West Indian Islands, the first in Cuba, Haiti and Jamaica, the two others on the

Bahamas. Of the Brazilian species, *E. latifolius* is found as far as in Paraguay and North Argentina.

Finally the three sections with distinct spike-like inflorescences; of the 15 species composing the *Phyllostachyi*, there are 13 exclusively occurring in Brazil, and inhabit limited areas there; one species also extends its area as far as Paraguay viz. *E. Chamaepitys*, whilst *E. alopecuroides* also occurs in Venezuela.

The only species of the *Involucrati*, *E. glomeratus* is found in Brazil and the neighbouring states Bolivia, Paraguay, Uruguay and Argentina. One of the sub-species is also known from British-Guiana.

The *Lagopodini* are also Brazilian, *E. pterocaulon* is, however, also found in Venezuela.

Thus we see from the above summary that some of the species belonging to the *Alsinoidei*—*Pedunculati* and *Epedunculati* have the widest distribution. The more specialized forms of the remaining sections have a much smaller area in most cases; the genus has attained its greatest degree of development in Brazil; a centre of development also seems to lie in the western part of South America, whilst the W. Indies and Mexico also contain some endemic forms. One peculiar feature is that some species occurring in Central and Southern Brazil, are also found in Venezuela. The similarity between Mexico and the Andine region is but slight, yet there are some species to be indicated, besides those inhabiting a great part of America, which occur both in Mexico and Colombia, viz. *E. ovatus* and *E. cardiophyllus*.

5. USE.

The genus *Evolvulus* is of very slight importance economically. One species, *E. arbuscula* has, on account of its beautiful flowers, been cultivated in hothouses, however, presumably without any success.

E. alsinoides is applied in the native medicine in British India, it is used there as a febrifuge and tonic. W a t t, in his Dictionary of the Economic Products of India III (1890), derives from Ainslie that the plant is used in bowel complaints; according to

Dynock it was believed to possess the power of promoting conception. Watt informs further the use of the roots in intermittent fever of children, "the leaves are made into cigarettes and smoked in chronic bronchitis and asthma". "The plant is astringent, useful in internal haemorrhages", "Mohammedan physicians believe that this plant has the power of strengthening the brain and memory".

In the Tanganyika Territory a medicine for sores is made from the pounded leaves, according to Graham (on a label in herb. Kew).

According to a communication of Decary which I found on a label in herb. Paris *E. nummularius* is also used in cases of haemorrhage in Madagascar.

III. TAXONOMICAL PART.

EVOLVULUS L.

L., Spec. Pl. ed. 2 (1762) p. 391; Lam., Encycl. III (1789) p. 537, "liserole"; id., Tabl. Encycl. II (1793) p. 351; Ill. t. 216; Willd., Spec. Pl. I (1797) p. 1516; Poir. in Lam. Encycl. Suppl. III (1813) p. 458, "liserolle"; Roem. et Schult., Syst. VI (1820) p. 193; Endl. Gen. Pl. (1836—40) p. 652, n. 3791; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 69; id., Conv. Rar. (1838) p. 147; id. in DC. Prodr. IX (1845) p. 441; Meissn. in Mart. Fl. Bras. VII (1869) p. 329, t. 119—124; Benth. et Hook., Gen. Pl. II, 2 (1876) p. 875; Baillon, Hist. des Pl. X (1891) p. 325; Hall. f. in Engl. Bot. Jahrb. XVI (1893) p. 570; Peter in Engl.-Prantl, Nat. Pfl. fam. IV, 3a (1897) p. 18; Lemée, Dict. descr. et syn. genr. pl. phanér. III (1931) p. 70.

Camdenia Scop., Introd. (1777) p. 190.

Cladostyles Humb. et Bonpl., Pl. Aequin. I (1808) p. 202, t. 57; Roem. et Schult., Syst. VI (1820) p. 199.

Meriana Vell., Fl. Flum. (1825) p. 128; Ic. III (1827) t. 109.

? *Plesilia* Raf., New Fl. N. Am. IV (1836) p. 56; Fl. Tellur. IV (1836) p. 83.

Leucomalla Phil. in Anal. de la Univers. de Chile XXXVI (1870) p. 189.

Type-species of the genus: *E. nummularius* L.

Annual or perennial herbs, undershrubs or shrubs; stems prostrate, ascending or erect, never twining. Leaves mostly small, simple, entire. Flowers hermaphroditic, regular, in axillary, pedunculate, several to 1-flowered dichasia or in few-flowered groups or solitary, petiolate or sessile in the leaf-axils, or aggregate at the ends of the stems and the branches in spikes or heads. Sepals 5, free, equal or subequal, acuminate, acute or obtuse. Corolla rotate, funnel or salver-shaped, generally small,

purple, blue or white, rarely yellow, the limb plicate, subentire or obscurely to distinctly 5-lobed, the lobes outside with a pilose band. Stamens 5, filaments filiform, inserted on the corolla, at the mouth of the tube, glabrous, occasionally with a tooth at both sides of the base; anthers ovate to oblong or linear. Ovary globular, ovoid or occasionally cylindrical, glabrous or occasionally pilose, 2-celled, each cell with 2 ovules, occasionally 1-celled, 4-ovuled; styles 2, slightly united at the base or totally free, each style 2-cleft; stigmas long, terete, filiform or slightly clavate. Capsule globose or ovoid, 4-valved, 4—1-seeded, in the latter case occasionally oblique and 3- or 2-valved. Seeds small, smooth or minutely verrucose; cotyledons nearly flat, radicle incurved.

Of the genera which must be united with *Evolvulus*, *Camdenia* was described by Scopoli in 1777. This author based the genus on the *Visnu* of the Hortus Malabaricus but however mentioned no species. One of the British Indian forms of *E. alsinoides* L. is meant here. *Cladostyles* H.B.K., based on *Cladostyles paniculatus*, was already recognized by Sprengel as an *Evolvulus*. *Meriana* based by Vellozo on *Meriana procumbens*, the original material of which I did not see, but, however, the description and the plate in the Flora Fluminensis, is without doubt identical with *E. pusillus* Choisy. *Plesilia* Raf. has been based on an incomplete specimen from New Jersey, *Evolvulus cuneifolius* Raf., and was created by the author under reserve, as the corolla and the stamens are not known. I am not quite sure if this genus belongs here.

Finally *Leucomalla lanuginosa* Phil., the type species of Philippi's *Leucomalla*, must also be considered as belonging to the genus *Evolvulus*, according to Bentham & Hooker's *Genera Plantarum*. It is identic with *E. sericeus* Sw. var. *falcatus* (Griseb.) v. Ooststr.

KEY TO THE SECTIONS.

1. Flowers pedunculate, in few- to 1-flowered dichasia, or peduncle absent, in the latter case flowers situated in the leaf-axils, generally pedicellate,

rarely sessile; occasionally at the end of the ultimate branches, solitary or in few-flowered groups; never aggregate in distinct terminal spikes. (*Sparsiflori* Meissn.).

2. Flowers pedunculate or at the end of the branches.

3. Perennials, rarely annuals, more rarely undershrubs, prostrate, ascending or erect. Flowers pedunculate. Leaves and hairiness variable. Corolla rotate to widely funnel-shaped; limb subentire or superficially lobed.

Sect. I. *Alsinoidei*, subsect. 1. *Pedunculati*, p. 22.

3.* Undershrubs or shrubs, generally erect. Flowers pedunculate or at the end of the ultimate branches, solitary or in few-flowered groups. Leaves narrow, linear to linear-lanceolate or oblong-lanceolate. Indument greyish or whitish sericeo-villose to lanate or tomentose. Corolla subentire, superficially lobed or deeply lobed, rotate to widely funnel-shaped. Sect. II. *Linoidei*, p. 163.

3.** Perennial (probably); erect. Flowers solitary at the end of the filiform ultimate branchlets in a very broad panicle. Leaves lanceolate to oblong-lanceolate. Plants quite glabrous or very sparsely appressed-pilose. Corolla rotate to funnel-shaped, distinctly lobed. Sect. III. *Paniculati*, p. 172.

2.* Peduncle generally absent. Flowers pedicellate or rarely sessile in the leaf-axils, solitary or in few-flowered groups.

4. Perennials, rarely annuals, often prostrate or ascending, sometimes erect. Leaves and hairiness variable. Corolla rotate, funnel-shaped, or salver-shaped, limb entire or superficially lobed, rarely distinctly lobed.

Sect. I. *Alsinoidei*, subsect. 2. *Epedunculati*, p. 101.

4.* Undershrubs or shrubs, generally erect. Leaves and hairiness variable. Corolla rotate to widely funnel-shaped, tube very short, limb subentire, superficially or distinctly lobed.

Sect. IV. *Passerinoidei*, p. 175.

1.* Flowers in terminal or sometimes lateral, generally dense spike-like inflorescences, sessile. (*Spicati* Meissn.).

5. All bracts of the inflorescence leaflike. Inflorescence more or less distinctly separate. Corolla funnel- to salver-shaped.

Sect. V. *Phyllostachyi*, p. 199.

5.* Lower bracts of the inflorescence leaflike, more or less involucrate, upper ones much smaller and narrower. Inflorescence more or less distinctly separate. Corolla salver- to funnel-shaped.

Sect. VI. *Involucrati*, p. 223.

5.** Bracts not leaflike, all small, narrow. Inflorescence generally distinctly separate. Corolla salver-shaped. Leaves decurrent at the base.

Sect. VII. *Lagopodini*, p. 234.

Section I. ALSINOIDEI Meissn. emend.

Meissn. in Mart. Fl. Bras. VII (1869) p. 331, 342; Peter in Engl.-Prantl, Nat. Pfl. fam. IV 3a (1897) p. 19.

Anagalloidei Meissn. l.c. p. 331, 348; Peter l.c. p. 19.

Perennials, rarely annuals, very rarely undershrubs or shrubs, prostrate, ascending or erect. Leaves and hairiness very variable. Flowers in pedunculate, axillary, few—1-flowered dichasia, or peduncle absent; in the latter case the flowers are situated in the leaf-axils, generally pedicellate, rarely sessile, solitary or in few-flowered groups of dichasial character. Corolla rotate, funnel-shaped or salver-shaped with subentire, superficially lobed or distinctly lobed limb.

I united the sections *Alsinoidei* and *Anagalloidei*, distinguished by Meissner, under the name of the former. The difference in the development of the peduncle in the two sections appears only of a gradual character and a separation in two distinct sections is not necessary. The species with developed peduncle I unite to the subject. *Pedunculati*; the non-pedunculate ones to the subject. *Epedunculati*. I could not maintain Meissner's name *Anagalloidei* for the latter, because *E. anagalloides*, after which species the author named the section, belongs to the *Pedunculati*.

KEY TO THE SUBSECTIONS.

Peduncle developed, longer or shorter than the subtending leaf, very rarely absent. Corolla rotate to widely funnel-shaped. Subsect. 1. **Pedunculati**, p. 22.

Peduncle absent or extremely short, exceptionally developed. Corolla rotate, funnel-shaped or salver-shaped. Subsect. 2. **Epedunculati**, p. 101.

Subsection 1. **Pedunculati** v. Ooststr. n. subject. 1)

Peduncle developed, longer or shorter than the leaves,

1) Subsect. **Pedunculati** v. Ooststr. n. subject. Pedunculi evoluti, quam folia breviores vel ea superantes, rarissime nulli. Corolla rotata vel late infundibuliformis, limbo subintegro vel sublobato.

exceptionally absent. Corolla rotate to widely funnel-shaped, the limb subentire or superficially lobed.

KEY TO THE SPECIES.

1. Corolla small, 3—4.5 mm in diam.; sepals lanceolate, sharp-acuminate, glabrous or sparsely pilose, ciliate, mostly 2—2.5 mm long. Leaves linear or narrow-lanceolate, seldom broader, sparsely pilose or glabrous above. Stems erect or ascending, generally sparsely pilose with appressed hairs.
 5. *E. filipes*.
- 1.* Corolla larger. (For Old World-specimens belonging to this subject. see 1. *E. alsinoides* L. and varieties; for New World-specimens see under 2, etc.).
 2. Corolla about 5—7 mm in diam.; sepals lanceolate, acuminate, more densely pilose, 2.5—3 mm long. Leaves elliptic, ovate or oblong to lanceolate, also linear to linear-oblong. Stems erect, ascending or prostrate, generally beset with long patent hairs, which however may be almost or totally absent, in the latter cases the indumentum is more or less densely short-pilose with closely appressed hairs.
 1. *E. alsinoides*.
 - 2.* Corolla generally more than 8 mm in diam.
 3. Plants of prostrate habit, the leaves generally distichous or secund; peduncles in the greater part of the species belonging to this group much shorter than the leaves, in others however as long as or longer than the leaves.
 4. Leaves broad, orbicular, elliptic, broad-ovate, ovate, ovate-oblong, exceptionally narrower.
 5. Peduncles shorter than or at most as long as the leaves (see the peduncles at the middle of the stems).
 6. Leaves 10—25 mm long and 10—17 mm broad, ovate, broad-ovate or orbicular, shortly appressed-pilose on both sides; sepals about 4.5 mm long; pedicels longer than the sepals. 18. *E. anagalloides*.
 - 6.* Leaves smaller.
 7. Sepals about 2.5 mm long, ovate-lanceolate, ovate or broad-ovate, acute. Leaves small, oblong, elliptic or almost orbicular, obtuse, the middle-sized ones 3—6 mm long and 2.5—5 mm broad; pedicels much longer than the sepals. 19. *E. pusillus*.
 - 7.* Sepals longer, narrower, lanceolate.
 8. Leaves glabrous or nearly so above, ovate-oblong, ovate, elliptic or orbicular, 5—10 × 4.5—7 mm, obtuse. 20. *E. bogotensis*.
 - 8.* Leaves equally hairy on both sides.
 9. Leaves densely villose on both sides with long spreading hairs, ovate or broad-ovate, occasionally ovate-oblong, 5—10 × 4—7 mm, acute or slightly cuspidate. 21. *E. Grisebachii*.
- 9.* Indumentum of the leaves more

- appressed sericeo-villose or tomentose.
10. Leaves densely sericeo-villose with shining hairs, ovate or broad-ovate, acute at the apex, rounded at the base, 7—14 × 4—8 mm. 22. *E. incanus*.
- 10.* Leaves densely villose-tomentose, broad-ovate, acute or very shortly acuminate at the apex, slightly cordate at the base, 7—12 × 4—8 mm. 23. *E. flexuosus*.
- 5.* Peduncles generally exceeding the leaves.
11. Leaves 5—10 × 2—6 mm, elliptic to oblong, densely appressed-villose-tomentose on both sides, or lanate (var. *lanatus*). Sepals short-villose, 3—4 mm or longer. 16. *E. helianthemoides*.
- 11.* Leaves larger.
12. Leaves elliptic or oblong, 10—24 × 5—14 mm, more or less densely villose-tomentose on both sides, often glabrescent. Sepals long-villose, 4—6 mm. 17. *E. villosus*.
- 12.* Leaves narrow-ovate, ovate or elliptic, 10—15 × 5—8 mm, densely lanate on both sides. Sepals lanate, 2 mm. 15. *E. boliviensis*.
- 4.* Leaves from oblong-lanceolate to lanceolate, narrow-lanceolate or almost linear.
13. Leaves densely hairy on both sides.
14. Leaves densely sericeous with closely appressed, shining hairs, oblong-lanceolate, lanceolate to linear; peduncles shorter than the leaves; sepals lanceolate, 2.5—3.5 mm, sericeous. 13. *E. argyreus*.
- 14.* Leaves densely tomentose, lanceolate-oblong, narrow-oblong to elliptic-oblong; peduncles as long as the leaves or longer; sepals lanceolate, 3—4 mm, densely short-villose to tomentose. 14. *E. piurensis*.
- 13.* Leaves glabrous or nearly so, oblong, narrow-oblong, oblong-lanceolate or oblanceolate, rounded at the apex; sepals ovate-lanceolate to oblong-lanceolate, 2.5—3 mm, sparsely ciliate. 6. *E. serpylloides*.
- 3.* Habit not so distinctly prostrate; peduncles generally slender.
15. Bracteoles 6—9 mm long, linear to linear-lanceolate. Leaves large, 25—40 × 8—15 mm, lanceolate, oblong-lanceolate, oblong or ovate, acutish or obtuse, appressed-pilose on both sides with short soft hairs. 11. *E. Fieldii*.
- 15.* Bracteoles much smaller.
16. Peduncles shorter or much shorter than the leaves, upper ones 3—6, lower ones to 12 mm long. Leaves 10—14 × 2.5—4 mm, narrow-oblong, densely sericeo-tomentose on both sides. Erect undershrub. 12. *E. magnus*.
- 16.* Peduncles generally longer and more slender.
17. Indumentum of the leaves consisting of short

- appressed hairs, dense, sparse or absent, occasionally tomentose or with patent ones, not sericeous.
18. Sepals linear to linear-lanceolate, distinctly 1-nerved, sparsely pilose and ciliate. Leaves ovate to narrow-ovate, acute, 17—40 × 7—22 mm. 24. *E. stellariifolius*.
- 18.* Sepals oblong-lanceolate, nerved, sparsely pilose and ciliate. Leaves suborbicular, ovate, obovate, elliptic or oblong, rarely narrower, generally obtuse, 8—25(—40) × 5—15(—30) mm. 25. *E. glaber*.
- 18.** Sepals lanceolate, generally more densely hairy, occasionally glabrous, generally not nerved.
19. Corolla to 16 mm in diam. Stems and leaves pilose, occasionally tomentose. Arizona, Mexico; Argentina. 8. *E. arizonicus*.
- 19.* Corolla generally smaller. Stems and leaves pilose or glabrous.
20. Leaves generally rather broad, broad-ovate, ovate or ovate-oblong. Brazil, Paraguay. Forms of 2. *E. tenuis*.
- 20.* Leaves generally narrower.
21. Leaves rather large, middle-sized ones generally more than 20 mm long, hairiness variable. N.W. part of South America, West Indies, Yucatan. Forms of 2. *E. tenuis*.
- 21.* Leaves generally smaller. Brazil, Paraguay.
22. Stems long, slender, virgate, to 80 cm long, leaves remote, oblong-lanceolate to linear-lanceolate. 7. *E. vimineus*.
- 22.* Stems lower, leaves less remote.
23. Stems and leaves glabrous or sparsely appressed-pilose. Leaves rather firm, linear or linear-oblong, obtuse and mucronulate or acutish at the apex; stems and peduncles rather stout. 3. *E. linarioides*.
- 23.* Stems and leaves generally more hairy with appressed hairs. Leaves thinner, linear-lanceolate, linear-oblong or

linear, acuminate or acute, rarely obtuse, peduncles filiform. Stems less stout.

4. *E. saxifragus*.

17.* Indumentum of the leaves sericeous with closely appressed hairs, on the stems with appressed or with patent hairs.

24. Leaves narrow-lanceolate or linear-lanceolate, 15—35 (—50) \times 2.5—6 (—9) mm. Hairs on the stems appressed.

9. *E. corumbaensis*.

24.* Leaves lanceolate, 12—20 \times 3—5 (—7) mm. Stems with long, shining, patent hairs.

10. *E. Herrerae*.

1. *Evolvulus alsinoides* L. Spec. Plant. ed. 2 (1762) p. 392; Burm. Fl. Indica (1768) p. 77; Willd. Spec. Plant. I (1797) p. 1517; Pers. Syn. Plant. (1805) p. 288; R. Br. Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 489; Roem. et Schult. Syst. VI (1820) p. 194; Moon, Catal. indig. and exot. pl. Ceylon (1824) p. 23; R. Br. Prodr. Fl. Nov. Holl. ed. 2 (1827) p. 345; Wall. Cat. (1828) n. 1317; Roxb. Fl. Ind. II (1832) p. 105; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 76; id. Conv. Rar. (1838) p. 154; id. in DC. Prodr. IX (1845) p. 447; Benth. Niger Flora (1849) p. 470; Webb Spicilegia Gorgonea, Cat. Cape Verd. Isl. (1849) p. 153; Wight Ill. Ind. Bot. (1850) t. 168bis; Miq. Fl. Ned. Ind. II (1856) p. 628; Benth. Fl. Hongk. (1861) p. 240; Thwaites, Enum. Pl. Zeyl. (1856—64) p. 213; Griseb. Fl. Brit. W. Ind. Isl. (1864) p. 475; Griseb. Cat. Plant. Cub. (1866) p. 207; Schweinf. Beitr. Fl. Aethiop. (1867) p. 93; Meissn. in Mart. Fl. Bras. VII (1869) p. 343; Benth. Fl. Austr. IV (1869) p. 437, excl. syn. *E. pilosus* Roxb.; Boiss. Fl. Orient. IV (1879) p. 113; Hemsl. Biol. Centr. Am. Bot. II (1881—'82) p. 398; Manson Bailey, Syn. of Queensl. Flora (1883) p. 340; Clarke in Hook. Fl. Brit. Ind. IV (1885) p. 220; Forbes and Hemsley in Journ. Linn. Soc. XXVI (1890) p. 166; Hall. f. in Engl. Bot. Jahrb. XVIII (1894) p. 85; Trimen, Handb. Fl. Ceylon III (1895) p. 227; Hiern in Cat. Afr. Pl. Welw. I (1898) p. 724; Diels Fl. Centr. Chin. in Engl. Bot. Jahrb. XXIX (1900) p. 544; K. Schumann, K. Lauterbach Fl. Deutsch. Schutzgeb. i. d. Südsee (1900) p. 514; Baker and Wright in Thiselton-Dyer, Fl. Capen-

sis IV, 2 (1904) p. 79; J. Matsumura and B. Hayata, Enum. Plant. Formos. in Journ. Coll. Science, Imper. Univ. Tokyo XXII (1906) p. 267; Baker and Rendle in Thiselton-Dyer, Fl. Trop. Afr. IV, 2 (1906) p. 66; Th. Cooke Fl. Bombay II (1908) p. 229; F. Manson Bailey, Compreh. cat. Queensl. Pl. (1909) p. 353; Th. Durand, H. Durand, Sylloge Fl. Congol. (1909) p. 379; J. F. Duthie, Flora Upper Gangetic Plain II (1911) p. 104; Boldingh, Fl. Dutch W. Ind. Isl. II (1914) p. 87; Pres. Col. Bot. Bull. Madras 5 (1914) t. 5; Gagnepain et Courchet in Lecomte, Fl. Génér. de l'Indo-Chine IV, fasc. 3 (1915) p. 303, 301 fig. 35; Basu, Ind. Med. Pl. (1918) t. 668; N. L. Britton, C. F. Millspaugh, Bahama Flora (1920) p. 347; Aug. Chevalier, Expl. Bot. de l'Afr. occ. franç. (1920) p. 458; Urb. Symb. Antill. VIII (1921) p. 557; Holland, The Useful Plants of Nigeria, Kew Bull. Addit. Ser. IX (1908—1922); J. S. Gamble, Fl. Pres. Madras V (1923) p. 923; Ridley, Fl. Malay Penins. II (1923) p. 454; J. M. Black, Fl. South Austr. III (1926) p. 468, fig. 193 H; Holtermann, Einfl. Klimas (1927) t. 5, fig. 28; Knuth, Prim. Fl. Venez. in Rep. spec. nov. Beih. XLIII (1928) p. 580; P. C. Standley, Flora Panama Canal Zone in Contrib. U. S. Nat. Herb. XXVII (1928) p. 313; J. Hutchinson, J. M. Dalziel, Fl. W. Trop. Afr. II, 1 (1931) p. 210; v. Ooststr. in Pulle Fl. of Surinam, IV (1932) p. 73.

Convolvulus alsinoides L. Spec. Plant. ed. 1 (1753) p. 157.

Camdenia Scop. Introd. (1777) p. 190.

E. chinensis Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 77; id., Conv. Rar. (1838) p. 155; id. in DC. Prodr. IX (1845) p. 447.

E. pseudo-incanus Spanoghe in Linnaea XV (1841) p. 341, nomen.

E. alsinoides L. var. *α procumbens* f. 2 *obtusifolia hirsuta* Schweinf. Beitr. Fl. Aethiop. (1867) p. 94, p. p.

E. alsinoides L. var. *Linnaeanus* Meissn. in Mart. Fl. Bras. VII (1869) p. 343.

E. alsinoides L. var. *Choisyanus* Meissn. l.c. p. 343.

The following synonyms also belong to the typical form or

to one of the varieties but I am not quite sure which is their right place:

Convolvulus valerianoides Blanco, Fl. Filip. ed. 1 (1837) p. 90.

Evolvulus pumilus Span. in Hook. Comp. Bot. Mag. I (1835) p. 348.

E. hirsutululus Herb. Brit. Mus. mss. ex Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 76.

E. pimulus Span. in Linnaea XV (1841) p. 341, sphalm.

E. filiformis Willd. ex Steud. Nom. ed. 2, I (1840) p. 620.

E. ramiflorus Boj. ex Choisy in DC. Prodr. IX (1845) p. 447.

E. pudicus Hance in Walp. Ann. III (1852—53) p. 115.

E. modestus Hance in Walp. Ann. l.c. p. 116.

Type: in the Linnean herbarium.

Typical form: Perennial. Stems few or several from an often lignescent root, prostrate or ascending, slender, variable in length, 12—50 cm, villose with appressed and patent hairs. Leaves oblong, elliptic or spatulate, the broadest part in or above the middle, obtuse or sometimes slightly emarginate at the apex, mucronulate, rounded at the base or attenuate into the short petiole, 7—20 (—25) mm long, 3—10 mm broad, 1.5—2.5 (—3) times as long as broad, more or less densely appressed-pilose on both sides, sometimes glabrous above. Peduncles filiform, shorter than, as long as or much exceeding the leaves, pilose with appressed hairs, either with patent ones or not, 1- or few-flowered; bracteoles linear-subulate to linear-lanceolate, 1.5—4 mm; pedicels as long as or generally longer than the calyx, pilose. Sepals lanceolate, acute or acuminate, about 3 mm long, villose. Corolla rotate, pale-blue or white, 5.5—7 mm in diam., sometimes to 10 mm. Filaments 2—3 times as long as the linear-oblong anthers. Ovary globular to ovoid, glabrous. Capsule globular, glabrous, 4-valved, 4- or less-seeded. Seeds black, smooth.

Distribution: British India, Indo China, China, Philippines, Netherlands Indies; also in Madagascar and trop. E. Africa.

The form on which Linnaeus based this species is the common British Indian form, spread throughout S. E. Asia but also occurring in the Philippines, the Netherlands Indies, Madagascar and tropical E. Africa. Beside this form a large number of varieties occurs, both in the tropical and subtropical parts of the Old World and in America. These varieties are however very difficult to separate. Everywhere transitional forms occur and often it is quite impossible to say to what variety a specimen belongs. Below, at the end of the species the list of the collectors' numbers may be found. As far as possible the number of the var. is placed between the brackets, before the abbreviations of the different herbaria. Transitional forms are known between the typical form and var. *hirsutus*, *linifolius*, *decumbens*. Specimens with narrow, more remote leaves much resemble var. *debilis* (indicated in the list of collectors' numbers with ta).

var. 1. *hirsutus* (Lam.) v. Ooststr. n. comb.

E. hirsutus Lam. Encycl. III (1789) p. 538; id., Ill. I (1797) t. 216, fig. 2; Tabl. encycl. II (1793) p. 351; Willd. Spec. Plant. I (1797) p. 1517; Pers. Syn. Pl. (1805) p. 288; Roem. et Schult. Syst. VI (1820) p. 194; Roxb. Fl. Ind. II (1832) p. 106; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 76; id., Conv. Rar. (1838) p. 154; id. in DC. Prodr. IX (1845) p. 447.

Type: *Sonnerat*, British India.

Stems several or few, prostrate, sometimes ascending, slender or rather stout, 7—16 (—35) cm long, appressed- and patent-pilose or almost tomentose with more or less ferrugineous hairs, especially in the young parts. Leaves more or less distinctly in two rows, rather dense (internodes 2—4 mm), oblong or ovate-oblong to elliptic, obtuse and mucronulate or acutish at the apex, rounded at the base, sessile or shortly petioled, hairy like the stems, mostly more densely beneath than above, occasionally glabrous above, 5—8 mm long, 2.5—4.5 mm broad in medium-sized specimens, 1.5—2 times as long as broad. Peduncles short, shorter than or as long as the leaves, 2—5 (—10) mm, hairy like the stems, 1 (—2)-flowered; bracteoles linear, 1.5—2 mm;

pedicels shorter or longer than the calyx. Sepals lanceolate, acuminate, appressed-pilose, 2.5—3 mm. Corolla 6—8 or to 10 mm in diam.

Distribution: British India, Malay Peninsula, Netherlands Indies, Philippines.

Specimens mentioned by HBK. under this name belong to *E. glaber* Spreng. Transitional forms to the typical form, var. *philippinensis* and var. *thymoides* are known.

var. 2. philippinensis v. Ooststr. n. var.¹⁾

Type: *M. Ramos, Bureau of Science 27435*, Philippines, Luzon, Ilocos Norte, Bangui.

Stems few or several, prostrate or ascending, 5—15 cm long, densely sericeo-villose with appressed and spreading fulvous hairs; internodes 1.5—3 mm. Leaves approximate, more or less in two rows, elliptic, obtuse or acutish, minutely cuspidate or mucronulate at the apex, rounded at the base, about sessile, densely sericeo-villose on both sides with loosely appressed fulvous hairs, 5—8 mm long, 3—4.5 mm broad, 1.5—2 times as long as broad. Peduncles shorter than or exceeding the leaves, 1—8 mm, rather stiff, 1 (—2)-flowered; bracteoles subulate, 1.5—2 mm; pedicels as long as or longer than the sepals, sericeo-villose. Sepals lanceolate, acuminate, sericeo-villose, 2.5—3 mm. Corolla ca. 10 mm in diam.

Distribution: Philippine Islands.

Closely related to var. *hirsutus* but different in the dense,

¹⁾ *E. alsinoides* L. var. **philippinensis** v. Ooststr. n. var. Caules pauci vel plurimi prostrati vel ascendentes 5—15 cm longi dense sericeo-villosi, pilis fulvis appressis et divaricatis tecti; internodiis 1.5—3 mm longis. Folia approximata plus minusve disticha elliptica apice obtusa vel acutiuscula, minute cuspidata vel mucronulata basi rotundata subsessilia, utrinque dense sericeo-villosa, pilis fulvis laxe appressis, 5—8 mm longa, 3—4.5 mm lata, 1.5—2-plo longiora quam lata. Pedunculi quam folia longiores vel breviores, 1—8 mm longi, subrigidi, 1 (—2)-flori; bracteolis subulatis, 1.5—2 mm longis; pedicellis sericeo-villosis sepala aequantibus vel superantibus. Sepala lanceolata acuminata sericeo-villosa 2.5—3 mm longa. Corolla rotata, ca. 10 mm diametens. **Type:** *M. Ramos, Bureau of Science 27435*, Philippines, Luzon, Ilocos Norte, Bangui (L).

sericeo-villose, fulvous indumentum. The peduncles of the type are very short; in the specimen Curran and Merritt they attain a length of 8 mm. The var. *rotundifolius* also appears to be closely related.

var. 3. rotundifolius Hayata, Gen. Ind. Fl. Formos. p. 87, nomen.

E. alsinoides L. f. *rotundifolia* (Hayata) Yamamoto in Suppl. Icon. Plant. Formos. I (1925) p. 40.

Type: *Tashiro*, Formosa, Kóshun and Garanbi.

Stems several, prostrate, slender, (10—) 15—20 cm long, patently villose with fulvous hairs; internodes 3—8 mm long. Leaves subsessile or shortly petioled, ovate or orbicular, broadly acute and mucronulate at the apex, subcordate or rotundate at the base, (4.5—) 7—13 mm long, (3—) 6—10 mm broad, on both sides and along the margins villose like the stems, beneath denser than above; petiole to 1 mm long. Peduncles 8—10 mm long or very short to absent, 1—2-flowered; bracteoles lanceolate, 2 mm long; pedicels slender, much longer than the sepals, 8—10 mm, villose. Sepals lanceolate, acuminate, 3—4 mm long, villose outside. Corolla rotate, 12 mm in diam.

Distribution: Formosa.

var. 4. thymoides Hall. f. in Bull. Herb. Boiss. VII (1899) p. 42.

Type: *Boivin*, Madagascar, east-coast.

Stems several, prostrate or ascending, slender, 10—30 cm, appressed-pilose with short hairs; internodes 4—5 mm. Leaves small, shortly petioled or sessile, oblong to elliptic or obovate, acutish or obtuse at the apex, mucronulate, rounded or acutish at the base, 3—5 mm long, 1.5—2.5 mm broad, appressed-pilose beneath, glabrous or sparsely appressed-pilose above. Peduncles filiform, shorter than or exceeding the leaves, 4—12 mm, sparsely appressed-pilose, 1-flowered; bracteoles linear, 2—2.5 mm, al-

most glabrous. Sepals lanceolate, acuminate, 2—3 mm, short-pilose.

Distribution: Madagascar and adjacent islands.

Shows some resemblance to specimens of var. *hirsutus*; differs by the slender stems, the less dense indumentum and the smaller leaves.

var. 5. adscendens (House) v. Ooststr. n. comb.

E. adscendens House in Bull. Torr. Bot. Club XXXIII (1906) p. 317.

Type: *Edw. Palmer 43*, Mexico, Colima, near Colima.

Much resembling the typical form, the leaves however often more ovate, the broadest part below the middle. Hairs on the stems generally patent.

Distribution: Texas, Mexico, C. America.

Transitions to var. *debilis* and var. *Grisebachianus* occur.

var. 6. Grisebachianus Meissn. in Mart. Fl. Bras. VII (1869) p. 344.

E. diffusus Chapm. Fl. South. Unit. St. (1860) p. 345.

Type, lectotype: *A. P. Garber*, United States of America, Florida, Caloosa.

Habit much resembling that of the typical form. Stems few or several, prostrate or ascending, slender, variable in length, 6—30 cm, loosely appressed-pilose and more or less patent-villose. Leaves ovate, oblong or elliptic, sparsely or densely-pilose on both sides, with strongly to loosely appressed, rather short, soft, greyish hairs, generally obtuse and mucronulate at the apex, rounded or acutish at the base, 8—22 mm long, 3.5—11 mm broad, 1.5—2.5 (—3) times as long as broad. Peduncles filiform, shorter than or exceeding the leaves, short-pilose, 1- or 2-flowered; bracteoles linear-subulate, 1—1.5 mm long; pedicels as long as or longer than the calyx, short-pilose. Sepals lan-

ceolate, acuminate, short-villose, 2.5—3 mm long. Corolla small, 4.5—5.5 mm in diam.

Distribution: Florida, Bahamas, West Indies, Central America, Guiana.

Hairs shorter and softer than in the typical form, with which this var. shows much resemblance. Specimens with very small leaves were described by Martens and Galeotti as *E. microphyllus*¹). Leaves in the type of this species 3.5—4 mm long and 1.5—2 mm broad. Many transitional forms to typical *Grisebachianus* occur.

var. 7. debilis (HBK.) v. Ooststr. n. comb.

E. debilis HBK. Nov. Gen. et Spec. III (1818) p. 115; id., col. ed. p. 90; Roem. et Schult. Syst. VI (1820) p. 196.

E. pilosissimus Mart. et Gal. in Bull. Acad. Brux. XII, 2 (1845) p. 257.

? *E. alsinoides* L. var. *hirticaulis* Torr. et var. *angustifolia* Torr. Bot. Mex. Bound. (1858) p. 150.

Type: *Bonpland*, Colombia, Tolima, near Ibague.

Perennial, the stems of the first year erect, simple or with few erect branches, later several from a lignescent base, prostrate or ascending, slender, appressed-pilose and long patent-pilose with brownish or greyish hairs; internodes up to 25 mm long. Leaves lanceolate or oblong-lanceolate, acute or obtuse, mucronulate, shortly petioled or sessile, 9—30 mm long and 2—10 mm broad, 2.5—3.5 times as long as broad, long-pilose on both sides. Peduncles long, slender, generally much exceeding the leaves, to 38 mm long, appressed-pilose and more or less patent-pilose, 1—few-flowered; bracteoles linear, 1—2 mm long; pedicels exceeding the calyx, 5—9 mm, appressed-pilose. Sepals narrow-lanceolate or lanceolate, acuminate, 2.5—3 mm, pilose with spreading hairs. Corolla rotate, 5—8 mm in diam.

¹) Mart. et Gal. in Bull. Acad. Brux. XII, 2 (1845) p. 257; Walp. Rept. VI (1846—47) p. 542. **Type:** *Galeotti 1382*, Mexico, Vera Cruz, near Zacuapan.

Distribution: Mexico, Central America, north-western part of South America.

Specimens belonging to the above variety often occur under the name *E. linifolius* L. in the literature and in the herbaria.

var. 8. acapulcensis (Willd.) v. Ooststr. n. comb.

E. acapulcensis Willd. ex Roem. et Schult. Syst. VI (1820) p. 199; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 81; id. Conv. Rar. (1838) p. 159; id. in DC. Prodr. IX (1845) p. 449; Hemsl. Biol. Centr. Am. Bot. II (1881-'82) p. 398.

E. albiflorus Mart. et Galeotti in Bull. Acad. Brux. XII, 2 (1845) p. 259; Walp. Rept. VI (1846-'47) p. 543; Hemsl. Biol. Centr. Am. Bot. II (1881-'82) p. 398.

Type: *Herb. Willdenow 6128*, Mexico, Guerrero, near Acapulco.

Stems several, prostrate or ascending, slender, 5—30 (—45) cm long, densely short-pilose with closely appressed hairs, occasionally also some patent ones; internodes 4—10 (—15) mm. Leaves linear-oblong, linear, sometimes oblong-lanceolate or linear-lanceolate, acute at the apex, acute or rounded at the base, more or less densely short-pilose, with closely appressed, brownish, often shining hairs, 10—15 (—20) mm long, 2.5—3.5 mm broad, 4—6 times as long as broad, occasionally broader, 2.5 times as long as broad. Peduncles shorter than or exceeding the leaves, appressed-short-pilose, 10—15 (—25) mm long; bracteoles subulate, 1—2 mm; pedicels longer than the sepals, appressed-short-pilose. Sepals lanceolate to broad-lanceolate, acuminate, ca. 2.5 mm long, short-villose. Corolla 5—6 mm in diam.

Distribution: S. W. United States of America, Mexico.

In Arizona occur plants with a much denser indument than in the normal Mexican form (Sierra Tucson, Pringle s. n., Apr. 25, 1884; id. Parish 170). Small specimens of the var. *acapulcensis* with rather small leaves approach *microphyllus* (Shannon 3608). Transitional forms to var. *debilis* exist.

var. 9. linifolius (L.) Baker in Thiselton-Dyer, *Flora Capensis* IV, 2 (1904) p. 79.

Convolvulus linifolius L. Amoen. Acad. IV (1759) p. 306.

E. linifolius L. Spec. Plant. ed. 2 (1762) p. 392 (see remarks); Willd. Spec. Plant. I (1797) p. 1517; Pers. Syn. Plant. (1805) p. 288; R. Brown, Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 489; ed. 2 (1827) p. 345; Roem. et Schult. Syst. VI (1820) p. 196; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 79; Choisy Conv. Rar. (1838) p. 157; Choisy in DC. Prodr. IX (1845) p. 449; Blanco, Fl. de Filipinas 2. ed. (1845) p. 156; Miq. Fl. Ned. Ind. II (1856) p. 628; Griseb. Fl. Brit. W. Ind. Isl. (1864) p. 475; Meissn. in Mart. Fl. Bras. VII (1869) p. 347; F. v. Mueller, Fragm. Phytogr. austral. X (1876—'77) p. 113; F. v. Mueller, Sec. syst. census of Austr. Pl. I (1889) p. 161; K. Schumann, K. Lauterbach, Fl. Deutsch. Schutzgeb. i.d. Südsee (1900) p. 514; Millsp. Fl. St. Croix, in Field Col. Mus. Publ. 68, Bot. Ser. Vol. I n. 7 (1902) p. 520; E. O. Wootton, P. C. Standley, Fl. New Mexico in Contr. U. S. Nat. Herb. XIX (1915) p. 516; N. L. Britton, C. F. Millspaugh, Bahama Flora (1920) p. 347; N. L. Britton, P. Wilson, Bot. Porto Rico etc. VI, 1 (1925) p. 104; Knuth Prim. Fl. Venez. in Rept. Spec. Nov. Beih. XLIII (1928) p. 580.

E. fugacissimus Hochst. in Flora XXIV (1841) 1. Intell. p. 25; Walp. Ann. III (1852—'53) p. 116.

Convolvulus fugacissimus Hochst. ex Choisy in DC. Prodr. IX (1845) p. 449.

E. natalensis Sond. in Linnaea XXIII (1850) p. 80; Walp. Ann. III (1852—'53) p. 116.

E. azureus Vahl ex Schum. et Thonn. Beskr. Guin. Pl. p. 166.

E. alsinoides L. var. *strictus* Klotzsch in Peters Reise n. Mosamb. I (1862) p. 246.

E. alsinoides L. var. β *erecta* Schweinf. Beitr. Fl. Aethiop. (1867) p. 94.

E. gemensis Deflers, Voyage au Yemen (1889) p. 175.

E. alsinoides L. var. α *procumbens* f. 1 *acutifolia hirsuta* p. p. Schweinf. Beitr. Fl. Aethiop. (1867) p. 94.

E. alsinoides L. var. *villosissima* Fenzl. in Kotschy Fl. Aethiop. exs. n. 371 ex Hall. f. in Engl. Bot. Jahrb. XVIII (1894) p. 86.

Type: in the Linnean Herbarium; Senegal.

Stems erect in the first year, later often prostrate, rather stiff, to 40 cm long, pilose with appressed and patent hairs. Leaves lanceolate, oblong-lanceolate or linear-lanceolate, occasionally broader, attenuate towards both ends, acute or obtusish at the apex, generally acute at the base, the middle-sized leaves 20—40 mm long and 5—10 mm broad, the upper ones often much smaller, more or less densely appressed-pilose on both sides. Peduncles, especially the upper ones, generally exceeding the leaves, 1—few-flowered, stiff, erecto-patent; bracteoles subulate to lanceolate, 2—4 mm; pedicels longer than the calyx. Sepals lanceolate, acuminate, about 3 mm long. Corolla about 7 mm in diam.

Distribution: Africa, from the Cape Verde Islands, Senegambia and Nubia southward to Angola, Transvaal, Natal; Madagascar; Yemen.

Typical specimens of the above var. appear to be limited to Africa. Densely hairy forms with brownish hairs and small leaves pass into var. *Wallichii*. *E. azureus* Vahl is a form with small leaves. American specimens cited by many authors under the name *E. linifolius* L. belong for the greater part to var. *debilis*. Australian specimens to var. *decumbens*. The literature on *E. linifolius* L. may be found above, but only citations of literature on African specimens really belong here.

var. 10. *glaber* Baker in Thiselton-Dyer, Flora Capensis IV, 2 (1904) p. 79.

Type: W. T. Gerrard 1907, Natal, Tugela.

Stems several, prostrate or ascending, 20—40 cm long, quite glabrous or sparsely pilose with appressed and patent hairs. Leaves in the type oblanceolate to oblanceolate-oblong, obtuse

and mucronulate at the apex, attenuate into the petiole, 8—13 mm long, 3.5—5 mm broad, 2—2.5 times as long as broad, in other specimens linear or linear-lanceolate, acute or acuminate at the apex, acute at the base, 7—16 mm long, 1—2.5 mm broad, 5—7 times as long as broad, quite glabrous or sparsely pilose beneath on the midrib; midrib and lateral nerves prominent beneath. Peduncles glabrous, exceeding the leaves, 10—20 mm long; bracteoles subulate, 1.5—2 mm, pedicels as long as to twice as long as the calyx. Sepals lanceolate, acute or acuminate, 2—3 mm long, quite glabrous. Corolla small, little exceeding the sepals, white or pale-violet. Filaments \pm 1.5 times as long as the oblong anthers. Ovary glabrous, globular.

Distribution: Africa, hitherto only found in Cameroon, Belgian Congo, the type from Natal.

var. 11. Wallichii v. Ooststr. nov. nom.

E. sericeus Wall. Cat. (1828) n. 1315.

E. alsinoides L. var. *sericeus* (Wall.) Gagnepain et Courchet in Lecomte, Fl. Gén. de l'Indo-Chine IV, fasc. 3 (1915) p. 304, quoad nomen.

Type: *Wallich 1315*, British India, Kumaon.

Stems several from a thick woody base, prostrate or ascending, 2—15 cm long, covered with long appressed and patent brown or ferruginous hairs. Leaves lanceolate, oblong or narrow-elliptic, acute or obtusish at the apex, rounded or acutish at the base, 4—6 mm long, 1.5—3 mm broad, densely villose on both sides like the stems. Peduncles short, not or little exceeding the leaves; bracteoles linear; pedicels as long as or longer than the calyx. Sepals lanceolate, acuminate, 3 mm long. Corolla 10 mm in diam.

Distribution: British India.

Closely related to densely hairy African specimens of var. *linifolius*. Transitional forms to this var. occur, e.g. specimens collected by Royle in N. W. India.

var. 12. decumbens (R. Br.) v. Ooststr. n. comb.

E. decumbens R. Br. Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 489; id., ed. 2 (1827) p. 345; Roem. et Schult. Syst. VI (1820) p. 198.

E. angustifolius Roxb., Hort. Beng. (1814) p. 84, nomen; id., Fl. Ind. II (1832) p. 107.

E. heterophyllus Labill. Sert. Austr.—Caled. (1824) p. 24, t. 29; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 79; id., Conv. Rar. (1838) p. 157; id. in DC. Prodr. IX (1845) p. 449.

E. lanceaefolius Span. in Linnaea XV (1841) p. 341, nomen.

E. gracillimus Miq. Fl. Ned. Ind. II (1856) p. 629.

E. procumbens Montr. in Mém. Acad. Lyon X (1860) p. 238.

E. sinicus Miq. in Journ. Bot. Néerl. I (1861) p. 112.

E. alsinoides L. var. *linifolius* (L.) Gagnep. et Courchet in Lecomte, Fl. Gén. Indo-Chine IV (1915) p. 304, p. p.

Type: *Robert Brown 2783*, Australia, Queensland.

Stems of the first year erect, later ascending or decumbent, slender, 30—45 cm, appressed-pilose and patent-pilose with few or many hairs, or patent hairs absent; internodes (5—) 10—20 mm. Leaves sessile or very shortly petioled, narrow-lanceolate to linear-lanceolate or linear, acute or acuminate, rarely obtusish at the apex, mucronulate, rounded or acute at the base, 5—20 (—30) mm long, 1.5—3.5 (—5) mm broad, 3—6 times as long as broad, sometimes broader, especially the basal ones, appressed-pilose on both sides, sometimes glabrous above. Peduncles filiform, exceeding the leaves, 1 or 2(—3)-flowered, 15—30 mm long, appressed-pilose; bracteoles linear-subulate, 1.5—2 mm; pedicels longer than the calyx, filiform, loosely appressed-pilose. Sepals narrow-lanceolate, acuminate, 2.5—3 mm, short-villose. Corolla 7—8 mm in diam.

Distribution: Australia, New Guinea, New Caledonia etc., Fiji-islands, Netherlands Indies, Philippines, Indo-China, China; in S. E. Asia transitional forms to the typical form of the species.

In the Philippine Islands and in Indo-China specimens are

met with, which possess a greyish shining closely appressed indument, much resembling that of var. *javanicus*. (Indicated in the list of collectors' numbers with 12a).

E. lanceaefolius Span. is intermediate between the typical form and var. *decumbens*.

Specimens belonging to var. *decumbens* are often met with in the herbaria and in the literature under the name *E. linifolius* L.

var. 13. javanicus (Blume) v. Ooststr. n. comb.

E. javanicus Blume, Bijdr. Fl. Ned. Ind. (1825) p. 724; Koorders, Exkurs. fl. von Java III (1912) p. 110.

Type: *Blume*, Java, Gedeh (?) (see remarks).

Stems several from a stout woody base with perpendicular root, erect or ascending, rather slender, 6—20 cm long, densely appressed-pilose with fulvous, later greyish, more or less shining hairs; internodes 3—5 mm. Leaves linear or linear-lanceolate, densely appressed-pilose like the stems, erect or erecto-patent, acute or acuminate at the apex, attenuate to the base, often enrolled, 4—11 mm long, 1—2.5 mm broad, 4—7 times as long as broad. Peduncles short, 2—5 mm, pilose like the stems; bracteoles subulate, 1 mm; pedicels as long as or commonly much longer than the calyx, to 7 mm. Sepals lanceolate, acuminate, 2.5—3 mm, appressed-pilose. Corolla rotate, 8—9 mm in diam.

Distribution: Java(?), Moluccas.

Koorders l.c. does not believe that Blume's specimens were collected on Mount Gedeh (Java). They are fully identical with specimens from the Moluccas. Transitional forms to var. *decumbens* exist (Philippine Islands, Indo-China, Australia). Also to var. *philippinensis*.

var. 14. villosicalyx v. Ooststr. n. var. ¹⁾

¹⁾ *E. alsinoides* L. var. *villosicalyx* v. Ooststr. n. var. Caules pauci vel plurimi e radice perpendiculari nascentes, erecti vel ascendentes, graciles vel subrigidi, ad 40 cm alti, pilis longis appressis et patentibus. Folia linearia vel lineari-lanceolata, apice acuta vel obtusiuscula, basin versus attenuata, 10—25 mm longa, 2—5 mm lata, 4—5 partibus longiora quam lata, utrinque sed subtus densius quam supra pilosa. Pedunculi plerumque foliis breviores.

Type: *L. Diels 2797*, West Australia, Dewitt, Springstation.

Stems few or several from a perpendicular root, erect or ascending, slender or rather stiff, to 40 cm high, but often much lower, with long appressed and patent hairs. Leaves linear or linear-lanceolate, acute or obtusish at the apex, attenuate to the base, 10—25 mm long, 2—5 mm broad, 4—5 times as long as broad, pilose on both sides, more densely beneath than above. Peduncles generally shorter than the leaves, sometimes almost absent, appressed- and patentily pilose, 1- to few-flowered, in the latter case flowers approximate at the end of the peduncle; bracteoles linear, variable in length, 1—7 mm; pedicels shorter than or as long as the sepals, 1—5 mm. Sepals lanceolate, acuminate, 4—5 mm long, long patentily villose with brownish or fulvous hairs. Corolla blue, rotate to funnel-shaped, as long as or little exceeding the calyx, the limb slightly 5-lobed, \pm 6—7 mm in diam. Filaments 2.5 times as long as the oblong anthers. Ovary globular, glabrous.

Distribution: West and Central Australia.

Greatly resembles some African specimens of var. *linifolius*, but the hairiness of the calyx is different.

var. **15. sericeus** Benth. Fl. Austr. IV (1869) p. 438.

E. argenteus R. Br. Prodr. Fl. Nov. Holl. ed. 1 (1810) p. 489; id. ed. 2 (1827) p. 345; Roem. et Schult. Syst. VI (1820) p. 198.

Type: *Robert Brown 2785*, Australia, Islands in the Gulf of Carpentaria.

Stems several from a woody base, ascending, densely sericeo-villose with appressed and spreading fulvous hairs, rather thick,

interdum subnulli, appresse et patenti-pilosi, uniflori vel pauciflori (floribus in apice pedunculi approximatis), bracteolis linearibus, longitudine variabilibus, 1—7 mm longis, pedicellis sepalibus brevioribus vel ea aequantibus, 1—5 mm longis. Sepala lanceolata, acuminata, 4—5 mm longa, longe patenti-villosa pilis ferruginescentibus vel fulvis. Corolla coerulea, rotata vel infundibuliformis limbo leviter 5-lobato, fere 6—7 mm diametro. Filamenta 2.5 partibus longiora quam antherae oblongae. Ovarium globosum, glabrum. Type: *L. Diels 2797*, West Australia, Dewitt, Springstation (B).

10—20 (—45) cm long. Leaves sessile, oblong-lanceolate, acute at the apex, acutish or rounded at the base, 8—20 mm long, 3—8 mm broad, about 2.5—3 times as long as broad, densely sericeo-villose on both sides like the stems, sometimes almost lanate. Peduncles rather stout, hairy like the stems, 7—15 mm long, 1 (—2)-flowered, bracteoles linear-subulate, 1.5—2 mm long; pedicels rather stout, as long as or longer than the calyx. Sepals lanceolate, acuminate, hairy like the other parts of the plant, 2.5—3 mm. Corolla rotate, 8—9 mm in diam.

Distribution: Australia (Queensland).

Distribution of *E. alsinoides* L. and varieties.¹⁾

UNITED STATES OF AMERICA, Arizona, Apache Pass, Sept. 1881, *J. L. Lemmon and wife* (NH, P, US); Sierra Tucson, *W. F. Parish 170* (8¹, B, Br, G, P); *id.*, Apr. 1894, *J. W. Toumey* (8, US); Sierra Tucson, dry ledges, Apr. 1884, *C. G. Pringle* (8, B, Br, G, P); Santa Catalina Mts, dry rocky slopes, Jan. 1930, *E. B. Bartram 346* (\pm 8, US); *id.*, Sabino Canyon, Aug. 1930, *G. J. Harrison, T. H. Kearney 7244* (8, US); *id.*, *id.*, 3000 ft., Aug. 1917, *Forrest Shreve* (US); *id.*, 3000 ft., Aug. 1903, *M. E. Jones* (US); Bowie, Sept. 1884, *M. E. Jones* (8, P); Santa Rita Range Reserve, Sept. 1912, *E. O. Wooton* (\pm 8, US). New Mexico, Lordsburgh, July 1891, *W. H. Evans* (8, US); Organ Mts, Dona Ana Co., 5000 ft., July 1897, *E. O. Wooton* (8, US); *id.*, *id.*, Parkers Well, July 1901, *E. O. Wooton* (8, US); Carrizallito Mts, Apr. 1892, *E. A. Mearns 115* (8, US). Texas, July 1925, *B. C. Tharp 3655* (5, US); June 1928, *B. C. Tharp 6399* (5, US); Western Texas to El Paso, May—Oct. 1849, *C. Wright 512* (7, DC, K, NH, US); Herb. Texano—Mexicanum, *Berlandier 3193* (US); Point Isabel, sand, March 1922, *B. C. Tharp 1199* (US); Davis Mts, Limpia Canyon, slopes, infrequent, July 1919, *H. C. Hanson 768* (8, US), *id.*, dry rocky slopes, open hillsides, June 1926, *E. J. Palmer 30902* (8, US); foothills of Chisos Mts., Aug. 1883, *V. Havard 48* (8, B, US); Chisos Mts., 1932, *C. H. Mueller 8126* (7, U); Devil's River, on hill, July 1925, *B. C. Tharp 3657* (5, US); Del Norte Mts, Aug. 1925, *B. C. Tharp 3658* (8, US); Pleasanton, Atascosa Co., May 1916, *E. J. Palmer 9783* (6, S); Guadalupe River, from Gonzales to Seguin, Nov. 1849, *Trécul 1282* (7, P); from Arroyo Colorado to Goliad, May 1834, *Berlandier* (7, G); vicinity of Laredo, Oct. 1913, *J. N. Rose 18060* (5, US); between Laredo and Bejar, March 1828, *Berlandier 1469* (7, Len, NH, P);

¹⁾ t: typical form of the species; ta: specimens of the typical form resembling var. *debilis*; 1: var. *hirsutus* (Lam.) v. Ooststr.; 2: var. *philippinensis* v. Ooststr.; 3: var. *rotundifolius* Hayata; 4: var. *thymoides* Hall. f.; 5: var. *adscendens* (House) v. Ooststr.; 6: var. *Grisebachianus* Meissn.; 7: var. *debilis* (HBK.) v. Ooststr.; 8: var. *acapulcensis* (Willd.) v. Ooststr.; 9: var. *linifolius* (L.) Baker; 10: var. *glaber* Baker; 11: var. *Wallichii* v. Ooststr.; 12: var. *decumbens* (R. Br.) v. Ooststr.; 12a: see remarks under var. *decumbens*; 13: var. *javanicus* (Blume) v. Ooststr.; 14: var. *villosicalyx* v. Ooststr.; 15: var. *sericeus* Benth.

Pena, 1889, *G. C. Nealley* 232 (5, US). Florida, May 1891, *J. H. Simpson* 199 (6, US); Dauphinisland, shellbanks, Aug. 1892, *C. Mohr* (6, US); Captiva, Febr. 1915, *G. A. Orrok* (6, US); Cape Sable, May 1891, *J. H. Simpson* 191 (6, US); S. Florida, Aug. 1878, *A. P. Garber*, type of *E. diffusus* Chapm. (6, C, US); Key West, *Blodgett* (6, US); id., 1874, *Edw. Palmer* 425 (6, US); id., 1846, *F. Rugel* 28 (6, NH, US); Big Pine Key, Nov. 1912, *J. K. Small* 3831 (6, S); id., Dec. 1913, *J. K. Small*, *G. K. Small* 5022 (6, S).

MEXICO, *Aschenborn* 440, 451, 592 (8, B); *Coulter* 1016, 1017 (8, K); *C. Ehrenberg* 431 (7, B); id. s. n. (8, B); Wartenberg, near Tantoyuca, prov. Huasteca, 1858, *L. C. Ervendberg* 169 (5—7, DC, G); *Karwinsky* 609 (7, Len); *Liebmann* 12523 (7, C); id. 12524 (8?, C); id. 12525 (5, C); id. 12526 (7, C); id. 12527 (7, C); id. 12529 (5, C); id. 12530 (8, C); id. 12537 (7, C); v. *Olfers* 848 c (7?, B); *W. Schaffner* 517 (8, B); *G. Schnee* (P); *W. Schumann* 949 (8, B, P); between Victoria and Rio Blanco, 1842, *Karwinsky* 609 d(?) (5, Len); Talea, Aug. 1844, *Galeotti* s. n. (7, Br, M, V); Barra d. Mexitlan, June—Oct. 1840, *Galeotti* 1386 (8, Br, P). Baja California, Cape S. Lucas, March 1911, *J. N. Rose* 16409 (8, US); id., Aug. 1859—Jan. 1860, *L. J. Xantus* 83 (8—5, Len, US); S. José del Cabo, Jan.—March 1901, *C. A. Purpus* 522 (US); La Paz, Jan.—Febr. 1890, *Edw. Palmer* 1 (7—8, US); San Pablo Cañon, rocks, 7—800 ft., Jan.—March 1898, *C. A. Purpus* 196 (8, K, US). Sonora, vic. of Guaymas, dry hills, March 1910, *J. N. Rose*, *P. C. Standley*, *P. G. Russell* 12604 (8?, US); vic. of Alamos, rocky hillside, March 1910, *J. N. Rose*, *P. C. Standley*, *P. G. Russell* 12761 (8, NY, US). Chihuahua, south-western Chihuahua, Aug.—Nov. 1885, *Edw. Palmer* 183 (7, US); Sierra en Media, Sept. 1899, *E. W. Nelson* 6487 (US); Sierra Madre, Aug. 1899, *Barber*, *Townsend* (US). Coahuila, 1903, *C. A. Purpus* 131 (7—8, US); Monclova, Aug. 1880, *Edw. Palmer* 915 (8, K, P, US); near Rancho de la Luz, Hda. de la Pailla, Sierra de la Pailla, 930 m, Apr. 1905, *R. Endlich* 824 (8, B); Saltillo, 1600 m, 1911, *Arsène* 6371 (7, Br). Nuevo Leon, Monterey, 1924, *C. R. Orcutt* 1182 (6, US); id., Febr.—Oct. 1880, *Edw. Palmer* 2096 (K); id., Dec. 1910, *Quarles van Ufford* 44 (7, U); id., 500—1000 m, arid slope, May 1921, *L. Rutten*, *C. Rutten*—*Pekelharing* 676 (6, U); id., June 1907, *W. E. Safford* 1214a (7, US); Cerro Guadeloupe, Aug. 1909, *Abbon* (7, B). Tamaulipas, 40 miles s.w. of Matamoros, July 1923, *R. Runyon* 424 (5, US); edge of wood, Lower Rio Grande, near Las Prietas, July 1904, *R. Endlich* 578 (B); vicin. of Victoria, 320 m, May—June 1907, *Edw. Palmer* 530 (6, US); between Tampico and Real del Monte (*Hidalgo*), *Berlandier* 279 (7, B, Del, Len, NH, P); vicin. of San José, Cerro Ladinás, limestone ledges, July 1930, *H. H. Bartlett* 10241 (7, U, US); Jaumave, July 1932, *H. W. von Rozyński* 402 (6, U); id., near San Vicente, July 1932, *H. W. von Rozyński* 457 (6, U); Buena Vista Hda, June 1919, *E. O. Wootton* (7, US). Sinaloa, Dec. 1921, *J. G. Ortega* 4360 (7, US); Sinaloa or Tepic, *J. G. Ortega* 545 (K); vicin. of Topolobampo, dry, rocky hill, March 1910, *J. N. Rose*, *P. C. Standley*, *P. G. Russell* 13314 (8, NY, US); vic. of Fuerte, dry hills, March 1910, *J. N. Rose*, *P. C. Standley*, *P. G. Russell* 13535 (8, NY, US); Ymala, Sept.—Oct. 1891, *Edw. Palmer* 1747 (7, US); Rancho del Espinal, San Ignacio, 360 m, Sept. 1918, *M. Narvaez Montes*, *Ant. E. Salazar* 545 (8, US); Mazatlan, Dec. 1894, *F. H. Lamb* 312 (8, B, US); id., dry hill, March—Apr. 1910, *J. N. Rose*, *P. C. Standley*, *P. G. Russell* 13683 (8, F, NY, US). Durango, Aug. 1897, *J. N. Rose* 2274 (7, NY, US); city of Durango, Aug. 1898, *E. W. Nelson* 4589 (8, US); vic. of Durango, July 1896, *Edw. Palmer* 368 (8, B, C, NH, US); Tejamén, Aug. 1906, *Edw. Palmer* 541

(8, US); vicin. of Sta Catalina, 2200 m, Sept. 1903, *R. Endlich* 95 (8, B). Zacatecas, July 1904, *O. Kuntze* (NY); Cedros, hills, especially in saddles of ridges, 1908, *F. E. Lloyd* 138 (8, US); San Juan Capistrano, Aug. 1897, *J. N. Rose* 3549 (8, US). San Luis Potosi, *Herb. Eug. Fournier* 1535, 1562 (*Viret d'Aoust*) (8, P); 1879, *J. G. Schaffner* 473 (8, B, C, G, M, NH, NY, P, US); 1879, *J. G. Schaffner* 502a (8, G); near San Luis Potosi, *C. C. Parry, Edw. Palmer* 625 (8, NH); id., 1878, *C. C. Parry, Edw. Palmer* 628 (8, P); near San Luis Potosi, sandy places, Sept.—Oct. 1876, *J. G. Schaffner* 615 (8, B, K, Len); Cañada de S. Antonio, 1851, *Herb. Eug. Fournier* 1653 (P). Nayarit, Tepic, Jan.—Febr. 1892, *Edw. Palmer* 2023 (6, US); June 1897, *E. W. Nelson* 4360 (8, US); vic. of Acaponeta, Apr. 1910, *J. N. Rose, P. C. Standley, P. G. Russell* 14282 (6—8, NY, US); foothills between Acaponeta and Pedro Paulo, Aug. 1897, *J. N. Rose* 1949 (8, NY, US); open grassy hillside, Nov. 1925, *Roxana S. Ferris* 5840 (7, US); road from Tepic to Acayapa, in open woods near water, 1000 m, Sept. 1926, *Ynes Mexia* 723 (5, US); trail from Yxtlan to San Marcos, wooded mountain side, 1100 m, Sept. 1926, *Ynes Mexia* 836 (7, US); La Cofradia, N. of Yxtlan, open hillcrests, 1100 m, Oct. 1926, *Ynes Mexia* 871 (5, NH, US). Aguascalientes, *Hartweg* 21 (8, B, K, NH, P); near city of Aguascalientes, Aug. 1901, *J. N. Rose, Rob. Hay* 6224 (8, US); id., Oct. 1903, *J. N. Rose, Jos. H. Painter* 7736 (8, US). Jalisco, near Guadalajara, 5000 ft., June 1898, *C. G. Pringle* 7551 (5, B, C, G, M); plains near Guadalajara, 5000 ft., Aug. 1902, *C. G. Pringle* 11047 (5, B, K, L, US); banks of Rio Grande de Lerma, near Guadalajara, 3000 ft., Dec. 1840, *Galeotti* 1390 (7, Br, K, P); Barranca de Oblatos, 5000 ft., fields near tramway, Sept. 1908, *C. R. Barnes, W. J. G. Land* 110 (5, U); along Mexican Central R. R., below Tuxpan, Oct. 1908, *C. R. Barnes, W. J. G. Land* 326 (5, U); Rio Blanco, July 1886, *Edw. Palmer* 750 (5, Gr). Queretaro, 1910—13, *Arsène* 10518 (7, US); near San Juan del Rio, stony hillside, Aug. 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 9579 (7, US). Hidalgo, near Zimapan, *Galeotti* 1388 (8, Br, P); near Ixmiquilpan, 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 8912 (8, US); 9 miles from Huejutla, *Karwinsky* 609 b (7, Len). Vera Cruz, *Galeotti* 1357 (7, Br, K, P); *Galeotti* 1365 (7, Br, P); savannas 3000 ft., June—Oct. 1840, *Galeotti* 1382 (6, type of *E. microphyllus* M. et Gal., 7, 8, Br, K, P); between Vera Cruz and Sta. Fé, July 1828, *Schiede* 565 (7, Len); Zacuapan, June 1906, *C. A. Purpus* 2018 (7, US); Orizaba, 1853, *Fred. Müller* 1197 (7, L); id., Oct. 1866, *Bourgeau* 2947 (7, P); near Jalapa, grassy places, fl. Aug., *Schiede* 231 (7, B); Coatzacoalco, dry sunny places, Apr. 1911, *C. and E. Seler* 5532 (453) (5, B); Papantla, 1841, *Karwinsky* 609 c (7, Len); Mirador, Apr. 1839, *J. Linden* 1118 (7, K); id., March 1842, *Liebmann* 12532 (8, C); Puerto de Alvarado, Jan. 1905, *C. and E. Seler* 4477 (7, B). Colima, Manzanillo, Dec. 1890, *Edw. Palmer* 952 (8, US); id., Nov. 1925, *Roxana S. Ferris* 6148 (7, US); Colima, July—Aug. 1897, *Edw. Palmer* 42 (5, C, S, US); id., *Edw. Palmer* 43, type of *E. adscendens* House (5, C, Len, S, US). Michoacan, Morelia, near La Huerta, Sept. 1910, *Arsène* 5448 (7, NY, P, US); id., *Arsène* 6660 (7, B); id., *Arsène s. n.* (7, B, Bog, Br, K, P, US); Zapote near Morelia, Aug. 1909, *Arsène* 2402 (7, 12, B, P); id., *Arsène s. n.* (7, L, P); id., July 1912, *Arsène s. n.* (7, M); Morelia, Cerro de las Nalgas, Sept. 1909, *Arsène* 2655 (7, K, P); Baqueta (Michoacan or Guerrero), Oct. 1898, *Langlassé* 487 (7, K, US). Mexico, near Mexico, Apr. 1830, *Schiede* (8, B); id., Oct. 1904, *C. and E. Seler* 4136 (73) (8, B); valley of Mexico, *Schaffner* 46 (8, P); id., *Schaffner* 351 (8, P); id., *Schaffner* 442 (8, G);

id., 1875, *Schaffner* 458 (8, G); id., June 1899, *J. N. Rose, W. Hough* 4509 (8, US); id., near Guadalupe, 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 8508 (8, US); id., Tacubaya, fl. July, *Bourgeau* 626 (8, B, Br, C, K, L, P, S, US); Pedregal de S. Angel, May 1921, *L. Rutten, C. Rutten—Pekelharing* 732 (8, U); id., July 1929, *E. Lyonnet* 516 (8, US); id., *Schiede* (8, B); valley of Mexico near Tlalpam, July 1901, *J. N. Rose, R. Hay* 5468 (8, NY, US); id., June 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 8261 (8, NY, US); near Tlalnepantla, July 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 8415 (8, US). Morelos, July 1929, *P. E. Lyonnet* 485 (5, US); Cuernavaca, Nov. 1865, *Bourgeau* 1267 (7, Br, DC, K, L, P, S). Puebla, near Tehuacan, Aug. 1901, *J. N. Rose, R. Hay* 5917 (8, US); id., n. of Tehuacan, Apr. 1907, *R. Endlich* 1993 (8, B). Guerrero, Acapulco, Oct. 1894—March 1895, *Edw. Palmer* 94 (7, US); near Acapulco, *Herb. Willdenow* 6128, type of *E. acapulcensis* Willd. (8, B). Oaxaca, *Ghiesbreght* 209 (5, P); 1842, *Ghiesbreght s. n.* (5, P); May 1842, *Liebmann* 12531 (8, C, US); savanna, 4000 ft., Nov. 1839—Apr. 1840, *Galeotti* 1357 bis (7, 8, Br, K, P); Franco, 1842, *Liebmann* (7, P); between Zanatepec and Tapaná, 650 ft., July 1895, *E. W. Nelson* 2819 (7—8, US); Santa Catarina, July 1910, *H. H. Rusby* 77 (7, US); valley of Oaxaca, 5100—5800 ft., Sept. 1894, *E. W. Nelson* 1212 (8, US); distr. Tlacolula, near Mitla, June 1888, *C. and E. Seler* 29 (8, B); near Tomellin, Sept. 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 10072 (8, US). Chiapas, May 1904, *E. A. Goldman* 1020 (6, US); valley of Jiquipilas, 2200—2800 ft., Aug. 1895, *E. W. Nelson* 2948 (7, US); Sta. Eulaliaplains, Sept. 1885, *Wilkinson* (8, US). Yucatan, savannas, *Linden* (5, DC, P); *G. F. Gaumer* 805 (6, B, Gr, US); Mérida, *Schott* 64 (5, NH, US).

BRITISH HONDURAS, All Pines, open places, common, Sept. 1930, *W. A. Schipp* 658 (7, K, S); Honey Camp, Sept. 1929, *C. L. Lundell* 534 (7, US).

GUATEMALA, in sand along railroad, June 1909, *C. C. Deam* 6185 (5, Gr, US); cornfield, 1480 m., Dec. 1922, *J. G. Salas* 183 (7, US); Nov. 1865, *Bernouilli and Cario* 1928 (6, G); Aug. 1866, *Bernouilli and Cario* 1929, (7, G); dept. Guatemala, Guatemala, 5000 ft., May 1892, *W. C. Shannon* (ed. *J. Donnell Smith*) 4712 (US); Guatemala city, Apr. 1905, *H. Pittier* 5 (6, US); near Guatemala, 1400 m., July 1921, *Tonduz* 632 (5, C, US); Las Vacas baranca near Guatemala, July 1860, *Sutton Hayes* (6, Gr); Barranca del Zapote, oakwood, Nov. 1896, *C. and E. Seler* 2467 (7?, B, L, US); Chimaltenango, *Lehmann* 1500 (6, NH); Ciudad Vieja, Nov. 1914, *R. Tejada* 276, 297 (US); llano de S. Juan de Dios, Nov. 1865, *Bernouilli* 181 (6, B, K); Camino de Pinula, Aug. 1866, *Bernouilli* 357 (7, B, Br, DC, K); near S. Geronimo, Aug. 1870, *Bernouilli and Cario* 1921 (5, G); Finca La Aurora, 1480 m. June 1923, *J. M. Ruano* 341 (5, US); dept. Alta Verapaz, Cahabon, March 1902, *O. F. Cook, R. F. Griggs* 326 (7, US); id., hills between Cajval and Cahabon, 400 m, May 1905, *H. Pittier* 213 (7, US); id., Secanguim, trail to Cahabon, Nov. 1904, *G. P. Goll* 60 (7, US); id., Finca Mocca, 1500 ft., Nov. 1919, *H. Johnson* 62 (7, US); id., arid places near Coban, Apr. 1879, *v. Türckheim Fl. Guatemal.* (ed. *C. Keck*) 29a (7, US); dept. Baja Verapaz, Santa Rosa, 1600 m, July 1908, *von Türckheim II* 2299 (8, US); dept. Santa Rosa, 3000 ft., July 1892, *Heyde and Lux* (ed. *J. Donnell Smith*) 2986 (7, B, M, US); id., id., 3000 ft., Nov. 1892, *Heyde and Lux* (ed. *J. Donnell Smith*) 4029 (7, M, US); id., Rio de Los Esclavos, 800 m., June 1893, *Heyde and Lux* (ed. *J. Donnell Smith*) 4734 (5, B, Gr, K, M, NH, US); dept. de Izabal, vic. of Quirigua, May 1922, without flowers, *P. C. Standley* 23906 (7, US); id., vic. of Los Amates, on sand bars along the Rio Motagua, about 85 m,

May 1922, *P. C. Standley* 24440 (7, 5, Gr, US); dept. Suchitepéquez, Mazatenango, 330 m, Febr. 1905, *W. A. Kellerman* 5143 (7, US); dept. Huehuetenango, July 1896, *C. and E. Seler* 2785 (8, B); dept. Jutiapa, Volcan Flores, 2500 ft., Oct. 1892, *W. C. Shannon* (ed. *J. Donnell Smith*) 3608 (8, US).

HONDURAS, San Pedro Sula, *C. Thieme* (ed. *J. Donnell Smith*) 77 (7, US); dept. Comayagua, vic. of Siguatopeque, thicket along stream, 1080—1400 m, Febr. 1928, *P. C. Standley* 56222 (7, US); dept. Gracias, 1852, *J. A. Hjalmarson* (7, S).

EL SALVADOR, *Hjalmarson* 1253 (7, S); near Chalchuapa, 1922, *S. Caldéron* 982 (5, US); Finca San Nicolás, 1923, *S. Caldéron* 1562 (7, US); dept. San Vicente, vic. of San Vicente, dry open slope, 350—500 m, March 1922, *P. C. Standley* 21384 (7, US).

NICARAGUA, Segovia, *Ørsted* 12626 (7, C); dept. Matagalpa, Cerro Tajuésoro, 800 m, dry soil, Sept. 1894, *E. Rothschild* 636 (7, B); low hills near Granada, July 1923, *W. R. Maxon*, *A. D. Harvey*, *A. T. Valentine* 7585 (5, US); savannas near Granada, Sept. 1869, *P. Lévy* 251 (5, DC, P).

COSTA RICA, pastures, 1919—20, *C. H. Lankester* K. 131 (7, F, K, P); *C. Hoffmann* 1254 (7, B); San Pedro de la Calabaza, 1100 m, Oct. 1896, *A. Tonduz* 10856 (7, US); Candelavia, *Ørsted* 12625 (7, C); id., 1845—48, *Ørsted* 12670 (7, C, US); Nuestro Amo, arid places, 7—900 m, Sept. 1902, *H. Pittier* 16434 (7, US); Boruca, savannas, Nov. 1891, *H. Pittier* 4412 (7, B, Br, NH, US); Rodeo, 800 m, Dec. 1889, *H. Pittier* 1644 (7, Br, US); id., dry pastures, 900 m, Jan. 1891, *H. Pittier* 3253 (7, Br, US).

PANAMA, *Seemann* 178 (7, NH); prov. Chiriqui, open woods 1 to 2 miles south of El Boquete, 1250 m, March 1918, *E. P. Killip* 3609 (7, US); vic. of El Boquete, 1000—1300 m, March 1911, *W. R. Maxon* 5143 (7, US); pastures around El Boquete, 1000—1300 m, March 1911, *H. Pittier* 3156 (7, NH, US); Sosa Hill, Balboa, Canal Zone, frequent, brushy slope, Nov.—Dec. 1923, *P. C. Standley* 26436 (7, US).

BAHAMA ISLANDS, Andros, scrub near Lisbon Creek, Mangrove Cay, Jan. 1910, *J. K. Small*, *J. J. Carter* 8458 (6, K, P, US); New Providence, Nov. 1866, *Krebs* (6, C); id., near Nassau, June 1907, *L. J. K. Brace* 7906 (6, F); id., Farringdon Road, Aug. 1904, *N. L. Britton*, *L. J. K. Brace* 209 (6, K); id., id., June 1909, *P. Wilson* 8335 (6, K, US); Eleuthera, Governor's Harbor and vicin., low meadow, Febr. 1907, *N. L. Britton*, *C. F. Millspaugh* 5515 (6, F); Long Island, Clarence Town and vicin., March 1907, *N. L. Britton*, *C. F. Millspaugh* 6346 (6, F); Great Ragged Island, Dec. 1907, *P. Wilson* 7815 (6, K); Crooked Island, Marine View hill, Jan. 1906, *L. J. K. Brace* 4689 (6, US); Mariguana, Southeast Point, Dec. 1907, *P. Wilson* 7580 (6, K); Anguilla Isles, Salt Key Bank, May 1909, *P. Wilson* 8041 (6, K).

CUBA, W.-Cuba, 1863, *Wright* 3103 (7, G, K, NH, P, S); prov. Pinar del Rio, Las Pozas, savanna, Jan. 1921, *E. L. Ekman* 12793 (7, S); id., near Pinar del Rio, March 1900, *W. Palmer*, *J. H. Riley* 434 (7, US); id., Galalon to San Pedro del Caimito, Jan. 1912, *J. A. Shafer* 11935 (7, US); id., along Camino Aguacate from Bahía Honda to Baños Aguacate, Dec. 1910, *P. Wilson* 9205 (7, U); prov. Habana, Morro Castle, in dry localities, Oct. 1924, *E. L. Ekman* 13379 (6, K, S, US); between Rio Cojimar and Playa de Bacuranao, Dec. 1910, *P. Wilson* 9527 (6, K, U, US); prov. Oriente, Santiago de Cuba, hills north of city, June 1914, *E. L. Ekman* 1520 (6, S, US); id., id., w. of Santiago Bay, Sierra del Cobre, June 1918, *E. L. Ekman* 9234 (6, S); Guantánamo, U. S. Naval Station, Dec. 1919, *E. L. Ekman* 10181 (6, S).

HAITI, Ile-la-Tortue, limestone terraces at Pte. Petit-Bois, May 1925, *E. L. Ekman H. 4149* (6, S, US); Ile-la-Gonave, Pte. Lataniers, quaternary limestone, Aug. 1927, *E. L. Ekman H. 8838* (6, S); vic. of Cabaret, Baiedes-Moustiques, dry thicket east of Cabaret, on coastal mountain, Jan. 1929, *E. C. Leonard, G. M. Leonard 11970* (6, K, US); vic. of Jean Rabel, arid road bed, Jan. 1929, *E. L. Leonard, G. M. Leonard 12612* (6, US); vic. of Mole St. Nicolas, arid rocky mountain top, west side of Mole gorge, 2 mi. south of city, Febr. 1929, *E. C. Leonard, G. M. Leonard 13101* (6, US); id., dry road bed, road out of Mole gorge to Bombardopolis, Febr. 1929, *E. C. Leonard, G. M. Leonard 13194* (6, US); id., dry roadside, Bombardopolis, road south of Mole gorge, Febr. 1929, *E. C. Leonard, G. M. Leonard 13240* (6, US); vic. of Bassin Bleu, roadside, road to Gros Morne, 630—1500 m, Apr. 1929, *E. C. Leonard, G. M. Leonard 14677* (6, US).

DOMINICAN REPUBLIC, prov. Barahona, peninsula Barahona, path Couève - en - haut to Trujin, quatern. limestone, Sept. 1926, *E. L. Ekman H. 7049* (6, S); Santiago, on road to Santo Domingo, March 1864, *R. T. Lowe* (6, K).

JAMAICA, *Houston s. n.* (6, NH).

LESSER ANTILLES, Virgin Islands, St. Thomas, *Herb. Jussieu 298* (6, P), Santa Cruz, *von Rohr* (6, NH).

COLOMBIA, *Goudot* (7, K); *Lehmann K. 212* (7, K); *J. C. Mutis 1225, 1229, 4413*, (7, US); *herb. Triana 2143* (7, NH), Santa Marta, 800 ft., fl. Nov., *H. H. Smith 1562* (7, B, Br, K, L, Len, NH, P, S, U, US); Santander, Espiritu Santo, Nov. 1879, *W. Kalbreyer 1233* (7, B); Ocaña, 4000 ft., fl. Oct., *L. Schlim 237* (7, DC, P); Cundinamarca, near Bogota, coffee plantation, growing among long grass, July 1915, *Mrs. J. A. Tracey 38* (7, K); Tolima, Ibaguè, *herb. Bonpland*, type of *E. debilis* HBK (7, B, P); id., id., *J. Goudot* (7, P); id., Mariquita, prairie, 250—300 m, Jan. 1918, *F. W. Pennell 3665* (7, F, K, US); id., id., El Espinal, 600 m, *Triana* (7, P); id., id., *herb. Triana 3791* (2) (7, NH), Cauca, La Paila, *I. F. Holton 538* (7, K); id., id., May 1853, *Herb. Triana 3791* (1) (7, NH); id., around Cali, western side of Cauca valley, 1000—1200 m, Dec. 1905, *H. Pittier 656* (7, US).

VENEZUELA, Aug. 1891, *Eggers 13581* (7, C); *Korthals* (7, L); *Moritz 35* (7, NH); *Moritz s. n.* (7, NH); Guanaguana, *Moritz 498* (7, NH); Merida, a few miles s.w. of Colonia Tovar, Oct. 1854, *A. Fendler 947* (7, G, K); Carabobo, vic. of Valencia, pastures, 400—800 m, Nov. 1919, *H. Pittier 8636* (7, US); Feder. Distr., Caracas and vic., spreading in grass on dry hillside, Dec. 1920, *L. H. Bailey, E. Zoe Bailey 47* (7, US); id., near Caracas, Jan. 1855, *J. W. Birschel* (7, K); id., id., Febr. 1856, *Gollmer* (7, B); id., id., *Moritz 1727* (7, P); id., Las Choros near Caracas, savannas, 1892, *Warming 1054* (7, C, L); id., on the old road from Caracas to La Guayra, 1100—1300 m, June 1921, *H. Pittier 9564* (7, US); id., Middle Cotizza, near Caracas, savannas, 1000—1400 m, Sept. 1917, *H. Pittier 7356* (7, US); id., Puerto Escondido, dry slopes, May 1930, *H. Pittier 13424* (7, NY, US); Bolivar, Ciudad Bolivar, *de Grosourdy* (7, P); id., id., Nov. 1929, *E. G. Holt, W. Gehriger 98* (7, US).

DUTCH GUIANA, Corantyne River, Dec. 1910, *J. F. Hulk 11* (6, U); Litani River, on rocks, Nov. 1903, *G. M. Versteeg 362* (6, U); Wilhelmina Range, Aug. 1926, *Forestry Bureau 7114* (6, U).

ECUADOR, *A. Sodiro 1136* (7, B).

BOLIVIA, North-Yungas, 1100 m, Dec. 1917, *O. Buchtien 4030* (7, US).

BRAZIL, Amazonas, S. Isabel on the Rio Negro, Schomburgk 1012 (6, B, K, L, NH, P, U).

CAPE VERDE ISLANDS, J. Cardoso 24 (9, K, L, s. n.); "Herb. rapporté du Portugal par M. Geoffroy de St. Hilaire en 1808" (9, P); São Thiago, Reinwardt (9, L); São Nicolão, 1851, C. Bolle (9, B); São Vicente, hills. Oct. 1852, C. Bolle 38 (9, B).

SENEGAL, type of *E. linifolius* L. (Linn); 1847, Boivin 412 (9, P); Bojer (9, Calc); Victorine Cassaigne (9—t, P); Herb. de Jussieu cat. 6888 (9, P); J. Lépine (9, P); dry sandy places, Leprieur (9, L, P); Miller (9, NH); Sept. 1824, Perrottet 504 (9, DC, P, S); Jan. 1825, Perrottet s. n. (9, P); Richard (9, P); Roger (9, Calc, K, Len); 1836, Heudelot 224 (9, P); banks of the Senegal, 1836, Heudelot 229 (9, K, P); Dakar, Dec. 1875, Thiébaud 147 (9, P); id., Nov. 1918, F. Vermoesen 1018 (9, Br); Dagana, 1825, Leprieur (9, P).

GAMBIA, 1928, T. R. Hages 554 (9, K).

PORTUGUESE GUINEA, Bolama, 1884, Rodrigues, Carvalho (9, B).

SIERRA LEONE, Afzelius (9, B).

GUINEA, without precise locality, Isert (9, form with small leaves, *E. azureus* Vahl, C, M); Thonning (9, form with small leaves, *E. azureus* Vahl, C, Len, S).

GOLD COAST, savanna, July 1913, Chipp 520 (9, K); R. Lloyd Williams 511 (9, K); Aburi, J. Anderson (9, K); Accra, 1842, Ansell (9, K); id., Oct. 1899, Brown 360 (9, K); id., growing in grass, not common, on Accra plains, March 1926, F. N. Howes 1131 (9, K); id., Apr.—May 1886, G. A. Krause 28 (9, B); id., Vogel (9, K); near Prampram, Oct. 1888, G. A. Krause 79 (form with slightly patent hairs, B); North Territory, Salaga, G. A. Krause (9, K); id., Tamale, Apr. 1928, T. Lloyd Williams 130 (9, K); id., id., prefers well drained gravelly lateritic soils, Febr. 1930, T. Lloyd Williams 483 (9, K).

TOGO, Lome, Nov. 1913, J. Mildbraed 7479 (9, B); id., 1900—02, Warnecke 212 (9, B, Br, K, L, M, NH, P); Paratau, May 1891, R. Büttner 633 (9, B).

DAHOMY, 1886, F. Newton 11 (9, B).

NIGERIA, N. Nigeria, Dec. 1921, B. Moiser 173 (9, K); River Benue, Sept. 1910, P. A. Talbot 799 (9, K, NH); Nupe, Barter 546 (9, B, K, Len, P); Zaria, March 1921, A. W. Hill 40 (9, K); fl. Febr.—March, J. Bunny, F. D. Ryan 37 (9, K); Naraguta, March 1921, A. W. Hill 31 (9, K); Katagum Distr., common amongst grass in bush, July 1907, J. M. Dalziel 189 (9, K, P); Baradau, on hard soils, May 1921, H. V. Lely 89 (9, K); Bauchi, "after fires", Febr. 1929, H. V. Lely P. 164 (9, K); Sokoto, F. D. Ryan 7 (9, K); Kano Hills, 1921, S. W. Carpenter (9, K); S. Nigeria, Quorra, Vogel 159 (9, K); from Niger to Tchad, July 1907, mission Tilho, Gaillard (9, P).

CAMEROON, C. Ledermann 3920 (9, B); C. Ledermann 3738 (10, B); M. Range 19 (9, B); Garua, stony or rocky savanna, 300 m, Apr. 1909, C. Ledermann 3266 (9, B); id., rocky sandstone hills, 300 m, July 1909, C. Ledermann 4649 (9, B); near Tseboa, Bauer 56 (9, B); Jola, Sept. 1893, Passarge 45 (9, B).

FRENCH CONGO, Central Chari, Koulfé, June 1903, A. Chevalier 8796 (9, B); id., June 1903, A. Chevalier 8882 bis (9, Br, K, P); Lac Fitri, Kolkelé and Moïto, Sept. 1903, A. Chevalier 9720 (9, K).

TROPICAL WEST AFRICA, without precise locality, 1898, J. W. H. Migeod 122 (9, NH).

BELGIAN CONGO, Moanda, June 1903, *J. Gillet* 3177 (9, Br); id., Nov. 1930, *Vanderijst* 27850 (9, T); id., Apr. 1913, *Vanderijst* s. n. (9, Br); Zambi, Aug. 1913, *Bequaert* 553 (9, Br); Boma, 1886, *D. Maria J. Garcia Chaves* (9, B); vic. of Boma, 1921, *J. Claessens* (9, Br, K); id., Dec. 1931, *Dacremont* 130 (9, T); id., Febr. 1919, *F. Vermoesen* 1394 (9, Br); from Matadi to Amgo-Ango, June 1913, *Feller B.* 41 (9, Br); Lugu-Lukungu, Jan. 1888, *Hens Sér. A.* 311 (9, Br, K, L, P); Mahagi, (Kibali—Ituri), 1930, *J. Lebrun* 3782 (9, T); Durumu (Uele), 1907—08, *Magis* (a form with very small leaves, Br); "Rhino-Camp", Bahr el Jebel, Lado Enclave, Jan.-Febr. 1910, *E. A. Mearns* 2875 (9, NH, P); Semliki Valley, Katontero, July 1914, *Bequaert* 5057 (9, Br); Semliki plain, between Beni and Kasindi (Kibali-Ituri), savanna, 1080 m, *J. Lebrun* 4639 (9, T); distr. Kivu, *Claessens* 1195 (9, Br); Kipaila, March 1908, *Kassner Exped.* 2531 (9, B, K, NH); Ruzizi Valley, July 1908, *Kassner Exped.* 3155a (9, NH); id., July 1908, *Kassner Exped.* 3177 (9-a, B, K, NH); Lisiki, May 1930, *R. L. Steyaert* (9, T); "Territ. du Haut-Oubangui, plateau des Ungourras, Nov. 1902, *A. Chevalier* 6140 (10, K, P).

ANGOLA, Nov. 1882, *Newton*, (*Herb. O. Hoffmann* 138) (9, B); distr. of Loanda, 1903, *J. Gossweiler* 225 (9, B, K, NH, P); id., near Cacuaço, Fort S. Pedro, March 1854, *Welwitsch* 6155 (9, B, C, DC, K, NH, P); id., Alto das Cruzes, May—June 1854, *Welwitsch* 6156 (9, B, C, DC, K, NH, P); id., near N-gombe, Oct. 1856, *Welwitsch* 6161 (9, NH); id., Pungo Andongo, March 1857, *Welwitsch* 6162 (9, K, NH); near Catumba, *Welwitsch* 6255 (9, NH); Huilla, *Antunes* 108 (9, B); S. Angola, May 1909, *H. H. W. Pearson* 2470 (9, K); between Quihita and Gambos, May 1909, *H. H. W. Pearson* 2522 (9, K).

FRENCH W. AFRICA, Siguiri, Febr. 1899, *Chevalier* 289 (9, P); region of Tombouctou, Apr. 1909, *Chudeau* (9, P).

SUDAN, 1910, *A. F. Broun* (9, NH); Dar fur province, July 1921, *H. Lynes* 572 (9, K); id., prairies N. E. of El Fasher, *H. Lynes* 335 (9, K); id., distr. Surutj, Barkin, Sept. 1875, *Pfund* 514 (9, B, K); Gabel Marra, 1930, *Mrs. Macintosh* 94 (9, K).

NUBIA, 1842, *Kotschy* 412 (9, K, S); Togodele, *G. Ch. Ehrenberg* (9, B).

CORDOFAN, Aug. 1875, *Pfund* 135 (9, K); id., *Pfund* 373 (9, B, with *Abutilon* spec.); "Corosco inter et Berber", *Kotschy* 371, var. *villosissima* Fenzl. (9, G, L, Len, K, NH, P); Obeid, *Pfund* 372 (9, B); cotton field near Obeid, Dec. 1839, *Kotschy* 411 (9, B, K, Len, P); bank of Djur, Oct. 1870, *G. Schweinfurth* 4269 (9, B); Djur, Apr. 1870, *G. Schweinfurth* III, 7 (9, B, K, P).

NILE. Exped. to the sources of the Nile, *Speke and Grant* 538 (9, K); Upper Nile, *Freeman and Lucas* 28 (9, K).

ERITREA, Febr. 1892, *G. Schweinfurth and D. Riva* 549 (9, Bog, K); Apr. 1892, *G. Schweinfurth and D. Riva* 1441 b (9, K, Len); Apr. 1892, *G. Schweinfurth and D. Riva* 1585 (9, Br, K, Len).

ABYSSINIA, Cheren, Boqos, Sept. 1861, *Stuedner* 357 (9, B, K, Len); 1872, *J. M. Hildebrandt* 529 (9, B, L, Len, NH); Choho, *Quartin—Dillon and Petit* (9, P); *Schimper* 1133 (9, P); Tigré prov., near Gapdia, Sept. 1838, *Schimper* (ed. *Hohenacker*) 828, *E. fugacissimus* Hochst. (9, B, Calc, G, L, Len, K, NH, P, S); id., *Schimper* 359 (9, B, NH); id., Tchêla—tchêkané, June 1840, *Quartin—Dillon* (9, P); Chiré, banks of Taccazzé, *Petit* 45 (9, P); id., id., *Petit* 297 (9, K, P); Galla highland, March 1901, *Ellenbeck* 1920 (9, slightly hairy, B); Dschadscha, mountains, 5000 ft., *Schimper* 2488 (9, S); id., *Schimper* 1150 (9, Br, Len, P); dry hills near Adua, Oct. 1837, *Schimper* 16 (9, B, L, Len, NH, P); Harar, March 1900, *Ellenbeck* 639

(9, B); id., Apr. 1900, *Ellenbeck* 849 (9, B), id., June 1900, *Ellenbeck* 1208 (9, B).

SOMALILAND, *Edith Cole* (9, K); *Mrs. E. Lort Phillips* (9, NH); *G. Revoil* 76 (9, P); *Ruspol—Riva* 1271 (9, remote leaves as in 7, B); near Meid, Ahl mts., 500 m, moist places, Apr. 1875, *J. M. Hildebrandt* 1528 (9, B, K, Len, NH); Golis Range, *Drake Brockman* 218 (9, K); *Berbera*, 1905, *G. W. Bury* (9, NH).

SOCOTRA, Aug. 1880, *Balfour* 271 (9, B, K); June 1897, *Mr. and Mrs. Th. Bent* (9, K); Apr. 1881, *G. Schweinfurth, Exp. Riebeck* 418 (small plants with strongly appressed hairs, near ??, B); 1881, *G. Schweinfurth, Exp. Riebeck* (K).

BRITISH EAST AFRICA, *E. Battiscombe* 774 (9, K); *W. J. Dowson* 457 (9, K); vic. of Thika, 1350 m, Sept. 1909, *E. A. Mearns* 1114 (9, Br, C, K); *T. Wakefield* (9, K); Dec. 1898, *A. Whyte* (9, K); Pemba Island, Chaki—Chaki, June 1928, *J. H. Vaughan* 330 (hairs more or less appressed, sericeous, leaves linear-lanc., NH); id., Moumoni, June 1928, *J. H. Vaughan* 361 (NH); Zanzibar, *Boivin* (P); 1909, *Last* (K); 1931, *J. H. Vaughan* 1354 (leaves lanceolate to narrow-oblong, glabrous or sparsely pilose, K); Mombasa, fl. Nov., *Scott—Elliott, Ruwenzori Exp. 6109* (9, K); id., Nov. 1884, *T. Wakefield* (9, Len); id., Rabai Hills, 1885, *W. E. Taylor* (9, NH); Kenya, Apr. 1922, *F. B. Butler* 42, 46 (9, K); Machakos distr., Dec. 1931, *van Someren* 1593 (9, K); Makindu, 3200 ft., Apr. 1902, *Kässner* 534 (9—t, B, K, NH); Nairobi, Sept. 1915, *W. J. Dowson* 286 (9, K); above Nairobi, stony slopes, 5500 ft., Febr. 1915, *R. A. Dümmer* 1913 (9, K); Athi plains near Nairobi, 1600 m, July 1927, *R. L. Piemeisel, L. W. Kephart* 135 (9, NH); "6th day from Mumias", Dec. 1896, *A. Whyte* (9, K); Kisumu, stony slopes, 3650 ft., Febr. 1915, *R. A. Dümmer* 1809 (9, K); Boran, E. of Lake Rudolf, 1899, *A. Donaldson Smith* (9, NH).

UGANDA PROTECTORATE, *Scott Elliott* 7444 (9—t, K, NH); *A. G. Bagshawe* 318 (t, K, NH); *R. Dümmer* 805 (9, NH, P); *R. Fyffe* 65 (9—t, K); Dec. 1931, *Hancock* 2399 (9—t, K); S. W. of Lake Rudolph, *Wellby* (9, K); Lake Rudolf, *Wellby* (9, K); Lake Albert Nyanza, Oct. 1908, *Kassner Exp. 3147* (9, NH); Mt. Ruwenzori, 1906, *A. F. R. Wollaston* (9, NH).

TAGANYIKA TERRITORY, 1901, *W. Busse* 958 (9, B); Muoa (Udigo), Apr. 1903, *W. Busse III* 2283 (9, B); March 1926, *R. L. Davis* 133 (9, K); Kiruru, 2800 ft., May 1927, *A. E. Haarer* 449 (K); Moshi, 2500 ft., Sept. 1927, *A. E. Haarer* 593 (9, K); a weed in cultivated land, *H. H. Homby* 348 (9, K); Umbugwe and Iraku, 1902—3, *Merker* 103 (9, B); Kilimanjaro Kibo, 1050 m, March 1909, *R. Endlich* 303 (9, B, M); steppe, Kilimanjaro, Apr. 1894, *G. Volkens* 2182 (9, B, NH); West Usambara, Mombo, Jan. 1905, *Braun* 644 (9, B); Buganza, s. of Lake Mohasi, July 1907, *Mildbraed* 608 (9, B); Ugogo, *J. Hannington* (9, K); Kipera near Kilosa, Jan. 1926, *B. D. Burt* 112 (9, NH); Victoria Nyanza, *Sir H. H. Johnston* (9, K); Ukerewe, *P. Conrads* 382 (9, B); Marienberg near Bukoba, *P. Conrads* 2 (9—t, B); Kyimbila distr., north of Lake Nyassa, March 1914, *A. Stolz* 2572 (9, B, Br, C, K, NH); Mahenge—Kilwa, June 1932, *H. J. Schlieben* 2355 (9, B, NH, T); Lake Nyassa, 1876, *Simons* (9, NH); Lukoma, Lake Nyassa, Aug. 1887, *W. Bellingham* (9, NH), near Sadani, March 1909, *Kränzlin* 2946 (9—t, B); Kwale, Aug. 1929, *R. B. Graham* 2037 (9, K).

BRITISH CENTRAL AFRICA, 1891, *J. Buchanan* 442 (9, B).

PORTUG. EAST AFRICA, *J. Stocks* 136 (9, K); near Sena, Apr. 1860, *Kirk, Livingstone's Zambesi Exp.* (9, P); Tete, Febr. 1859, *Kirk* (9, K); Gazaland, Febr. 1928, *Miss E. D. Earthy* 46 (9, not typical, B); Delagoa

Bay, 1890, *H. Junod* 135 (9, Br); Lourenço Marques, Dec. 1897, *Schlechter* 11626 (9, B, Br, Gro, K, Len, NH).

RHODESIA, Apr. 1920, *Miss Waller* 2182 (9, K); N. E. Rhodesia, Mkushi Distr., granite, quartzite soil, 4000 ft., *G. Hewitt* 14 (9, NH); id., Shibamba and Lupata, *Kirk, Livingstone's S. Afric. Exp.* (9, sparsely hairy, K); N. W. Rhodesia and S. Rhodesia, Victoria Falls, Dec. 1904, *C. E. F. Allen* 124 (9, K); Livingstone, July 1909, *F. A. Rogers* 7008 (9, K); id., *F. A. Rogers* 7296 (9, K); Mazabuka, 4000 ft., *Mrs. H. S. Woods* 21, 29 (9, NH); Sesheke Distr., *Miss A. E. Gairdner* 179, 454, 522 (9, K); S. Rhodesia, *Hislop* 17 (9, K); id., *R. F. Rand* 356 (9, NH); Matabele land, *W. Elliott* (9, K); id., *F. Oates* (9, appressed-pilose, K); id., Bembezi River, March 1918, *F. Eyles* 958 (9, NH); id., Bulawayo, Nov. 1899, *Mrs. Evelyn Cecil* 116 (9, K); id., id., on open field, *F. Eyles* 1 (9, NH); id., id., *Gardner* 90 (9, K); id., id., Aug. 1896, *Klingberg* (S); id., id., Jan. 1898, *R. F. Rand* 127 (9, Br, NH).

BECHUANALAND PROTECTORATE, fl. Febr., *R. F. Rand* 66 (9, NH); May 1914, *F. A. Rogers* 6552 (9, NH); Jan. 1907, *Seiner* II, 400 (9, B); Metsimaklaba, March 1930, *G. van Son* 28785 (6—t, NH, U); Bakwena Territ., *E. Holub* (9, K); Mochudi, Jan.—Apr. 1914, *C. C. Harbor* 6860 (9, K); on rocks at Chue Vley, Oct. 1812, *Burchell* 2382 (9, K, Len); Kuruman, June 1812, *Burchell* 2185 (9, sparsely pilose, K); id., Febr. 1886, *R. Marloth* 1101 (9, sparsely appressed-pilose, B).

UNION OF SOUTH AFRICA, South West Africa, Oct. 1906, *Seiner* 56 (9, B); March 1911, *Seiner* III, 326 (9, B); Amboland, Dec. 1885, *H. Schinz* 746 (9, B); Damaraland, 1879, *T. G. Een* (9, NH); id., Windhoek, Febr. 1899, *Dinter* (9, B); Auas Mountains, quartzite slopes, Jan. 1916, *H. H. W. Pearson* 9794 (9—t, K); id., *Trotka* 72 (9, B); Otjihna, Okahandja, 1300 m, Jan. 1907, *Dinter* 388 (9, B, Br, Gro, K, NH, P, U); Quaaiputs, Jan. 1899, *Dinter* 196 (9, B); Namaland, Oct. 1904, *Pearson* (9, L). Transvaal, *A. Junod* 2292 (9, Del); *Sanderson* (9, K); South African Gold-fields, 1870, *I. Baines* (9, K); Rustenburg Distr., Jan. 1904, *Olive Nation* 68 (9, K); Magaliesberg, Nov. 1893, *R. Schlechter* 3654 (9, B, Calc, K, NH, P, S); id., *Zeyher* 1233 (9, NH, S); Waterberg, Warm Bath, *J. Burt—Davy* 2231 (9, NH); Pretoria Distr., Kopje, Pienaars Poort, *C. E. Moss* 18271 (9, NH); id., Rooikop, Jan. 1926, *Mrs. A. B. Gillett* (9, K); Wonderboom-poort, *A. Rehmman* 4535 (9, K); lower hill slopes near Barberton, 2800 ft., 1889, *E. E. Galpin* 6311 (9, K); Houtbosch, *A. Rehmman* 5930 (9, K, NH). Griqualand West, Herbert Div., St. Clair, 1898, *Orpen* 206 (9, K). Natal, Sept. 1897, *Ch. Wheeler* (9, Br); *Wood* (9, B); Mooi River, *Wood* (9, B); Tugela, *W. T. Gerrard* 1335 (9, K, NH); id., *W. T. Gerrard* 1907, type of *E. alsinoides* L. var. *glabra* Baker (10, K, NH); near Lower Tugela, Apr. 1888, *J. M. Wood* 709 (9, Calc); Port Natal, *Gueinzus* 418, type of *E. natalensis* Sond. (9—t, S); near Verulam, fl. Dec., *J. M. Wood* 745 (9, Calc, K, NH); distr. Alexandra, Station Dumisa, Campbellton, 800 m, Febr. 1913, *Rudatis* 1891 (9—t, Gro, L, M, S).

MADAGASCAR, *R. Baron* 4587 (B, P); *R. Baron* 4781 (P); *J. Blackburn* (9—t, K, P); *Boivin* 2492 (4, DC); *Boivin s. n.* (t, P); *Bojer* (9, B, C, DC, K, M, P); *Lyall* 133 (9, K); *Perrier de la Bathie* 1055 (9, K); *Prudhomme* 97 (9, P); N. Madagascar, *R. Baron* 6575 (9, NH); Central Madagascar, *R. Baron* 730 (9, K, P); id., *R. Baron* 4587, 4781 (9, K); East Coast, *G. F. Scott Elliott* 2253 (9—t, K); Ambohipeno, *Geneaud* 60 (P); prairies de Longvatou, *Bernier* 112 (4, P); Ambovombe-distr., gneiss, Apr. 1924, *Decary* 2650 (9, P); id., cultivated places, Dec. 1924, *Decary* 3455 (9, P); vic. of

Ampanihy, 200—300 m, Aug.—Sept. 1928, *Humbert and Swingle 5509* (9, P); Ampanihy, *Perrier de la Bathie 835* (4, P); Port Lewin, March—Apr. 1849, *Boivin 2492* (4, P); Tsiromandidy, *Hure* (9, P); Diego, 1833, *Goudot* (9, DC); Imerimandroso, moist places, June 1921, *Decary 746* (9, P); Ste-Marie, *Boivin 2492* (4, P); id., 1854, *Boivin s. n.* (t, NH); Ambaton Drazaka June 1921, *Decary 706* (9, P); id., June 1921, *Decary 681* (9, P); Nossi Bé, *Boivin s. n.* (t, P); Maromandia, March 1923, *Decary 1518* (9, P); id., Andranosamonta, Febr. 1923, *Decary 1496* (9, P); near Tananarive, *Hilsenberg and Bojer* (9, NH); id., *Waterlot 735* (9, P); id., June 1915, *Waterlot s. n.* (9, P); Tuléar prov., *H. Poisson 446* (P); Mananjara prov., *Geay 7000* (t, P); Ampolaka, Sept. 1917, *Decary s. n.* (9, P); Fort Dauphin, June 1926, *Decary 4032* (9, P).

COMORES, Angasija, Fomboni, June 1886, *Schmidt 249* (9—7, B); id., coll. v. d. *Decken, leg. Kersten* (9, B); Isl. Johanna, Anjouan, *Lavanchie* (9, P); id., Pomony, Aug. 1875, *J. M. Hildebrandt 1885* (9—7, B).

COSMOLEDO ARCHIPELAGO, Oct. 1902, *H. P. Thomasset* (4?, K); Astove, *J. C. F. Fryer 8* (4, K).

ALDABRA ISLANDS, *Abbott* (4, B, Calc, P); *R. Dupont 50* (4, K); *J. C. F. Fryer 113* (4?, K); *H. P. Thomasset 237* (4—1, K); May 1895, *Voeltzkow 52* (4, Calc).

YEMEN, 1837, *Botta* (9, P); id., Wadi Schaba, near Hodjeilah, 500—600 m, May 1887, *Deflers 144*, type of *E. yemensis* Deflers (9—t, P).

AFGHANISTAN, near Chapri, common, Aug. 1880, *J. E. T. Aitchinson 526* (ta, K).

NEPAL, *W. Jack 1218* (NH).

BRITISH INDIA, *N. Annandale (Bot. Survey of India) 1394* (ta, Calc); *R. H. Beddome 5619* (NH); *Buchanan Hamilton* (NH); *Drummond 25838* (K); *Jacquemont 151, 278* (P); *Jacquemont 365* (t, P); *Jacquemont 1404* (t, P); *herb. Maire* (t, P); *Abbé Pourret (herb. Barbier)* (t, P); *Ch. Ritchie* (t, Len); *W. Roxburgh* (t, Br); *Sonnerat*, type of *E. hirsutus* Lam. (1, P); *Wichura 2819* (1, B); *herb. Wight 2004* (t, B, C, G, L, Len, M, P, S); *herb. Wight 2304* (t, B, K, L, Len); *N. W. India, M. P. Edgeworth 417* (t, K); id., *herb. Royle* (11, K, Len); id., *J. L. Stewart* (1, Len). North West Frontier Prov., Malakand, *Sidney Toppin 2019* (ta, Calc). North West Himalaya, near Mussourie, 1869, *G. King* (ta, Calc); near Belaspoor, *Stoliczka* (1, Calc); Tubulpore, July 1917, *H. H. Rich 594* (t, K); *Herb. Ind. Or. Hooker f. and Thomson* (t, K); Kashmir, Aug. 1891, *G. A. Gammie* (t, K). Punjab, fl. March, *Ali Shah* (11, K); March 1904, *J. R. Drummond 15253* (K); Sept. 1885, id. *25832* (t, K); id. *25833* (t, K); id. *25834, 25837* (K); id. *25835* (t, K); id. *25836* (t, K); *Herb. Ind. orient. Hooker f. and Thomson* (t, K); *Parish* (t, Len); Rawal Pindi, Aug. 1870, *J. E. T. Aitchison 151, Punjab catal. 789* (t, K); Salt Range, Jan. 1917, *R. R. Stewart 804* (t, K, S); near Pathankot, Febr. 1917, *R. R. Stewart 976* (t, K); Chamba State, Pangli, 8000—10,000 ft., Aug. 1899, *J. F. Duthie s. n.* (K); Simla, *de Hügel* (ta, Br, M); between Simla and Subathu, *Lady Dalhousie* (B, K); Syree near Simla, 5000 ft., *H. Collett* (K); id., 5000 ft., Oct. 1877, *J. S. Gamble 5748* α (K); between Simla and Kasauli, 4000 m, 1884, *Fl. Him. Bor. Occid., ex herb. J. R. Drummond 1871* (K); Delhi, Oct. 1874, *Clarke 23382* (NH). Rajputana, 1880, *J. E. T. Aitchison 526* (ta, Calc); Jodhpore, *G. King* (11, B); Aboo, 1868, *without collector's name* (t, Calc). Upper Gangetic Plain, *Herb. Ind. or., Hooker f. and Thomson* (t, B, C, G, Len, K, M, NH, P, S, U). North Western Provinces, *J. F. Duthie* (t, K); Kumaon, *Wallich 1315*, type of *E. sericeus* Wall. (11, B, C, Calc, K).

L, Len, M, NH, P, S, Sing); id., Bageser to Munshari via Kathi and Namik, 5000—7800 ft., May 1855, *Schlagintweit* (11, M); id., Sarju valley, 5000 ft., *Strachey and Winterbottom* (NH); id., Kota dun, 2000 ft., *Strachey and Winterbottom* (ta, Br); id., Almora, 5000 ft., *Strachey and Winterbottom* (K, P); Dehra Dhoon, Oct. 1891, *G. A. Gammie* (K); id., *G. King* (7a, Calc); Moradabad, July 1843, *I. Thomson* 258 (t, K); Saharanpur, March 1897, *J. F. Duthie* (K); Saharanpur distr., Siwaliks, Jan. 1893, *J. S. Gamble* 24026 (t, K); Lucknow, Aug. 1856, *Anderson* 612 (t, 1, B); Jaunpur, 1916, *G. O. Allen* 61 (1, Calc); Banda, Aug. 1901, *Mrs. A. S. Bell* 763 (t, Calc); id., March 1901, *Mrs. A. S. Bell* 145 (ta, Calc); Bundelkhand, *Edgeworth* 6024 (K); vic. of Amarkantak, Paidera and source of the Johila, 2000—2900 ft., Jan. 1856, *Schlagintweit* (11, B). Central Provinces, Chanda Distr., Jan. 1890, *J. F. Duthie* 9596 (Len). Bengal, 1827, *Bélangier* 564 (ta, Len); May 1870, *C. B. Clarke* 11705 c (1?, Len); Nov. 1882, *J. S. Gamble* 10631 (t, K); Nov. 1882, *J. S. Gamble* 10635 (K); *J. S. Gamble* 10684 (t, K); 1903, *H. H. Haines* 2732 (1, K); Behar, *Herb. Ind. or. Hooker f. and Thomson* (t, 11, K); Santal Parganas, Deogarh, May 1916, *S. N. Dey* (1, Calc); Chota Nagpore, Sept. 1873, *C. B. Clarke* 20171 (t, Len, NH); id., Sept. 1873, *C. B. Clarke* 20663 (t, Len); id., Nov. 1883, *C. B. Clarke* 34431 (t, B, Len); id., Nov. 1880, *J. S. Gamble* 8582 (K); id., Dec. 1880, *J. S. Gamble* 9036 (K); id., Jan. 1881, *J. G. Gamble* 9071 (Calc, K); id., Jan. 1881, *J. S. Gamble* 10166 (K); id., Jan. 1882, *J. S. Gamble* 10167 (K); id., Nov. 1886, *Prain* (P); id., *J. J. Wood* (t, Calc, L); id., Ranchi, Sept. 1896, *Mokim* (t, Calc); id., Ranchi—Doranda, *J. J. Wood* (t, K); Hughli Distr., Aug. 1902, *A. Hosein* (1, Calc); id., Jahnanabad, March 1902, *J. D. Nusker* 47 (1—11, Calc, NH). Assam, *Griffith* 726 (Calc); *Griffith* 5871/2 (erect form, leaves oblong-lanc., glabrous above, B, C, DC, G, K, Len, M, P, S, U). Burma, Meiktila, May 1915, *A. Rodger* 355 (1, Calc); upper Burma, Sept. 1890, *Abdul Huk* (ta, Calc); id., July 1891, *Abdul Huk* (ta, Calc); id., 4000 ft., May 1888, *H. Collett* 762 (7a, Calc); May 1888, *J. C. Prager* (ta, Calc); Kachin Hills, Sept. 1899, *Shaik Mokim* 132 (ta, Calc, M); id., Nov. 1897, *Shaik Mokim* s.n. (ta, Calc). Nizams Dominions, Secunderabad, *H. N. Ridley* (NH). Bombay Presidency, *Gibson* (1, Bog); *T. S. Ralph* (t, DC); *Stocks* 120 (K); The seven Pagodes, sandstrand, Febr. 1928, *F. Borgesen* 268 (1, C); S. Maratha country and N. Canara, June 1879, *A. P. Young* (t, NH); Belgaum, *Ritchie* 420/1 (t, K); Mysore, 1826, *Bélangier* 573 (Len); Malabar, Concan etc., *Herb. Ind. Orient. Hooker f. and Thomson*, coll. *Stocks, Law* etc. (t, B, C, L, Len, M, NH, P); Malabar, 1825—26, *Bélangier* 292 (t, Len). Mahé, *Deschamps* (P). Travancore State, near Mekarai, Sept. 1913, *C. C. Calder*, *M. S. Ramaswami* 567 (1, Calc); Sept. 1913, *C. C. Calder*, *M. S. Ramaswami* 487 (ta, Calc). Madras Presidency, Oct. 1898, *Bourne* 2804 (t, K); Oct. 1832, *J. Campbell* (t—1, Sing); *F. Didrichsen* 3850, *Galathea Expeditions 1845—47* (1, C); *M. S. Ramaswami* 564, 600 (1, Calc); Coromandel, *Bélangier* (t, DC); id., *Cossigny* 163, 164 (t—1, P); id., *de Jussieu*, catal. 6891 + A (P); id., *Kamphövener* (1, B); id., *Koenig* (1, NH); id., *Leschenault* (P); Maisor and Carnatic, *Herb. Ind. orient.*, *Hooker f. and Thomson* (t, B, Br, C, G, K, L, Len, M, NH, P, S, U); Kistna Distr., July 1907, *C. A. Barber* 7928 (ta, Calc); Godavari Distr., Rampa Country, Rampa Hills, Sept. 1920, *V. Narayanawami* 220 (ta, Calc); id., id., Dummakonda, Oct. 1920, *V. Narayanawami* 641 (ta, Calc); Ganjam, Kallikota Hills, May 1899, *Prain's collector* (1, Calc); Cuddapah, July 1885, *J. S. Gamble* 16377 (K); Anantapur Distr., July 1885,

J. S. Gamble 16391 (K); Nellore Distr., Sangam, July 1914, M. S. Ramaswami 1155 (1, Calc); Madras, Oct. 1900, Sir. A. G. and Lady Bourne 2805 (K); St. Thomas, without collector's name (ta, Calc); Mahabalipur, Dec. 1888, G. Watt 12916 (1, Calc); Salem Distr., Shevaroy, Bourne (K); Coimbatore, common everywhere, flowering at all seasons, C. E. C. Fisher 868 (t, Calc); Mt. Nilagiri near Khilkhonda, fl. Apr., ed. Hohenacker 1414 (t, B, K, L, Len, M, K, P, S); Canara, near Mangalor, 1851, Metz, ed. Hohenacker 67 c (1, B, C, K, L, Len, M, P, S); id., Hohenacker 67 d and e (1, NH); Kodaikanal, July 1897, Bourne 897* (t, K); id., Oct. 1913, Aug. Saulière 1038 (ta, Calc); Pulney Hills, Madura Distr., 3000 ft., Apr. 1914, Aug. Saulière 111 (t, P); id., A. Saulière 394 (t, Bog); id., A. Saulière 689 (t, K); Tranquebar, ex Herb. Schwaegrichen (M); Tinnevely Distr., Febr. 1913, D. Hooper, M. S. Ramaswami 39338 (t, Calc). Pondichery, Bélanger (P); Commerson (1, P); Perrottet (t, 11, Br, DC, K, P); herb. Poiré (1, P); Reynaud (1, B, L).

CEYLON, Herb. Burman (1, L, M); 1815, Delessert (t, DC); Deschamps (ta, DC); J. Fraser 39 (t, Len, NH); J. Fraser 169 (t, t-1, Len, NH); Gardner 615 (K, NH); J. Macrae 243 (NH); March 1927, W. W. Marcovitz (t, Len); herb. Schrader (ta, Len); herb. Schreber (t, M); Thwaites (1, B, K, NH, P); Walker 130 (K); Point de Galle, 1868, Talmy (P); Isl. Ramaswaram, March 1901, C. Holtermann (B); Isl. Kaits, March 1901, C. Holtermann (B).

MALDIVES, 1899, J. S. Gardiner (ta, Calc).

NICOBARS, Febr. 1875, S. Kurz 26057 (ta, NH); id., Camorta, Febr. 1875, S. Kurz s. n. (ta, Calc); Kar Nicobar and Chowry, Kamphövener 2299 (ta, B, C).

CHINA, 1889, Hillebrand (ta, DC); Aug. 1831, Meyen (B); 1840, Philippi (ta, B); Yunnan, 1917-19, G. Forrest 15525 (K, NH); id., Prince H. d'Orléans (P); id., Ta-pui-tze, Delavay 3603 (t, P); id., id., Delavay 1053 (t, P); id., id., Delavay 377 (11, P); id., Pin-tchouan, Aug. 1906, Fr. Ducloux 4668 (ta, P); id., Ta-pin-siou near Kieou ya pin (Yong-pé), Sept. 1906, Ducloux 4761 (ta, P); id., Machang, Oct. 1908, Fr. Ducloux 5930 (P); id., Lo ma tsin (Pin tchouan), Sept. 1911, Ducloux 6884 (P); Kwang-si Lungchow, Beauvais 308 (t, P); Kwang-tung, Krone 56, type of *E. sinicus* Miq. (12, P, U); id., Whampoa, F. Didrichsen, *Galathea Exped.* 1845-47 (12, C); id., id., Febr. 1867, Hance 502 (12, Calc, G, P); id., Lung T'au Mountain, near Yueng uk, July 1924, To Kang Peng, Ts'ang Wai Tak, Ts'ang Un Kin 12808 (ta, P, S); Fukien, Hinghwa and vicin., July 1925, Lin Pi 6092 (12a, C, NH); id., gravelly hillsides near University, Foochow, Oct. 1925, Tang chung chang, Ma Shan En 2879 (ta, Bog, M); id., Foochow City, Hwai-Chi, on hill slope, Aug. 1923, H. H. Chung 2385 (12, K); id., Diogloh and vic., roadside, sandy dry places, July 1925, Chen Ping En 2489 (12, M); Hunan, between Linling (Yungtschoufu) and Sinning, Aug. 1917, Handel-Mazzetti 11320 (\pm t, C, K); Kwei-Tschou, Oct. 1908, Cavalerie 3638 (t, P); Szechuan, S. E. of Yungning, 9000 ft., Sept. 1922, G. Forrest 22492 (t, K, NH, P); Hupeh, A. Henry 25 (12a, NH); id., Ichang, A. Henry 1609 (ta, Calc, K, P); id., W. Hupeh, July 1901, E. H. Wilson 2469 (K); Tsche-kiang, Sept. 1911, Limpricht 202 (12, L); Shang-hai, Courtois (12, P); Hainan, Nov. 1889, A. Henry 8048 (12, B, K, P); id., Katsumata, Hongkong herb. 7873 (12, P); id., Ma-augza vulcano, Holhow, Dec. 1878, W. Hancock (12, K); Amoy, Hance 502 p. p. (t, Br, NH, s. n.); id., June 1858, C. Wilford 456 (K); Hongkong, hills, Bodinier 861 (t, P); id., Furet 192 (12a, P); id., Hance 502 p. p. (12a, B, Calc, G, NH, P); id., Nov. 1861, Schottmüller 417 (ta, B); id., C. Wright

346, *U. S. North Pacific Expl. Exped. 1853—56*, (12a, K, P); id., Mount Parker, *Lamont 478* (NH); id., Mount Victoria, July 1874, *Lamont 489* (L, Sing); near Macao, *Nelson*, type of *E. chinensis* Choisy (t, NH); id., *Meyen* (B); Pak-hoi, Apr. 1883, *G. M. H. Playfair 189* (K).

FORMOSA, *A. Henry 1091* (B); Oct. 1905, *G. Nakahara 641* (ta, Calc); fl. Dec., *Playfair 339* (K, P); *S. W. Formosa*, 1862, *R. Swinhoe 16* (K); *S. Formosa, Maries* (K); *S. Formosa* near Longkoan, Febr. 1888, *Warburg 10727* (B); Mt. Takao, prov. Takao, Dec. 1920, *Ito* (NH); Takao, June 1912, *W. R. Price 589* (K); id., open hillside, June 1912, *W. R. Price 617* (K); Kôshun and Garanbi, *Tashiro*, type of var. *rotundifolius* (3, not seen); South cape, Febr. 1888, *Warburg 10728* (3, B).

INDO-CHINA, Tonkin, May 1888, *Balansa 3533* (ta, K, P); June 1887, *Balansa 3534* (t, K, P); Oct. 1922, *Petelot 741* (t, P); *S. Tonkin, Bon 275, 518* (ta, P); *S. Tonkin, Kienkhé*, valley Dông Hâm, Apr. 1883, *Bon* (ta, P); hills near Phuông-Lam, Nov. 1887, *Balansa 3532* (ta, P); Tuyen-Quang, *Brousmiche 314* (12—13, P); Sept Pagodes, fl. Aug., *Mouret 231* (P); Long-Tchéou, *Simond 238* (12a, P); Along bay, *Lecomte and Finet* (P). Annam, prov. Quang-tri, Thuy-loan, Oct. 1909, *Bauche 104* (Bog, P); id., Hué to Thuy-loan, Oct. 1909, *Bauche 92* (Br, P); Hué and vicin., Jan.—May 1927, *R. W. Squires 384* (12a, Bog, K, Len, NH, P, Sing); near Tourane, *J. and M. S. Clemens 4489* (P); id., shady places in moist mts., *Gaudichaud 144* (12, P); Nha-trang, Nov. 1911, *Lecomte and Finet 1364* (t, P); id., March 1911, *C. B. Robinson 1046* (12, B, K, L, NH, P); Phan-rang prov., May 1918, *C. Boden Kloss* (NH); id., Tourcham, Nov. 1911, *Lecomte and Finet 1409* (12, P). Cochinchina, *Godefroy 939* (12, P); prov. Saigon, March 1866, *Herb. L. Pierre* (12, P). Cambodia, Mt. Reang Khong, May 1870, *L. Pierre 999* (very densely hairy, NH, P); Phu-Quoc, 1874, *herb. L. Pierre* (12, P); id., seashore, Oct. 1875, *Godefroy—Lebeuf 940* (12, K, P); Kampot, *L. Pierre* (K).

SIAM, Meh Ping, Doi Noi, about 1000 ft., Oct. 1911, *A. F. G. Kerr 2207* (12, K, P); banks of Meh Ping near Raheng, growing among grass in open Dipterocarpus jungle, Dec. 1908, *A. F. Kerr 503* (12, K); Raheng, *Mrs. Malcolm Smith's collector* (12, K); Dang kanai, Kan-buri, 100 m, deciduous forest, May 1927, *A. Marcan 2163* (12, K); Cape Liant, seashore, *H. J. Murton 39* (12, K); Ranawng, in open grassy grounds on sandy soil, 10 m, Jan. 1929, *A. F. G. Kerr 16596* (12, K).

MALAY PENINSULA, state of Trengganu, Tok Tambi, K. Trengganu, on sandy soil, May 1925, *R. E. Holtum 17369* (ta, Sing); id., Kretay Plant., Sept. 1919, *A. Vesterdal 246* (ta, C); id., Kuala Kemaman, July 1932, *E. J. H. Corner* (ta, Sing); Kelantan, seashores, Febr. 1917, *H. N. Ridley* (K); Singapore, Changi, 1890, *H. N. Ridley* (ta, Sing); id., id., 1891, *H. N. Ridley 5650* (ta, Sing); id., Kranji, Oct. 1890, *H. N. Ridley* (ta, Calc).

PHILIPPINE ISLANDS, Febr. 1906, *Loher 6578* (ta, B, K, M); *Loher 4177* (K); *Micholitz* (K); Luzon, prov. Ilocos Norte, Burgos, Febr.—March 1917, *M. Ramos, Bur. of Sc. 27262* (12a, B, NH); id., Bangui, Febr.—March 1917, *M. Ramos, Bur. of Sc. 27435*, type of var. *philippinensis* v. *Ooststr.* (2, Bog, Calc, L, P, Sing); prov. Cagayan, March 1909, *E. Bacani, Forest. Bur. 16692* (1, Bog, L); id., Enrile, Apr. 1927, *Jos. Clemens 17543* (12a, Bog); Bontoc subprovince, Apr. 1913, *M. Vanoverbergh 3094* (t, P); id., Mt. Masapild, March 1920, *M. Ramos, G. Edaña, Bur. of Sc. 37855* (ta, Calc, Sing); id., id., March 1920, *M. Ramos, G. Edaña, Bur. of Sc. 37935* (12a, L); id., Jan. 1909, *H. M. Curran, M. L. Merritt, Forest. Bur. 16536* (1, B); prov. Bengued, Oct.—Nov. 1905, *Merrill 4397* (K); prov. Nueva Vizcaya, *R. C.*

Mc. Gregor, Bur. of Sc. 20189 (P); prov. Isabela, May 1909, *M. Ramos, Bur. of Sc. 8125* (12, L); prov. Pangasinan, Apr.—June 1914, *F. Otones, Bur. of Sc. 17954* (1—ta, Calc, Sing); id., Dec. 1907, *H. M. Curran, M. L. Merritt, Forestr. Bur. 8403* (2, Br); prov. Zambales, Mt. Tapolao, Nov.—Dec. 1924, *M. Ramos, G. Edaño, Bur. of Sc. 44736* (12a, Bog, K, L, NH, P, S, Sing); id., Dec. 1907, *M. Ramos, Bur. of Sc. 5049* (12, B); prov. Bulacan, Angat, Sept. 1913, *M. Ramos 21677* (t, L, NH); Rizal prov., Montalban, Jan. 1912, *A. Loher 12736* (1, M); Manila, Laguna de Bay, Jan. 1853, *N. J. Andersson* (t, S); id., *Barthe* (2, P); id., *Calléry* (P); id., Balic-balic, Sept. 1892, *A. Loher 4178* (t, Calc, K, M); id., Oct. 1914, *Merrill, Spec. Blancoanae 137* (1, B, Bog, Calc, K, L, NH, P); Semerara Island, June 1905, *E. D. Merrill 4159* (12a, B, Calc, K, L, P); Panay, Antique Prov., May—Aug. 1918, *R. C. Mc. Gregor, Bur. of Sc. 32246* (K, P); Mindanao, prov. Davao, Santa Cruz, June 1905, *R. S. Williams 2932* (K); id., Davao, March 1904, *E. B. Copeland 391* (12a, K).

NETHERLANDS INDIES, *Sumatra, Horsfield*, type of *E. gracillimus* Miq. (12, NH); Govt. Atjeh and Dependencies, Gajoe and Alas Districts, Boerdjoempa, Gajo Loeas, Apr. 1904, *Pringgo Atmodjo (exp. van Daalen) 250* (12, Bog, L); id., id., Boersangir, Gajo Loeas, Apr. 1904, *Pringgo Atmodjo (exp. van Daalen) 242* (12, Bog, L, P); Govt. Sumatra's East Coast, Sibolangit, Karo Uplands, near Djinaboen, w. s. w. of Kabandjahé, pasture, ca. 1000 m, March 1919, *Galoengi 127* (12, Bog); id., Karo Uplands, near Tandjoeng, w. s. w. of Sinaboeng, ca. 775 m, May 1922, *J. A. Lörzing 8964* (12, Bog); id., Karo Uplands, ca. 1350 m, Nov. 1921, *J. A. Lörzing 8561* (12, Bog); id., Karo Uplands near Kabandjahé, dry lawns, very rare, Jan. 1919, *J. A. Lörzing 6174* (12, Bog); id., Prapat, lawns, ca. 915 m, May 1923, *J. A. Lörzing 9860* (12, Bog); id., Prapat, Apr. 1931, *Frey-Wyssling 55* (22) (12, Bog); Res. Tapanoeli, Lake Toba, near Sipablangit, Aug. 1881, *Haagen* (12, M); Habinsaran Uplands e. s. e. of Lake Toba, bare places in lawns, ca. 1300 m, May 1919, *J. A. Lörzing 6521* (12, Bog, L); Central Habinsaran, near Parsoboeran, Nov. 1920, *J. A. Lörzing 7885* (12, Bog); id., between Piso-Piso and Lake Toba near Tongging, almost bare slopes, ca. 950 m, Nov. 1920, *J. A. Lörzing 8095* (12, Bog, L); Res. Riouw and Dependencies, Anambas Islands, Letong, Temaja, sealevel, prostrate on sand, Apr. 1928, *M. R. Henderson 20511* (1, Bog, K, Sing); id., Padang near Letong, Temaja, sealevel, prostrate on sand, Apr. 1928, *M. R. Henderson 20340* (1, Bog, Sing). Java, Res. Batavia, Gedeh(?), *Blume*, type of *E. javanicus* Blume (13, L); Res. Soerabaja, s. w. of Sidajoe, dry lawns, limestone hill, rather common, 50—100 m, Sept. 1923, *Dorgelo 2113* (1, Bog); Res. Besoeki, Soemberwaroe, Apr. 1845, *Zollinger 2794* (t, B, Bog, NH, P); Res. Madoera, Bangkalan, limestone hill near Djatih-barat, rather common, May 1917, *Bremekamp* (1, Bog); id., Bangkalan, stony hills, many specimens, 10—50 m, Febr. 1914, *C. A. Backer 18977* (1, Bog); id., id., stony places, rocks, 25 m, Febr. 1915, *C. A. Backer 19154* (1, Bog); Ketapang-daja, fissures of rocks, 25 m, March 1915, *C. A. Backer 19843* (1, Bog); hills south of Tamberoe, sunny, rocky places, March 1915, *C. A. Backer 20496* (1, Bog); Tamberoe, rocks, July 1916, *C. A. Backer 21204* (1, Bog); hills east of Tamberoe, rocky slopes, March 1915, *C. A. Backer 20548* (1, Bog); stony hills north of Soemenep, rocks, 50 m, March 1915, *C. A. Backer 20739* (1, Bog); hills north-east of Batangbatang-daja, rocks, 50 m, March 1915, *C. A. Backer 20871* (1, Bog); hills west of Soemenep, rocks 50—100 m, March 1915, *C. A. Backer 20923* (1, Bog); hills near Soemenep, common on arid, sunny, rocky places, July 1916, *C. A. Backer 21268* (1, Bog). Lesser Soenda Islands. Timor,

Spanoghe, *E. pseudo-incanus* *Spanoghe* (t, Bog, L, U); id., *Spanoghe*, *E. lanceaefolius* *Spanoghe* (t—12, L); id., Kesser, *Treub* 139 (13, Bog); South Middle Timor, 880 m, limestone rocks, sunny places, Jan. 1929, *M. E. Walsh* 48 (12, Bog); id., Niki Niki, 750 m, May 1929, *M. E. Walsh* 463 (12, Bog). Moluccas, *Reinwardt* 151 (13, Bog, L); *Herb. W. Roxburgh* 2477 (12, Br); Boeroe, between Wai Eken and Kaboet, marshy along between limestone hills, Sept. 1921, *L. J. Toxopeus* 519 (12, Bog); Ceram, 1857—61. *W. H. de Vriese* (12, L); Ambon, 1900, *Boerlage* 678 (12, Bog); July—Nov. 1913, *B. Robinson* 1820 (12, Bog, K, L); June 1876, *Teysmann* (12, Bog, L); *d'Urville* (12, P); lawns near beach, *Binnendijk* (12, Bog); Latoea, July 1900, *Boerlage* 482 (12, Bog); Leitimor, Apr. 1837, *Doleschall* 156 (12, V); Benteng, Apr. 1918, *Kornassi* 1096 (12, Bog, L, U); Tanahmérá, May 1929, *A. Rant* 103 (12, Bog); hills behind Sojaweg, common, May 1929, *A. Rant* 334 (12, Bog, K, L); 1893, *Treub* (12, Bog, L, U); hills, along-along, 100 m, Apr. 1926, *W. M. Docters van Leeuwen* 8668 (12, Bog, L). Saparoea, *Teysmann* 5078 *H. B.* (12, Bog, L, U); *Reinwardt* (12, L). Key Islands, *Jaheri* (12, Bog). New Guinea, N. New Guinea, Hollandia near Humboldt Bay, 50 m, rocky hill, lawn, common, Apr. 1910, *K. Gjellerup* 72 (12, Bog); N. New Guinea, Cycloop Mts, east. slope, hill, *K. Gjellerup* 498 (12, Bog); Isl. off south coast of New Guinea, Sept. 1849, *Mc. Gillivray*, *Voyage Rattlesnake* (12, Calc, K).

N. E. NEW GUINEA, stony grassy places near Bielau, Finschhafen, March 1889, *F. Hellwig* 430 (12, B, K).

BISMARCK ARCHIPELAGO, New Britannia, Gazelle Penins., *Naumann B.* 516 (14, B); New Mecklenburg, Nusa, *Warburg* 21277 (12, B); Namatanai, Jan. 1910, *Peckel* (12, B).

AUSTRALIA, without precise locality, *Bailey* (12, B); 1770, *Banks and Solander* (12, B, P); *Robert Brown* (12, P); *Cunningham* (K); *J. C. Dalton* (12, L); Dec. 1847, *Mc. Gillivray*, *Voyage of Rattlesnake* (12, K); *Gulliver* (12, P); 1820, *Cunningham* 116, 3rd voyage of *Mermaid* (12, NH); *G. F. Hill* 162, 281 (14, B); *King* (14, L); N. W. Coast, *de Bouley* (12, NH); N. Coast, *Brown* (12, NH); id., *Brown* (15, NH); subtrop. New Holland, 1846, *T. L. Mitchell* 453 (12, K); N. E. Australia, *Cunningham* 93, 149 (12, NH).

WEST AUSTRALIA, Kimberley Division, *v. Mueller* (12, P); id., Prince Regents River, June 1921, *C. A. Gardner* 848 (12, B); id., Derby, Nov. 1914, *C. H. Ostenfeld* 1169 (12, C); id., Roebuck Bay, 1889—91, *I. W. O. Tepper* 71 (12, B); id., Broome, July 1911, *E. Mjöberg* 115 (12, S); North West Division, between the Ashburton and Yule Rivers, *E. Clement* (14, K); id., Dewitt, Springstation, 55 km. s. of Roebourne, Apr. 1901, *L. Diels* 2797, type of var. *villosicalyx v. Ooststr.* (14, B); id., Dewitt, Port Walcott, 1868, *v. Mueller* (14, K).

SOUTH AUSTRALIA, Northern Territory, *Schomburgk* (12, Br); Arnhem Land, Apr.—June 1928, *H. Basedow* 76 (12a, K); id., *v. Mueller* (12, K); Raffles Bay, 1841, *Le Guillou* (12, P); Port Essington, *Armstrong* 594 (12, K); id., *Cunningham* (12, K); id., Apr. 1818, *Capt. King's 1st Voy.* 273 (12, NH); near Port Darwin, Jan. 1914, *C. E. F. Allen* 53 (12—15, K); id., *Holtze* 157 (12, Len); id., Aug. 1869, *F. Schultz* 530 (12, B, K, Len); id., *F. Schultz* 848 (K); Fitzmaurice Riv., *v. Mueller* (?) (K); Sea Range, Dec. 1855, *v. Mueller* (12, K); Upper Victoria River, *v. Mueller* (12, K); Finke River, *v. Mueller* (14, NH); Hermannsburg on the Finke River, 1906—08, *Strehlow* 139 (14, B); id., 1906—08, *Strehlow* 202 (14, B); between Alice Spring and Charlotte Waters, *v. Mueller* (14, NH); Central

District, 1903, *H. Basedow* 343, 442 (14, B); Centre of S. Australia, *Gosse's Exped. 9* (comm. *R. Schomburgk*) (14, K); *id.* 19 (12, K); South Australia, *v. Mueller* (14, P); vicin. of Lake Eyre, *Andrews* 28, 59, comm. *R. Schomburgk* (12, K).

QUEENSLAND, 1802—05, *R. Brown* 2782 (12, K, NH); *id.*, *R. Brown* 2785, type of *E. argenteus* R. Br. (15, NH); *id.*, *R. Brown* 2784 (15, K, NH); *Sir T. L. Mitchell* (12, NH); N. Queensland, *N. Michael* 583 (12, Bog); S. Queensland, *Warburg* 18679 (12, B); Sandy Cape and Port Bowen, *Mc. Gillivray*, *H. M. S. Fly*, 18 (12, NH); Alice River, *Mjöberg* (15, S); Redcliffe, Dec. 1881, *J. W. Statter* (12, NH); Springsure, *v. Mueller* (12, P); Prince of Wales Island, Aug. 1886, *T. L. Lea* (12, NH); Cape York Penins. exped., Dec. 1873, *W. Hann* 178 (12, K); Sources of the South Coen River, 1891, *Stephen Johnson* (12, Bog, Calc, Sing); Lizard Island, March 1861, *Drummond* 77 (12, V); *id.*, March 1861, *Mc. Gillivray* 77 (12, NH); Cooktown, *Warburg* 18695 (12, B); Cairns, *G. Podenzana* (12, NH); *id.*, *Warburg* 18696 (12, B); Rockingham Bay, *v. Mueller* (12, P); Townsville, *Warburg* 18697 (12, B); diff. localities, Keppel Bay, Broad Sound, Northumberland, *R. Brown* 2783, type of *E. decumbens* R. Br. (12, NH); Palmerston, June 1886, *T. L. Lea* (12, NH); Rockhampton, *v. Mueller* (12, P); Port Curtis, Nov. 1874, *Mc. Gillivray*, *Voyage of Rattlesnake B 61, B 84* (12, K); Moreton Bay, *v. Mueller* (15, Calc); Brisbane River, *Cunningham* 187 (12, NH).

NEW SOUTH WALES, *Banks and Solander* (12, NH); Darling River, *Dallachy and Goodwin* (12, NH); Macintyre River, *W. Pamplin* (12, K); Macquarie River, 1846, *T. L. Mitchell* 25 (12, K); Warrego, *v. Mueller* (P).

NEW CALEDONIA, *Baudouin* 682 (12, P); *E. Caldwell* (K); 1861, *Deplanche* (12, K); *Elom* (12, Br); *Pancher* (12, Bog, K, Len, NH); Southern part of the island, 1902—03, *A. Le Rat* (12, B); east of Port de France, 1868—70, *Balansa* 1673 (12, K, Len); Dombéa, *Bernier* 756 (12, Bog, K, Len); Nouméa, *Herb. Le Jolis* (12, Boiss, Len); Kuakué, in undergrowth of Casuarina woods, May 1914, *R. H. Compton* 932 (12, NH); Wayap or Balade, *Vieillard* 1018 (12, P); Gatope, *Vieillard* 3027 (12, K, P); Ile des Pins, 1874—76, *R. Germain* (12, K).

FIJI ISLANDS, *U. S. Exploring Exped. Capt. Wilkes* (12, US); 1877—78, *J. Horne* 675 (12, K).

Vernacular names: Ojitos azules (Mexico, ex *Standley*, Fl. Panama l.c.); Ojitos azulitos (Mexico, Nuevo Leon, *W. E. Safford* 1214a); Grama de Castillo, Rastrera (Mexico, Nayarit, *Ynes Mexia* 723); Oreja de ratón (El Salvador, *Salv. Calderón* 982); Erirao (Abyssinia, *Schimper*); Managaninawamil (Tanganyika Terr., *Davis* 133); Uthúko (Brit. E. Afr., *Lindblom*); Bird's eye, Speedwell (Rustenburg Distr., *Olive Nation* 68); Handrinamboa (Madagascar, Ampolaka (S. Madag.), *Decary* s.n.); Vistnu clandi (*Rheede*, Hortus Malab.); Visnu-kranti (Sinhalese) (ex *Trimen* l.c.); Vichnukiránti (Tamil) (ex *Trimen* l.c.); Vishnukránta, Shankaveli (ex *Cooke*,

Bombay Fl. l.c.); Wisnugarandi (Ceylon, ex *Burman*, Thes.); *Vittella karandi* (Brit. India, *Leschenault* 121); Mimli, Nilkanti (Brit. India, N. W. Prov., *Mrs. A. S. Bell* 763, 145); *Marubasagao-karakusa* (Formosa, *Yamamoto*).

Use: See General Part, p. 14.

2. *Evolvulus tenuis* Mart. ex Choisy in Mém. Soc. Phys. Genève (1837) p. 78; id., Conv. Rar. (1838) p. 156; id. in DC. Prodr. IX (1845) p. 448; Meissn. in Mart. Fl. Bras. VII (1869) p. 346.

Type: *Martius*, Brazil, Rio Doce.

Perennial or suffruticose. Stems erect or ascending, to 50 cm high, few- or much-branched with erecto-patent branches. Indument of stems and leaves variable, generally consisting of short hairs, sparse to dense. Leaves variable in form and size, from broad-ovate to lanceolate or oblong. Midrib and lateral nerves generally prominent beneath, tertiary nervation more or less distinct, reticulate, pale. Peduncles shorter than, as long as or exceeding the leaves, filiform, pilose like the stems, several-, few- or 1-flowered; pedicels generally longer than the sepals, to 8 (—12) mm; bracteoles subulate, about 1.5 mm, often approximate at the top of the peduncle. Sepals lanceolate, acute or acuminate, 2.5—3 mm long. Corolla blue or white, rotate, the limb about 10 mm in diam., superficially lobed. Filaments about twice as long as the oblong anthers. Ovary globose, glabrous.

1. Leaves orbicular, broad-ovate, ovate or ovate-oblong, obtuse or acutish at the apex, rounded or slightly cordate at the base. A. ssp. *eu-tenuis*.
- 1.* Leaves narrower, lanceolate, oblong to linear-oblong.
 2. Broadest part of the leaves below the middle.
 3. Leaves 20—45 × 8—16 mm, almost glabrous, more or less pilose or tomentose. B. ssp. *longifolius*.
 - 3.* Leaves 8—18 (—20) × 2—4 (—6) mm, sparsely pilose or almost glabrous. D. ssp. *yucatanensis*.
- 2.* Broadest part of the leaves in or near the middle. Size of the leaves variable; indumentum dense, tomentose. C. ssp. *sericatus*.

A. ssp. eu-tenuis v. Ooststr. n. ssp.

Evolvulus villosus auct. non Ruiz et Pav.; Nees et Mart. in Nova Acta Nat. Cur. XI, pars I (1823) p. 80.

E. tenuis Mart. ex Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 78; id., Conv. Rar. (1838) p. 156; id. in DC. Prodr. IX (1845) p. 448; Meissn. in Mart. Fl. Bras. VII (1869) p. 346.

E. tenuis Mart. var. *obtusatus* Meissn. l.c. p. 346, t. 122, fig. II, excl. specim. 260 a cl. Funck lecta.

Type: *Martius*, Brazil, Rio Doce.

Leaves ovate or ovate-oblong, rarely broad-ovate, obtuse and often mucronulate at the apex, or acutish; rounded or slightly cordate at the base, the larger ones 12—35 mm long, 6—20 mm broad, 1.5—2 times as long as broad; the upper leaves gradually smaller. Stems and leaves more or less densely pilose, the hairs of the stems loosely appressed, with occasionally a few patent ones; those of the leaves strongly appressed, the upper surface sometime glabrous. Midrib and 4—5 pairs of lateral nerves prominent beneath; tertiary nervation reticulate, more or less distinct, pale.

Distribution: Brazil, Ceará, Minas Geraes.

BRAZIL, Ceará, near Icó, Aug. 1838, *Gardner* (NH); Rio Doce, 1827, *Martius*, type (K). Minas Geraes, between Valos and Tamburil, *Prince zu Wied-Neuwied* (Br, G); without precise locality, *A. de St.-Hilaire B*¹, 1479 (P).

Meissner who did not know the type of *E. tenuis* Mart. described a var. *obtusatus*, based on specimens collected by the Prince zu Wied-Neuwied between Valos and Tamburil, Minas Geraes, Brazil, and on others collected by Funck (260) near Cumana, Venezuela. The former totally agree with the type of *E. tenuis* Mart. in the Kew Herbarium, the latter belong to the ssp. *longifolius* (Choisy). Other specimens which were also collected by the Prince zu Wied-Neuwied in the same locality, were incorrectly ranged under *E. villosus* by Nees and Martius and again by Meissner. They fully correspond with the above-mentioned specimens.

var. 1. Sellowii Meissn. in Mart. Fl. Bras. VII (1869) p. 346.

Type: *Sellow 1593*, Brazil, Rio de Janeiro, near Sumidoro.

This var. has the habit of the typical form, the whole plant is however densely fulvous to ferruginous tomentose, on the stems there are also longer spreading hairs. Leaf shape as in the typical form.

Distribution: Brazil, Rio de Janeiro.

BRAZIL, Rio de Janeiro, near Sumidoro, *Sellow 1593*, type (B).

A specimen collected by Ule (452), Brazil, Goyaz, Serra Dourada (P, R), probably belongs here. The indumentum is much like that of the *Sellow* plant, the leaves are narrower, lanceolate or narrow-ovate-lanceolate, 18—28 mm long and 5—9 mm broad, 2.5—3.5 times as long as broad; moreover the leaves are more remote.

var. 2. cinereus Chod. et Hassl. in Bull. Herb. Boiss. 2. sér., V (1905) p. 684.

Type: *E. Hassler 6147*, Paraguay, hills near Tobaty.

Leaves ovate, ovate-oblong or broad-ovate to nearly orbicular, the upper ones often narrower, ovate-lanceolate, acute, obtusish or broadly rounded at the apex, mucronulate, rounded at the base or subcordate, 9—20 mm long, 3.5—16 mm broad, (1—) 1.5—2.5 times as long as broad, densely short-villose or almost tomentose on both sides with loosely appressed light brown or grey hairs, often longer hairs along the leaf-margin. Midrib and 2—4 pairs of lateral nerves prominent beneath in the older, glabrescent leaves, pale; reticulate nervation more or less visible. Stems covered with short loosely appressed hairs, mixed with long patent ones.

Distribution: Paraguay.

PARAGUAY, 1914, *Chodat 287* (Boiss); on loma, 1914, *Chodat 820* (Boiss); *von Bredow* (B); Gran Chaco, *Hagenbeck* (B); lomas, Acahay, 1914, *Chodat 278* (Boiss); Cordillera de Altos, campo, fl. Febr., *Hassler 3878* (K); id., Cerro Chochi, Aug. 1902, *K. Fiebrig 35* (B, K, L, M); S. Bernardino, 1914, *Chodat 285* (Boiss); S. Bernardino, Aug. 1896, *C. Bettfreund 1200*

(B); near lake Ypacaray, May 1913, *E. Hassler 12161* (B, C, K, L, NH, US); id., in campo, fl. Aug., *E. Hassler 3182* (B, K, NH, P); near Fort Lopez, in thicket, *E. Hassler 604* (Boiss, K, NY, P); hills near Tobaty, "Cerros de Tobaty", between stones, Sept. 1900, *E. Hassler 6147*, type (B, Boiss, K, NH, P); Caacupe—Tobaty, 1914, *Chodat 312, 351* (Boiss); Pirayu, uncultivated hills, Nov. 1880, *B. Balansa 3228* (DC, P); Cordillera de Peribebuy, rocky clearings, 1876, *B. Balansa 1168* (P); id., dry pastures, Dec. 1875, *B. Balansa 1044* (P); Cerro Pelado, March 1932, *P. Jorgensen 4862* (U).

B. ssp. longifolius (Choisy) v. Ooststr. n. comb.

Evolvulus longifolius Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 81; id. Conv. Rar. (1838) p. 159; id. in DC. Prodr. IX (1845) p. 449; Knuth in Fedde, Rept. Spec. Nov. Beih. XLIII (1928) p. 581.

E. columbianus Meissn. in Mart. Fl. Bras. VII (1869) p. 347; Boldingh, Fl. Dutch W. Ind. Isl. II (1914) p. 87; Hall. f. in Meded. Rijks Herb. Leiden n. 46 (1922) p. 13; Knuth l.c. p. 581.

E. tenuis Mart. var. *obtusatus* Meissn. in Mart. Fl. Bras. VII (1869) p. 346, quoad specim. a cl. Funck lecta; non t. 122, fig. II; Knuth l.c. p. 582.

E. bocasanus Britton in Bull. Torr. Bot. Club XLVIII (1921) p. 337; Britton and Wilson, Bot. Porto Rico etc. VI, 1 (1925) p. 105.

E. columbianus Meissn. var. *incana* Hall. f. in Meded. Rijks Herb. Leiden n. 46 (1922) p. 13.

E. Ottonis Klotzsch in sched., ex Knuth l.c. p. 581.

Type: *Vargas 94*, Venezuela, Federal Distr., near Caracas.

Leaves lanceolate, the broadest part always below the middle, attenuate towards the apex, acute or obtusish, mucronulate, sometimes slightly falcate; rounded, rarely acutish at the base, the larger ones 20—45 mm long, 8—16 mm broad, 2.5—4 times as long as broad, very rarely shorter, the upper leaves gradually diminishing in size. Pubescence variable, stems and leaves almost glabrous, more or less pilose to almost tomentose, hairs of greyish colour, soft, appressed. Midrib and 3—5 pairs of lateral nerves prominent beneath, tertiary reticulate nervation more or less distinct, occasionally obsolete or covered by the indumentum.

Peduncles filiform, shorter than or exceeding the leaves, 1—several-flowered; bracteoles often approximate.

Distribution: West Indies, Colombia, Venezuela, Bolivia.

HAITI, Plaine Cul-de-Sac, Port-au-Prince, in gardens, cultivated, Nov. 1927, *E. L. Ekman* H 9271 (S, US).

LESSER ANTILLES, Virgin Islands, St. Thomas, Febr. 1924, *G. S. Miller* (US); id., Louisen Höj, cultivated, March 1923, *N. L. Britton*, *E. G. Britton*, *J. F. Kemp* 7 (K). St. Kitts, collector (?) (G). Guadeloupe, 1892, *Père Duss* 2470 (US); Port Louis, dry, sandy places, *Père Duss* 491 (P); Ste. Anne, fl. Jan., *Duchassaing* (B). Trinidad, *Crueger* (G); *Botanic Gardens Herb. Trinidad* 1027, 2971 (US); Island of Chacachacare, Dec. 1903, *B. Othmer* (M); id., shaded hillside, type of *E. bocasanus* Britton (US); Patos Island, June 1932, *W. E. Broadway* 8911 (NH, S). Curaçao, *Boldingh* 4997, 5007 (U); Christoffelbaai, Jan. 1885, *W. F. R. Suringar* (L).

COLOMBIA, Santa Marta, *von Rohr* 11 (C, NH); id., 200 ft., fl. Dec., *H. H. Smith* 538 (B, Br, K, L, Len, NH, P, S, U, US); id., 500 ft., fl. Apr., *H. H. Smith* 1560 (K); id., alt. seashore, fl. Nov., *H. H. Smith* 1561 (B, Br, K, L, Len, NH, P, S, U, US); id., Oct. 1926, *A. Schultze* 633 (B); Santander, Rio Suratá valley between El Jaboncillo and Suratá, 1500—1800 m, dry hillside, Jan. 1927, *E. P. Killip*, *A. C. Smith* 16436 (US); El Valle, Dagua Valley, Dagua, rocky bank, 700—900 m, May 1927, *E. P. Killip* 5426 (US).

VENEZUELA, 1913, *I. Boldingh* 3994 (U); *Korthals* (L); *Preuss* 1483 (B); vicin. of Cristobal Colon, hills, Jan.—Febr. 1923, *W. E. Broadway* 238 (US). Zulia, vic. of Perijá, 1918, *E. Tejera* 112 (US). Trujillo, Aug. 1923, *E. P. de Bellard* (US). Carabobo, Valencia, Dec. 1891, *Warming* (C, L); id., *Moritz* 425 (B); id., in pastures, 400—800 m, Dec. 1919, *H. Pittier* 8646 (US). Federal Distr., Caracas, valley to Valle, March 1854, *Gollmer* (B); Caracas, *van Lansberge* 273 (L, S?, specimens without collector's name, numbered 273, identical with the specimens in the Leyden herbarium); id., fl. Aug., *Moritz* 499, type of *E. columbianus* Meissn. (B, Len, NH); id., Apr. 1840, *Otto* 674, *E. Ottonis* Klotzsch in sched. (B); id., 1829, *Vargas* 94, type of *E. longifolius* Choisy (DC); id. Jan., Febr. 1854, Sept. 1855, *Fendler* 948 (G, K); id., 1864, *de Grosourdy* (P); id., 1826, *Plée* 99, 101 (P); lower Catuche wood above Caracas, among bushes, June 1917, *H. Pittier* 7126 (US); id., Oct. 1917, *H. Pittier* 7536 (US); id. clear places in woods, Aug. 1921, *H. Pittier* 9647 (P, US). Miranda, near Colonia Tovar, *Fendler* 2066 β (G, K); El Valle, June 1891, *Eggers* 13129 (C, L, US). Bermudez, Cumana, 1843, *Funck* 260 (K, Len, NH, P); Carúpano, 1913, *I. Boldingh* (U).

BOLIVIA, Santa Cruz, Cordillera, El Limón, Febr. 1916, *J. Steinbach* (*Hb. M. Lillo*) 1787 (B); "Monte" near Yuquirenda, Pilcomayo, 460 m, Nov. 1910, *Th. Herzog* 1129, type of *E. columbianus* Meissn. var. *incana* Hall. f. (B, L, S).

Vernacular name: Capricieuse (Haïti, *Ekman*); Yerba plata (Curaçao, *Suringar*).

The type of *E. longifolius* Choisy is a very slightly pilose specimen, just as the type of *E. columbianus* Meissn. For a discussion of *E. tenuis* Mart. var. *obtusatus* Meissn. see under ssp. *eu-tenuis*. *E. bocasanus* Britton is based on a rather tomentose specimen with distinct prominent reticulate nervules. Some specimens of the above ssp., for example Broadway 238, approach the ssp. *sericatus* and of this especially the specimen Padre Cornelio 97. Th. Herzog 1129, the type of *E. columbianus* Meissn. var. *incana* Hall. f., has the stems and leaves covered with a dense tomentum mixed with spreading hairs.

C. ssp. sericatus (House) v. Ooststr. n. comb.

? *Evolvulus albiflorus* Schlechtend. in *Linnaea* XXVI (1854) p. 654.

E. sericatus House in *Torreyia* VII (1907) p. 61.

Type: *E. Langlassé 12*, Colombia, Papagayeras.

Leaves oblong, narrow-oblong or linear-oblong, occasionally elliptic, the broadest part in or near the middle; very rarely linear-lanceolate, and approaching the form of those of the ssp. *longifolius*. Pubescence always dense, tomentose, especially on the stems and the lower surface of the leaves, colour of the indumentum greyish to fulvous. Midrib and 3—5 pairs of lateral nerves more or less visible in large leaves, tertiary nervation obsolete.

Distribution: Colombia, Venezuela, Trinidad.

COLOMBIA, Papagayeros, 800 m, rocks, Nov. 1899, *E. Langlassé 12*, type (B, Del, K, P, US); Curucuti, 2000 ft., fl. Jan., *Wagener 325*, type of *E. albiflorus* Schlechtend. (not seen); East Cordillera, along roadsides, ca. 2200 m, July 1916, *M. T. Dawe 329* (K, US); Cauca, Andes near Cali, Middle Rio Dagua, fl. March—July, *Lehmann 5105* (B, K, S, US); Dagua, *Lehmann B. T. 1168* (L, NY); El Valle, Espinal, below Dagua, Dagua Valley, open arid slopes, 600—900 m, Sept. 1922, *E. P. Killip, T. E. Hazen 11110* (US); Centr. Andes of Popayan, fl. March—June, *Lehmann 5102* (K); Cundinamarca, Bogota, *Triana 3791* (NH); Melgar, open slope, 500—600 m, Dec. 1917, *F. W. Pennell 2876* (F, US); Fusagasuga to Pandi, open loam, 1000—1300 m, Nov. 1917, *F. W. Pennell 2723* (US); "Monte Redondo", to Quetame, open slope, 1400—1500 m, Sept. 1917, *F. W. Pennell 1865* (NY, US).

VENEZUELA, *Engels* (Len); *Moritz* 36 (NH, with *E. alsinoides* and *E. glaber*); June 1917, *H. M. Curran* and *M. Haman* 844 (US); Merida, Lagunillas, savannas, 1000 m, Oct. 1921, *Alfr. Jahn* 655 (US); Lara, near Barquisimeto, Oct. 1926, *J. Saer* 304 (NY, US); Federal Distr., La Guayra, fl. May, *Moritz* 1727 (K); id., Oct. 1842, *Funck* 373 (Len); id., 1843, *Funck* 464 (P); near Guarenas, Dec. 1854, *Birschell* (K); Miranda, Aragua, La Trinidad de Maracay, 440 m, Jan.—Febr. 1913, *H. Pittier* 5787 (B, NY, US); Maracay, C. *Vogl* 93 and 94 (M); id., 1927, *Padre Cornelio* 97 (US).

TRINIDAD, Monos Island, wooded hillside, Apr. 1920, *N. L. Britton*, *T. E. Hazen* 1695 (US); Chacachacare Island, rocky hillside, March 1920, *N. L. Britton* 503 (K, US).

Vernacular name: Santa Lucia (Venezuela, *Alfr. Jahn*).

The form and size of the leaves of this ssp. are rather variable; the oblong and narrow-oblong leaves as occur in the type and several other specimens have a length of 10—20 mm and a breadth of 5—8 mm, they are 2—3.5 times as long as broad. Linear-oblong leaves attain a length of 30 mm or more and are to 5.5 times as long as broad (e.g. *Vogl* 93). Specimens with very small leaves, 8—12 mm long and 2.5—6 mm broad are *Pennell* 1865, 2876, *Dawe* 329 and *Jahn* 655. Transitional forms to the ssp. *longifolius* occur, e.g. the numbers *Padre Cornelio* 97 and *Curran & Haman* 844. A specimen from Trinidad, *Britton* 503 probably also belongs here. It has the leaves elliptic, 15—16 mm long, 7—8 mm broad. *Britton* and *Hazen* 1695 much resembles it. *Schlechtendal's E. albiflorus* presumably belongs here, but I did not see the type-specimen.

D. ssp. *yucatanensis* v. *Ooststr. n. ssp* ¹⁾.

Type: *G. F. Gaumer* 1969, Mexico, Yucatan, Chichankanab.

Leaves lanceolate to linear-lanceolate or occasionally linear-oblong, acute or acutish at the apex and at the base, sometimes rounded at the base, 8—18 (—20) mm long, 2.5—4 (—6) mm broad, (3—) 4—4.5 times as long as broad, sparsely pilose on

¹⁾ *E. tenuis* Mart. ex *Choisy* ssp. *yucatanensis* v. *Ooststr. n. ssp.* Folia lanceolata vel lineari-lanceolata vel interdum lineari-oblonga, apice et basi acuta vel acutiuscula, interdum basi rotundata, 8—18 (—20) mm longa, 2.5

both sides or nearly glabrous. Stems appressed-pilose. Midrib and lateral nerves rather visible beneath, pale; reticulate nervation more or less distinct. Peduncles filiform, shorter or longer than the leaves.

Distribution: Mexico, Yucatan.

MEXICO, Yucatan, 1895, *G. F. Gaumer* 805 (C, K, NH, P, US); 1917—1921, *G. F. Gaumer* 24216 (C, Gray, NH, P, US); 1917—1921, *G. F. Gaumer* 24396 (US); Buena Vista, Xbac, *G. F. Gaumer* 1067 (C, K, NH, P, US); Chichankanab, *G. F. Gaumer* 1969, type (C, K, NH, P, US); id., *G. F. Gaumer* 2230 (Gray, S).

3. *Evolvulus linarioides* Meissn. in Mart. Fl. Bras. VII (1869) p. 343.

Type: *Sellow*, Brazil, Minas Geraes, near Inficionado.

Perennial. Stems several from a woody base, caespitose, prostrate or ascending, terete, ramified, 25—40 cm long, the young parts with appressed hairs, soon glabrous. Leaves sessile or very shortly petioled, linear or linear-oblong, obtuse and mucronulate or acutish at the apex, acutish at the base, quite glabrous on both sides, or very sparsely appressed-pilose, rather firm in texture, 10—15 mm long, 2—3 mm broad; midrib prominent beneath, other nerves obsolete. Peduncles rather stout, erecto-patent, generally exceeding the leaves, sparsely appressed-pilose like the stems or glabrous, generally 1-flowered, 7—25 mm long; pedicels long, filiform, much longer than the calyx, 10—15 (—20) mm, reflexed at first, then erect, finally reflexed again; bracteoles linear, 4—6 mm long, occasionally shorter, glabrous. Sepals equal, lanceolate, sharp-acuminate, 3—4 mm long, always ciliate at the margin, further sparsely pilose or glabrous. Corolla blue or white, rotate, the tube short, the limb subentire, 10—12 mm in diam., with sericeous bands outside. Filaments 1—1½ times as long as the linear anthers. Ovary ovoid, glabrous. Capsule

—4 (—6) mm lata, (3—) 4—4.5-plo longiora quam lata, utrinque sparse pilosa vel subglabra. Caules appresse pilosi. Nervus medianus et nervi laterales subtus plus minusve distincti, pallidi; nervatio ultima reticulata plus minusve distincta. Pedunculi filiformes quam foliis breviores vel longiores. Type: *G. F. Gaumer* 1969, Mexico, Yucatan, Chichankanab (US).

subglobose, 3 mm high, 4-valved, 4—1-seeded. Seeds black, smooth.

Distribution: Brazil (Minas Geraes), Paraguay.

BRAZIL, Minas Geraes, near Inficionado, fl. Dec., Sellow, type (B); Serra da Moeda, Sellow 1592 (B).

PARAGUAY, Gran Chaco, bank of Paraguay River, 23°20'—23°30' S., Oct. 1903, E. Hassler 2402 (B, Boiss, P).

4. *Evolvulus saxifragus* Mart. in Flora XXIV (1841) 2. Beibl. p. 99; Herb. Fl. Bras. p. 339; Choisy in DC. Prodr. IX (1845) p. 448; Meissn. in Mart. Fl. Bras. VII (1869) p. 343.

Type: *Martius*, Brazil, Bahia, Rio S. Francisco, near Joazeiro.

Perennial. Stems several from a woody base, prostrate or ascending, branched, to 20 (rarely to 40) cm long, with short, stiff, appressed hairs, glabrescent towards the base. Leaves sessile or shortly petioled, linear-lanceolate, linear-oblong or linear, acuminate, acute or obtuse and mucronulate at the apex, acute or obtusish at the base, appressed-pilose like the stems beneath, glabrous or only with a few appressed hairs above, 6—20 mm long, 1—3 (—4) mm broad, the upper ones smaller, 3 mm long, 0.5 mm broad. Midrib prominent beneath, lateral nerves generally obsolete. Peduncles filiform, erecto-patent, mostly exceeding the subtending leaf, appressed-pilose like the stems, 5—20 mm long (occasionally to 25 mm), 1—2-flowered; pedicels filiform, much longer than the calyx, 5—8 mm, occasionally to 18 mm, reflexed, then erect, finally reflexed again; bracteoles linear or subulate, 1—3 mm long. Sepals equal, from an ovate-lanceolate or lanceolate base sharp-acuminate, sparsely appressed-pilose, ciliate, 2.5—3.5 mm long. Corolla blue or white, rotate, the limb 10—13 mm in diam., subentire, with 5 sericeous bands outside. Filaments as long as the linear anthers. Ovary ovoid, glabrous. Capsule globular, 3—3.5 mm long, 4-valved, 4- or less-seeded. Seeds brown, smooth.

Distribution: Brazil, Piauhy, Bahia, Minas Geraes.

BRAZIL, without precise locality, Sellow 1201 (B). Piauhy, dry campos

near Oeiras, Apr. 1839, *Gardner* 2252 (DC, K, NH, P, US). Bahia, Serra da Jacobina, *Blanchet* 2687 (B, K, Len, NH, P); near Joazeiro, campos, fl. Apr.—May, *Martius*, type (M); Taboleiro near Remanso, Dec. 1906, *Ule* 7401 (B, K, L); N. E. Bahia, catinga, March 1914, *Ph. von Luetzelburg* 12395 and 12396 (M). Minas Geraes, 1843, *Claussen* 325 (P); Serra de Ouro Branco, Jan. 1889, *Glaziou* 17711 (B, P).

The type of Meissner's var. *paraensis* belongs to *E. filipes* Mart.

5. *Evolvulus filipes* Mart. in Flora XXIV (1844) 2. Beibl. p. 100; id. Herb. Fl. Bras. p. 340; Choisy in DC. Prodr. IX (1845) p. 448, excl. specim. 2687 a cl. Blanchet lect., ad *E. saxifragum* Mart. transferendo; Meissn. in Mart. Fl. Bras. VII (1869) p. 342 cum var. *gracillimus* Meissn. et var. *abbreviatus* Meissn.; Hall. f. in Jahrb. Hamb. wiss. Anst. XVI, 3. Beih. (1899) p. 23, 24 cum iisdem var.; Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. VI (1922) p. 38; Knuth in Fedde, Rept. Spec. Nov. Beih. XLIII (1928) p. 581; v. Ooststr. in Pulle, Flora of Surinam IV (1932) p. 74.

E. linifolius auct. non L.; Benth. in Hook. Lond. Journ. Bot. V (1846) p. 355.

E. exilis Meissn. in Mart. Fl. Bras. l.c. 342, t. 123, fig. I.

E. saxifragus Mart. var. *paraensis* Meissn. in Mart. Fl. Bras. l.c. p. 343.

E. nanus Meissn. in Mart. Fl. Bras. l.c. p. 346.

E. alsinoides auct. non L.; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III, p. 489.

E. filipes Mart. var. *exilis* (Meissn.) Chod. et Hassl. in Bull. Herb. Boiss., sér. II, V (1905) p. 684.

Type: *Martius*, Brazil, Bahia, Rio S. Francisco near Joazeiro.

Perennial; flower-bearing stems of the first year erect, the later ones erect or ascending, more or less lignescent at the base, sparsely or much branched with erect or ascending branches, terete, sparsely pilose with appressed or rarely patent hairs, glabrescent, variable in height, 4—40 cm (see remarks). Leaves sessile or shortly petioled, generally linear or narrow-

lanceolate, occasionally broader, lanceolate or oblong-lanceolate, narrowed towards both ends, acute or obtusish and mucronulate at the apex, acute at the base, very sparsely pilose or glabrous above, sparsely pilose beneath with appressed hairs, glabrescent, in typical specimens 8—25 mm long and 1.5—5.5 mm broad, the upper ones becoming smaller, occasionally subulate; midrib generally prominent beneath. Peduncles variable in length, shorter than, as long as or much exceeding the leaves, filiform, patent or erecto-patent, with a few, appressed hairs, 1—2-, occasionally to 5-flowered, 5—35 mm long (see remarks); pedicels shorter than or about as long as the calyx, filiform, erect or perpendicular to the peduncle, always reflexed in fruit; bracteoles small, lanceolate to subulate, 1—2 mm. Sepals equal in length, lanceolate or the inner ones ovate-lanceolate, with scarious margins near the base, sharp-acuminate, the tips often spreading, glabrous or sparsely pilose outside, ciliate at the margins, (1.5—) 2—2.5 (—3) mm long. Corolla pale-blue or white, rotate to funnel-shaped, at most twice as long as the sepals, the tube very short, the limb slightly 5-lobed, 3—4.5 mm in diam., with 5 sericeous bands outside. Filaments 4—5 times as long as the small oval anthers. Ovary subglobose, glabrous. Capsule little exceeding the sepals, globose or ovoid, 4- or 2-valved, 4- or occasionally less-seeded. Seeds brownish-black, smooth.

Distribution: Mexico, Central America, Colombia, Venezuela, Guiana, Ecuador, Peru, Brazil, Paraguay.

MEXICO, Sinaloa, vicin. of Culiacan, Sept. 1904, *T. S. Brandegee* (US); "La Noria", foothills, shady woods, Oct. 1925, *Ynes Mexia* 180 (C). Durango, vicin. of Durango, 1896, *Palmer* 644 (B, C, NH, U, US). Jalisco, Rio Blanco, Sept. 1886, *Palmer* 572 (Len, NH, P, U, US). Vera Cruz, *Wawra* 480 (B); Zacuapan, Corral de Piedras, savanna, Sept. 1917, *C. A. Purpus* 7866 (B, M).

GUATEMALA, dept. Jalapa, Laguna de Ayarza, Sept. 1892, *Heyde and Lux*, ed. *J. Donnell Smith* 4028 (US).

NICARAGUA, *Barclay* (NH).

COSTA RICA, Nicoya, Jan. 1900, *A. Tonduz* 13668 (K, NH, NY, US).

PANAMA, 1851, *Duchassaing* (P); prov. Panamá, Sabana de Dormisolo, near Chepo, Oct. 1911, *H. Pittier* 4666 (US); id., Agricultural Experiment Station, Matias Hernandez, Jan. 1915, *H. Pittier* 6922 (US); id., Bella Vista, on rocks along seashore, Nov. 1923, *P. C. Standley* 25365 (US); id., Punta Paitilla, Nov. 1921, *Bro. Heriberto* 230 (US); id., id., in savanna, Dec. 1923,

P. C. Standley 26297 (US); Rio Tecumen, savanna, Jan. 1924, *P. C. Standley* 29406 (US); id., near the big swamp east of Rio Tecumen, in savanna, Dec. 1923, *P. C. Standley* 26634 (US); id., vicin. of Juan Franco Race Track, near Panamá, wet pasture, Dec. 1923, *P. C. Standley* 27765 (US); id., Nuevo San Francisco, savanna, Jan. 1924, *P. C. Standley* 30700 (US); id., near Panamá, savanna, Jan. 1911, *H. Pittier* 2536 (US); Sosa Hill, Balboa, Canal Zone, brushy slope, Nov.—Dec. 1923, *P. C. Standley* 25293 (US); Alhajuela, Chagres River, Canal Zone, Nov. 1917, *E. P. Killip* 3223 (B, US); Ancon Hill, Canal Zone, 175 m, May 1928, *E. P. Killip* 3428 (US); prov. Coclé, Aguadulce, savanna, near sea level, Dec. 1911, *H. Pittier* 4841 (US); along the old Las Cruces Trail between Fort Clayton and Corozal, grassy field, common, Dec. 1923, *P. C. Standley* 29188 (US).

JAMAICA, *P. Browne* (NH); Lititz, savanna, 300—500 ft., Nov. 1914, *W. Harris* 11719 (K, NH, S, US); id., in open places on the savanna, Nov. 1916, *W. Harris* 12444 (K, US).

COLOMBIA, 1844, *Goudot* (P); Santa Marta, *Purdie* (K); id., fl. Febr., *H. H. Smith* 539 (DC, F, K, P, S, U, US); id., Magdalena Valley near Lake Zapatosa, Chiriguana, *C. Allen* 119 (K); Tolima, Honda, sandy hillside, 250—300 m, Jan. 1918, *F. W. Pennell* 3598 (K, US); id., between Ibaqué and Piedras, 1100 m, *Ed. André* 1969 (K); id., between Ibaqué and Tocaima (Cundinamarca), Oct. 1868, *A. Stübel* 194 n (B).

VENEZUELA, Zulia, vicin. of Mene Grande, in bushes, Nov. 1922, *H. Pittier* 10666 (US); Merida, Tovar, *Fendler* 2065 (G, K); Trujillo, Dividive, savanna, Nov. 1922, *H. Pittier* 10832 (US); Carabobo, vicin. of Valencia, savanna, 400—800 m, Nov.—Dec. 1919, *H. Pittier* 8709 (US); Federal District, Isl. of Margarita, Juan Griego, Sept. 1901, *O. O. Miller*, *J. R. Johnston* 14 (P) and 16 (K, NH, US); Bolivar, Ciudad Bolivar, ± 35 m, Nov. 1929, *E. G. Holt*, *W. Gehriger* 28, 101 (US); Orinoco Delta, Febr. 1911, *F. E. Bond*, *T. S. Gillin*, *S. Brown* 127 (US); Orinoco, *Chaffanjon* 175 (P); near Maipure, June 1854, *Spruce* 3584 (K, P).

BRITISH GUIANA, Mount Roraima and vic., *R. Schomburgk* 483/741 (B, K, L, NH, P); id., Limao, Sept. 1927, *Tate* 126 (K).

DUTCH GUIANA, Tapanahoni R., on granitic rock, July 1904, *Versteeg* 657 (U).

FRENCH GUIANA, without locality, *without collector's name* (P).

ECUADOR, Chanduy near Guayaquil, Apr. 1862, *Spruce* 6496 (K, NH).

PERU, dept. Piura, prov. Piura, Serrán, 220—280 m, March 1912, *A. Weberbauer* 5983 (B, F, U, US).

BRAZIL, without locality, *Burchell* 6751 (K, P); *Pohl* 1749 (B); *Sellow* s. n. (NH). Amazonas, Rio Branco, Surumu, swampy campos near the Serra do Mel, Sept. 1909, *Ule* 8273 (B, K, L, U); N. Brazil, Maruay, dry campo, Sept. 1927, *Ph. von Luetzelburg* 21146 (M). Pará, Ilha de Maraio, *Burchell* 9284 (Br, K, P); id., Prainha on the Amazon R., Nov. 1873, *J. W. H. Traill* 556 (K); near Santarem, 1849—'50, *Spruce* 162, type of *E. saxifragus* Mart. var. *paraensis* Meissn. (B, C, G, K, Len, M, NH, P, S); id., high campos, Jan. 1850, *Spruce* 609 (K, P); id., sandy soil, March 1850, *Spruce* 761 (K); Monte Alegre, sandy soil, Aug. 1882, *Schwacke* III, 663 (G). Maranhão, S. Francisco, 1877—'78, *Jobert* 1191 (P). Ceará, Ipu, March 1910, *Alb. Löfgren* 196 (S); dry shady places below Icó, Aug. 1833, *Gardner* 1774 (K, NH). Piauhy, near Oeiras, 1839, *Gardner* 2251 (B, K, NH); id., 1877—'78, *Jobert* 1025 (P). Pernambuco, Tapera, on the foot of moist rocks, July 1929, *Pickel* 2091 (US). Goyaz, R. Tocantins, near Porto Imperial, *Burchell* 8662—2 (Br, L, NY, US); id., *Burchell* 8668 (Br,

K, NY, P); near Goyaz, *Burchell* 6824—2 (Br, K, P); Villa Boa, *Pohl* 2507, *E. exilis* Meissn. (K, s. n., V); near Paranahyba R., Febr. 1893, *Ulle* 424 (P); Serra d'Ourada, *Pohl* 1474, *E. exilis* Meissn. (V); Porto Imperial, *Burchell* 8544, type of var. *gracillimus* Meissn. (Br, K, P). Bahia, Serra da Jacobina, *Blanchet* 2676 (B, NH, P); Rio S. Francisco, near Joazeira, *Martius*, type (Br, M); id., near Remanso, Dec. 1906, *Ulle* 7411 (B, K, L). Matto Grosso, near Cuyabá, Febr. 1827, *Riedel* 809 (Len); id., March 1827, *Riedel* 885 (Len). Minas Geraes, May 1870, *Regnell III*, 191½ (B, Br, P, S, US); *A. de St.-Hilaire* B¹, 1481 (K); *A. de St.-Hilaire* B¹, 1486 (B, P); *A. de St.-Hilaire* B¹, 1541bis (B, NY, P); Serra de Caldas, fl. May, *Regnell III*, 191½ (S); Lagoa Santa, Febr.—March 1864, *Warming* (Br, C); Pico de Itabira, Febr. 1835, *Lund* (C); Caldas, Apr. 1867, *Regnell III*, 191 (S); Serra de Ouro Branco, campo, *Glaziou* 13013 (B, Br, C, K, Len, P). Rio de Janeiro, *Herb. John Miers* (NH); *Weddell* 465 (NY, P); cult. at Rio de Janeiro, *Glaziou* 9973 (C, K, P); near Rio de Janeiro, *Glaziou* 11273 (B, C, K, P); between Campos and Vittoria, 1815, *Sellow* 271, 355, 371, 425, *E. nanus* Meissn. (B); Sebastianopol, 1846, *Barboza*, type of var. *abbreviatus* Meissn. (Br); Fort Santa Cruz, Aug. 1872, *Glaziou* 5948 (B, C, P, S); Praia Grande, Nov. 1873, *Glaziou* 6813 (B, C, K, P); id., *Glaziou* 6813a (P, with *E. sericeus* Sw.); Jurutuba, Aug. 1887, *de Moura* 576 (B). São Paulo, Batataés, Febr. 1849, *Regnell III*, 191 (S); Cajurú, March 1857, *Regnell III*, 191 (Br, P, S, US).

PARAGUAY, 1909, *K. Fiebrig* s. n. (B); C. Paraguay, *Hassler* 3698 (NH); between Rio Apa and Rio Aquidaban, wet campo, Febr. 1909, *K. Fiebrig* 4833 (B, Del, G, K, L, M, NH, US); near Lake Ypacaray, May 1913, *Hassler* 12641 (B, C, K, L, NH, US); San Bernardino, Sept. 1916, *C. Osten* 9038 (S); Cerros de Tobaty, Sept. 1900, *Hassler* 6343 (B, Boiss, K, NH, P); La Trinidad, May 1874, *B. Balansa* 1172 (P).

This species is rather variable in habit and size, typical specimens are erect in the first year, later mostly more ascending. The height of the plants may differ very much; from very small, hardly 5 cm to 40 cm. The hairiness is generally sparse, closely appressed, sometimes however with more spreading hairs. The size of the leaves is also rather variable. In robust specimens they may attain a length of 2.5 cm, they are often much smaller, weak specimens sometimes show leaves only a few mm long. The peduncles are generally filiform, longer or much longer than the subtending leaves, sometimes they are shorter. Transitions occur everywhere. Sharply defined forms are difficult to distinguish. The types of the var. *β gracillimus* and of the var. *α abbreviatus*, both described by Meissn., differ fairly much from the typical specimens of the species. The former is characterized by the very wide extending branches and the long filiform peduncles, which are situated in the axils of very small, subulate leaves, 1—3 mm long; the latter chiefly differs in the short peduncles.

Numerous transitions between the varieties and the species however occur, so that I deem it advisable to unite them with this.

E. nanus Meissn. is to be considered as a low form of *E. filipes*, with small leaves and short peduncles. The specimens Meissner distinguished as *E. exilis* are low weak plants of the typical form with small narrow leaves and slender peduncles. The plants considered by Chodat and Hassler as var. *exilis* are partly wholly identical with the type of the species, partly transitions to the weak small plants, which Meissner called *E. exilis*. Regnell III, 191½ unites *E. exilis* also with the species, *E. saxifragus* Mart. var. *paraensis* Meissn. is represented by plants which are fairly robust, much branched at the base with ascending branches with rather spreading hairs. Some specimens, viz. de St.-Hilaire B¹, 1486 and 1541bis show flowers with a diameter of about 7 mm, the pedicels attain a length of 10 mm. In other respects, also in the size of the sepals, they agree with the typical *E. filipes*, the larger corolla and the longer pedicels however remind us of *E. saxifragus*.

6. *Evolvulus serpylloides* Meissn. in Mart. Fl. Bras. VII (1869) p. 345.

Type: *Langsdorff and Riedel 285*, Brazil, São Paulo, Morro de Morungaba.

Perennial. Stems few or several, herbaceous, prostrate, occasionally rooting at the basal nodes, terete, slender, 5—30 cm long, sparsely beset with short, stiff, appressed hairs, glabrescent. Leaves shortly petioled, secund, oblong, narrow-oblong, oblong-lanceolate or oblanceolate, rounded at the apex, acute or obtusish at the base, 7—16 mm long, 2—5 mm broad, glabrous on both sides or sparsely appressed-pilose beneath; midrib prominent beneath, lateral nerves indistinct or the basal pair visible beneath. Peduncles filiform, directed upwards, 5—15 mm long, those at the middle of the stem shorter than or as long as the subtending leaf, the upper ones exceeding this, 1—2-flowered, sparsely

appressed-pilose like the stems; pedicels longer than the calyx, 6—10 (—18) mm, filiform; bracteoles linear or narrow-lanceolate, acute or obtusish, glabrous, 2—3.5 mm long. Sepals ovate-lanceolate to oblong-lanceolate, acute, sparsely ciliate, 2.5—3 mm long. Corolla blue or white, rotate, the tube very short, the limb 10—12 mm in diam., superficially 5-lobed. Filaments as long as the oblong anthers. Ovary ovoid, glabrous. Capsule as long as the sepals, globular, 4-valved, 4-seeded. Seeds dark-brown, smooth.

Distribution: Brazil, Minas Geraes, São Paulo, Paraná.

BRAZIL, Minas Geraes, Lagoa Santa, moist soil, Nov. 1865, *Warming 1802* (Br, one specimen of the species and three of the var. *Warmingii* v. Ooststr. on the same sheet). São Paulo, Morro de Morungaba, dry places, Febr. 1826, *Langsdorff and Riedel 285*, type (Len). Paraná, Jaguarihyva, marshy places, Febr. 1910, *P. Dusén 9182* (S).

The description Meissner gives of this species relates to the specimen Langsdorff and Riedel. The specimens Warming, also cited by Meissner, partly represent a variety, which I name var. *Warmingii*.

var. *Warmingii* v. Ooststr. n. var. ¹⁾

Type: *Warming 1802*, Brazil, Minas Geraes, Lagoa Santa.

Stems, lower surface of the leaves, peduncles, pedicels, bracteoles and sepals much more pilose than in the type, with soft, loosely appressed or spreading hairs; upper leaf-surface glabrous or sparsely pilose. Peduncles 1—2 or occasionally 3-flowered. Sepals up to 4 mm long.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Lagoa Santa, moist, occasionally inundated places, Nov. 1865, *Warming 1802*, type (Br, three specimens of the var. and one of the species on the same sheet, C).

¹⁾ *E. serpylloides* Meissn. var. *Warmingii* v. Ooststr. n. var. Multo pilosior quam forma typica quoad caules, foliorum paginam inferiorem, pedunculos pedicellos bracteolas sepalaque, pilis mollibus laxè appressis vel divaricatis; foliorum pagina superior glabra vel sparse pilosa; pedunculi 1—2, nunc inde 3-flori; sepala ad 4 mm longa. **Type:** *Warming 1802*, Brazil, Minas Geraes, Lagoa Santa (C).

7. *Evolvulus vimineus* v. Ooststr. n. sp.¹⁾

Type: *A. de Saint-Hilaire s. n.*, Brazil, Minas Geraes, Itambé.

Perennial. Stems several from a woody base, long, slender, virgate, to 80 cm long, probably ascending, sparsely pilose with appressed and slightly spreading white hairs. Leaves remote, oblong-lanceolate to linear-lanceolate, acute at both ends, pilose on both sides like the stems, glabrescent, surface of the leaves fine-shagreenish; medium-sized leaves 7—11 (—14) mm long, 1.5—3.5 (—5) mm broad, 3—4.5 times as long as broad, the upper leaves much smaller, the ultimate ones subulate, 1.5—2 mm; midrib prominent beneath, pale; internodes (10—) 15—25 mm. Peduncles erecto-patent, straight, generally 1-flowered, much exceeding the leaves, 10—20, occasionally to 40 mm long, appressed-short-pilose; bracteoles subulate, 1—2 mm; pedicels about as long as or longer than the sepals. Sepals lanceolate, acuminate, 2.5—3 mm, short-villose with patent hairs. Corolla rotate, the tube very short, the limb probably about 8 mm in diam., superficially 5-lobed. Filaments about 3 times as long as the linear anthers. Ovary globose, glabrous. Capsule globose.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Itambé, *A. de Saint-Hilaire s. n.*, type (P, NY, US).

¹⁾ *E. vimineus* v. Ooststr. n. sp. Perennis. Caules plurimi e basi lignosa verosimiliter ascendentes, graciles, virgati, usque ad 80 cm longi, pilis albis appressis et subdivaricatis sparse induti. Folia remota, oblongo-lanceolata vel lineari-lanceolata, basi et apice acuta, utrinque indumento caulium praedita, glabrescentia, minute rugulosa, mediocria 7—11 (—14) mm longa, 1.5—3.5 (—5) mm lata, 3—4.5 partibus longiora quam lata, superiora multo minora, summa subulata, 1.5—2 mm longa. Costa subtus prominens pallida. Internodia (10—) 15—25 mm longa. Pedunculi erecto-patentes, stricti, plerumque uniflori, folia multo superantes, 10—20, interdum usque ad 40 mm longi, breviter appresse pilosi, bracteolis subulatis, 1—2 mm longis, pedicellis sepalis fere aequalongis vel longioribus. Sepala lanceolata, acuminate, 2.5—3 mm longa, breviter villosa pilis patentibus. Corolla rotata, tubo brevissimo, limbo probabiliter fere 8 mm diametro, leviter 5-lobato. Filamenta fere triplo longiora quam antherae lineares. Ovarium globosum, glabrum. Capsula globosa. Type: *A. de St.-Hilaire s. n.*, Brazil, Minas Geraes, Itambé (P).

8. *Evolvulus arizonicus* A. Gray, Syn. Fl. N. Amer. II, 1 (1886) p. 218; Hemsl. Biol. Centr. Am. Bot. II (1881-'82) p. 399.

Type, lectotype: *Pringle*, Mexico, Sonora, sandy plains near the U. S. boundary.

Perennial. Stems few to many from a perpendicular root, 10—30 (—45) cm high, straight or slightly curved, simple or more or less paniculately branched, erect, ascending or decumbent-spreading, densely appressed-villose or almost tomentose. Leaves sessile or shortly petioled, lanceolate or linear-lanceolate, occasionally broader, acute or obtuse at the apex, attenuate towards the base, the middle ones 10—25 (—35) mm long and 2.5—6 (—14) mm broad, gradually diminishing in size towards the top of the stems, the upper ones linear, 8—10 mm long, 1.5 mm broad, all hairy like the stems; midrib generally prominent beneath, other nervation invisible or the basal lateral nerves slightly prominent beneath. Peduncles slender, generally exceeding the leaves, to 25 mm long, 1- or 2—3-flowered. Pedicels as long as or mostly longer than the calyx, with short appressed hairs. Bracteoles linear-subulate, 1.5—3 mm long. Sepals equal, lanceolate, acuminate, hairy like the leaves, 3—3.5 mm long. Corolla blue or bluish with white stripes, rotate, the limb very slightly 5-lobed, to 16 mm in diam., the lobes slightly emarginate, the tube very short. Filaments inserted near the base of the corolla, 1.5—2 times as long as the linear anthers. Ovary globular, glabrous. Capsule globular, 3.5—4 mm high, 4-valved.

Distribution: United States of America (Arizona); Mexico (Sonora); Argentina.

UNITED STATES OF AMERICA, Arizona, Sept. 1891, *D. T. McDougal* (US); *Rothrock* (K); *T. E. Wilcox* (US); Prescott, Aug. 1894, *J. W. Toumey* (US); Bradshaw Mts., June 1892, *J. W. Toumey 184* (US); Oracle Ranger Station, Coronado Forest, Pinal Co., 1500 m, Sept. 1919, *W. W. Eggleston 15965* (US); Warren, Coconino Co., May 1915, *J. I. Carlson* (US); Lowell, May 1915, *J. I. Carlson* (US); Fort Grant, *B. H. Dutcher 19, 20* (US); id., July 1874, *Rothrock 376* (Len, US); Clifton, Sept. 1880, *Edw. Lee Greene* (K); Johnston's Ranch, 11 m east of San Pedro River, Aug. 1893, *E. C. Merton* (Internat. Boundary Comm. U. S. and Mexico) 1702 (US); Tucson, Apr. 1905, *H. A. Wilcox* (US); Santa Rita Mts., 3500

ft., Aug. 1903, *M. E. Jones* (NH, U); id., Stone Cabin Cañon, 5000 ft., July 1903, *Thornber 269* (US); Huachuca flats, Aug. 1909, *L. N. Goodding 291* (Del); Huachuca Mts., 1882, *Lemmon 2842* (K, NH, P); id., Sept. 1882, *Lemmon s. n.* (Calc, US); near Ft. Huachuca, Sept. 1898, *G. J. Harrison, T. H. Kearney 5732* (US); id., 1890, *Patzky* (US); id., 1891, *T. E. Wilcox 50* (US); id., May 1894, *T. E. Wilcox s. n.* (US); near Bisbee, Sept. 1922, *W. W. Jones* (K); Nogales, Aug. 1907, *C. D. Marsh* (US); id., Aug. 1927, *R. H. Peebles, G. J. Harrison, T. H. Kearney 4603* (US); near Baboquivari, Oct. 1925, *R. H. Peebles, G. J. Harrison 611* (US); near Baboquivari Mts., May 1926, *F. A. Thackery 2022* (US); Sonoita, fl. May, *R. H. Peebles 5316* (K); Pedregosa Mts., Mexic. boundary line, Sept. 1892, *E. A. Mearns 848* (US); Niggerhead Mts., near Monument n. 82, Aug. 1893, *E. A. Mearns 1894* (US).

MEXICO, Sonora, sandy plains near the boundary, Aug. 1884, *C. G. Pringle* (Br, Calc, K, P, U, US).

ARGENTINA, Jujuy, Tumbaya, Volcan, 2400 m, stony places, Febr. 1927, *S. Venturi 4932* (F, U, US); Abra de Palomac, ca. 3800 m, Nov. 1901, *R. E. Fries 822* (S); dept. Humahuaca, ca. 3350 m, *F. Claren (F. Kurtz. Herb. Argent.) 11703* (S); Salta, Candelaria, 1500 m, Apr. 1925, *S. Venturi 3832* (U); Pasaje del Rio Juramento, Febr. 1873, *G. Hieronymus, P. G. Lorentz* (B); Dragones (Fuerte Sarmiento), Aug. 1873, *G. Hieronymus, P. G. Lorentz* (B); id., *G. Hieronymus, P. G. Lorentz 595* (B, G); Catamarca, Yacutula, fl. March, *F. Schickendantz 236* (B); Tucuman, Dept. Burroyaco, Cerro del Campo, 800 m, Dec. 1928, *S. Venturi 7689* (S, U, US); id., id., 800 m, Nov. 1928, *S. Venturi 7502* (F, NH, US); Dept. Trancas, Vipos, 900 m, Dec. 1921, *S. Venturi 1542* (U); hills near Vipos, *Lillo 308* (P); Santiago del Estero, Dept. C. Pellegrini, Febr. 1928, *S. Venturi 5977* (F, U, US); Territorio del Chaco, *P. Jørgensen 2652* (US); Rioja, Dept. Ulapes, La Diana, fl. June, *T. Stuckert 13238* (Del); Mendoza (?), Las Peñas, *P. G. Lorentz 602* (B); id., rocky hills, common, Jan.—Febr. 1871, *P. G. Lorentz 85* (B, G); San Luis, Estanzuela, March 1882, *C. Galander* (B); Quebrada del Salado, Bebida de las Vacas, March 1882, *C. Galander* (B); Cordoba, Dec. 1898, *T. Stuckert 5721* (Del); id., March 1900, *T. Stuckert 9203* (Del); id., Jan. 1903, *T. Stuckert 12642* (Del); id., sandy soil, Jan. 1925, *W. Lossen 84* (B, F, Len, M); id., Capilla del Monte, March 1900, *T. Stuckert 8840* (Del); id., Altos Sud, Dec. 1898, *T. Stuckert s. n.* (Del); near Lagune de Tegua, 9 miles n. of Rio Cuarto, March 1882, *C. Galander* (B); Sierra Chica de Cordoba, Calera, Jan. 1881, *C. Galander* (B); id., road to Calera, Jan. 1876, *G. Hieronymus* (B); id., Febr. 1925, *W. Lossen 145* (Len, M); id., Jan. 1908, *T. Stuckert 18524* (Del); San Vicente, near Cordoba, Dec. 1889, *T. Stuckert 4118* (Del); Cruz del Eje, 1898, *Isler 77* (US).

No doubt closely related to *E. alsinoides* L. and *E. tenuis* Mart., but different in the much larger corolla. In Argentina occur specimens which so much resemble the Arizona ones that it is impossible to draw a distinct line between them. For the time being I wish to place them here. It is not impossible that similar climatological circumstances gave rise to the two forms which so much resemble each other; in Arizona beside the forms

of *E. alsinoides* which occur in that country, in Argentina beside *E. tenuis*, which perhaps only represents a form of *E. alsinoides* also. Both the Arizona specimens and the Argentina ones are rather variable in habit, size, form of the leaves and indumentum. Specimens from Jujuy, elevat. to 3800 m, are small, densely hairy and have large, intensively blue corollas.

var. *laetus* (Gray) v. Ooststr. n. comb.

E. laetus A. Gray in Proc. Amer. Acad. XVII (1882) p. 228; id. Syn. Fl. N. Amer. II, 1 (1886) Suppl. p. 436.

Type: *Pringle*, Arizona, mesas and foot-hills of the Santa Rita Mountains.

Hairiness more patent-villose than in the species.

Distribution: United States of America (Arizona); Mexico (Sonora).

UNITED STATES OF AMERICA, Arizona, Fort Huachuca, Apr.—May 1890, *Edw. Palmer* 442 (K, US); Range Reserve near Tucson, Sept. 1911, *E. O. Wooton* (US); Santa Rita Mts., Sept.—Oct. 1902, *D. Griffiths*, *J. J. Thornber* 200 (US); id., Aug. 1903, *M. E. Jones* (US); id., Aug. 1926, *C. J. King*, *H. F. Loomis* 2893 (US); Fenced area, Santa Rita Forest Reserve, May 1903, *D. Griffiths* 4370 (US); id., June 1903, *D. Griffiths* 4778 (US); Santa Rita Range Reserve, May 1912, *E. O. Wooton* (US); id., July 1913, *E. O. Wooton* (US); mesas and foot-hills of the Santa Rita Mts., May 1881, *C. G. Pringle*, type (B, F, US); Baboquivari Mts., May 1926, *F. A. Thackery* 2014 (US); near Baboquivari, Nov. 1925, *R. H. Peebles*, *G. J. Harrison*, *T. H. Kearney* 390 (US); Ramsay's Cañon, 1895, *E. G. Weibel* (US).

MEXICO, Sonora, sandy plains near the boundary, Aug. 1884, *C. G. Pringle* (B, G).

9. *Evolvulus corumbaensis* Hoehne in Anex. Mem. Inst. Butantan Bot. I, fasc. VI (1922) p. 38, t. 1.

E. pseudo-filipes Hassl. Addenda Pl. Hassl. (1917) p. 18, nomen.

Type: *Hoehne* 7883, Brazil, Matto Grosso, Corumbá.

Undershrub. Stems slender, erect or ascending, to 50 cm long, much branched with slender, erecto-patent branches, sericeo-villose. Leaves narrow-lanceolate or linear-lanceolate, acute at the apex, acute or rounded at the base, with sericeous, appressed, more or less shining hairs on both sides and along the margins,

15—35 (—50) mm long, 2.5—6 (—9) mm broad, 5—8.5 times as long as broad. Midrib and several pairs of lateral, long-ascending, nerves more or less prominent beneath; tertiary nervation often distinct, pale. Peduncles nearly as long as or exceeding the leaves, slender, 1—few-flowered; pedicels as long as or longer than the sepals, 3—7 mm, bracteoles subulate, 1.5—2.5 mm. Sepals lanceolate, subulate-acuminate, 3—3.5 mm long, short-villose. Corolla rotate, the tube very short, limb subentire, 14—20 mm in diam. or smaller, ca. 10 mm. Filaments 1.5 times as long as the linear anthers. Ovary globular, glabrous. Capsule exceeding the sepals.

Distribution: Bolivia, Brazil (Matto Grosso), Paraguay.

BOLIVIA, Bolivian Plateau, below Cochabamba, 1891, *M. Bang* 1006 (B, K, M, NH, US).

BRAZIL, Matto Grosso, Corumbá, July 1911, *F. C. Hoehne* 7883, *herb. Rondon* 3047, type (Bu).

PARAGUAY, N. Paraguay, Sept. 1892, *Otto Kuntze*, named *E. alsinoides* L. *α. argyreus* (Choisy) O. K. f. *ochraceus* O. K. (B, US); between Rio Apa and Rio Aquidaban, San Luis, March 1909, *K. Fiebrig* 5159 (B, Boiss, Del); id., Centurion, dry campo, Oct. 1908, *K. Fiebrig* 4191 (B, Boiss, Del, K); id., id., Oct. 1908, *K. Fiebrig* 4086 (B, Boiss, Del, K, L, M, NH); Santa Maria, Jan. 1897, *J. D. Anisits* 2375 (S).

The specimens Bang 1006 have the hairs shorter, more closely appressed, very dense and not so shining as the typical specimens. Further the stems and the peduncles are not so slender and the sepals to 5 mm long.

10. *Evolvulus Herrerae* v. Ooststr. n. sp.¹⁾

Type: *F. L. Herrera* 3081, Peru, dept. Cuzco, Apurimac Valley.

Very probably perennial. Stems presumably ascending, slender, to ca. 40 cm long, covered with long, whitish, shining, soft, appressed and patent hairs. Leaves lanceolate, acute at the apex.

¹⁾ *E. Herrerae* v. Ooststr. n. sp. Verosimillime perennis. Caules probabiliter ascendentes, graciles, usque ad 40 cm longi, pilis longis, albidis, nitentibus, mollibus, appressis et patentibus induti. Folia lanceolata, apice acuta, basi rotundata, 12—20 mm longa, 3—5 (—7) mm lata, (3—) 3.5—4 partibus longiora quam lata, utrinque pilis longis albidis, arcte appressis vel magis minus patentibus, sericeis tecta, costa nervisque lateralibus utroque latere binis vel singulis longe ascendentibus subtus satis prominentibus. Pedunculi

rounded at the base, 12—20 mm long, 3—5 (—7) mm broad, (3—) 3.5—4 times as long as broad, covered on both sides with long whitish closely appressed or more or less spreading silky hairs; midrib and 1—2 pairs of lateral long ascending nerves rather prominent beneath. Peduncles exceeding the leaves, filiform, 15—30 mm long, straight, short-sericeous, 1- or few-flowered, primary ramifications, when developed about 5 mm long; bracteoles subulate, 2—2.5 mm long; pedicels shorter to longer than the sepals, 2—3, later to 8 mm long, erect, later reflexed. Sepals narrow-oblong-lanceolate, acuminate, 3—4 mm long, appressed-sericeous and long ciliate. Corolla blue, rotate, the limb superficially lobed, about 12 mm in diam. with sparsely pilose bands outside. Filaments 1—1.5 times as long as the oblong anthers. Ovary ovoid, glabrous.

Distribution: Peru.

PERU, dept. Cuzco, Apurimac Valley, 1931, *F. L. Herrera 3081*, type (US).

11. *Evolvulus Fieldii* v. Ooststr. n. sp.¹⁾

Type: *A. Weberbauer 7670*, Peru, dept. Tumbes, prov. Tumbes, Mts. E. of Hacienda Chicama.

A decumbent undershrub. Stems several, lignescent at the base, to 60 cm long, appressed-short-pilose and patently villose, later glabrous. Leaves sessile or shortly petioled, petiole 1—2 mm, limb lanceolate, oblong-lanceolate or oblong to almost ovate, acutish or obtuse and mucronulate at the apex, rounded or

folia superantes, filiformes, 15—30 mm longi, stricti, breviter sericei, 1- vel pauciflori, ramis, si adsunt, fere 5 mm longis, bracteolis subulatis 2—2.5 mm longis, pedicellis sepalibus brevioribus vel longioribus, 2—3, denique usque ad 8 mm longis, erectis, denique reflexis. Sepala anguste oblongo-lanceolata, acuminata, 3—4 mm longa, appresse sericea longe ciliata. Corolla coerulea, rotata. **Type:** *F. L. Herrera 3081*, Peru, dept. Cuzco, Apurimac Valley (US).

¹⁾ *E. Fieldii* v. Ooststr. n. sp. Suffrutex decumbens. Caules plurimi, basi lignescentes, usque ad 60 cm longi, breviter appresse pilosi et patenti-villoso, denique glabri. Folia sessilia vel breviter petiolata, petiolis 1—2 mm longis. lanceolata, oblongo-lanceolata vel oblonga atque etiam prope ovata, acutiuscula vel obtusa et tum apice mucronulata, basi rotundata vel acutiuscula, 25—40 (—46) mm longa, 8—14 (—20) mm lata, (2—) 3—3.5 partibus longiora quam lata, utrinque pilis brevibus, mollibus appresse pilosa, costa, nervis lateralibus

acutish at the base, 25—40 (—46) mm long, 8—14 (—20) mm broad, (2—) 3—3.5 times as long as broad, appressed-pilose on both sides with short soft hairs; midrib and lateral nerves, also the tertiary nerves rather visible beneath, lateral nerves long-ascending. Peduncles filiform, shorter than or surpassing the leaves, pilose like the stems, few to several-flowered, primary bracteoles linear or linear-lanceolate, very acute or acuminate, (4.5—) 6—9 mm long; pedicels slender, filiform, much longer than the sepals. Sepals slightly unequal, narrow-lanceolate, long-acuminate, with spreading tips, 5—6 mm long, patently villose. Corolla rotate, blue, the limb superficially lobed, to 12 mm in diam. Filaments 1.5 times as long as the linear anthers. Ovary globose-ovoid, glabrous.

Distribution: Peru.

PERU, dept. Tumbes, prov. Tumbes, Mts. E. of Hacienda Chicama, 400—500 m, in deciduous bushwood, Febr. 1927, *A. Weberbauer 7670*, type (F, US); dept. Piura, prov. Paíta, Talara, Cerro Viento, Jan. 1926, *O. Haught 107* (US).

12. *Evolvulus magnus* Helwig in Notizbl. Berlin—Dahlem IX, n. 91 (1927) p. 105.

Type: *A. Weberbauer 4125*, Peru, dept. Cajamarca, prov. Hualgayoc, below Santa Cruz.

A low erect shrub, ca. 50 cm high, the root thick, woody, 6 mm in diam., the stem much branched at the base, branches strict or slightly curved, erect or erecto-patent, the young parts densely sericeo-tomentose, with short fulvous, later greyish hairs; internodes 4—5 mm. Leaves sessile or very shortly petioled,

nec non tertiariis subtus satis distinctis, lateralibus longe ascendentibus. Pedunculi filiformes, foliis breviores vel ea superantes, indumento caulium, pauci- vel pluriflori, bracteolis primariis linearibus vel lineari-lanceolatis, acutissimis vel acuminatis, (4.5—) 6—9 mm longis, pedicellis gracilibus, filiformibus, sepala multo superantibus. Sepala subinaequalia, anguste lanceolata, longe acuminata, apicibus patentibus, 5—6 mm longa, patenti-villosa. Corolla rotata, coerulea, limbo leviter lobato, usque ad 12 mm diametro. Filamenta 1.5 partibus longiora quam antherae lineares. Ovarium globoso-ovoideum, glabrum. **Type:** *A. Weberbauer 7670*, Peru, dept. Tumbes, prov. Tumbes, Mts. E. of Hacienda Chicama (F).

narrow-oblong, obtuse, mucronulate at the apex, obtusish at the base, densely sericeo-tomentose like the stems with strongly appressed hairs, fulvous, later more greyish, 10—14 mm long, 2.5—4 mm broad, about 4 times as long as broad; midrib and lateral nerves rather distinct beneath. Peduncles generally shorter or much shorter than the leaves, strict, erect or erecto-patent, the upper ones 3—6, the lower to 12 mm long, hairy like the stems, 1- of 2-flowered; bracteoles subulate, 1—1.5 mm long, persistent; pedicels erect, later curved, attaining a length of 10 mm, hairy like the stems. Sepals lanceolate, acuminate, 3.5—5 mm long, short-villose, the hairs slightly spreading. Corolla blue, the limb rotate, presumably 10—12 mm in diam., the midpetaline areas pilose outside. Filaments twice as long as the linear anthers. Ovary subglobose, glabrous. Capsule subglobose, glabrous, little shorter than the calyx, 4-valved. Seeds 4 or less, glabrous, dark-brown.

Distribution: Peru.

PERU, dept. Cajamarca, prov. Hualgayoc, below Santa Cruz, 1300—2000 m, in open formation, consisting of herbs, shrubs and Bromeliaceae, May 1904, A. Weberbauer 4125, type (B, DC).

13. *Evolvulus argyreus* Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 75; id. Conv. Rar. (1838) p. 153; id. in DC. Prodr. IX (1845) p. 447, written *E. argyraeus*; Boldingh, Fl. Dutch W. Ind. Isl. I (1909) p. 160.

E. incanus auct. non Pers.; HBK. Nov. Gen. et Spec. III (1818) p. 116; ed. col. p. 91.

Cressa sericea Willd. ex Roem. et Schult. Syst. VI (1820) p. 207.

Type: *Bonpland 3080*, Ecuador, dept. Pichincha, bank of Guallabamba R.

A low undershrub. Stems several from a stout woody root, prostrate, 10—35 cm long, rather slender, densely sericeous with closely appressed fulvous or greyish hairs, finally glabrescent. Leaves distichous or secund, subsessile or very shortly petioled, oblong-lanceolate, lanceolate or narrow-lanceolate to linear,

acute, short-acuminate or obtusish and mucronulate at the apex, rounded at the base or attenuate into the short petiole, occasionally slightly falcate, densely sericeous on both sides with closely appressed hairs of fulvous or grey colour, shining, 6—20 mm long, 2—6.5 mm broad, 2.5—4 (—6) times as long as broad. Midrib and lateral nerves prominent beneath, the two lower pairs of lateral nerves rising at or quite near the base, long ascending. Peduncles over the whole length of the stems, shorter than the leaves or exceeding them, 3—14 mm long, stiff, erecto-patent, 1—3-flowered, appressed-sericeous, persistent; bracteoles subulate, 1.5—2 mm long, persistent; pedicels shorter to longer than the calyx, to 10 mm, reflexed in fruit. Sepals lanceolate, acuminate, 2.5—3.5 mm long, appressed-sericeous like the stems and the leaves, the hairs at the margin slightly spreading. Corolla rotate, bright-blue with white bands, the limb slightly lobed, 12 mm in diam. Filaments as long as or 1.5 times as long as the linear anthers. Ovary globose, glabrous. Capsule little exceeding the sepals, 4—2-valved, 4- or less-seeded. Seeds darkbrown.

Distribution: Colombia, Ecuador, Peru, Bolivia, West Indies.

COLOMBIA, J. C. Mutis 193, coll. U. S. herb. 4652 (US); dept. Huila, Quebrada de Angeles, above Natagaima, 450—500 m, July 1917, H. H. Rusby, F. W. Pennell 261 (NY).

ECUADOR, L. Fraser (NH); Andes of Ecuador, 6000—8000 ft., May 1884, St. Albans (K); prov. Imbabura, 2600 m, Febr. 1928, G. Firmin 382 (US); id., Loma de Canaballa, dry places, 2100—2300 m, Jan.—Febr. 1871. A. Stübel 148 (B); id., volcano Imbabura, 7000—9000 ft, Apr. 1859, M. Wagerer XIX (M); id., id., 9000—12000 ft, Apr. 1859, M. Wagerer XX (M); prov. Pichincha, between Cochasqui and Rio Pisque, Sept. 1870, A. Stübel 50a (B); id., Caraburu, sandy places, about 2500 m, June 1920, O. Heilborn 719 (S, US); Guallabamba, fl. Jan., Bonpland 3080, type (B, P); near the village of Tumbaco in the valley of Chillo near Quito, Hartweg 1236 (B, Br, K, NH, P); Quito, Jameson 5 (NH, P); near Patate, Spruce 6119 (B, K, Len, NH, P, S); near Paute, 7000 ft., Jameson (K); near Puenbo, Dec. 1872, A. Sodiro 113/7 (B).

PERU, dept. Cajamarca, prov. Hualgayoc, between Ninabamba and Santa Cruz, 1900—2200 m, May 1904, A. Weberbauer 4113 (B); id., Camino Magdalena, July 1875, A. Raimondi 7149, 7984 (B); dept. Huanuco, Tomaiquichua, 3 miles below Ambo, Sept. 1922, Macbride, Featherstone 2433 (F); dept. Ayacucho, 3000—3200 m, May 1910, A. Weberbauer 5498 (B, F, US).

BOLIVIA, prov. Larecacha, near Sorata, Chuchulaya, Carapota, Poquerani, in dry and in grassy places, Febr.—May 1839, G. Mandon 1492 (B, Br, F,

G. K. Len, NH, NY, P, S); below Tacacoma, 10,000 ft, June 1902, R. S. Williams 1421 (NH, US).

LESSER ANTILLES, Antigua, near English Harbor, Febr. 1913, J. N. Rose, W. R. Fitch, P. G. Russell 3356 (US); Martinique, hills near Casa Pilote, May 1870, Hahn 1136 (Br, Len, NH, P); Aruba, Koolwijk, 1885, W. F. R. Suringar (L); id., Fontein, Febr. 1885, W. F. R. Suringar (L); id., Oranjestad, Febr. 1885, W. F. R. Suringar (L); id., Savonnet, Jan. 1885, W. F. R. Suringar (L); Boldingh 6397 (U); Boldingh 6456 (K, L, U); Curaçao, rocky hills, Wacao to Playa Grande, March 1913, N. L. Britton, J. A. Shafer 3037 (U, US); Boldingh 4766 (C, P, U); Boldingh 5038, 5471 (U); Bonaire, Febr. 1885, W. F. R. Suringar (L).

Vernacular name: Jerba plata (Aruba, Curaçao, Bonaire, Suringar, Boldingh).

I do not see any distinct difference between the specimens from the Lesser Antilles and those of continental South America.

14. *Evolvulus piurensis* v. *Ooststr. n. sp.*¹⁾

Type: Oscar Haught 78, Peru, dept. Piura, Pariñas Valley.

Perennial. Stems prostrate (or also ascending?), 0.5—1 m, densely tomentose and with a few longer patent hairs, greyish white to fulvous. Leaves secund, at distances of 10—15 mm, lanceolate-oblong, narrow-oblong to elliptic-oblong, acute or obtusish and mucronulate at the apex, attenuate towards the base, densely tomentose on both sides like the stems, 14—22 mm long, 5—10 mm broad, 2—3 times as long as broad, the upper leaves about 10 mm long and 2.5—3 mm broad, 4 times as long as broad. Midrib and 3—4 pairs of lateral nerves rather pro-

¹⁾ *E. piurensis* v. *Ooststr. n. sp.* Perennis. Caules prostrati (an etiam ascendentes?), 0.5—1 m longi, dense tomentosi, pilis nonnullis longioribus patentibus, albido-grisei vel fulvi. Folia secunda, 10—15 mm distantia, lanceolato-oblonga, anguste oblonga vel elliptico-oblonga, apice acuta vel obtusiuscula et mucronulata, basin versus attenuata, ut in caulibus utrinque dense tomentosa, 14—22 mm longa, 5—10 mm lata, 2—3 partibus longiora quam lata, superiora fere 10 mm longa, 2.5—3 mm lata, 4 partibus longiora quam lata, nervo mediano nervorumque lateralium jugis 3—4 subtus prominentioribus. Pedunculi filiformes, folia superantes vel aequantes, uni- vel pluriflori, bracteolis subulatis vel lineari-subulatis, apicem pedunculorum versus approximatis, primariis 3—4 mm longis, pedicellis calyces superantibus, 5—10 mm longis. Sepala lanceolata, acuminata, 3—4 mm longa, dense et breviter villosa vel tomentosa. Corolla rotata, laete coerulea, limbo leviter lobato, extus fasciis sericeis 5 ornato, fere 12 mm diametro. Filamenta antheris lineari-oblongis duplo longiora. Ovarium globosum, glabrum. Type: Oscar Haught 78, Peru, dept. Piura, Pariñas Valley (S).

minent beneath. Peduncles filiform, exceeding the leaves or equal to them, 1 to several-flowered; bracteoles subulate or linear-subulate, approximate at the end of the peduncles, the primary ones 3—4 mm; pedicels longer than the calyx, 5—10 mm. Sepals lanceolate, acuminate, 3—4 mm long, densely short-villose to tomentose. Corolla rotate, bright-blue, the limb superficially lobed, with 5 sericeous bands outside, about 12 mm in diam. Filaments twice as long as the linear-oblong anthers. Ovary globose, glabrous.

Distribution: Peru.

PERU, without precise locality, *Th. Haenke* (M); dept. Piura, Negritos, fairly common around Cerro Viento, 1928, *O. Haught F 17* (F); id., prov. Paíta, Pariñas Valley, Nov. 1925, *O. Haught 78*, type (S, US).

The specimen collected in Peru by Haenke has the habit of Haught 78, but the pilosity is less dense and the leaves are lanceolate. Haught F 17 is a specimen with many-flowered dichasia, some of which show an abnormal number of bracteoles.

15. *Evolvulus boliviensis* v. Ooststr. n. sp.¹⁾

Type: *Otto Kuntze*, Bolivia, Tunari.

Perennial. Stems probably prostrate (or ascending?), the fragments which are present ca. 30 cm long, densely greyish to fulvous lanate; internodes 9—15 mm. Leaves sessile, secund, narrow-ovate, ovate or elliptic, obtusish or acute at the apex, rounded at the base, 10—15 mm long, 5—8 mm broad, 2—2.5 times as long as broad, densely lanate on both sides, greyish or

¹⁾ *E. boliviensis* v. Ooststr. n. sp. Perennis. Caules probabiliter prostrati (an ascendentes?), in fragmentis quae mihi suppetunt, fere 30 cm longi, dense griseo- vel fulvo-lanati, internodiis 9—15 mm longis. Folia sessilia, secunda, anguste ovata, ovata vel elliptica, apice obtusiuscula vel acuta, basi rotundata, 10—15 mm longa, 5—8 mm lata, 2—2.5 partibus longiora quam lata, utrinque dense lanata, grisea vel fulva. Pedunculi folia aequantes vel superantes, filiformes, dense sericei, 10—28 mm longi, ramis primariis 2—5 mm longis, bracteolis subulatis, inferioribus 2—2.5 mm longis, secundariis minoribus, approximatis, pedicellis 2.5—3 mm longis. Sepala parva, ovato-lanceolata, breviter acuminata, fere 2 mm longa, lanata. Corolla coerulea (?), rotata, fere 10 mm diametro, sub-integra. Filamenta 1.5 partibus longiora quam antherae lineares. Ovarium globosum, glabrum. **Type:** *Otto Kuntze*, Bolivia, Tunari (US).

fulvous. Peduncles as long as or exceeding the leaves, filiform, densely sericeous, 10—28 mm long, the primary ramifications 2—5 mm; bracteoles subulate, the lower ones 2—2.5 mm, the secondary ones smaller, approximate; pedicels as far as present 2.5—3 mm. Sepals small, ovate-lanceolate, short-acuminate, about 2 mm long, lanate. Corolla blue (?), rotate, ca. 10 mm in diam., subentire. Filaments 1.5 times as long as the linear anthers. Ovary globular, glabrous.

Distribution: Bolivia.

BOLIVIA, dept. Cochabamba, Tunari, 2600 m, Apr.—May 1892, O. Kuntze, named *E. alsinoides* L. α *villosus* (R. et P.) O. K., f. *canus* O. K., type (B, US).

The specimen in herb. Berlin has the leaves narrower than the type in the United States National Museum. They are lanceolate, acute at the apex, rounded at the base, 9—18 mm long and 4—5 mm broad, 3—3.5 times as long as broad. Moreover the leaves are not so distinctly secund.

Seems to be closely related to *E. piurenensis* v. Ooststr., but the indument is more lanate and the sepals are broader and shorter.

16. *Evolvulus helianthemoides* Meissn. in Mart. Fl. Bras. VII (1869) p. 345.

Type: *Matthews 1247*, Peru, Lima, lomas of Lurin.

Perennial. Stems several from a thick woody perpendicular root, prostrate or ascending, more or less densely villose-tomentose, greyish, 8—20 or occasionally to 40 cm long, simple or slightly branched. Leaves sessile or shortly petioled, often secund, petiole to 1.5 mm long, blade elliptic to oblong, densely appressed-villose-tomentose on both sides, obtuse or acutish at the apex, mucronulate, rounded or acutish at the base, the middle-sized leaves 5—10 mm long and 2—6 mm broad. Only the midrib slightly visible. Internodes 3—6 mm. Peduncles generally exceeding the leaves, hairy like the stems, 1—2-flowered, 8—15 (—30) mm long; pedicels as long as or mostly longer than the calyx, often reflexed in fruit; bracteoles linear-subulate, 1.5—3.5

mm long. Sepals equal, lanceolate, acuminate, short-villose, 3—4 mm long, occasionally longer. Corolla blue with 5 lighter bands, rotate to broadly funnel-shaped, the limb slightly lobed, 10—15 mm in diam., midpetaline bands sericeous outside. Filaments as long as the linear, sagittate anthers. Ovary ovoid, glabrous. Capsule globular, glabrous, as long as or little exceeding the calyx, 4-valved, 2-celled, 4- or less-seeded; seeds black, glabrous.

Distribution: Peru.

PERU, dept. Piura, Huancabamba, between Shumaya and Sondor, 1700—1800 m, May 1912, *A. Weberbauer 6284* (B, F, U); dept. Lima, lomas between Lima and Lurin, *A. Raimondi 12589* (B); lomas of Lurin, fl. May, *Matthews 1247*, type (K, L, Len, NH, P); id., Callao, *U. S. Expl. Exped., capt. Wilkes* (US); probably a specimen collected by *Cuming* (951, NH) in N. Chile also belongs here.

var. lanatus (Helwig) v. Ooststr. n. comb.

Evolvulus lanatus Helwig in Notizblatt Berlin—Dahlem IX n. 91 (1927) p. 107.

Type: *Weberbauer 7184*, Peru, Arequipa, prov. Camaná.

Indumentum denser than in the species, lanate or villose-lanate, fulvous.

Distribution: Peru.

PERU, dept. Arequipa, prov. Camaná, Chala, loma formation on sandy soil, 230 m, Nov. 1915, *A. Weberbauer 7184*, type (B, F).

17. *Evolvulus villosus* Ruiz et Pav., Fl. Peruv. III (1802) p. 30, t. 253, fig. b; Poir. in Lam. Encycl. Suppl. III (1813) p. 459; Roem. et Schult. Syst. VI (1820) p. 195; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 78, quoad specim. et litt. peruv., part. descr.; excl. syn.; id. Conv. Rar. (1838) p. 156, quoad specim. et litt. peruv., part. descr.; excl. syn.; id. in DC. Prodr. IX (1845) p. 448, quoad specim. peruv., part. descr.; excl. syn.; Meissn. in Mart. Fl. Bras. VII (1869) p. 344, quoad specim. et litt. peruv., part. descr.

Type: *Ruiz and Pavon*, Peru, Lima, Lurin, Surco.

Perennial. Stems several from a stout woody perpendicular

root, prostrate or ascending, more or less densely villose-tomentose with whitish hairs at least in youth, afterwards often glabrescent, up to 30 cm long, 1 mm in diam., simple or slightly branched. Leaves sessile or shortly petioled, often secund, the petiole up to 1.5 mm long, the blade elliptic to oblong, obtuse or acutish, mucronulate at the apex, rounded or acutish at the base, more or less densely villose-tomentose with whitish appressed hairs on both sides, later often glabrescent; 12—24 × 5—13.5 mm; internodes (5—) 8—10 mm; midrib generally prominent beneath, 4—5 pairs of lateral nerves more or less distinct. Peduncles generally exceeding the subtending leaves, hairy like the stems, or glabrous, 1—2- or rarely 3-flowered, 10—30 mm long; pedicels as long as or generally longer than the calyx, 5—7 mm long, erect, in fruit elongated and reflexed, to 15 mm long; bracteoles linear-subulate, 2—3.5 mm. Sepals equal, narrow-lanceolate, acuminate, 4—6 mm long, long-villose with spreading hairs. Corolla blue with 5 lighter bands, rotate to broadly funnel-shaped, the limb slightly 5-lobed, 16 mm in diam., with 5 sericeous bands outside. Filaments as long as the linear, sagittate anthers. Ovary ovoid, glabrous. Capsule globular, as long as or a little exceeding the calyx, glabrous, 4-valved, 2-celled, 4- or less-seeded; seeds black, glabrous.

Distribution: Peru.

PERU, without precise locality, *Pavon* (NH, P); *Dombey* (P); dept. Lima, Atocongo, open sandy slopes, June 1925, *F. W. Pennell* 14787 (F, K, US); Lima, Lurin, Surco, *Ruiz and Pavon*, type (M, fragment, NH); Lurin, about 200 ft., on sandy lomas along the sea, Sept. 1923, *J. Fr. Macbride* 5923 (F); dept. Arequipa, Mollendo, hillside directly back of the port, dryish open places on middle slopes, Oct. 1925, *I. M. Johnston* 3548 (F).

I did not see the type of Poirét's var. *lanceolatus* (Poir. in Lam. Encycl. Suppl. III (1813) p. 459).

18. *Evolvulus anagalloides* Meissn. in Mart. Fl. Bras. VII (1869) p. 348.

Type: *Gardner* 2259, Brazil, Piauhy, near Oeiras, on open sandy places.

Perennial. Stems herbaceous, lignescent at the base, simple or slightly branched, prostrate, several from a perpendicular root, to 50 cm long, loosely appressed-short-villose, glabrescent, the young shoots densely villose-tomentose, with brown hairs. Leaves at distances of 7—14 mm, very shortly petioled (about 1 mm), the blade ovate, broad-ovate or nearly orbicular, acute, apiculate or obtusish at the apex, truncate or cordate at the base, shortly appressed-pilose on both sides, glabrescent, with minute white dots, in youth sometimes almost tomentose, 10—20 mm long and 10—15 mm broad, occasionally larger, up to 25 mm long and 17 mm broad. Midrib and 1 or 2 basal pairs of lateral nerves prominent beneath. Flowers over the whole length of the stems, 1—3 on a short peduncle; this peduncle always much shorter than the subtending leaf, 2—5 (—8) mm long; pedicels slender, generally longer than the calyx, 4—8 (—10) mm, densely appressed-short-villose, reflexed in fruit. Bracteoles linear-lanceolate, 2—4 mm long. Sepals equal, about 4.5 mm long, lanceolate or almost oblong-lanceolate, gradually attenuate towards the top, acute, shortly appressed-hairy like the pedicels, with minute pellucid dots. Corolla blue, rotate, the tube very short, the limb slightly lobed, about 14 mm in diam., with pilose bands outside. Filaments twice as long as the linear-oblong anthers. Ovary globose, glabrous. Capsule globose, glabrous, 4 mm high, 4-valved, 2-celled, 2-seeded. Seeds glabrous, dark brown.

Distribution: Brazil, Piauhy, Ceará.

BRAZIL, Piauhy, near Oeiras, open sandy places, May 1839, *Gardner* 2259, type (K, NH, P, S, US). Ceará, 1926, *G. Bolland* (K).

Choisy in DC. Prodr. IX (1845) p. 447 cited the type-specimen of this species under *E. cordatus* Moric.

19. *Evolvulus pusillus* Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 77; id. Conv. Rar. (1838) p. 155; id. in DC. Prodr. IX (1845) p. 447; Meissn. in Mart. Fl. Bras. VII (1869) p. 346, t. 123, fig. 2; Glaziou in Bull. Soc. Bot. France LVIII

(1911) Mém. III p. 489; Hoehne in Anex. Mem. Inst. Butantan. Bot. I, fasc. VI (1922) p. 38.

Meriana procumbens Vell. Fl. Flum. (1825) p. 128; Ic. III (1827) t. 109.

E. alsinoides auct. non L; Gardn. in Hook. Lond. Journ. Bot. I (1842) p. 535.

Type: *Gaudichaud 167*, Brazil, Santa Catharina.

Perennial. Stems several from a woody base, prostrate, occasionally rooting at the nodes, terete, pilose with loosely appressed hairs, glabrescent, 10—35 (—90) cm long, internodes 3—7 mm. Leaves distichous or secund, small, shortly petioled, petiole 0.5—1 mm long, blade oblong, elliptic or nearly orbicular, obtuse or subemarginate and mucronulate at the apex, rounded at the base, glabrous or sparsely appressed-pilose above, appressed-pilose beneath, 3—6 (—10) mm long, 2—5.5 (—7) mm broad; midrib prominent beneath, sometimes also 2—3 pairs of lateral nerves. Peduncles shorter or a little longer than the subtending leaves, appressed-pilose, 3—8 mm long, 1-flowered; pedicels slender, filiform, much longer than the calyx, 6—10 mm long, appressed-pilose; bracteoles subulate, 0.5—1.5 mm long. Sepals ovate-lanceolate, ovate or broad-ovate, acute, sparsely pilose and ciliate, 2.5 mm long. Corolla white, rotate to funnel-shaped, the tube very short, the limb slightly 5-lobed, 8—12 mm in diam., with 5 sparsely sericeous bands outside. Filaments twice as long as the linear anthers. Ovary globular, glabrous. Capsule globular, 3 mm high, 4-valved, 4—2-seeded.

Distribution: Brazil, Rio de Janeiro, São Paulo, Paraná, Santa Catharina.

BRAZIL, without locality, *Burchell 3092* (K); *Burchell 4611* (K, US); *Lobb* (K); *Sellow 340* (B); *Sellow 5749* (B); *Sellow s.n.* (NH); Oct. 1886, *Ule 457* (B). Rio de Janeiro, *Pohl 5458* and *s.n.* (V); near Rio de Janeiro, 1829, *Luschnath* (S); Imbetiba, fl. Oct.—Nov., *Glaziou 6055* (B, C, K, P); Fazenda de Sta Cruz, fl. Oct.—Nov., *Glaziou 4967* (B, C, K, P); Santa Cruz, *Humboldt* (B); Ilha do Governador, dry sandy places, common, Nov. 1836, *Gardner 195* (K, NH, P, loc.: Serra dos Orgãos); San Cristovai, *Herb. John Miers* (NH). São Paulo, *A. de St.-Hilaire C², 1195* (P); id., Apr. 1913, *Toledo 524* (R, 1984); 1910, *A. Frazas* (R, 15857); near São Paulo, in campos, Jan. 1834, *Lund* (Br, C, DC); Sto Amaro, campo, Dec.

1911, *Alex Curt Brade* 5566 (S); Santos, in fissures of the rocks, Apr. 1854, *Lindberg* 714 (Br, S); Santos, Praia de S. Vicente, on the sandy coast of the Atlantic Ocean, Jan. 1875, *Hj. Mosén* 3197 (S); Butantan, campo, Apr. 1917, *Hoehne* 13 (M); Villa Mariana, Dec. 1905, *A. Usteri* 135 (K); Conceição de Itanhaen, 0—20 m, beach, March 1929, *L. B. Smith* 2067 (S). Paraná, Guaratuba, sandy coast, Dec. 1911, *P. Dusèn* 13544 (S); Paranaquá, grassy places, *P. Dusèn s. n.* (S); Porto d. Pedro II, grassy places, Dec. 1911, *P. Dusèn* 13484 (S). Santa Catharina, *Pabst* 462 (B); Island Santa Catharina, *Gaudichaud* 167, type (B, Br, DC, P); id., 1826, *d'Urville* (B, DC, P); continental coast opposite Desterro, on the beach, Sept. 1886, *Schenck* 347 (B).

I did not see the type-specimen of Vellozo's *Meriana procumbens*, but the description and plate in the Flora Fluminensis fully agree with *E. pusillus*, so that I united these two species just as Choisy and Meissner have already done.

20. *Evolvulus bogotensis* v. Ooststr. n. sp. 1)

Type: *Goudot*, Colombia, near Bogota.

Perennial. Stems several from a woody perpendicular root, prostrate, villose, with loosely appressed hairs, terete, 10—25 cm long, sparingly branched. Leaves often secund or distichous, petioled, petiole 1—1.5 mm, blade ovate-oblong, ovate, elliptic or orbicular, obtuse and mucronulate at the apex, rounded at the base, quite glabrous above or rarely with a few hairs, rather densely villose beneath, 5—10 mm long, 4.5—7 mm broad; midrib and 1 or 2 pairs of lateral nerves slightly impressed above, the former prominent beneath. Peduncles axillary, secund, as long as or a little shorter than the subtending leaves, 1- or few-

1) *E. bogotensis* v. Ooststr. n. sp. Perennis. Caules plurimi e radice lignosa perpendicularare, prostrati teretes 10—25 cm longi parce ramosi villosi, pilis laxè appressis. Folia secunda vel disticha petiolata, petiolis 1—1.5 mm longis, ovato-oblonga ovata elliptica vel orbicularia, apice obtusa mucronulata, basi rotundata, supra glaberrima vel raro pilis nonnullis obsita, subtus subdense villosa, 5—10 mm longa, 4.5—7 mm lata, nervo mediano et nervis lateralibus 1—2 supra leviter impressis nervo mediano subtus prominente. Pedunculi axillares secundi, foliis aequales vel paulo longiores 1- vel pauci-flores; bracteolis lineari-lanceolatis, 2—3 mm longis, saepe persistentibus, erectis; pedicellis calycem aequantibus vel paulo longioribus 4—6 mm longis, demum saepe elongatis. Sepala lanceolata vel anguste lanceolata, 3.5—4, demum ad 5 mm longa, villosa. Corolla coerulea rotata, limbo subintegro 10—14 mm diametiente. Filamenta 1.5 partibus longiora quam antherae lineari-oblongae. Ovarium ovoideum, glabrum. Type: *Goudot*, Colombia, near Bogota (G).

flowered; bracteoles linear-lanceolate, 2—3 mm long, often persistent, erect; pedicels as long as or somewhat longer than the calyx, 4—6 mm, often elongating afterwards. Sepals lanceolate or narrow-lanceolate, 3.5—4, later to 5 mm long, villose. Corolla blue, rotate, the limb subentire, 10—14 mm in diam. Filaments $1\frac{1}{2}$ times as long as the linear-oblong anthers. Ovary ovoid, glabrous.

Distribution: Colombia.

COLOMBIA, Cundinamarca, near Bogota, 1919, *Bro. Ariste-Joseph* (US); id., sandy places, *Justin Goudot*, type (G, P); id., Dec. 1909, *Henri* 29 (P); id., among grass and small scrub, hillock, south of Bogota, *Mrs. J. A. Tracey* 5 (K); chiefly near Bogota, July 1915, *Mrs. J. A. Tracey* 30 (K); Bogota, S. W. of Las Cruces, wet meadow, 2600—2700 m, Sept. 1917, *F. W. Pennell* 2156 (F, K, US); Sopo, *Bro. Ariste-Joseph* (US); eastern páramos of Guasca, toward Gachetá, 1921, *Bro. Ariste-Joseph* (US).

21. *Evolvulus Grisebachii* Peter in Engl.-Prantl, Nat. Pfl. fam. IV 3a (1897) p. 19; Urban Symb. Ant. IX (1923) p. 243.

E. incanus auct. non Pers.; Griseb. Cat. Plant. Cub. (1866) p. 207.

E. Wrightii House in Bull. Torr. Bot. Club XXXIII (1906) p. 316.

Type: *C. Wright* 3105, Cuba, Pinar del Rio.

Low perennial. Stems several from a woody base, prostrate or ascending, loosely appressed-villose, fulvous in youth, soon grey, finally glabrescent, 5—10 (—25) cm long; internodes 4—6 mm. Leaves distichous, sessile, ovate or broad-ovate, occasionally ovate-oblong, sometimes slightly oblique, acute or slightly cuspidate at the apex, broadly rounded at the base, densely villose with long spreading hairs on both sides but especially beneath, fulvous and shining at first, soon grey, later often glabrous and minutely verrucose due to the remaining bases of the hairs; 5—8 (—10) mm long, 4—7 mm broad. Flowers solitary in the apical leaf-axils; peduncles short, at most equaling the leaves, or none; pedicels shorter than or as long as the calyx, rarely longer, often elongated in fruit, villose; bracteoles linear-subulate, 2.5—4 mm long. Sepals narrow-lanceolate, acuminate,

5—6 mm long, villose, ciliate. Corolla blue with white throat, rotate to funnel-shaped, the tube very short, about 1 mm, the limb 7—10 mm in diam., subentire, with distinct, sericeous bands outside. Filaments about 3 times as long as the oblong anthers. Ovary globular, glabrous. Capsule globular, shorter than the calyx, glabrous, 4- or less-seeded.

Distribution: W. Cuba, Isle of Pines.

CUBA, Prov. Pinar del Rio, *C. Wright 3105*, type (G, K, Len, NH, P, S, US); near Pinar del Rio, Sept. 1910, *N. L. Britton, E. G. Britton, C. S. Gager 7091* (F, US); Herradura, in sandy pinelands, June 1922, *E. L. Ekman 14077* (S); Remates, in pinelands at the cemetery, June 1920, *E. L. Ekman 11168* (S); Lagune Jovero, creeping on sand, Dec. 1911, *J. A. Shafer 10728* (US).

ISLE OF PINES, near Nueva Gerona, March 1904, *Curtiss W. Ind. Pl. 409* (K, L, Len, M, NH, P, US); id., in sandy palm-pine savannas near Playa de Columbo, Oct. 1920, *E. L. Ekman 11756* (S); near San Pedro, Febr. 1916, *N. L. Britton, Percy Wilson, A. D. Selby 14471* (F, US).

Some of the specimens collected under Wright 3105 have the leaves not ovate to broad-ovate but ovate-oblong and the hairs less spreading.

22. *Evolvulus incanus* Pers. Syn. I (1805) p. 288; Poir. in Lam. Encycl. Suppl. III (1813) p. 459; Roem. et Schult. Syst. VI (1820) p. 197; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 74, quoad part. descr.; excl. syn. *E. cuspidatus*, Nama sericea; id. Conv. Rar. (1838) p. 152, quoad part. descr.; excl. iisdem syn.; id. in DC. Prodr. IX (1845) p. 444, quoad specim. peruv., excl. syn. *E. cuspidatus*, *E. virgatus*, *E. cressoides*, Nama sericea; Meissn. in Mart. Fl. Bras. VII (1869) p. 352, quoad specim. peruv., part. descr., excl. syn. *E. cuspidatus*, *E. cressoides*.

E. sericeus Ruiz et Pav. Fl. Peruv. III (1802) p. 30, t. 252, fig. b, non Sw. (1788).

Type: *Ruiz and Pavon*, Peru, Dept. Huanuco, Huanuco.

Perennial. Stems several from a woody root, prostrate, not or few-branched, often leafless near the base, 10—30 cm long, densely sericeo-villose, light fulvous, with more or less shining

hairs, later greyish, at last glabrescent at the base. Leaves distichous or secund, sessile or with a very short petiole; petiole to 1 mm long; blade ovate or broad-ovate, acute and mucronulate at the apex, rounded at the base, occasionally slightly cordate, 7—14 mm long, 4—8 mm broad; densely sericeo-villose on both sides with appressed hairs, somewhat shining, light fulvous, later greyish; nervation indistinct; upper leaves at distances of 3—4 mm, lower ones of 5—7 mm. Peduncle short or almost absent, up to 4 mm long (occasionally longer, in the specimen *Dombey* attaining 8 mm), always shorter than the leaves, 1 or sometimes 2-flowered; bracteoles linear-subulate, 1.5—2 mm long, pedicels 4 mm long, all sericeo-villose and fulvous like the stems and the leaves. Sepals lanceolate, acuminate, 4 mm long, sericeo-villose, fulvous. Corolla blue, rotate, the limb 12 mm in diam., superficially 5-lobed, the lobes slightly emarginate, each outside with a sericeous band. Filaments 2.5—3 times as long as the yellow linear-sagittate anthers. Ovary globose, glabrous. Capsule globose, glabrous, 4-seeded; seeds brown (according to *Ruiz and Pavon*).

Distribution: Peru.

PERU, without locality, *Pavon* (P). Huanuco, *Ruiz and Pavon*, type (NH); id., dry places, *Dombey* (P); id., slope near rocky trail, \pm 7000 ft, May 1922, *J. Francis Macbride* 2049 (F); id., on stony slopes, \pm 7000 ft., Apr. 1923, *J. Francis Macbride* 3244 (F).

The specimen Gillies, collected near Villavicencio, Argentina, the type of the var. *elongatus* Choisy, belongs to *E. sericeus* Sw. var. *falcatus* (Griseb.) v. Ooststr. It is not clear on what plant Meissner based his var. *subcordatus* but there is a possibility that he ment typical specimens of the species, which indeed possess sometimes a subcordate leaf-base.

23. *Evolvulus flexuosus* Helwig in Notizblatt Berlin—Dahlem, Bd. IX, n. 91 (1927) p. 107.

E. holosericeus auct., non HBK.; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III, p. 489.

Type: *E. Ule* 7548, Brazil, Bahia, Serra do São Ignacio.

Perennial. The whole plant densely light-fulvous or greyish-white villose-tomentose with appressed hairs. Stems several from a woody perpendicular root, prostrate, slender, leafy throughout, woody at the base, slightly branched, up to 60 cm long (according to *Helwig*), flexuose at the ends. Leaves sessile, distichous or secund, those of the basal parts and of young shoots approximate, imbricate, the others more remote, broad-ovate, acute or very shortly acuminate at the apex, slightly cordate at the base, often somewhat falcate, 7—12 mm long, 4—8 mm broad, gradually diminishing in size towards the top and the base of the stems (the upper ones 5×4 mm), densely villose-tomentose on both sides, more densely beneath than above. Peduncles shorter than the leaves, or the upper ones sometimes exceeding them, 3—5 mm long, stiff, erecto-patent, rather stout, 1- or 2-flowered; pedicels about as long as the calyx; bracteoles lanceolate-setaceous, about 1 mm long, persistent. Sepals lanceolate, about 3 mm long, the 2 exterior ones a little shorter and narrower than the others, all densely sericeo-tomentose. Corolla blue, rotate, the limb 8—10 mm in diam., superficially 5-lobed, the lobes slightly emarginate, with sericeous midpetaline areas. Filaments twice as long as the linear-oblong, sagittate anthers. Ovary globose, glabrous. Capsule globose, glabrous, about as long as the calyx, 4- or less-seeded. Seeds glabrous.

Distribution: Brazil, Bahia, Espiritu Santo.

BRAZIL, Bahia, Serra do São Ignacio, campo, Febr. 1907, *Ule* 7548, type (B, K, L). Espiritu Santo, Serra da Itabapoana, fl. Sept.—Oct., *Glaziou* 11270 (C, K).

A part of the plant collected under *Glaziou* 11270 in herb. C is fully identic with the type, other parts however are beset with more spreading hairs and so are the specimens in the Kew herbarium.

24. *Evolvulus stellariifolius* v. *Ooststr.* n. sp.¹⁾

¹⁾ *E. stellariifolius* v. *Ooststr.* n. sp. Suffrutex humilis, 60 cm altus, ramis junioribus pilis brevibus laxe appressis indutis, denique glabrescentibus et cinerascenti-viridibus. Folia magis minus disticha, apicem ramorum versus

Type: *Glaziou 14126, p. p.*, Brazil, Minas Geraes, Aldeia da Serra de Ouro Branco.

A suffruticose plant, 60 cm high, the young branches with short, loosely appressed hairs, later glabrous and greyish green. Leaves more or less distichous, gradually diminishing in size towards the top of the branches, ovate to ovate-lanceolate, gradually attenuate towards the acute apex, rounded or slightly cordate at the base, 17—40 mm long, 7—22 mm broad, 2—2.5 times as long as broad, sessile or subsessile, sparsely short-pilose or almost glabrous above, short-pilose beneath, especially on the nerves. Midrib and 4—5 pairs of lateral nerves prominent beneath. Peduncles filiform, 20—40 mm long, patent or erecto-patent, the lower ones shorter than or as long as the leaves, the upper to 2.5 times as long as the leaves, glabrous or with very short appressed hairs, generally 1—3 or occasionally to 7-flowered; bracteoles linear or linear-lanceolate, 2—3 mm long, with distinct midrib; pedicels long, filiform, to 10 mm, short-pilose, reflexed afterwards. Sepals linear to linear-lanceolate, 2.5—3, later to 4 mm long, sparsely pilose and ciliate, with distinct midrib (especially visible in fruit). Corolla white, rotate, 6 mm long, the limb subentire. Filaments inserted near the corolla base, about 2.5 times as long as the linear anthers. Ovary ovoid, glabrous.

gradatim decrescentia, ovata vel ovato-lanceolata, apicem acutum versus gradatim attenuata, basi rotundata vel subcordata, 17—40 mm longa, 7—22 mm lata, 2—2.5 partibus longiora quam lata, sessilia vel subsessilia, supra sparse breviter pilosa vel fere glabra, subtus breviter pilosa, imprimis in nervis. Costa nervorumque lateralium 4—5 jugae subtus prominentes. Peduncululi filiformes, 20—40 mm longi, patentes vel erecto-patentes, inferiores foliis breviores vel ea aequantes, superiores usque ad 2.5 partibus longiores quam folia, glabri vel pilis brevissimis appressis tecti, plerumque 1—3- vel interdum usque ad 7-flori, bracteolis linearibus vel lineari-lanceolatis, 2—3 mm longis, nervo mediano distincto, pedicellis longis, filiformibus, usque ad 10 mm longis, breviter pilosis, denique reflexis. Sepala linearia vel lineari-lanceolata, 2.5—3, denique usque ad 4 mm longa, sparse pilosa ac ciliata, nervo mediano, praesertim in statu fructifero, distincto. Corolla alba rotata, 6 mm longa, limbo subintegro. Filamenta prope basin corollae inserta, fere 2.5 partibus longiora quam antherae lineares. Ovarium ovoideum, glabrum. Type: *Glaziou 14126, p. p.*, Brazil, Minas Geraes, Aldeia da Serra de Ouro Branco (P).

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Aldea da Serra de Ouro Branco, in woods, fl. Jan.—Febr., Glaziou 14126, p. p., type (C, K, Len, P, with *E. phyllanthoides* Moric.).

This new species was met with in the herbaria under the names of *E. phyllanthoides* Moric. and *E. tenuis* Mart. It differs greatly from the former, the similarity with the latter is greater, although distinct differences may also be given here.

The specimens existing in the herbarium Brussels under Glaziou 14126 belong to *E. phyllanthoides*, in Paris *E. phyllanthoides* occurs together with the new species under Glaziou 14126.

25. *Evolvulus glaber* Spreng. Syst. I (1825) p. 862; Hall. f. in Jahrb. Hamb. wiss. Anst. XVI, 3. Beih. (1899) p. 22; Urb. Symb. Ant. IV (1910) p. 503; Boldingh, Fl. Dutch W. Ind. Isl. I (1909) p. 160; Urb. Symb. Antill. IV (1910) p. 502; Boldingh, Fl. Dutch W. Ind. Isl. II (1914) p. 87; N. L. Britton, C. F. Millspaugh, Bahama Flora (1920) p. 347; Urb. Symb. Antill. VIII (1921) p. 557; Hall. f. in Meded. Rijks Herb. Leiden n. 46 (1922) p. 13; N. L. Britton, P. Wilson, Bot. Porto Rico etc. VI, 1 (1925) p. 104; Knuth in Fedde, Rept. Spec. Nov. Beih. XLIII (1928) p. 581.

E. nummularius auct., non L.; Nutt. Gen. N. Am. Pl. I (1818) p. 174.

E. hirsutus auct., non Lam.; H. B. K. Nov. Gen. et Spec. III (1818) p. 116; col. ed. p. 92, excl. synn.

Nama convolvuloides Willd. ex Schult. Syst. VI (1820) p. 189, sphalm. (cf. *Nama evolvuloides* Willd. ex Choisy).

Evolvulus mucronatus Swartz ex Wikstr. in Kongl. Vet. Acad. Handl. Stockh. (1827) p. 61; Griseb. Fl. Brit. W. Ind. Isl. (1864) p. 475; Meissn. in Mart. Fl. Bras. VII (1869) p. 345; Hemsl. Biol. Centr. Am. Bot. II (1881—'82) p. 399; A. Gray, Syn. Fl. N. Am. II, 1 (1886) p. 218; Morong and Britton in Ann. N. York Acad. Sc. VII (1892—'94) p. 173.

E. glabriusculus Choisy in Mém. Soc. Phys. Genève VIII

(1837) p. 78; id. *Conv. Rar.* (1838) p. 156; id. in DC. *Prodr.* IX (1845) p. 448; Chapman *Fl. South. Unit. St.* (1860) p. 345.

E. alsinoides L. var. α *procumbens* f. *3 obtusifolia glabrata* Schweinf. *Beitr. Fl. Aeth.* (1867) p. 94, excl. pl. Ind. or.

E. cumanensis Klotzsch in pl. Moritz. ex Schweinf. l.c. in syn.

Nama evolvuloides Willd. ex Choisy in DC. *Prodr.* IX (1845) p. 447, in syn.

Evolvulus linifolius L. var. *linearis* Meissn. in Mart. *Fl. Bras.* VII (1869) p. 347.

Majera coerulea Karst. ex Peter in Engl.—Prantl, *Nat. Pfl. fam.* IV, 3a (1897) p. 19.

Evolvulus Karstenii Peter l.c. p. 19.

E. campestris T. S. Brandegee in Univ. Calif. *Publ. Bot.* VI (1915) p. 190.

Type: from Porto Rico.

Perennial. Stems several from a perpendicular root, prostrate or ascending, sometimes erect, more or less pilose with closely appressed hairs, glabrescent and lignescent at the base, 15—60 cm. Leaves shortly petioled, petiole appressed-pilose or glabrous; limb ovate, obovate, elliptic or oblong, rarely lanceolate, oblong-lanceolate or suborbicular, obtuse or slightly emarginate at the apex, mucronulate, rarely acutish; rounded, truncate or subcordate at the base, sparsely appressed-pilose beneath or only with some appressed hairs on the nerves, glabrous above or with some appressed hairs, 8—25 (—45) mm long, 5—15 (—30) mm broad. Peduncles shorter to longer than the subtending leaves, filiform, 8—30 mm, 1-, 2—3- or occasionally more-flowered, appressed-pilose; pedicels shorter or longer than the calyx, erect at first, later at an angle with the peduncle, 2—4 mm, often reflexed in fruit. Bracteoles linear-subulate, 1.5—3 mm. Sepals equal, oblong-lanceolate, acute or acuminate, 2.5—3.5 (—4) mm long, sparsely appressed-pilose, ciliate at the margin, often reflexed in fruit, 3-nerved, reticular nervation visible. Corolla pale-blue or white, rotate to funnel-shaped, the tube very short,

the limb superficially 5-lobed, 8—10 mm in diam., outside with 5 sericeous bands. Filaments 2—3 times as long as the linear-oblong anthers. Ovary globular, glabrous. Capsule globular or ovoid, 4—2-valved, 4- or less-seeded. Seeds brown.

Distribution: Southern United States of America, Mexico, West Indies, South America to Paraguay, Galapagos Islands.

UNITED STATES OF AMERICA, Louisiana, on the banks of the Mississippi near New Orleans (ex Nutt. l.c.) Florida, Lower Matcumbe, dry rocky soil, April 1892, *J. H. Simpson* 567 (K, US); Key West, March 1906, *A. S. Hitchcock* (F); id., *Rugel* 183 (NH); id., Jan. 1892, *J. H. Simpson* 384 (US).

MEXICO, Oaxaca, San Geronimo, July 1914, *C. A. Purpus* 7182, type of *E. campestris* Brandegees (F, NH, US).

BAHAMA ISLANDS, Long Island, Clarence Town and vicin., marshy grounds, March 1907, *N. L. Britton, C. F. Millspaugh* 6298 and 6298 bis (F); id., salina margin, March 1907, *N. L. Britton, C. F. Millspaugh* 6340 (F); Fortune Island, Febr. 1888, *Eggers* 3812 (C); id., Febr. 1888, *Eggers* 3991 (C, K, NH); Caicos group, Ambergris Cay, rocky plain, March 1911, *C. F. and C. M. Millspaugh* 9282 (F, US); South Caicos, Dec. 1907, *P. Wilson* 7685 (K); Turk's Islands, *Hjalmar* (K); Eastern Cay, March 1911, *C. F. and C. M. Millspaugh* 9365 (US); id., Grand Turk, Aug. 1905, *G. V. Nash, N. Taylor* 3760 (US); Inagua, Oct. 1904, *G. V. Nash, N. Taylor* 928 (K); id., upper savanna, Oct. 1904, *G. V. Nash, N. Taylor* 1312 (K, US).

WEST INDIES, without locality, *Riedle* (P).

CUBA, Camaguey, Cayo Romano, Oct. 1909, *J. A. Shafer* 2634 (NH, P, U, US); id., Cayo Guajaba, March 1909, *J. A. Shafer* 630 (US); id., Cayo Sabinal, in a kind of sweet water meadows, Oct. 1922, *E. L. Ekman* 15491 (S); id., Manati, marshy ground, Febr. 1889, *Eggers* 4777 (K); Oriente, Naval Station, Caimanera, Febr. 1919, *Bro. Hioram, Dr. C. J. Ramsden* 2337 (C); Santiago de Cuba, open coastal thickets, March 1919, *Bro. Clement* 102 (US); Oriente, Guantánamo Bay, U. S. Naval Station, coral rock bench, March 1909, *N. L. Britton* 1909 (US); id., id., margin of "tide water plains", Novaliches, Sept. 1914, *E. L. Ekman* 2946 (S, US); id., id., near the targar practice, Dec. 1919, *E. L. Ekman* 10182 (S); id., Gamboa, in low savannas near Cienaga de Birama, Aug. 1922, *E. L. Ekman* 15006 (S).

HAITI, *C. Ehrenberg* (B); Vicin. of Cabaret, Baie des Moustiques, open place in thicket, coastal plateau west of Cabaret, Jan. 1929, *E. C. and G. M. Leonard* 12014 (US); id., id., saline at mouth of Moustique River, Jan. 1929, *E. C. and G. M. Leonard* 11945 (K, US); Plaine Cul-de-Sac, arid region at the foot of Morne-à-Cabrits, July 1924, *E. L. Ekman* H 946 (S, US); vicin. of Port à l'Ecu, dry thicket, border of saline, east of bay, March 1929, *E. C. and G. M. Leonard* 13845 (US); vicin. of Port de Paix, rifle range west of town, May 1929, *E. C. and G. M. Leonard* 15241 (US); id., dry slope, Dec. 1928, *E. C. Leonard, G. M. Leonard* 11090 (US); vicin. of St. Marc, near sea level, dry bank of irrigation ditch, Febr. 1920, *E. C. Leonard* 2860 (US); id., near sea level, occasional, Febr. 1920, *E. C. Leonard* 2996 (US); vicin. of Fond Parisien, Etang Saumâtre, arid plains, scarce, May 1920, *E. C. Leonard* 4159 (US).

DOMINICAN REPUBLIC, *Herb. Poirét* (P); *Herb. de Poiteau* (P); 1852, *R. Schomburgk 181** (B); near banks of Ester R., March 1827, *Jacquemont* (K, P); Prov. de Santiago, Mao, 100—300 m, Febr.—March 1921, *W. L. Abbott 1058* (US); Prov. de Monte Cristi, Guayubin, 100 m or less, Febr. 1921, *W. L. Abbott 962a* (US); Llanos de Rafael, 200 m, in woods, May 1887, *Eggers 1917* (G, US).

JAMAICA, *Bancroft* (K); *March 1163, 1164* (G, K, Len); *Wright* (NH); savanna, 1849, *Wullschlaegel 927*, type of *E. linifolius* L. var. *linearis* Meissn. (M); near Halfway Tree, Dec. 1898, *W. Fawcett 7534* (US); Margaretville Pen, *H. A. Wood* (NH).

PORTO RICO, *Bertero* (?) (P); *de Jussieu, catal. 6889* (P); Mayaguez, Guanica, Porto Rico and vicin., rocky thicket, March 1913, *N. L. Britton, J. A. Shafer 1867* (US); id., salinas Cabo-Rojo to Punta de Aguila, Febr. 1885, *Sintenis 599* (B, G, K, Len, M, NH, P, S, US); Punta Aguila, Febr. 1915, *N. L. Britton, J. F. Cowell, S. Brown 4693* (US); thickets between Guayanilla and Ponce, March 1927, *N. L. Britton, E. G. Britton 9059* (S); Guayama, 1864, *de Grosourdy* (P); from Guayama to Aguirre, brackish saltbarren, on road, June 1901, *L. M. Underwood, R. F. Griggs 390* (US); Aguirre, subsaline plain, Febr. 1922, *N. L. and E. G. Britton, M. S. Brown 6027* (US); Cayo Muertos, limestone rocks, March 1915, *N. L. Britton, J. F. Cowell, S. Brown 5022* (US); Mona Island, moist soil, coastal plain, Febr. 1914, *N. L. Britton, J. F. Cowell, W. E. Hess 1776* (US).

LESSER ANTILLES, *St. Thomas, Balbis* (Len); *Bertero* (P); *Crudy* (M); *C. Ehrenberg 296* (B); *I. F. Holton 537* (K); *Herb. Lamarck* (P); *Herb. Jussieu* (P); *Richard* (P). Tortola, Febr. 1913, *N. L. Britton, J. A. Shafer 856* (US); Virgin Gorda, hillside near valley, Febr. 1913, *N. L. Britton, W. C. Fishlock 1110* (US). St. Croix, March 1923, *N. L. Britton, E. G. Britton, J. F. Kemp 68* (US); *Hornemann* (B); *von Rohr* (Len, S); Dec. 1923, *J. B. Thompson 588* (US); *Herb. Ledebour* (Len); Cornhill, Jan. 1896, *A. E. Ricksecker 203* (US); East End, March 1897, *Mrs. J. J. Ricksecker 285* (P, US). Anagada, rocky plain near settlement, Febr. 1913, *N. L. Britton, W. C. Fishlock 1008* (K, US). Anguilla, 1906, *Boldingh 3564* (U). St. Martin, May 1885, *W. F. R. Suringar* (L); 1906, *Boldingh 1961* (U); shady places, along roads, 1868, *H. E. Rijgersmaa 58* (S); along roads from Bethlehem to Mont Chambord, Aug. 1906, *Boldingh 2916* (L, U); between Belvedere and Oysterpoint, Aug. 1906, *Boldingh 3066* (K, U); near Fort Amsterdam, Apr. 1885, *W. F. R. Suringar* (L). St. Barthelémy Isl., *A. von Goës* (S). St. Kitts, collector ?, (S). Antigua, in pastures, Sept. 1891, *Nicholls* (K); dry places, 1849, *Wullschlaegel 366* (Br, G, M). Guadeloupe, *Forsström* in *herb. Swartz*, type of *E. mucronatus* Sw. (S); *Bertero* (B); dry places, 1849, *Duchassaing* (G, P); *Père Duss 490* (P); *Grisebach* (K); *coll. Nijst* (Br). Martinique, *Père Duss 1881* (US); *Hahn 1325* (NH); 1787, *Isert* (C); hills near Casa Pilote, May 1870, *Hahn 1328* (S); Ste Anne, *Hahn 1328* (K, P, US). St. Vincent, *H. H. Smith, G. W. Smith* (K). Mustique Island, open pasture land, near sea-level, common, *G. W. Smith G. 28* (K). Grenada, dry pastures, Apr. 1895, *W. E. Broadway 472* (K). Barbados, Apr.—June 1895, *J. F. Waby 27* (K). Trinidad, Patos Island, rocky ground, June 1908, *W. E. Broadway 2658* (Br, Del); id., June 1932, *W. E. Broadway 8913* (K, NH, S). Aruba, *Boldingh 6453b* (U); *Boldingh 6474* (C, U); *Boldingh 6541* (U); Koolwijk, 1885, *W. F. R. Suringar* (L). Curaçao, *Boldingh 5037* (L, U); *Boldingh 5138* (K, P, U); *Boldingh 5165, 5216* (U); rocky hills, Wacao to Playa Grande, March 1913, *N. L. Britton,*

J. A. Shafer 3047 (U, US); dry mud, Patrick, March 1913, N. L. Britton, J. A. Shafer 3079 (U, US). Bonaire, *Boldingh* 7103, 7301 (U); Febr. 1885, W. F. R. Suringar (L).

COLOMBIA, without precise locality, *Karsten* (B); *Bro. Ariste-Joseph* (US); Santa Marta, Magdalena, Goajira, M. T. Dawe 509 (K, US); *Bolivar*, Barranquilla and vicin., 1927, *Bro. Elias* 363 (US); id., id., 1926, *Bro. Paul C. 44* (US); id., id., Puerto Colombia, Jan. 1928, *Bro. Elias* 434 (US); id., id., id., Jan. 1932, *Bro. Elias* 868 (U ex US); id., id., id., Febr. 1925, *Keilhack* 52, 53, 54 (B); id., id., id., sandy shores, 0—10 m, Oct. 1922, F. W. Pennell 12033 (B, K, US); id., Tierrabomba Island, Cartagena Bay, coastal thicket, Nov. 1926, E. P. Killip, A. C. Smith 14137 (US).

VENEZUELA, without precise locality, 1865, *Moritz s. n.* (NH); Cabo-Blanco, on dry hills in cactus formation, Febr. 1922, *H. Pittier* 10197 (US); Zulia, Maracaibo, 1865, *Moritz* 1236 (B, NH); id., *Plée* 24 (P); id., *Plée s. n.* (P); Merida, near Tovar, *Fendler* 2067 (K); Carabobo, Puerto Cabello, fl. Nov., *Ed. André* 167 (K); id., *Engels* (Len); id., *Karsten* (B, Len); id., May 1874, *O. Kuntze* 1757 (US); id., Nov. 1916, *Mr. and Mrs. J. N. Rose* 21990 (US); id., Nov. 1901, *Went* 1088 (U); Federal Distr., Caracas, Herb. *H. van Heurck* (P); Bermudez, Cumana, Herb. *Bonpland* 24 (B, P); id., fl. June, *Moritz* 500 (B); id., *Moritz* 501 (B, NH).

ECUADOR, Guayaquil, 1852, N. J. Andersson 35 (S); id., *Barclay* (NH); id., *Jameson* 359 (K, Len, NH); id., *Pavon* (P); id., dry places, July 1925, *Luis Mille* 84 (NY); R. Daule near Guayaquil, R. *Spruce* 6318 (B, K, Len, NH, P, S); Isl. Puna, 1852, N. L. Andersson (S); id., *Sinclair* (K); Recreo, Apr. 1897, *Eggers* 15769 (F, K, L); Manabi, *Eggers s. n.* (P).

PERU, Dept. Tumbes, between Ricaplaya and Casa Blanqueada, herbaceous vegetation, March 1927, A. *Weberbauer* 7736 (F, U, US).

GALAPAGOS ISLANDS, *Scouler* (K); Chatham (S. Cristobal) and Indefatigable (Santa Cruz), *Andersson* (S); Indefatigable (Santa Cruz), s. coast, 40 m, June 1932, *H. J. F. Schimpff* 63 (B, U); id., n. w. side, fl. July, A. *Stewart* 3102 (K); Charles Isl. (Santa Maria), Apr. 1891, *Alex. Agassiz* (US); id., abundant in open places in the vegetation above 450 ft., March 1906, A. *Stewart* 3097 (K, US); id., common in rocky soil near the shore, May 1906, A. *Stewart* 3104 (US); Albemarle Isl. (Isabela Isl.), Iguana Cove, Dec. 1898, R. E. *Snodgrass*, E. *Heller* 32 (US).

BOLIVIA, dry hills near Camatindi, 700 m, Dec. 1910, *Th. Herzog* 1161a (L); Villamontes, 700 m, March 1925, K. *Pflanz* 4094 (B); Dept. Santa Cruz, Lagunas (?), Apr. 1915, *Steinbach* (herb. Lillo) 1249 (B).

BRAZIL, without precise locality, *Sellow* (B). Matto Grosso, Jan. 1903, A. *Robert* 868 (K, NH).

PARAGUAY, Pilcomayo River, 1888—1890, *Th. Morong* 1020 (K, US); Chaco, *Fiebrig* 1501 (K); id., Nov. 1903, E. *Hassler* 2601 (B, K, P).

Vernacular names: Yerba de Sabana de Montaña (Venezuela, ex *Knuth* l.c.); Tsjananaa (ex *Boldingh* l.c.).

The shape of the leaves may show a rather great variability. In most cases they are fairly broad and obtuse, sometimes they are narrower, distinctly oblong, as example I mention *Sintenis* 599. *Wulschlaegel* 927 is very narrow-leaved. Now and then

emarginate leaves occur, which are mostly broad, almost orbicular. The length of the peduncle is rather variable. As an exception it is almost lacking. Consequently its being mistaken for *E. nummularius* L. which moreover often resembles this species in leaf-form, is explainable. The form and size of the corolla and also the typical hairiness with short patent curved hairs are however characteristics by which *E. nummularius* is easy to distinguish from *E. glaber*. On the Islands Aruba, Curaçao and Bonaire a densely hairy form occurs.

Subsection 2. *Epedunculati* v. Ooststr. n. subsect. ¹⁾

Anagalloidei Meissn. in Mart. Fl. Bras. VII (1869) p. 331, 348, pro majore parte; Peter in Engl.-Prantl, Nat. Pfl. fam. IV 3a (1897) p. 19, p. p.

Peduncle absent, rarely very short, exceptionally longer. Corolla rotate, funnel-shaped or salver-shaped, the limb generally entire or superficially lobed, rarely distinctly lobed.

KEY TO THE SPECIES.

1. Corolla rotate to widely funnel-shaped, tube very short, filaments inserted quite near the corolla base.
2. Corolla distinctly 5-lobed; sepals ovate-oblong. Stems prostrate, rooting at the nodes; leaves broad-ovate, elliptic or orbicular, occasionally obovate or oblong, glabrous or sparsely pilose.
35. *E. nummularius*.
- 2.* Corolla subentire or superficially lobed.
3. Sepals ovate-lanceolate to lanceolate; stems prostrate or ascending, occasionally rooting at the nodes; leaves distinctly emarginate, elliptic-oblong or obovate; pedicels much longer than the villose calyx.
34. *E. Pohl.*
- 3.* (see also 3**). Sepals linear, narrow-lanceolate or lanceolate; stems prostrate, ascending or erect, not rooting at the nodes; leaves not emarginate.
4. Leaves small, at most 5 mm long and 3 mm broad, generally smaller, ovate-oblong, ovate or nearly orbicular.
5. Very small plants, stems to 4 cm long; leaves 1.5—4 mm long, 1—2 mm broad, glabrous above; pedicels as long as or longer than the sepals.
31. *E. minimus*.
- 5.* Generally larger; leaves 2—5 mm long, 2—3 mm broad, sparsely appressed-villose or occasionally glabrous above; pedicels shorter than the sepals.
32. *E. Bracei*.
- 4.* Leaves larger.
6. Pedicels as long as or mostly rather longer than the sepals.
7. Corolla at most 15 mm in diam.
8. Stems appressed-pilose; leaves glabrous above, appressed-pilose beneath, elliptic to ovate, obtuse at both ends, 7—12 mm long, 5—8 mm

¹⁾ Subsect. *Epedunculati* v. Ooststr. n. subsect. Pedunculus nullus vel raro brevissimus vel rarissime evolutus. Corolla rotata, infundibuliformis vel hypocrateriformis, limbo integro vel sublobato, raro distincte lobato.

broad; pedicels as long as or generally longer than the sepals, loosely appressed-pilose.

33. *E. siliceus*.
- 8.* Stems patently pilose with long and short hairs; leaves sparsely pilose on both sides, ciliate, ovate, narrow-ovate or oblong, occasionally orbicular, acute or obtusish at the apex, rounded, truncate or subcordate at the base; 8—20(—32) mm long, 4—12 mm broad, pedicels much longer than the sepals, patently pilose. 26. *E. cordatus*.
- 7.* Corolla about 30 mm in diam. Stems patently pilose and tomentose. Leaf-margins long ciliate. Pedicels rather thick, hairy like the stems. 27. *E. speciosus*.
- 6.* Pedicels shorter than the sepals or none.
9. Leaves hairy on both sides, occasionally only very sparsely.
10. Stems prostrate, sometimes the tips ascending.
11. Stems densely patent-villose with brown hairs; leaves sparsely appressed-villose on both sides, ciliate, often secund; sepals patently villose with brown hairs. 28. *E. ovatus*.
- 11.* Hairs of the stems more appressed.
12. Leaves densely imbricate, ovate; the whole plant densely silvery white woolly-sericeous. 29. *E. gnaphalioides*.
- 12.* Leaves not imbricate, ovate to elliptic, closely appressed-pilose on both sides with short, soft hairs, 10—18 mm long, 5.5—10 mm broad. 30. *E. Hallierii*.
- 10.* Stems erect (cf. *E. ovatus* Fern. f. oblongus m., with corolla as long as the sepals or slightly surpassing them and leaves oblong).
13. Sepals linear, 5—7 mm; corolla shorter than or as long as the calyx; leaves linear or narrow-oblong, occasionally oblanceolate. 36. *E. simplex*.
- 13.* Sepals lanceolate or narrow-lanceolate, 4—5 mm; corolla exceeding the sepals. 37. *E. pilosus*.
- 9.* Leaves quite glabrous above, densely villose beneath with reddish brown or greyish hairs, oblong or oblong-lanceolate, occasionally broader. Habit erect or ascending from the base. 38. *E. chrysotrichos*.
- 3.** Sepals narrow-oblong-lanceolate, oblong-lanceolate or ovate-oblong, acute or acuminate. Stems erect, ascending or prostrate, not rooting at the nodes. Indumentum sericeo-villose or sericeo-lanate.

14. Leaves not imbricate, either distichous or not.
15. Leaves glabrous above.
16. Leaves variable in size, narrow-linear, lanceolate, oblong, ovate-oblong to elliptic, acute or obtuse, sericeo-villose or sericeo-lanate beneath, in the latter case the apex mostly acute. Corolla white, pale blue or pale lilac (occasionally bright yellow in dried state), variable in diam. Stems erect, ascending or prostrate. 39. *E. sericeus*.
- 16.* Leaves ovate or elliptic, sometimes broad-ovate, obtuse or slightly emarginate, densely appressed sericeo-villose beneath, 13—22 × 8—12 mm. Corolla intensively blue with white throat and midpetaline stripes, about 13 mm in diam. Stems prostrate. 40. *E. rotundifolius*.
- 16.** Leaves ovate or oblong-elliptic, obtuse, densely sericeo-lanate beneath, 4—8 mm long, 2.5—4 mm broad. Corolla intensively blue, about 8 mm in diam. Stems prostrate (or ascending?). 42. *E. Purpusii*.
- 15.* Leaves densely sericeo-villose on both sides, oblong-lanceolate to ovate-oblong, acute at the apex, rounded or acutish at the base, 6—9 mm long and 2.5—3.5 mm broad. Stems prostrate. 43. *E. arenicola*.
(See also forms of 39. *E. sericeus* and 42. *E. Purpusii*).
- 14.* Leaves imbricate, distichous, broad-ovate to orbicular, rounded or slightly emarginate at the apex, glabrous above, sericeo-villose beneath. 41. *E. prostratus*.
- 1.* (see also 1**) Corolla funnel-shaped, tube 3—4 mm long, filaments inserted at the mouth of the tube.
17. Leaves small, 5—8 mm long, elliptic to elliptic-oblong, sometimes slightly falcate, acute at the apex, densely covered with long spreading hairs, mixed with shorter ones. 46. *E. villosissimus*.
- 17.* Leaves larger, 8—15 or occasionally to 25 mm long.
18. Leaves ovate, broad-ovate or orbicular, rarely oblong, often oblique, obtuse or acutish at the apex, covered with a short tomentum, mixed with longer hairs (almost glabrous in the var. *subglaber*). 44. *E. frankenioides*.
- 18.* Leaves broad-ovate, ovate or ovate-oblong, often oblique, acute at the apex, densely villose with long spreading hairs; tomentum sparse or none. 45. *E. Riedelii*.
- 1.** Corolla salver-shaped, tube 5—15 mm, narrow, limb widely expanded, filaments inserted at the mouth of the tube.
19. Leaves large, the middle-sized ones 30—40 mm long and 15—20 mm broad, sometimes larger, to 75 mm long, ovate, ovate-oblong or deltoïd-ovate, apex mostly acute, rarely obtuse, base cordate with stemclaspng rounded auricles, rarely subcordate or truncate. Sepals narrow-lanceolate with long linear acumen, 5—6 mm. 52. *E. cardiophyllus*.
- 19.* Leaves smaller.
20. Sepals lanceolate to ovate-lanceolate, acute or acuminate, 3 mm or more long.
21. Leaves glabrous on both sides or with some hairs on the

nerves beneath and along the margins, principally near the base; broad-ovate to orbicular, obtuse or acutish at the apex, 10—20 mm long, 1—1.5 times as long as broad.

47. *E. macrolepharis*.

(in the typical form the stems are beset with patent hairs; in the var. *Warmingii* they are appressed-pilose and so are both surfaces of the ovate-oblong to broad-ovate leaves).

21.* Leaves densely hairy on both surfaces.

22. Upper surface of the leaves not tomentose.

23. Leaves ovate, broad-ovate or suborbicular, apex obtuse or acutish; middle-sized leaves 15—25 mm long, occasionally smaller, 1—2 times as long as broad; hairs of the stems to 4 mm long, patent.

49. *E. barbatus*.

(forms with smaller leaves also occur; see remarks under 48. *E. aurigenus* and 49. *E. barbatus*).

23.* Leaves orbicular or broad-ovate, rounded or short-apiculate at the apex; 6—10(—12) mm long; 1—1.5 times as long as broad. Indumentum of the stems consisting of long patent hairs of reddish brown colour, and either with a short tomentum or without.

48. *E. aurigenus*.

23.** Stems with appressed hairs.

47. *E. macrolepharis* var. *Warmingii*.

22.* Upper surface of the leaves tomentose. Leaves broad-ovate, ovate or ovate-oblong, acute or obtusish at the apex, 5—15 mm long, 1—2.5 times as long as broad.

50. *E. cressoides*.

20.* Sepals elliptic, obtuse, apiculate, 2 mm long. Leaves ovate, acute at the apex, rounded or slightly cordate at the base, 7—10 mm long, 5—7 mm broad, covered with a short tomentum, mixed with long hairs.

51. *E. rariflorus*.

According to the description 53. *E. ramulosus* Jones also belongs to this subsection.

26. *Evolvulus cordatus* Moric. Pl. Nouv. Am. (1844) p. 137, t. 82; Choisy in DC. Prodr. IX (1845) p. 447 excl. specim. 2259 a cl. Gardner lecta ad *E. anagaloidem* Meissn. transferenda; Meissn. in Mart. Fl. Bras. VII (1869) p. 349.

E. modestus Mart. ex Choisy in DC. Prodr. IX (1845) p. 448; Obs. mss. n. 2279.

E. villosus? auct. non R. et P.; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III, p. 489.

E. bahiensis Helwig in Notizblatt Berlin—Dahlem IX, n. 91 (1927) p. 106.

Type: Gardner 2258, Brazil, Piahy, near Oeiras.

Perennial herb. Stems several from a perpendicular root.

decumbent or ascending, 10—40 (—80, *Gardner* 2258, US.) cm long, terete, patently pilose, with short and long hairs, not or somewhat branched, with flowers over the whole length; internodes 6—15 mm long. Leaves often directed upwards or sometimes appressed against the stems, sessile or shortly petioled, orbicular, ovate, narrow-ovate or oblong, acute or obtusish, sometimes slightly inequilateral or nearly falcate, often rather variable in form on the same plant, often subcordate at the base, but also rounded or truncate, rarely acutish, 8—20 (—32) mm long and 4—12 mm broad, sparsely appressed-pilose on both sides, ciliate, glabrescent, with minute pellucid lines. Petiole up to 1.5 mm long. Midrib and 2—3 pairs of lateral nerves prominent beneath, pale. Flowers solitary or rarely 2—3 in the leaf-axils; peduncles none, pedicels long, filiform, slender, curved, much longer than the calyx, to 15 mm long, patently pilose with short and long hairs, strongly reflexed in fruit; bracteoles linear, 1.5 mm long, villose. Sepals with minute, pellucid lines, lanceolate or narrow-lanceolate, acuminate, variable in length, 3.5—6 mm long, covered with long soft spreading hairs. Corolla much exceeding the calyx, blue, with white throat, rotate, the tube very short, the limb with 5 short, emarginate lobes and 5 sericeous bands outside, 12—15 mm in diam. Filaments twice as long as the linear anthers. Ovary globose, glabrous. Capsule globose, enclosed by the incurved sepals, glabrous, 4-valved, 2-celled, 4- or less-seeded; seeds smooth, dark brown.

Distribution: Brazil, Piauhy, Bahia, Rio de Janeiro.

BRAZIL, Piauhy, near Oeiras, 1839, *Gardner* 2258, type (K, NH, P, US). Bahia, Aug. 1912, *Zehntner* 227 (Rio 6289); N. E. Bahia, Caatinga distr., Febr. 1914, *Ph. von Luetzelburg* 785 A (B); near Joazeiro and at Rio S. Francisco, fl. Apr., *Martius*, type of *E. modestus* Mart. (M); near Joazeiro, *Zehntner* 1983 (M); Remanso, on sand, Dec. 1906, *Ule* 13 Ba (B); Taboleiro near Remanso, Dec. 1906, *Ule* 7406, type of *E. bahiensis* Helwig (B, K, L); id., Dec. 1906, *Ule* 7409 (B, L). Rio de Janeiro, *Glaziou* 9969 (C, K, P); São Fidelio, stony places, Jan. 1876, *Glaziou* 9974 (C, K, P).

27. *Evolvulus speciosus* Moric. Pl. Nouv. Amér. (1838) p. 50, t. 34; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 75;

id. *Conv. Rar.* (1838) p. 153; id. in DC. *Prodr.* IX (1845) p. 447; Meissn. in Mart. *Fl. Bras.* VII (1869) p. 358.

Type: *Blanchet 2649*, Brazil, Bahia, Serra da Jacobina.

Perennial. Stems decumbent or ascending, several from a woody base, simple or slightly branched, 10—30 cm long, more or less densely covered with a short brown tomentum, mixed with longer patent hairs. Leaves at distances of 8—15 mm, often secund, shortly petioled; petioles 0.5—2 mm long, channelled above, blades with minute pellucid dots, ovate or elliptic, acute or obtusish at the apex, rounded or cordate at the base, the moderate ones 10—20 mm long and 6—10 mm broad, the larger ones up to 25 mm long and 17 mm broad, hairy like the stems, the margins long-ciliate. Midrib prominent beneath, pale, basal pairs of lateral nerves more or less visible, pale. Flowers axillary, solitary, for the greater part in the axils of the apical leaves; peduncle none, pedicels as long as or exceeding the leaves, thick, curved, 8—15 mm long, hairy like the stems. Sepals equal, lanceolate, attenuate towards the top, acute, 7—7.5 mm long, hairy like the stems. Corolla white (yellow?, *Choisy*), large, broadly rotate, the tube short, the limb 12—16 mm in diam. according to *Meissner*, but attaining 30 mm in the specimens collected by *Ule (7408)*, shallowly 5-lobed, with appressed-sericeous bands outside. Filaments as long as the oblong, sagittate anthers. Ovary globular, glabrous. Capsule globular, glabrous, 5 mm high, 4-valved, 2-celled, 4- or less-seeded. Seeds blackish, smooth.

Distribution: Brazil, Bahia.

BRAZIL, without locality, *Blanchet s.n.* (K, with *E. frankenioides*). Bahia, Taboleiro near Remanso, Dec. 1906, *Ule 7408* (B, K); Serra da Jacobina, *Blanchet 2649*, type (B, K, P); id., *Blanchet 2647* (NH).

Meissner incorrectly ranges this species with the *Passerinoidei*. Shows great resemblance in habit to *E. cordatus*, differs however from this species among others by the much larger corolla, the larger sepals and the thicker pedicels. *Meissner* gives the diameter of the corolla as "6—8 lin.", the specimens collected

by Ule (Ule 7408) show corollas with a diameter of about 3 cm, the largest known in the genus.

28. *Evolvulus ovatus* Fernald in Proc. Amer. Acad. XXXIII (1898) p. 89.

Type: *Edw. Palmer 313*, Mexico near Acapulco, on a shady hillside.

Perennial herb. Stems several from a perpendicular root, prostrate, simple or somewhat branched below, 10—35 cm long, densely patently villose with long brown hairs, especially the younger parts, densely leafy near the apex, the leaves patent, secund or directed towards the apex and more or less appressed to the stems; internodes at the middle of the stems 5—7 mm long. Leaves shortly petioled or the upper ones sessile (petiole at most 1.5 mm long), ovate or ovate-oblong, acutish at the apex, rounded or subcordate at the base, 10—15, rarely to 30 mm long and 6—10 (—14) mm broad, sparsely appressed-villose on both sides, ciliate, with minute pellucid dots. Midrib and 1—3 pairs of lateral nerves rather prominent beneath. Flowers 1 or 2 in the leaf-axils over the whole length of the stems or principally near the apex; peduncles none, pedicels short, much shorter than the sepals, directed downwards in fruit. Bracteoles linear, 1—1.5 mm long, villose. Sepals with pellucid dots, lanceolate, acute, 4—5 (—7) mm long, with long soft, spreading, brown hairs. Corolla blue, as long as the calyx or somewhat exceeding it, funnel-shaped, the tube very short, the limb subentire, with 5 sericeous bands, about 5 mm or a little more in diam. Filaments 3 times as long as the oblong anthers. Ovary globose, glabrous. Capsule depressed-globose, shorter than the sepals, 4-valved, 4-seeded. Seeds smooth, dark brown.

Distribution: S. Mexico, Colombia, Venezuela, Brazil (Ceará, Minas Geraes).

MEXICO, Guerrero, near Acapulco, shady hillside, Dec. 1894, *Edw. Palmer 313*, type (K, US).

COLOMBIA, Santa Marta, *Purdie* (K).

VENEZUELA, Bolívar, Ciudad Bolívar, 1864, *de Grosourdy* (P).

BRAZIL, without locality, *Swainson* (K). Ceará, *Gardner 1773* (K, NH).

V); *Cratheus*, in "caatinga", March 1910, *A. Löfgren* 412 (S); Guamaranga, 3000 ft., *G. Bolland* (K). Minas Geraes, Cachoeira do Campo, Oct. 1893, *Glaziou* 11276 (B, K, P).

The specimens de Grosourdy and G. Bolland have the pedicels longer, about as long as the sepals, and the bracteoles, at least a part of them, larger, 4—9 mm long.

f. **oblongus** v. Ooststr. n. f. ¹⁾

Type: *Ule* 8272, Brazil, Amazonas, Parime distr.

Probably annual, erect, simple or branched near the base, 6—20 cm high. Leaves appressed against the stems or erecto-patent, almost sessile, oblong or narrow-oblong, occasionally elliptic, acute or obtusish at the apex, obtuse at the base, 7—17 (—21) mm long, 2.5—4.5 (—7) mm broad. Flowers in the upper leaf-axils, secund, pedicels shorter than the calyx.

Distribution: Brazil, Amazonas, Minas Geraes.

BRAZIL, Amazonas, Parime distr., Oct. 1909, *Ule* 8272, type (B, K, L). Minas Geraes, Cachoeira do Campo, Oct. 1893, *Glaziou* 11276 (C).

29. *Evolvulus gnaphalioides* Moric. Pl. Nouv. Amér. (1839) p. 61, t. 41; Choisy in DC. Prodr. IX (1845) p. 445; Meissn. in Mart. Fl. Bras. VII (1869) p. 353.

Type: *Blanchet* 2826, Brazil, Bahia, Serra Açurua, Rio S. Francisco.

Perennial, densely woolly-sericeous with silvery-white, shining hairs; the stems rather stout, lignescent, branched, prostrate or ascending, terete, totally covered by the densely imbricate leaves, only visible below in the leafless parts, to 40 cm long. Leaves distichous, sessile, ovate, cordate and stemclasping at the base, acute or shortly acuminate at the apex, with a mucro consisting of a bundle of hairs, the blade 10—20 (—28) mm long, 6—16 mm broad, densely silvery-white woolly-sericeous, shining. Midrib

¹⁾ *E. ovatus* Fernald f. **oblongus** v. Ooststr. n.f. Probabiliter annuus, erectus, simplex vel prope basin ramosus, 6—20 cm altus. Folia ad caules appressa vel erecto-patentia, subsessilia, oblonga vel anguste oblonga, interdum elliptica, apice acuta vel obtusiuscula, basi obtusa, 7—17 (—21) mm longa, 2.5—4.5 (—7) mm lata. Flores in axillis foliorum superiorum, secundi, pedicellis calyce brevioribus. Type: *Ule* 8272, Brazil, Amazonas, Parime distr. (B).

visible beneath, sometimes also the lower pairs of lateral nerves. Flowers solitary or 2—3 in the leaf-axils; peduncle absent, pedicels short, 1—3 mm. Sepals equal, narrow-lanceolate or lanceolate, 4—5 mm long, densely woolly-sericeous. Corolla blue with white bands, rotate, 8 mm long, the tube very short, the limb 12—14 mm in diameter, with 5 appressed-sericeous bands outside. Filaments as long as the oblong anthers. Ovary globular or ovoid, glabrous.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, Serra Açurua, Rio S. Francisco, *Blanchet 2826*, type (B, K, Len, NH, P); Serra do São Ignacio, sandy campo, Febr. 1907, *Ule 7547* (B, K, L); Bahia (?), *Th. Bernhardt* (B).

A very beautiful *Evolvulus*, directly to be recognised by the silvery, dense, closely appressed hairiness and the densely imbricate, broad leaves.

30. *Evolvulus Hallierii* v. Ooststr. n. sp.¹⁾

Type: *Edw. Palmer 528*, Mexico, Tamaulipas, vicinity of Victoria.

Perennial. Stems several from a woody perpendicular root, prostrate, simple or slightly branched, 6—25 cm long, pilose with loosely appressed soft hairs, light fulvous or silvery white, glabrescent and lignescent towards the base. Leaves distichous, at distances of 6—12 mm, patent, shortly petioled, petiole 1—2

¹⁾ *E. Hallierii* v. Ooststr. n.sp. Perennis. Caules plurimi e radice lignosa perpendiculare, prostrati, simplices vel parce ramosi, 6—25 cm longi, pilis laxe appressis mollibus pallide fulvis vel argenteo-albis tecti, basin versus glabrescentes et lignescentes. Folia disticha, 6—12 mm distantia, patentia, breviter petiolata, petiolis 1—2 mm longis, limbo ovato vel elliptico, utrinque obtuso, apice mucronulato, 10—18 mm longo, 5.5—10 mm lato, fere duplo longiore quam lato, utrinque pilis brevibus mollibus appressis fulvis vel argenteo-albis tecto, pagina inferiore densius pilosa, magis minus nitente, nervo mediano magis minus distincto, nervis lateralibus subindistinctis. Flores 1—2 axillares, pedunculo nullo, pedicellis brevibus, 1—2 mm longis, bracteolis parvis, 0.5—1.5 mm longis. Sepala anguste lanceolata vel lanceolata, acuminata, 4.5 mm longa, indumento caulium. Corolla alba, rotata, sepala multo superans, tubo brevissimo, limbo leviter lobato, usque ad 12 mm diametro. Filamenta 1.5—2 partibus longiora quam antherae oblongae. Ovarium subglobosum, glabrum. Capsula oblique ovoidea, sepala aequans vel paulo superans, semine singulo. Semen brunneum, laeve. *Type*: *Edw. Palmer 528*, Mexico, Tamaulipas, vicinity of Victoria (US).

mm long, limb ovate to elliptic, obtuse at both ends, mucronulate at the apex, 10—18 mm long, 5.5—10 mm broad, about twice as long as broad, closely appressed-pilose on both sides with short soft fulvous or silvery white hairs, beneath more densely than above and more or less shining. Midrib more or less distinct, lateral nerves rather indistinct. Flowers 1—2 in the leaf-axils; peduncle none, pedicels short, 1—2 mm, bracteoles small, 0.5—1.5 mm. Sepals narrow-lanceolate to lanceolate, acuminate, 4.5 mm long, pilose like the stems. Corolla white, rotate, much exceeding the sepals, tube very short, limb superficially lobed, to 12 mm in diam. Filaments 1.5—2 times as long as the oblong anthers. Ovary subglobose, glabrous. Capsule oblique-ovoid, as long as or slightly exceeding the sepals, 1-seeded. Seed brown, smooth.

Distribution: Mexico, Tamaulipas.

MEXICO, Tamaulipas, vicinity of Victoria, about 320 m, May-June 1907, *Edw. Palmer 528*, type (US); vicinity of San José, limestone ledges, Cerro Ladinas, Sierra de San Carlos, July 1930, *H. H. Bartlett 10240* (U, US).

I name this plant after the late Dr. H. Hallier, the botanist who has supplied so many important contributions to the taxonomy of the family Convolvulaceae.

The type specimen has a fine shining fulvous indumentum, in the specimen Bartlett 10240 the hairs are silvery white.

31. *Evolvulus minimus* v. Ooststr. nom. nov.

Convolvulus serpylloides Griseb. Catal. Plant. Cubens. (1866) p. 207.

Evolvulus serpylloides Wright in Sauvalle, Fl. Cub. (1873) p. 108, non Meissn. (1869).

Type: *Wright 3106*, Cuba, San Marcos.

A very small perennial; the stems several from a woody base, prostrate, terete, light-brown or greyish-white appressed-pilose, to 4 cm long; internodes 1—2 mm long. Leaves distichous, small, very shortly petioled, rather firm in texture, broad-ovate to orbicular, sometimes oblong, obtuse or acutish at the apex,

rounded, truncate or subcordate at the base, glabrous above, appressed-pilose beneath like the stems, 1.5—3 (—4) mm long, 1—2 mm broad. Flowers axillary, solitary, peduncle none, pedicels as long as the sepals, or longer, up to 5 mm, curved, shortly appressed-villose; bracteoles linear, 1—1.5 mm long. Sepals lanceolate, acute or acuminate, 2—3 mm long, shortly appressed-villose outside and at the margins. Corolla white, 5.5 mm long, funnel-shaped, the tube very short, the limb with 5 short lobes and with 5 sparsely sericeous bands. Filaments twice as long as the oblong anthers. Ovary ovoid-globose. Capsule globose, as long as the calyx.

Distribution: Cuba.

CUBA, San Marcos, *Wright 3106*, type (G, P); prov. Santa Clara, Motembo, on the Matanzas line, in palm barrens, June 1923, *E. L. Ekman 16824* (S).

32. *Evolvulus Bracei* House in Bull. Torr. Bot. Club XXXV (1908) p. 90; Britton and Millspaugh, Bahama Flora (1920) p. 346.

Type: *Brace 4575*, Bahama Islands, Crooked Island, Landrail Point.

A low perennial. Stems several from a woody base, prostrate or ascending, 5—20 cm long, more or less zigzag, densely appressed-villose or villose-strigillose with greyish, whitish or fulvous hairs, glabrescent towards the base; internodes 0.5—2.5 mm long. Leaves distichous or secund, small, sessile or shortly petioled, ovate-oblong, ovate-elliptic, ovate or nearly orbicular, acute or shortly cuspidate at the apex, acutish, rounded or subcordate at the base, 2—5 mm long, 2—3 mm broad, greyish, whitish or fulvous appressed-villose or almost lanate beneath, more sparsely so above, occasionally quite glabrous above. Flowers solitary in the axils of the apical leaves; peduncle none; pedicels much shorter than the calyx, 1 mm long, villose; bracteoles lanceolate, scarcely 1.5 mm long. Sepals equal, lanceolate, acuminate, 3—4 (—5.5) mm long, villose like the leaves. Corolla pale-blue (*House*), widely funnel-shaped, the tube very short, about 1 mm

long, the limb slightly 5-lobed, about 7 mm in diam. with 5 sericeous bands outside. Filaments to 2.5 times as long as the oblong anthers. Ovary globular-ovoid, glabrous. Capsule depressed-globose, glabrous, a little shorter than the calyx, 2-celled, 4-seeded; seeds brown, minutely pitted.

Distribution: Bahama Islands, Cuba.

BAHAMA ISLANDS, Crooked Island, Landrail Point, Jan. 1906, *L. J. K. Brace* 4575 (F, U, US); Mariguana, Abraham Bay and vicinity, Dec. 1907, *P. Wilson* 7518 (K, US); Caicos Islands, North Caicos, Kew and vicinity, Dec. 1907, *P. Wilson* 7719 (F, K, US).

CUBA, Prov. Camaguey, savannas near Camaguey, rocky hills, April 1912, *N. L. Britton, E. G. Britton, J. F. Cowell* 13243 (F, U, US); id., Santayana, in low "carrascales", in open places, Oct. 1922, *E. L. Ekman* 15353 (S); id., at km 9 of the line to Nuevitas, at "carrascal", Oct. 1922, *E. L. Ekman* 15566 (S); id., Queen City to Minas, savanna, dry stony places, Nov. 1909, *J. A. Shafer* 2926 (US); Prov. Oriente, barren savannas, south-east of Holguin, Nov. 1909, *J. A. Shafer* 2939 (NH, US).

The hairiness of this species is rather variable, from appressed-villose or villose-strigillose to almost lanate; the lower surface of the leaves is always more densely hairy than the upper one; in the specimens Ekman 15353 and Shafer 2939 the upper leaf-surface is quite glabrous. In general the Bahama specimens have somewhat narrower leaves than those of Cuba, also the base is generally not so broad and not subcordate; the stems of the Cuban specimens are often stouter.

33. *Evolvulus siliceus* Britton et *P. Wilson* ex Britton in Bull. Torr. Bot. Club XLIV (1917) p. 36.

E. arenicola Britton et *P. Wilson* ex Britton in Bull. Torr. Bot. Club XLIII (1916) p. 466, non Johnston (1905).

Type: *N. L. Britton, E. G. Britton and Percy Wilson* 14190, Isle of Pines, Vicinity of Los Indios.

"A diminutive perennial, with a slender, woody root, the few or solitary, simple or few-branched stems slender", appressed-pilose with white hairs, glabrescent, "2—5 cm long, ascending or nearly prostrate". Leaves shortly petioled, the petiole 1—2.5 mm long, pilose like the stems, the blade elliptic to ovate, obtuse or rounded at both ends or occasionally acutish at the apex.

7—12 (—15 according to the original description) mm long, 5—8 mm broad, quite glabrous above with minute black dots, appressed-pilose beneath with white hairs; midrib slightly visible at base beneath, lateral nerves obscure. Flowers few, 1—2 in the upper axils; peduncle none; pedicels erect, as long as or generally longer than the calyx, 5—10 mm long, appressed-pilose, brownish; bracteoles linear, 2—2.5 mm, pilose. Sepals narrow-lanceolate, acute, 5 mm long, pilose, brownish. Corolla white, rotate, the limb obscurely lobed, 9—12 mm broad, with 5 pilose bands outside. Filaments about 3 times as long as the oblong anthers. Ovary globular, glabrous. "Capsule subglobose, shorter than the sepals."

Distribution: Isle of Pines.

ISLE OF PINES, vic. of Los Indios, white sand, Febr. 1916, N. L. Britton, E. G. Britton, Percy Wilson 14190, type (NY).

34. *Evolvulus Pohl* Meissn. in Mart. Fl. Bras. VII (1869) p. 344.

E. nummularius L. var. *emarginatus* Meissn. l.c. p. 349.

E. Seleriana Fernald in Proc. Amer. Acad. XXXVI (1901) p. 498.

Type: *Pohl 3467*, Brazil, Minas Geraes, between Catas Altas and Inficionado.

A small perennial, stems caespitose, prostrate or ascending, several from a woody base, terete, slender, 6—20 cm long, occasionally rooting at the nodes, brownish or whitish villose, with soft spreading hairs, glabrescent at the base, internodes 4—6 mm long. Leaves shortly petioled or sessile, distichous or secund, oblong, elliptic-oblong, obovate-oblong or obovate, emarginate at the apex, rounded or acutish at the base, 3—10 mm long and 2.5—7 mm broad, the largest up to 15 mm long and 8 mm broad, appressed-sericeo-villose on both sides or glabrate above. Flowers 1 or 2 in the leaf-axils; peduncle absent; pedicels slender, curved, as long as or exceeding the leaves, up to 15 mm long, short-villose; bracteoles linear-lanceolate, 1.5 mm long, villose. Sepals ovate-lanceolate or lanceolate, acute, 3—4

mm long, densely villose with appressed hairs, ciliate, with minute pellucid dots. Corolla lilac (*Warming*) or white (*Rutten*), 7 mm long, broadly funnel-shaped, the tube very short, the limb obscurely 5-lobed, to 15 mm in diam., the midpetaline areas with appressed sericeous hairs. Filaments twice as long as the linear-oblong anthers, inserted near the base of the corolla. Ovary globular, glabrous. Capsule ovoid-globose, 3 mm high, 1-seeded. Seed smooth, 2 mm long, brown.

Distribution: Mexico, Brazil.

MEXICO, Chiapas, distr. Tuxtla, La Ciénega, in meadows inundated in summer, Febr. 1896, *Caec. and Ed. Seler 1926*, type of *E. Seleriana* Fernald (B, Gray). Vera Cruz, Vera Cruz, dunes, May 1921, *L. Rutten* and *C. Rutten-Pekelharing 877* (U).

BRAZIL, Minas Geraes, 1844, *Weddell s.n.* (P); Lagoa Santa, in moist places near the banks of the lake, common, fl. June-Aug., *Warming 1760*, *E. nummularius* L. var. *emarginatus* Meissn. (C); *id., s. n.* (Br, P); Lagoa Santa, roads, gardens, very common, fl. Oct.—March, *Warming 1810* (C); near Capanema and Barbacena, in dry silicious campos, *Riedel sub 106*, *E. nummularius* L. var. *emarginatus* Meissn. (Len, with *E. aurigenus*); between Cattas altas and Inficionado, *Pohl 3467*, type (V); Corinto, Apr. 1931, *Ynes Mexia 5665* (U).

Several of the numbers collected in Brazil fully agree with the Mexican specimens, collected by Rutten and by Seler. The leaves of all these specimens are slightly broader than in the type. They are obovate or elliptic, whilst in the type they are oblong. Specimens mentioned by Meissner as the var. *emarginatus* of *E. nummularius* L. belong here.

35. *Evolvulus nummularius* L. *Spec. Plant.* ed. 2 (1762) p. 391; *Jacq. Sel. Stirp. Amer. Hist. Picta* (1780) t. 260, f. 23; *Lam., Encycl.* III (1789) p. 539; *Willd. Spec. Plant.* I (1797) p. 1516; *Pers. Syn. Plant.* (1805) p. 288; *Roem. et Schult. Syst.* VI (1820) p. 193; *Choisy in Mém. Soc. Phys. Genève* VIII (1837) p. 72; *id. Conv. Rar.* (1838) p. 150; *id. in DC. Prodr.* IX (1845) p. 445; *Griseb. Fl. Brit. W. Ind. Isl.* (1864) p. 475; *id. Cat. Plant. Cub.* (1866) p. 207; *Meissn. in Mart. Fl. Bras.* VII (1869) p. 349; *Eggers, St. Croix's Flora* (1875) p. 132; *Hemsl., Biol. Centr. Am. Bot.* II (1881—'82) p. 399; *Hall. f.*

in Engl. Bot. Jahrb. XVIII (1894) p. 85; id. in Bull. Herb. Boiss. VII (1899) App. I p. 43; Spencer L. M. Moore in Journ. Bot. XLII (1904) p. 105; Baker and Rendle in Thiselton-Dyer, Flora Trop. Afr. IV, 2 (1906) p. 68; Urb. Symb. Antill. IV (1910) p. 502; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III, p. 489; Hall. f. in Meded. Rijks Herb. Leiden n. 35 (1918) p. 4; N. L. Britton, C. F. Millspaugh, Bahama Flora (1920) p. 347; Cheval. Expl. Bot. Afr. Occ. Franç. (1920) p. 458; Urb. Symb. Antill. VIII (1921) p. 556; Hoehne in An. Inst. Butantan I, 6 (1922) p. 39; N. L. Britton and P. Wilson, Bot. Porto Rico etc. VI, 1 (1925) p. 104; P. C. Standley, Fl. Panama Canal Zone in Contr. U. S. Nat. Herb. XXVII (1928) p. 313; Hutchinson and Dalziel, Fl. W. Trop. Afr. II, 1 (1931) p. 210.

Convolvulus nummularius L. Spec. Plant. ed. 1 (1753) p. 157.

Evolvulus veronicaefolius H. B. K. Nov. Gen. et Sp. III (1818) p. 117, p. 92 (col. ed.), t. 215; Roem. et Schult. Syst. VI (1820) p. 193.

E. reniformis Salzm. ex Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 72, in synn.; id. Conv. Rar. (1838) p. 150, in synn.

E. domingensis Spr. ex Choisy l.c. in synn.; id., l.c. in synn.

E. capreolatus Mart. ex Choisy in DC. Prodr. IX (1845) p. 445, in synn.

E. dichondroides Oliv. in Transact. Linn. Soc. XXIX (1875) p. 117, t. 78 B.

? *E. repens* Parodi, Contrib. fl. Parag. fasc. 1 (1877) p. 29.

E. nummularius L. var. *grandifolia* Hoehne in An. Inst. Butantan I, 6 (1922) p. 39.

Type: in the Linnean Herbarium, ex herb. Banks.

A perennial herb. Stems several, prostrate, rooting at the nodes, simple or slightly branched, slender, terete, pilose with short, patent, curved hairs, glabrescent, often lignescent at the base, variable in length, 10—40 cm long; internodes 5—12 mm, sometimes to 20 mm long. Leaves distichous, shortly petioled; petiole grooved above, pilose or glabrous, 1—5 mm long, occasionally to 12 mm; limb broad-ovate, elliptic or orbicular.

sometimes obovate or oblong, rounded or emarginate at the apex, rounded, truncate or subcordate, sometimes slightly oblique at the base, variable in size, middle-sized leaves 4—15 mm long, 3—15 mm broad, larger ones up to 25 mm long and 18 mm broad, glabrous on both sides or sparsely appressed-pilose beneath, especially on the nerves, sometimes also above, the margins sometimes ciliate, especially near the base; midrib and 2—5 pairs of lateral nerves more or less distinct beneath. Flowers 1 or 2 in the leaf-axils, on the main stems or on short lateral branches; peduncle none or very short, rarely longer, up to 10 mm long (f. *pedunculatus*); pedicels 2—6 mm long, occasionally longer, recurved in fruit; bracteoles linear or lanceolate, acute, 0.5—1.5 mm long. Sepals equal, 2.5—4 mm long, ovate-oblong, obtuse or acutish, minutely mucronate, with microscopical pellucid dots, sparsely pilose or glabrous, but with ciliate margin; with distinct midrib and reticulate nervation; often reflexed in fruit. Corolla white, rarely pale blue, rotate to broadly funnel-shaped, 5—7 mm long, the tube short, the limb about 8 mm in diam., 5-lobed, the lobes with distinct, sparsely pilose bands. Filaments inserted about 2 mm above the corolla base, 2—3 times as long as the oblong anthers. Ovary globular, glabrous. Capsule globular, as long as or a little longer than the sepals, 2-celled, 4-valved, 4 or less-seeded.

Distribution: Continental America from Mexico to N. Argentina, West Indies; tropical Africa, Madagascar; British India.

MEXICO, *Liebmann 12485* (C). Sinaloa, Mazatlan, dry hill, March 1910, *J. N. Rose, P. C. Standley, P. G. Russell 13668* (US); "La Rata", ranch 4 leagues n. of La Noria, foothills, 900 ft., marshy open places in deciduous woods, Oct. 1925, *Ynes Mexia 374* (C, K); El Carrizo, 800 m, 1925, *J. G. Ortega 6018* (US). Nayarit, Acaponeta, dry field, Apr. 1910, *J. N. Rose, P. C. Standley, P. G. Russell 14283* (US). Hidalgo, 1841—'42, *Karwinsky 611* (Len). Guerrero, Acapulco, 1894—'95, *Edw. Palmer 235* (US); id., 1894—'95, *Edw. Palmer 238* (K, U, US); id., *Sinclair* (K). Vera Cruz, Dec. 1866, *Gouin* (P); Ixhuatlan, 1841—'42, *Karwinsky 611b* (Len); valley of Cordoba, savannah, fl. Apr., *Bourgeau 2286* (K, Len, P). Tabasco, San Juan Bautista, Nov., 1888, *J. N. Rovirosa 289* (US); Tabasco or Yucatan, *E. P. Johnson 95* (K, NY).

GUATEMALA, 1849, *Morelet* (P); Aquacate, *Friedrichsthal 1277* (V); Retalhuleu, Sept. 1875, *Bernouilli and Cario 1915* (G, Len); dept. Izabal.

Quirigua, May 1922, *P. C. Standley 23961* (S, US); dept. Santa Rosa, Santa Rosa, May 1892, *Heyde and Lux, ed. J. Donnell Smith 3054* (B, K, M, US); dept. Santa Rosa, Cuaquinquilapa, Sept. 1893, *Heyde and Lux, ed. J. Donnell Smith 6207* (B, K, US); prov. Chontales, Hac. de Sta Luca, *Friedrichthal 774* (K, V).

HONDURAS, dept. Santa Bárbara, San Pedro Sula, 300 m, Oct. 1888, *C. Thieme, ed. J. Donnell Smith 5633* (B, US); vicinity of Amapala, Isla Tigre, Febr. 1922, *P. C. Standley 20760* (US).

EL SALVADOR, dept. Ahuachapán, 1923, *S. A. Padilla 343* (US); dept. Sonsonate, Acajutla, 30 m, March 1922, *P. C. Standley 21914* (US); dept. Sonsonate, Santa Emilia, about 135 m, March 1922, *P. C. Standley 22106* (US); vicin. of San Salvador, 650—850 m, Dec. 1921—Jan. 1922, *P. C. Standley 19559* (US); id. March—April 1922, *P. C. Standley 23548* (S, US); dept. La Unión, La Unión, 150 m or less, sandy field, common, Febr. 1922, *P. C. Standley 20869* (US); Finca San Nicolás, 1923, *Choussy(?) 76* (US).

NICARAGUA, June 1927, *D. Chaves 273* (US).

COSTARICA, Nicoya, roadsides, Jan. 1900, *Tonduz 13673* (US); Boruca, pastures near the church, Nov. 1891, *Tonduz 4419* (L, US); Terraba, pastures near the church, Apr. 1898, *Pittier 12171* (US).

PANAMA, without locality, 1851, *Duchassaing* (G, P); open grassy places, along paths and roads, Sept. 1862, *Sutton Hayes 648* (K); Panam Golf Course, Febr. 1923, *C. V. Piper 6013* (US); Panama City, in waste places, Sept. 1917, *E. P. Killip 3047* (US); roadside near Panama City, Jan.—March 1847, *Seemann 577* (K, NH); Mamei and Gorgona, Jan. 1858, *M. Wagner* (M); Ancon Hill, 100—200 m, Oct. 1922, *E. P. Killip 12190* (US); Ancon, March 1923, *C. V. Piper 5493* (US); prov. of Panama, Chepo, about 60 m, Oct. 1911, *Pittier 4459* (US); id., Laguna de Portala, near Chepo, Oct. 1911, *Pittier 4609* (US); id., Rio Tapia, in savanna, Dec. 1923—Jan. 1924, *P. C. Standley 28144* (US); id. near Matias Hernández, wet field, Dec. 1923, *P. C. Standley 28899* (US); id., Nuevo San Francisco, savanna, Jan. 1924, *P. C. Standley 3072* (US); id., Camino de Las Sabanas, in ditch, Oct. 1921, *Bro. Heriberto 205* (US); id., Las Sabanas, grassy bank, common, Dec. 1923, *P. C. Standley 25830* (US); id., near the big swamp east of the Rio Tecumen, wet forest, Dec. 1923, *P. C. Standley 26669* (US).

BAHAMA ISLANDS, New Providence, *N. L. Britton, L. J. K. Brace 433* (K); Crooked Island, Landrail point, margin of salt pond, Jan. 1906, *L. J. K. Brace 4583* (US); Mariguana, Abraham Bay, along trail, Dec. 1907, *P. Wilson 7508* (K, US); Caicos Islands, N. Caicos, Kew and vic., Dec. 1907, *P. Wilson 7714* (K).

WEST INDIES, without locality, *Forsström* (S); *Herb. Morch* (C); *Herb. Richard* (P).

CUBA, without locality, *Ramon de la Sagra* (P); fl. Nov., *Bro. Hioram 2263* (US); near Matanzas, *Rugel 108* (L, Len, NH, US); prov. Pinar del Rio, palm-barrens w. of Guane, roadside, Nov. 1911, *J. A. Shafer 10511* (U, US); id., Guane to Mendoza, Nov. 1911, *J. A. Shafer 10580* (U, US); id., San Diego de los Baños, Sept. 1910, *N. L. Britton, F. S. Earle, C. S. Gager 6756* (US); id., vic. of Bahía Honda, Dec. 1910, *P. Wilson 9275* (K); id., Punta Brava, Nov. 1904, *Baker and O'Donovan 3988* (US); id., Sierra de Anafe, open places, Dec. 1911, *P. Wilson 11589* (US); prov. Havana, Rio Almendares to Playa de Marianao, open places, Dec. 1910, *P. Wilson 9509* (K, U, US); id., Laguna de Castellano, shore of lagoon, Dec. 1910, *P. Wilson 9555* (US); prov. Santa Clara, Cienfuegos, Castillo de Jagua, Sept. 1895, *R. Combs 606* (K, P); prov. Camaguey, La Gloria, Jan. 1909, *J. A. Shafer 182* (US); prov. Oriente, El Cobre, gravelly hills, March 1912,

N. L. Britton, J. F. Cowell, J. A. Shafer 12865 (U, US); id., El Cobre, dry hills, Oct. 1916, E. L. Ekman 7885 (S.); id., Baracoa, dry plateau, Febr.—March 1910, J. A. Shafer 3983 (U, US); id., savanna Resueña, Bayate, common, Aug. 1914, E. L. Ekman 2619 (S); E. Cuba, Wright 142 (G); id., 1856—'57), Wright 457 (Br, NH, S, US).

ISLE OF PINES, Los Indios, white sand, fr. Febr. 1916, *N. L. Britton, E. G. Britton, P. Wilson 14188 (US); Nueva Gerona, towards Columbia, in savannas, common, Nov. 1920, E. L. Ekman 12390 (S).*

HAITI, Dept. du Nord, \pm 400 m, open dry slope along trail, s. w. of Plaisance, Jan. 1926, *E. C. Leonard 9263 (US); id., vicin. of St. Michel de l'Atalaye, \pm 350 m, Nov. 1925, E. C. Leonard 7358 (US); Massif de la Hotte, Fond-des-Nègres, Miragoane, roadside, 300 m, Nov. 1926, E. L. Ekman H. 7182 (S, US).*

DOMINICAN REPUBLIC, *Herb. Desportes, Herb. Jussieu catal. 6892 (P); Herb. de Bunge (P); L. C. Richard (P); Apr. 1906, Raunkiaer 799 (C); Nov. 1815, Poiteau (Len); Prov. of Monte Cristi, distr. Moncion, Moncion, 375 m, May 1930, E. J. Valeur 437 (US); Prov. Pacificador, Pimentel, near sea level, Jan. 1921, W. L. Abbott 662 (US); La Noriega, 200 m, June 1887, Eggers 2403 (G, Len, US).*

JAMAICA, *Bancroft (K); Macnab (S); Swartz (S); Wright (NH); St. Andrew, Macnab (P); near Manchester, Purdie (K); Red Hills, Harris 6879 (NH); Robins Bay, C. R. Orcutt 4688 (NH); Hope Gardens, among grasses on the lawns, Dec. 1914, Harris 11851 (NH, US); St. Elizabeth, Miss I. Maxwell (NH).*

PORTO RICO, *Herb. de Riedlé, herb. Jussieu catal. 6892 (P); Herb. Lamarck (P); Herb. Moquin (P); Herb. Poiret (P); Aguadilla, Aguada, Rosario, Dec. 1886, P. Sintenis 5714 (M); Mayagüez, vic. of Mayagüez, March 1906, E. G. Britton, D. W. Marble 569 (US); id., slopes "Mesa", roadsides, Oct. 1884, P. Sintenis 116 (G, K, Len, S, US); id., Boqueron, Dec. 1929, N. L. Britton, E. G. Britton 9384 (US); Cayey, 7 miles s. of Caguas, \pm 2300 ft., Jan. 1889, Mr. and Mrs. Heller 325 (Bog, K, US); Bayamon, Rio Piedras, Dec. 1913, J. A. Stevenson 1121 (US).*

LESSER ANTILLES, Virgin Islands, St. Thomas, *Crudy (M); Dec. 1880 Eggers 248 (Len); Ehrenberg (B); L. C. Richard (P); Bonne Resolution, Febr. 1913, E. G. Britton, D. W. Marble 1432 (US); Water Island near St. Thomas, Nov. 1880, Eggers, Fl. Exsicc. Ind. occ. 156 (B, Br, G, K, L, M, P); June 1881, Eggers s. n. (US). St. John, hillside, Rosenberg, 300 m, Febr. 1913, N. L. Britton, J. A. Shafer 323 (US). St. Croix, herb. Vahl 4426, dedit F. W. Klatt (L); Hornemann (B); Herb. Ledebour (Len); Herb. Schumacher (Len); Jan. 1896, A. E. Ricksecker 246 (US); Febr. 1897, Mrs. J. J. Ricksecker 144 (US); Christianstead, Febr. 1913, J. N. Rose, W. R. Fitch, P. G. Russell 3577 (US). Antigua, dry places, *Wullschlaegel 365 (Br, G, M). Guadeloupe, Balbis (Len); Bertero (B, M); Herb. Bonpland (P); 1849, Duchassaing (G, P); Jan. 1846, Funck, Schlim 84 (P); Basse Terre, L. C. Richard (P). Martinique, Plée (B, P); L. C. Richard (P); Sieber, Fl. Martin. 389 (B, G, K, L, M, P); Fort de France, Febr. 1904, Mouret (P). Santa Lucia, J. J. Walsh (K). Grenada, Febr. 1905, W. E. Broadway (Br). Trinidad, Broadway 7417 (NH); Fendler 591 (K, NH, P); Bot. Gard. Herb. Trinidad 1026 (US).**

COLOMBIA, 1760—1808, *Mutis 3459 (US); 1844, J. Goudot (P); Humboldt (B); Santa Marta, 250 ft., fl. Oct., H. H. Smith 558 (B, Br, K, L, NH, P, S, U, US); valley of the Rio Magdalena, 1844, J. Goudot (P); Bolivar, Barranquilla, Dec. 1929, Bro. Elias 777 (US); Antioquia,*

Paso de Caramanta, Rio Cauca, bushy wayside, 700—1000 m, Sept. 1922, *F. W. Pennell 10819* (US); Cauca, Cartago, 1853, *Boussingault* (B); id., id., *Ørsted 12669* (C); id., Juntas on the R. Dagua, 300 m., Sept. 1882, *Lehmann 1949* (NH); id., La Paila, Apr. 1853, *I. F. Holton 536* (Calc. K); Tolima, Honda, March 1868, *A. Stübel 82a* (B); id. between Ibagué and Tocaima (Cundinamarca), Oct. 1868, *A. Stübel 194B* (B); Cundinamarca, Bogota, *J. Goudot* (P); Atlantico, Salgar, sandy soil near beach, 0—10 m, Oct. 1922, *F. W. Pennell 12062* (US).

VENEZUELA, Zulua, near Perijá, *E. Tejera 216* (US); Trujillo, La Ciénega(?) near Valera, in arid places, Nov. 1922, *H. Pittier 10778* (US); Carabobo, Puerto Cabello, *Karsten* (B, NH); Feder. Distr., Caracas, *Plee* (P); id., Nov. 1855, *Gollmer* (B); Miranda, Aragua, Baños de San Juan de los Morros, in bare places, Apr. 1927, *H. Pittier 12300* (M, US); id., Maracay, *C. Vogl 99* (M); Miranda, Hacienda El Volcán near Santa Lucia, \pm 300 m, Nov. 1918, *H. Pittier 8265* (US); Bolívar, Ciudad Bolívar, \pm 35 m, Nov. 1929, *Holt and Gehriger 137* (US); id., Upata, de Grosourdy (P).

PERU, Dept. Loreto, near Tarapoto, Oct. 1902, *Ule 6480* (B, L); id., June 1855, *R. Spruce 4487* (B, Br, Calc, C, G, K, Len, NH, P).

BOLIVIA, Chaco, Tatarenda, March 1902, *R. E. Fries 1395* (S); Chiquiaca, 1000 m, March 1904, *K. Fiebrig 2749* (B, G, K, L, M, NH, P, S, U, US).

BRAZIL, without locality, *Banks and Solander* (NH); *Burchell 1351* (K); *Glaziou s. n.* (NH); *Pohl 1582* (Br, M); *Sellow 340* (B); id. s. n. (B); 1844, *Widgren 1313* (S). Amazonas, Rio Branco, near S. Marcos, wood, Jan. 1909, *Ule 7906* (B, K, L); Manáos, June 1882, *Schwacke* (G). Pará, near Pará, *Burchell 8600* (Br, K, L, Len, P, US). Pernambuco, Tapera, March 1931, *D. B. Pickel 192* (NH). Bahia, on clay, *Salzmann* (Br, K, Len, M, P); Serra da Jacobina, *Blanchet 2658* (B, K, Len, NH, P). Goyaz, near Goyaz, *Burchell 6614* (Br, K, L, NY, P); Porto Imperial, *Burchell 8741-2* (Br, K, L, Len, P). Minas Geraes, *Weddell 1046* (P); *Herb. Fischer* (Len); Lagoa Santa, *Warming* (C); near Sta Luzia do Rio das Velhas, Jan. 1915, *W. Schwacke 11461* (B). Rio de Janeiro, *Glaziou 11277* (B, C, K, P); *Glaziou 13019* (B, Br, C, K, Len, P); Nov. 1922, *Kuhlmann*, Herb. Rio 22516 (R); Oct.—Nov. 1910, *Ph. von Lützelburg 39* (M); *Herb. J. Miers* (NH); *Pohl 5458* (B, V); 1844, *Widgren* (S); *U. S. Expl. Exped., Capt. Wilkes* (US); near Rio de Janeiro, *Burchell 1083* (Br, K, Len, US); id., 1829, *Luschnath* (S); São Christorão, Jan. 1888, *Glaziou 17153* (B, Br, C, K, P); Quinta, March 1869, *Glaziou 3064* (Br, C, K, P). Matto Grosso, *Spencer Moore 259* (NH); S. Luiz de Cáceres, *Hoehne* (Rondon 514, ex *Hoehne* l.c.); Coxipó da Ponte, Cuiaba, *Hoehne* (Rondon 2886, ex *Hoehne* l.c.); Corumbá, *Hoehne*, type of *E. nummularius* L. var. *grandifolia* *Hoehne* (Rondon 4837, ex *Hoehne* l.c.); Porto Murтинho, *A. Robert 868* (ex *Spencer L. M. Moore* in *Journ. Bot. XLII* (1904) p. 105).

PARAGUAY, without locality, *Andeer* (P); *Chodat 322* (Boiss); Villarica, Jan. 1931, *P. Jørgensen 4037* (US); San Bernardino, Aug.—Sept. 1916, *C. Osten 9119* (S); Upper Rio Apa, *Hassler 8185* (NH); between Rio Apa and Rio Aquidaban, thicket on moist sandy bank, *K. Fiebrig 4979* (B, K); near Villa Concepcion, fl. Sept., *E. Hassler 7311* (K, NH, P); Paraguari, in pastures, Febr. 1881, *Balansa 3227* (P); id., Febr. 1894, *C. A. M. Lindman A 3731* (S); plain of Paraguari, on clay, May 1874, *Balansa 1046* (Br, G, K, Len, NH, P, S); plain between Cerro Lambaré and Tacumba near

Asuncion, on clay, May 1874, *Balansa 1046a* (B, P); Tobati, near Aparepy, campo, on clay, Jan. 1903, *Fiebrig 804* (B).

ARGENTINA, Territorio de Formosa, Formosa, 1883, *P. Jørgensen 2659* (US); prov. Salta, Oran, Campo Chico, 550 m, Nov. 1927, *S. Venturi 5537* (U).

IVORY COAST, Mankono, banks of Bandama, near Marabadiassa (ex Hutchinson and Dalziel l.c.).

BELGIAN CONGO, Aug. 1914, *Bequaert 5442* (Br); between Irumu and Bogoro, roadsides in herbaceous savanna, July 1914, *Bequaert 4918* (Br); Gwane (Uelé-Itimbiri), roadsides, *J. Lebrun 2888* (T); Faradje (Kibali-Ituri), July 1931, *J. Lebrun 3411* (T); from Kabgaye to Kigali, rocky places, *Scaetta 396b* (Br).

ANGOLA, Huilla, near Lopollo and by Lake Ivantala, March 1860, *Welwitsch 6136* (B, C, K, NH, P).

NILELAND, Lado, Yei River, Oct. 1919, *F. Sillitoe 344* (K); Upper Nile, *Freeman and Lucas 29* (K); sources of the White Nile, *Sabatier* (P).

SUDAN, Bongo, Lesiriver, June 1870, *Schweinfurth 4011* (B, K).

UGANDA, Dec. 1931, *P. Chandler 256* (K); 1911, *Nägele 270* (B); *Liebenberg 979* (K); *Speke and Grant 524*, type of *E. dichondroides* Oliv. (K); Albert Nyanza, Oct. 1908, *Kassner Exp. 3147* (B, K, NH); Ruwenzori Exp., Nyanza, *Scott Elliott 7135* (K, NH).

BRITISH EAST AFRICA, Sabaki Valley, *Gregory* (NH); Mombasa, *Boivin* (P).

TANGANYIKA TERRITORY, Bukoba Distr., Oct. 1931, *A. E. Haarer 2234* (K); Tanga, June 1908, *Braun, Inst. Amani 1814* (B).

MADAGASCAR, Tananarive, May 1923, *Waterlot 778* (P); Hafy, Febr. 1917, *Decary* (P).

BENGAL, 1878, *J. S. Gamble 5852 A and B* (K); Lower Bengal, naturalized, *Herb. Hort. Calc.* (K, Len); Calcutta, Botanic Garden and Eden Garden, naturalized, 1879, 1882, 1896 (B, Calc, L, M, NH, P); id., Sept. 1914, *P. M. Debbarmann* (Calc); grassy places about Calcutta, becoming common, Sept. 1882, *King* (K); Howrah, Febr. 1905, *A. Meebold 3995* (B); Hughli Distr., Aug. 1902, *A. Hosein* (Calc); Bardwan, growing on the side of the high road from Calcutta, Aug. 1903, *Prain 18951* (Calc); Behar, near Motihari, Aug. 1903, *Prain 18927* (Calc.).

N. W. PROVINCES, Benares, Hindu-University grounds, Apr. 1929, *N. K. Tiwary* (K).

ASSAM, Shillong, 5000 ft, July 1904, *Hare* (Calc).

Vernacular names: *Velasquina* (El Salvador, ex *Standley & Calderón*, Lista prelim. Pl. El Salv., p. 179); *Oreja de ratos* (Colombia, *Bro. Elias 777*); *Kelyomandra* ("petit qui mange le sang", used as a styptic, Madagascar, *Decary*).

The Linnean Herbarium contains a sheet with 3 specimens of *E. nummularius* L., ex herb. Banks, and 1 specimen of *E. glaber* Spreng. collected by P. Browne.

The specimens which represent the var. *emarginatus* Meissn. belong to *E. Pohlii* Meissn. The var. *grandifolia* Hoehne is based

on a specimen with large leaves, such specimens frequently occur in a fertile, favourable habitat.

The African *E. dichondroides* Oliv. fully agrees with typical *E. nummularius*. About the capsule of the type specimen of *E. dichondroides*, the collector, Mr. J. A. Grant says: "after the flower falls off, the seed-vessel turns into the ground, like the *Arachis hypogea*, and propagates".

The occurrence in British India is said to be due to introduction.

f. *pedunculatus* v. Ooststr. n. f. ¹⁾

Type: *Berlandier 103*, Mexico, Tamaulipas, Tampico.

Like the species, but peduncle developed, up to 10 mm long.

Distribution: Mexico.

MEXICO, Tamaulipas, Tampico, 1827, *Berlandier 49, 103* (B, DC, Del, Len, NH, P, US). Yucatan, Chichankanab, *G. F. Gaumer 2261* (C, S, US); Tekax, *G. F. Gaumer 1216* (US).

36. *Evolvulus simplex* Andersson, Galap. Oarnes Veget. in Kongl. Vetensk. Akad. Handl. 1853 (1855) p. 211; id. Enum. Plant. in Ins. Galap. huc. obs. (1861) p. 87.

Type: *Andersson*, Galapagos Islands, Chatham.

Annual (or sometimes perennial?; *Stewart 3106*). Stems erect, simple or occasionally branched near the base, with erecto-patent branches, terete, 5—20 cm high, brownish or greyish villose; internodes 4—6 mm long. Leaves shortly petioled or sessile, linear, narrow-oblong to oblanceolate, narrowed at the base or attenuate into a short petiole, acute or obtusish at the apex, appressed-short-villose on both sides, the middle-sized ones 10—20 mm long and 2—5 mm broad, sometimes attaining a length of 30 mm and a breadth of 10 mm. Midrib prominent beneath, lateral nerves rather indistinct. Flowers solitary or 2—3 in the leaf-axils, over the whole length of the stem; peduncle very short or none; pedicels shorter than the calyx, villose, 1—2.5 mm long;

¹⁾ *E. nummularius* L. f. *pedunculatus* v. Ooststr. n. f. Differt pedunculo evoluto, ad 10 mm longo. Type: *Berlandier 103*, Mexico, Tamaulipas, Tampico (DC).

bracteoles linear, exceeding the pedicels, resembling the sepals. Sepals equal or somewhat unequal, narrow-linear, acutish or obtusish, 5—7 mm long, villose, long-ciliate. Corolla white, tubular to funnel-shaped, shorter than or nearly as long as the calyx, 2.5—4 mm, slightly 5-lobed, the midpetaline areas sparsely sericeous. Filaments short, 4 times as long as the ovate anthers. Ovary globular, glabrous. Capsule globular, glabrous, much shorter than the calyx, 4-valved, 4-seeded. Seeds dark brown, smooth, 1.5 mm.

Distribution: Galapagos Islands, N. Peru.

GALAPAGOS ISLANDS, *Andersson* 138 (B, K, P); id., *Andersson* 137 (C); id., *Andersson s. n.* (B, G, as *E. galapagensis* Peter in sched.); Albe-marle Isl. (Isabela Isl.), occasional in the flat area near the shore and the tufahills surrounding the cove, Apr. 1906, *Alban Stewart* 3106 (US); Chatham (S. Cristobal), 1852, *Andersson s. n.*, type (Br. P, S); Indefatigable (Sta Cruz), 1852, *Andersson s. n.* (L, S).

PERU, Dept. Tumbes, prov. Tumbes, Zorritos, rainy-green formation, 100 m, March 1927, *A. Weberbauer* 7742 (F, US); Dept. Piura, Toblazo, March 1929, *Oscar Haught* F 144 (F); Toblazo, north of Pariñas valley, March 1929, *Oscar Haught* 218 (US); id., Prov. Piura, Serran, stony slopes, in rainy-green formation, 220—280 m, March 1912, *A. Weberbauer* 5980 (B, F, US); Dept. Cajamarca, prov. Contumazá, Cascas, June 1875, *A. Raimondi* 7577 (B).

37. *Evolvulus pilosus* Nutt., Gen. N. Amer. Pl. I (1818) p. 174; Britton and Brown, Ill. Fl. N. States and Canada III (1898) p. 21; id., ed. 2, III (1913) p. 42; E. O. Wootton, P. C. Standley, Fl. New Mexico, in Contr. U. S. Nat. Herb. XIX (1915) p. 516.

E. argenteus Pursh, Fl. Amer. Sept. I (1814) p. 187, non R. Br. 1810; Nutt. Gen. N. Amer. Pl. I (1818) p. 174; Torr. Bot. Mex. Bound. (1858) p. 150; A. Gray, Syn. Fl. N. Am. II, 1 (1886) p. 219; Hemsl. Biol. Centr. Amer. Bot. II (1881—'82) p. 399.

E. Nuttallianus Roem. et Schult. Syst. VI (1820) p. 198.

E. mollis Small in Bull. New York Bot. Garden I (1899) p. 285.

Type: *Nuttall*, on the banks of the Missouri.

Perennial. Stems several from a woody base, erect or ascending.

lignescens in the older parts, generally simple, 10—15 cm long, densely covered with spreading villose hairs of ferruginous, brown, fulvous or greyish colour, and with a more or less developed short tomentum. Leaves dense, erect or erecto-patent, linear-oblong, narrow-lanceolate or narrow-oblong, occasionally oblong, acute or obtusish at the apex, attenuate towards the base, shortly petioled or sessile, densely hairy like the stems, 8—20 mm long and 1.5—5 mm broad, 4—5 times as long as broad, the oblong leaves 2—4 times as long as broad. Midrib more or less visible beneath, pale. Flowers solitary in the leaf-axils over the whole length of the stems, shortly pedicellate, pedicels shorter than the sepals, reflexed in fruit; peduncle none; bracteoles subulate, 1—4 mm long. Sepals lanceolate or narrow-lanceolate, long-acuminate, 4—5 mm long, patently villose. Corolla purple or blue (not "yellow" as *Pursh* states), rotate to broadly funnel-shaped, the limb 8—12 mm in diam., subentire. Filaments twice as long as the oblong anthers. Ovary subglobose, glabrous. Capsule oblique ovoid, a little shorter than the sepals or little exceeding them, 2 or 1-seeded. Seeds purple-brown. Sepals often reflexed in fruit.

Distribution: United States of America, Montana and N. Dakota to Arizona, New Mexico, Texas and to Arkansas and Tennessee.

UNITED STATES OF AMERICA, precise locality unknown, Rocky Mts, Powell's Colorado Expl. Exp., 1868, *G. Vasey* 457 (P); Upper Missouri, Nicollet's North-Western Exp., June 1839, *C. A. Geyer* (B); on the Missouri, *Nuttall* (B); 1843, *Frémont's Exp. to California* 237 (K, P); Upper Arkansas, *Pope's 1st. exp.* (US). Montana, June 1890, *J. W. Blankinship* 85 (US). Wyoming, Douglas, Aug. 1914, *E. O. Wootton* (US); Uva, Laramie Co., June 1901, *A. Nelson* 8275 (P); Fairbanks, July 1894, *A. Nelson* 398 (US). North Dakota (ex *Britton and Brown* l.c.), South Dakota, Black Hills, Hot Springs, 3500 ft, June 1892, *P. A. Rydberg* 578 (US); gravelly hills of the Missouri near Fort Pierre, June 1839, *C. A. Geyer* (US). Nebraska, July 1890, *Herb. P. A. Rydberg* (US); Valentine, July 1889, *J. M. Bates* (B); gravelly hills of the middle part of Platte River, *C. A. Geyer* 236 (K, NH); Upper Platte River, *Gordon* (K); Kearny Co., sandhills, June 1891, *P. A. Rydberg* 263 (US); Minden, 1911, *H. Hapeman* (L); id., June 1930, *H. Hapeman* (S). Colorado, 1872, *E. L. Greene* (P); 1862, *E. Hall, J. P. Harbour* 579 (Len, NH, P, US); Aug. 1878, *Martindale* (L); Apr. 1873, *Mohr* (US); Aug. 1913, *O. Paulsen* (C); Southern Colorado, 1867, *C. C. Parry* (US); Ft. Collins, foothills, July 1891, *C. S. Crandall*

(US); plains near foothills, June 1896, *Herb. State Agric. Coll. Colorado* (US); Denver, Sept. 1910, *Miss A. Eastwood* (K); 1875, *H. N. Patterson* (Len); plains near Denver, July 1899, *Th. Holm* (S); along the Platte River, Denver, June 1878, *M. E. Jones* 197 (B, Br, NH, P); Wray, Yuma Co., 1100 m, July 1919, *W. W. Eggleston* 15206 (F); Fossil Creek, dry plains, 5000 ft, June 1895, *Cowen* 364 (US); near Boulder, about 5600 ft., July 1892, *N. H. Patterson* 289 (US); Florence, 7000 ft, June 1895, *F. Tweedy* 103 (US); Cañon City, *Hooker and Gray* (K); Pueblo, May 1890, *O. A. Farwell* 1060 (C). Kansas, West Kansas, 1867, *C. C. Parry* (S); Arkalon, July 1892, *A. S. Hitchcock* (US); Minneapolis, June 1926, *H. C. Benke* 4291 (US); id., July 1929, *H. C. Benke* 5162 (U); near Fort Wallace, *W. M. Bell* 52 (NH); Ulysses, sandy soil, 3000 ft., June 1893, *C. H. Thompson* 10 (B, US); Meade, rocky hills, Aug. 1890, *B. B. Smyth* 136 (US); Greenburg, Aug. 1890, *B. B. Smyth* 79 (US); Hamilton Co., plains, Aug. 1895, *A. S. Hitchcock* 357 (P, US). Missouri, *Herb. C. Mohr* (Len); Taney Co., Branson, calcareous slopes, bald knobs, Sept. 1918, *E. J. Palmer* 14334 (P); Swan, June 1898, *B. F. Bush* 175 (US); Allenton, July 1882, *G. W. Letterman* (Len, US); near Pacific, May 1898, *G. W. Letterman* (US); Crystal, July 1893, *H. Eggert* (US); id., May 1896, *H. Eggert* (US); Ozark Co., rocky open ground, bald knobs near Tecumseh, Oct. 1927, *E. J. Palmer* 33035 (P); rocky slopes and glades, dolomite hills, bald knobs along the Missouri-Arkansas state line near Eagle Rock, Barry Co., June 1926, *E. J. Palmer* 30419 (US); Eagle Rock, common, May 1898, *B. F. Bush* 79 (K, S, US); id., Sept. 1896, *B. F. Bush* 157 (Br, US); rocky open ground, bald knobs, "Bald Jesse" near Gainesville, Ozark Co., June 1928, *E. J. Palmer* 34765 (U, US). Oklahoma, Aug. 1893, *F. A. Waugh* (US); prairie near Alva, May 1913, *G. W. Stevens* 652 (K, US); near Mountain Park, Swanson Co., June 1913, *G. W. Stevens* 1204 (P); Mountain Park, Sept. 1903, *A. H. van Vleet* (US); vicin. of Durant, 1931, *W. L. Blain* 137 (U); prairie near Shattuck, Ellis Co., May 1914, *R. L. Clifton* 3124 (P); Oklahoma Terr., May 1891, *M. A. Carleton* 131 (US); Kingfisher Co., May 1896, *L. A. Blankinship* (US). Indian Territory, Catoosa, May 1895, *B. F. Bush* 1093 (B, K); "chiefly on the False Washita between Fort Cobb and Fort Arbuckle", 1868, *Edw. Palmer* 198 (US); Caddo, June 1891, *C. S. Sheldon* 53 (US). Arkansas, 1834, *Beyrich* (G); 1844, *Decaisne* (P); 1844, *Torrey* (P); Beaver, Carroll Co., rocky ledges, May 1914, *E. J. Palmer* 5584 (U); id., June 1914, *E. J. Palmer* 5887 (P, U). Tennessee, near Nashville, 1883, *Gattinger* (US). Arizona, Ash Fork, June 1903, *D. Griffiths* 4740 (US); N. Santa Catalina Mts, Apr.—May 1881, *Lemmon* 246 (NH, P); Beaver Creek, gravelly soil, Sept. 1903, *C. A. Purpus* 8253 (US); Woodruff, in limestone soil, June 1892, *E. O. Wooton* (US); Tumacacori and vicin., March—Apr. 1903, *D. Griffiths* 3950 (US). New Mexico, *Fendler* 668 β (NH); *Scheer* (K); *G. L. Fisher* 19, 184 (US); vicin. of Cedar Hill, San Juan Co., about 1900 m, July 1911, *P. C. Standley* 6867 (US); vicin. of Farmington, San Juan Co., 1550—1650 m, *P. C. Standley* 7072 (US); Santa Fé, 1847, *Fendler* 668 (B, G, K, L, Len, NH, P, S, US); Socorro Mts, July 1897, *C. L. Herrick* 711 (US); vicin. of Raton, Colfax Co., dry hills, 2100—2380 m, June 1911, *P. C. Standley* 6291 (US); Silver City, 1901, *Metcalfe* s. n. (S); near San Marcial, gravelly hills, Aug. 1880, *H. H. Rusby* 296 (P, US); Jornada Range, Dona Ana Co., May 1913, *E. O. Wooton* (US); Guadalupe Mts, pine woods, Aug. 1924, *P. C. Standley* 40700 (US); Mangas Springs, Aug. 1901, *Metcalfe* (US). Texas, *Belfrage* (S); 1847, *F. Lindheimer* 662 (B, K, Len, NH, P, US); Garza Co., prairie, June 1928, *A. Ruth* 1302 (Len, S, US); Tarrant Co., Apr. 1926, *O. L. Killian* 6908 (US); id., in

level grassy grounds, June 1920, *A. Ruth* 166 (F); Palo Duro Canyon, June 1929, *B. C. Tharp* 6292 (US); Washburn, Aug. 1892, *V. Bailey* (US); Chillicothe, cotton fields, Sept. 1906, *C. R. Ball* 1119 (US); Fort Worth, Apr. 1909, *A. Ruth* 182 (US); Bonham, fl. Apr., *Mrs. J. M. Milligan* (US); Dallas, rocky prairies, May 1881, *J. Reverchon* 662, and *s. n.* (C, P, US); id., common in woods, May 1900, *B. F. Bush* 673 (K, US); calcareous prairies near Dallas, *J. Reverchon*, *Curtiss*, *N. Am. Pl.* 2178, *E. mollis* Small (B, F, K, Len, M, NH, P, US); Colorado, May 1902, *S. M. Tracy* 8069 (B, NH, US); Tom Green Co., Knickerbocker Ranche, Dove Creek, May 1880, *F. Tweedy* 176 (US); dry hills, Austin, May 1872, *E. Hall* 489 (K, NH, US); Kerr Co., Turtle Creek, May 1899, *W. L. Bray* 162 (US); Kerrville, dry calcareous open ground, May 1916, *E. J. Palmer* 9943 (S); Kerrville, 1600—2000 ft., June 1894, *A. A. Heller* 1912, *E. mollis* Small (K, P, US); near Blanco, rocky open ground, calcareous soil, May 1928, *E. J. Palmer* 33925 (US); Bexar Co., *G. Jermy* 127 (US); Uvalde, fl. May, *Mrs. J. M. Milligan* (US).

The length of the hairs in this species is rather variable as also is their colour. Specimens cited by Small as belonging to his *E. mollis* are partly closely appressed-pilose, but so many intermediate specimens occur between these and typical *E. pilosus* that it is impossible to keep the species separate.

38. *Evolvulus chrysotrichos* Meissn. in Mart. Fl. Bras. VII (1869) p. 351.

E. guaraniticus Chod. et Hassl. in Bull. Herb. Boiss. sér. II, V, (1905) p. 685.

Type: *Riedel* 1464, Brazil, Minas Geraes, Serra da Caraça.

Perennial. Stems erect, occasionally ascending, 12—20 (—30) cm high, several from a woody base, branched in the lower parts, densely reddish-brown or occasionally grey villose with spreading hairs, the basal parts glabrescent. Leaves sessile, erect, appressed to the stems, dense, more or less imbricate, green and quite glabrous above, densely villose like the stems beneath with long reddish-brown, later greyish, spreading hairs (in some specimens the indument is greyish or whitish in youth), oblong, oblong-lanceolate, narrow-ovate or ovate, the basal ones often the broadest, acute or obtusish and submucronulate at the apex, acute or rounded at the base, 8—16 mm long, the middle ones 4—7, the lower ones occasionally up to 9 mm broad; midrib and basal lateral nerves slightly impressed above. Flowers axillary, solitary,

peduncle very short, villose or none; pedicels 1.5—3 mm long, erect, later reflexed, villose; bracteoles linear, 3 mm long, villose with spreading hairs. Sepals slightly unequal, the outer ones narrow lanceolate, gradually attenuate towards the apex, the inner ones a little shorter, with broader, scariously margined base, respectively 6—6.5 and 5 mm long, villose with spreading hairs. Corolla blue or white, broadly funnel-shaped, about 9 mm long, the limb 10—13 mm in diam., subentire, with sericeous bands outside. Filaments inserted near the corolla base, about 4 times as long as the oblong anthers. Ovary obovoid, glabrous. Capsule globose, little shorter than the sepals, glabrous; seeds brownish-black, glabrous, 2.5 mm.

Distribution: C. and S. Brazil, Paraguay.

BRAZIL, without locality, *Riedel sub 106* (Len); *Sellow s. n.* (B). Minas Geraes, 1844, *Weddell s. n.* (P); Lagoa Santa, fl. Nov.—Dec.—Jan., *Warming 1798* (Br, C); Serra da Caraça, grassy places, Jan. 1825, *Riedel 1464*, type (Len). São Paulo, Nov. 1912, *A. C. Brade 6020* (S); Sept. 1909, *Löfgren 345* (R, 4240); Serra do Caixo, Araraquara, Sept. 1898, *Löfgren 932* (C).

PARAGUAY, between Rio Apa and Rio Aquidaban, San Luis, dry loma, Dec. 1908, *K. Fiebrig 5235* (B); Upper Rio Apa, Bellavista, Nov. 1901, *Hassler 7936*, type of *E. guaraniticus* Chod. et Hassl. (B, Boiss, K, NH, P); Paraguari, uncultivated hills, Oct. 1875, *Balansa 1173* (P); Caáguasú, campo, Nov. 1874, *Balansa 1171* (P).

The type has an erect habit, just as the specimens collected by Warming and by Balansa (1173). The leaves of the type are about oblong, the broadest part in the middle, they are rather obtuse, mucronulate, erect, the lower ones are slightly broader. The specimen Warming has the same leaves, only more acute; the specimen Balansa 1173 has narrow-ovate to ovate, acute leaves, the largest part below the middle. Other specimens, for example Löfgren, are more ascending and more branched and so is the type of *E. guaraniticus*, which in hairiness and leaf-shape much resembles Balansa 1173. Identical with the type of *E. guaraniticus* is the specimen Fiebrig 5235.

39. *Evolvulus sericeus* Sw., Prodr. Veg. Ind. Occ. (1788) p. 55; id., Fl. Ind. Occ. I (1797) p. 576 1); Willd. Spec. Plant. I

¹⁾ Swartz writes *Evolvulus*.

(1797) p. 1518; Nutt. Gen. N. Amer. Pl. I (1818) p. 174; Roem. et Schult. VI (1820) p. 196; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 74; id. Conv. Rar. (1838) p. 152; id. in DC. Prodr. IX (1845) p. 443; Chapm. Fl. S. Unit. St. (1860) p. 345; Griseb. Fl. Brit. W. Ind. Isl. (1864) p. 475; Griseb. Cat. Plant. Cub. (1866) p. 207; Meissn. in Mart. Fl. Bras. VII (1869) p. 353; Hemsl. Biol. Centr. Am. Bot. II (1881—'82) p. 399; A. Gray, Syn. Fl. N. Am. II, 1 (1886) p. 218; Th. Morong and N. L. Britton in Ann. N. Y. Acad. Sc. VII (1893) p. 173; Boldingh, Fl. Dutch W. Ind. Isl. I (1909) p. 160; N. L. Britton, C. F. Millspaugh, Bahama Flora (1920) p. 347; Urb. Symb. Antill. VIII (1921) p. 557; N. L. Britton and P. Wilson, Bot. Porto Rico etc. VI, 1 (1925) p. 104; P. C. Standley, Fl. Panama Canal Zone in Contr. U. S. Nat. Herb. XXVII (1928) p. 313.
 ? *Convolvulus minimus* Aubl. Pl. Guy. I (1775) p. 141; Vitm. Summa Pl. I (1789) p. 434 (ex Choisy in Mém. Soc. Phys. Genève l.c.).

Evolvulus sericeus Sw. var. β Lam. Encycl. III (1789) p. 538.

Convolvulus proliferus Vahl, Eclog. Am. I (1796) p. 18, forma cecidio affecta.

Evolvulus sericeus Sw. var. *Commersoni* Pers. Syn. Plant. I (1805) p. 288.

E. angustissimus HBK. Nov. Gen. et Spec. III (1818) p. 116, col. ed. p. 91; Roem. et Schult. Syst. VI (1820) p. 198.

E. Commersoni Roem. et Schult. Syst. VI (1820) p. 197.

E. virgatus Willd. ex Roem. et Schult. VI (1820) p. 198.

Convolvulus Commersoni Lam. ex Steud. Nom. ed. 2, I (1840) p. 408, 621 in syn.

E. brevipedicellatus Klotzsch in Schomb. Faun. et Fl. Guian. (1848) p. 1153, nomen.

E. sericeus Sw. var. *latior* Meissn. in Mart. Fl. Bras. VII (1869) p. 353; Hall. f. in Bull. Herb. Boiss. VII (1899) p. 44; Chod. et Hassl. in Bull. Herb. Boiss. 2. sér. V (1905) p. 685; Arech. in Anal. Mus. Nac. Montevideo VII (1911) p. 216.

E. anomalus Meissn. in Mart. Fl. Bras. VII (1869) p. 353.

E. alsinoides L. var. *sericeus* (Sw.) OK. Rev. Gen. Pl. I (1891) p. 441. ¹⁾

E. sericeus Sw. f. *glabrata* Chod. et Hassl. in Bull. Herb. Boiss. 2. sér. V (1905) p. 684.

E. sericeus Sw. f. *erecta* Chod. et Hassl. in Bull. Herb. Boiss. 2. sér. V (1905) p. 685.

E. sericeus Sw. var. *angustifolius* Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. 6, (1922) p. 42.

E. sericeus Sw. var. *Loefgrenii* Hoehne l.c. p. 42.

Type: Swartz, Jamaica.

Perennial. Stems few or several, lignescent at the base, erect or ascending, simple or branched, 10—25 cm long, in large specimens up to 45 cm, appressed-sericeo-villose, greyish, fulvous or whitish, exceptionally quite glabrous. Leaves erect or erecto-patent, sessile or shortly petioled, narrow-linear, linear or linear-lanceolate, the lower ones especially in ascending specimens often broader, attenuate and acute at both ends, appressed-sericeo-villose or occasionally sericeo-lanate beneath, glabrous above in the typical specimens, green to brownish in dried state, occasionally the upper surface appressed-sericeo-villose also, as dense as the lower surface or less dense, exceptionally the leaves quite glabrous; upper and middle leaves 6—25 mm long, 0.5—5 mm broad, generally more than 4 times as long as broad, the lower ones often broader, occasionally to 9 mm broad; internodes up to 15 mm long. Midrib impressed above, more or less prominent beneath; lateral nerves in the narrow leaves absent, in the broader ones 1 or 2 pairs from near the leaf-base, long-ascending. Flowers solitary or few in the leaf-axils; sessile or shortly pedicellate; in the f. *pedunculatus* with developed peduncle; bracteoles linear-subulate, 1—3 mm long; pedicels shorter than the calyx, erect, later reflexed, to 3 mm long, occasionally longer in fruit. Sepals narrow-oblong-lanceolate to oblong-lanceolate, acuminate, 3—5 (—8) mm long, rather densely appressed-pilose outside and at the margins or only with a few hairs; tops of the sepals often

¹⁾ O. Kuntze writes *E. alsinodes* L.

spreading. Corolla white, lilac or pale-blue, occasionally yellow in dried state, the limb rotate to broadly funnel-shaped, subentire, 7—12 or sometimes to 15 mm in diam. Filaments 2—3 times as long as the oblong anthers. Ovary subglobose, glabrous. Capsule globose, glabrous, 4-valved, 4-seeded, or occasionally oblique-ovoid, 3—2-valved, 1-seeded. Seeds brown, smooth.

Distribution: Southern United States of America, Mexico, Central America, West Indies, South America, from Colombia to northern Argentina³).

Vernacular name: Malcoté de Sabana (Dominican Rep., *E. J. Valeur* 233).

Typical specimens of *E. sericeus* Sw. are erect or ascending, with narrow erect leaves; typical *E. holosericeus* HBK. is prostrate, with distichous leaves. Beside the typical form of *E. sericeus*, Persoon¹) distinguished a var. *Commersoni*, based on specimens collected by Commerson near Montevideo, Uruguay (= var. *latior* Meissn.²)). These specimens have the stems generally shorter, the leaves are more patent and are often broader, often less than four times as long as broad. It is impossible however to draw a distinct line between the two. On the other hand there are also specimens which pass into the typical *holosericeus*. I presume that the forms are due to differences in habitat when occurring in a closed or more open vegetation. An examination on the habitats themselves may lead to a solution here. All specimens which have the leaves not distinctly in two rows I reckon to the typical *E. sericeus*.

Convolvulus proliferus Vahl is based on a specimen, misformed by a gall; the leaves are partly closely approximate and form an almost globular body at the top of the stems.

E. anomalus Meissn. is based on specimens with the, frequently occurring, 1-seeded, oblique capsules.

Specimens from Texas, New Mexico, and Arizona occasionally

1) Persoon, Syn. Plant. I (1805) p. 288.

2) Meissn. in Mart. Fl. Bras. VII (1869) p. 353.

3) The collectors' numbers of the species and its varieties may be found on p. 135—143.

possess large corollas, up to 15 mm in diam., the sepals to 5—6 mm long. Such large corollas also occur in the f. *pedunculatus* v. Ooststr. (see below).

Both in the typical specimens and in those which correspond to Persoon's var. *Commersoni*, as well as in the transitional forms, the following distinctions may be made:

- a. a form with leaves glabrous above.
- b. a form with leaves not glabrous above, appressed-sericeo-villose on both sides, equally dense on both sides or less dense above than beneath; transitions to a. occur.

Further may be distinguished:

f. c. *glaberrimus* Robins. in Proceed. Am. Acad. Arts and Sci. XLV (1910) p. 400, pro var.

Type: *Morton E. Peck 372*, British Honduras.

Habit of the typical *E. sericeus* Sw., entirely glabrous.

Distribution: Florida, British Honduras.

f. d. *pedunculatus* v. Ooststr. n. f. ¹⁾

Type: *C. A. Purpus 5402*, Mexico, San Luis Potosi, Minas de San Rafael.

Habit of the typical *E. sericeus* Sw.; peduncle developed, short, 3—5 mm or much longer, attaining a length of 25 mm. Corolla up to 15 mm in diam.

Distribution: Texas, Northern Mexico.

var. 1. *holosericeus* (HBK.) v. Ooststr. n. comb.

Evolvulus holosericeus HBK. Nov. Gen. et Spec. III (1818) p. 116, col. ed. p. 91; Roem. et Schult. Syst. VI (1820) p. 198; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 74; id., Conv. Rar. (1838) p. 152; id. in DC. Prodr. IX (1845) p. 444; Meissn. in Mart. Fl. Bras. VII (1869) p. 352; Hemsl. Biol. Centr. Am., Bot. II (1881—'82) p. 399; Reiche, Fl. de Chile V (1910) p. 174.

¹⁾ *E. sericeus* Sw. forma *pedunculatus* v. Ooststr. n. f. Habitus speciei, pedunculus evolutus 3—5 mm longus vel longior ad 25 mm longus. Corolla ad 15 mm diametens.

E. cuspidatus HBK. Nov. Gen. et Spec. III (1818) p. 116, col. ed. p. 91; Roem. et Schult. Syst. VI (1820) p. 197.

Nama sericea Willd. ex Roem. et Schult. Syst. VI (1820) p. 189.

E. distichophyllus Mart. in Flora XXIV (1841) 2. Beibl. p. 101.

E. holosericeus HBK. var. *incomtus* Meissn. in Mart. Fl. Bras. VII (1869) p. 352.

E. araucanus Phil. in Anal. Univ. Chil. XLIII (1873) p. 513, cf. Reiche, Fl. de Chile V (1910) p. 174.

? *E. ellipticus* Larrañaga, Escritos II (1923) p. 122. (Publ. Inst. Hist. Geog. Urug.).

Type: *Bonpland*, Colombia, pastures near La Cuesta de Toluca and near Ibaguè.

Perennial. Stems several, lignescent at the base, prostrate, simple or branched, 10—30 cm long, appressed-sericeo-villose to sericeo-lanate with more or less spreading hairs, colour of the indument greyish, white or fulvous. Leaves distichous, often almost at right angles to the stems, sessile or shortly petioled, lanceolate, oblong-lanceolate, oblong or ovate to elliptic, generally acute at the apex, mucronate with a bundle of hairs at the leaf-top, rounded or acutish at the base, densely sericeo-villose or sericeo-lanate beneath, the latter often only in the young parts, greyish, white or fulvous, glabrous above or hairy along the margins or sericeo-villose to lanate on both sides, above as dense as beneath or less dense; in the at the upper surface glabrous leaves, this side often olive-green or brown in dried state; middle-sized leaves 8—15 mm long, 2.5—7 mm broad, but varying in length from 4—20, occasionally to 25 mm and in breadth from 2—8 (—10) mm, 2—3 times as long as broad; internodes 2—7 mm long. Flowers solitary in the leaf-axils, sessile or shortly pedicellate; bracteoles subulate, 2—3 mm long, occasionally to 4.5 mm. Sepals oblong-lanceolate, acuminate, 3—5 mm, sericeo-villose, the top often oblique and spreading. Corolla twice as long as the calyx, pale-blue, pale-violet or white, in

dried state occasionally yellow, the limb rotate to broadly funnel-shaped, subentire, 7—12 mm in diam. Filaments inserted 2 mm above the corolla base. Ovary globose, glabrous. Capsule globose, glabrous, 4-valved, 4 or less-seeded. Seeds 4, brown, or black.

Distribution: Mexico, South America from Colombia to northern Argentina.

For *E. holosericeus* HBK. var. *obtusatus* Choisy see under *E. sericeus* Sw. var. *discolor* (Benth.) Gray.

There is a slight chance that Larrañaga's *E. ellipticus* from Uruguay belongs here. The original description of this species reads: "Foliis ellipticis, sessilibus, subtus sericeis, floribus subsessilibus solitariis, prostratis caulibus."

Two forms can be distinguished, just as in the typical *E. sericeus* Sw.

- a. Upper leaf-surface glabrous, described by HBK. as *E. holosericeus*. Here belong the synonyms *E. distichophyllus* Mart., *E. holosericeus* HBK. var. *incomtus* Meissn., *E. araucanus* Phil.
- b. Upper leaf-surface not glabrous, sparsely to densely sericeo-villose or sericeo-lanate, as dense as beneath or less dense. Here belongs *E. cuspidatus* HBK. Transitions between a and b occur.

var. 2. **discolor** (Benth.) Gray, Synopt. Fl. N. Am. II, I (1886) Suppl. p. 436.

Evolvulus discolor Benth., Pl. Hartw. (1839) p. 6; Hemsl. Biol. Centr. Am., Bot. II (1881—'82) p. 399; Gray, Synopt. Fl. N. Am. II, I (1886) p. 219.

E. holosericeus H.B.K. var. *obtusatus* Choisy in DC. Prodr. IX (1845) p. 444; Torr. Bot. Mex. Bound. (1858) p. 150.

? *E. uniflorus* Sessé et Moc., Fl. Mexic., ed. 2 (1894) p. 78.

E. oreophilus Greene, Leafl. Bot. Obs. and Crit. I (1903—06) p. 151.

E. Wilcoxiana House in Bull. Torr. Bot. Club XXXIII (1906)

p. 315; E. O. Wooton, P. C. Standley, Fl. New Mexico in Contr. U. S. Nat. Herb. XIX (1915) p. 516.

Type: *Hartweg 20*, Mexico, between Lagos (Jalisco) and Aguas Calientes (Aguas Calientes).

Perennial. Stems several from a woody perpendicular root, rather short, prostrate or ascending at the top, mostly unbranched, 5—12 (—20) cm long, sericeo-villose with soft brownish shining hairs, hairs not so closely appressed as in the preceding form. Leaves more or less distinctly distichous, at right angles to the stems or directed towards the stem-top, sessile or shortly petioled, ovate-oblong, elliptic to oblong or narrow-oblong to oblong-lanceolate, obtuse or acutish at the apex, rounded or acutish at the base, the lower ones often the broadest, 7—18 mm long and 4.5—8 mm broad, $1\frac{1}{2}$ —2 (—3) times as long as broad, the upper ones often narrower, 8—20 (—26) mm long and 3—5 mm broad, 2—4 times as long as broad, bright green and glabrous above, densely sericeo-villose beneath like the stems, or densely sericeo-villose on both sides, the hairs not so closely appressed as in the preceding form and often more intensively brown and shining than in that form; leaves often conduplicate, especially the higher ones, convex and falcate; midrib and 2—3 pairs of lateral nerves, rising from near the base, impressed above, slightly visible beneath; internodes 3—7 mm. Flowers solitary in the leaf-axils; peduncle none or rarely developed, to 2 mm long; pedicels shorter than the calyx; bracteoles linear or linear-oblong, 2—5 mm long. Sepals ovate-oblong to oblong-lanceolate, acute to acuminate, 4.5—5 (—6) mm long, sericeo-villose. Corolla white, or pale-blue, much exceeding the sepals, rotate to widely funnel-shaped; the tube very short, the limb 10—15 mm in diam. Filaments inserted 1.5 mm above the corolla base, about 3 times as long as the ovate anthers. Ovary globular, glabrous. Capsule globular, as long as or exceeding the sepals, 4- or less-seeded; seeds brown, smooth.

Distribution: United States of America (California, Arizona, New Mexico, Texas); Mexico.

The type has the leaves rather broad, ovate-oblong to elliptic, obtuse. Also specimens often occur with longer and narrower leaves; to the latter belongs House's *E. Wilcoxiana*. Numerous transitions exist however and a separation in one or more forms is not possible. There are some remarkable specimens with distinctly distichous, elliptic leaves, e.g. Pringle 6720, Conzatti and Gonzalez 441, both from Oaxaca.

We can distinguish two forms:

- a. upper leaf surface glabrous (here belongs the typical form and *E. Wilcoxiana* House).
- b. both surfaces of the leaves equally hairy (here belongs *E. oreophilus* Greene).

var. 3. *falcatus* (Griseb.) v. Ooststr. n. comb.

E. incanus Pers. var. *elongatus* Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 75; id., Conv. Rar. (1838) p. 153; id. in DC. Prodr. IX (1845) p. 444.

Leucomalla lanuginosa Phil. Sert. Mendoc. Alt. (1871) p. 31.

E. falcatus Griseb. in Goett. Abh. XIX (1874) p. 229.

Type: *P. G. Lorentz 84*, Argentina, Cordoba, near Cordoba.

Perennial. Stems few or several from a woody base, ascending, rather short, 5—12 cm long, occasionally longer, densely sericeo-lanate with white or greyish, more or less shining hairs; internodes 3.5—7 mm. Leaves often more or less secund, the younger ones often conduplicate, narrow-lanceolate, lanceolate or oblong-lanceolate to ovate-lanceolate, more or less falcate, acute at the apex, rounded at the base, 10—20 mm long, 2—6 mm broad, 3—6 times as long as broad, occasionally broader, about twice as long as broad, densely sericeous or sericeo-lanate on both sides with silvery white, more or less shining hairs. Nervation obscure or midrib prominent beneath. Flowers solitary, axillary; peduncle none, pedicels very short or almost absent; bracteoles small, linear-lanceolate, from nearly 2 to 3.5 mm long. Sepals narrow-oblong-lanceolate, acuminate, 4.5—6 (—7.5) mm

long, appressed-sericeous. Corolla pale- or dark-blue, rotate, the limb 11—12 mm in diam., superficially lobed with emarginate lobes. Filaments inserted about 2 mm above the corolla base, 2.5 times as long as the oblong anthers. Ovary globular, glabrous. Capsule globular, shorter than the sepals, 4- or less-seeded; seeds smooth.

Distribution: Argentina.

UNITED STATES OF AMERICA, California, Colorado Desert, San Diego Co., Santa Catalina Mission, Sept. 1889, C. R. Orcutt (2a¹), US). Tennessee, Memphis, 1885, G. Egeling (a¹), G). Louisiana, Caddo, prairies, fl. Apr.—May, J. Hale (a, US); New Orleans, herb. Maire (a, P). Georgia, Leconte (a, P). Florida, Chapman (a, B, K); Decaisne (a, P); F. Rugel 228 (a, US); id., F. Rugel 458 (a, NH); East Florida, herb. Baldwin (a, K); near St. Marks, F. Rugel 467 (a, NH); vicin. of Eustis, Lake Co., high pineland, July 1894, G. V. Nash 1308 (a, US); Jackson Co, herb. Chapman (a, US); Fort Meade, pine barrens, March 1880, J. Donnell Smith (a, US); Fort Myers, 1904, J. M. Westgate 3554 (a, F); id. pine woods, Febr. 1916, P. C. Standley 12825 (a, US); id., low pineland, March 1916, J. P. Standley 85 (a, NH, US); Sanibel Isl., May 1901, S. M. Tracy 7580 (a, B, NH, US); Everglades, E. border, fl. June, Curtiss, N. Americ. Pl. 2181 (a, Len); prairies between Everglades and Biscayne Bay, June 1880, Curtiss, N. Americ. Pl. 2179 (a, b, B, K, Len, M, NH, P, US); Everglade Key, June 1915, J. K. Small, C. A. Mosier, G. K. Small 6533, June 1915 (b, S); Big Pine Key, pinelands, Nov. 1912, J. K. Small 3798 (c, S); Key West, Aug. 1877, Garber (a, P). Arizona, N. Arizona, 1869, Palmer (2a, US); Ash Creek, fl. July, fr. Aug., Rothrock 307 (a—2a, US); Prescott, May 1883, H. H. Rusby 253 (2a, US); id. s. n. (2a, P); Prescott, Aug. 1926, R. H. Peebles, G. J. Harrison, F. H. Kearney 2624 (2a, K, Len); Kirkland, s. of Prescott, July 1926, R. H. Peebles, G. J. Harrison, F. H. Kearney 2608 (2a, US); Mayer, July 1903, D. Griffiths 4893 (2a, US); Black Mesa, May—Oct. 1902, C. A. Purpus 73 (2a, US); near Douglas, fl. May, R. H. Peebles 5375 (2b, US); near Nogales, Aug. 1928, R. H. Peebles, G. J. Harrison, T. H. Kearney 5571 (2a, US); Fort Huachuca, 1890, C. N. Patzky (2a, US); id., 1894, T. E. Wilcox 8 (2b, US); id., 1894, T. E. Wilcox 96, type of E. Wilcoxiana House (2a, US); id., May 1892, T. E. Wilcox s. n. (2a, US); Apache Pass, Chiricahua Mts, May 1881, J. L. Lemmon 247 (2a, NH, P, US); Oracle, Aug. 1903, M. E. Jones (2a, NH, US); Taylor, June—July 1897, W. Hough 67 (2a, US); Copper Basin, 1892, J. W. Toumey 185 (2a, US). New Mexico, Central New Mexico, 1880, H. H. Rusby (2a, US); Santa Rita, Aug. 1911, J. M. Holzinger (2a, US); 1 mile w. of Hillsboro, Sierra County, dry hills, base of Black Range, 5500 ft., Aug. 1904, O. B. Metcalfe 1228, type of E. oreophilus Greene (2b, B, NH, US);

¹) Specimens indicated with a. *E. sericeus* Sw., leaves glabrous above; b. *E. sericeus* Sw., leaves hairy on both sides; c. *E. sericeus* Sw. f. *glaberrimus* (Robins.) v. Ooststr.; d. *id.* f. *pedunculatus* v. Ooststr.; 1a. *E. sericeus* Sw. var. *holosericeus* (HBK.) v. Ooststr.; 1b. *id.*, leaves hairy on both sides; 2a. *E. sericeus* Sw. var. *discolor* (Benth.) Gray; 2b. *id.*, leaves hairy on both sides; 3. *E. sericeus* Sw. var. *falcatus* (Griseb.) v. Ooststr.

Grant Co., gravelly plains, Sept. 1880, *H. H. Rusby* 298½ (a, US); Silver City, 1901, *Metcalfe* (2a, S); id., Sept. 1920, *W. W. Eggleston* 17280 (a, US); Silver City, road above Tyrone, Gila Forest, Grant Co, Oct. 1919, *W. W. Eggleston* 16484 (2a, not typical, US); Mangas Springs, 18 miles N.W. of Silver City, Grant Co, June 1903, *O. B. Metcalfe* 100 (2a, K, Len, NH, P, US); id., Aug. 1901, *O. B. Metcalfe s. n.* (2a, US); Fort Bayard, July 1895, *A. I. Mulford* 485 (a, K); Organ Mts, June 1906, *P. C. Standley s. n.* (2a, US); id., Aug. 1881, *G. R. Vasey* (2b, US); id., 5000 ft., July 1897, *E. O. Wooton* 128 (2b, B, K, Len, P, US); id. Filmore Canyon, May 1905, *E. O. Wooton* (2a, b, US); Lake Valley, Sept. 1914, *Ida M. Beals* (a, 2b, US); Las Vegas, June 1927, *Arsène* 18878 (2a, P); id., *Arsène* 18880 (2a, U); Kingston, dry hills, Aug. 1904, *O. B. Metcalfe* 1259 (2a, B, NH, US); Water Canyon, June 1895, *C. L. Herrick* 515 (2a, US). Texas, from W. Texas to El Paso, May—Oct. 1849, *Wright* 513 (b, K, NH, US); herb. Texano-Mexicanum, *Berlandier* 2506 (a, K); Texas, May 1860, *G. W. Bellrage* (a, S); Apr. 1899, *W. L. Bray* 146 (a, US); *Drummond* 35 (a, NH); *Drummond s. n.* (a, P); Aug. 1881, *V. Havard* (a, US); 1843, *Lindley* (a, K); Apr. 1922, *B. C. Tharp* 1377 (d, US); May 1925, *B. C. Tharp* 3659 (2b, US); Nov. 1908, *Wolf* 196 (a, US); Tarrant Co, May 1927, *O. L. Killian* 6958 (a, US); Fort Davis, Sept. 1920, *W. W. Eggleston* 17375 (b, US); id., *V. Havard* (2b, US); Rio Limpia Canyon, Apr. 1902, *S. M. Tracy*, *F. S. Earle* 412 (2b, US); Marfa, Presidio Co., 1420 m, Sept. 1920, *W. W. Eggleston* 17355 (b, US); Marfa to Alpine, frequent, mountain sides, hill sides, Apr. 1919, *H. C. Hanson* 636 (2b, US); Kerr Co., Kerrville, 1600—2000 ft, June 1894, *A. A. Heller* 1912 (d, US); id., May 1916, *Palmer* 9942 (d, P); Southerland Springs, Wilson County, 25 miles S. E. of San Antonio, Aug. 1879, *Edw. Palmer* 913 (2a, K, US); id., *Edw. Palmer* 914 (a, d, K, P, US); Blexas County, 25 miles north of San Antonio, dry rocky soil, not common, May 1920, *Ellen D. Schulz* 138 (d, US); San Antonio, 1918, *Mrs. H. D. Slater* (d, US); Medina River, June 1834, *Berlandier* (a, G); Austin, rocky ledges, high exposed bluffs, May 1918, *Palmer* 13668 (d, P); Austin, July 1882, *G. W. Letterman* 108 (d, US); Bryan, Brazos Co., dry sandy ground, May 1915, *E. J. Palmer* 7817 (a, K, P); Richard, Cameron Co., Apr. 1905, *F. L. Lewton* 190 (a, US); Pena, 1889, *G. C. Nealley* 281 (2a, US); San Diego, 1885, *M. B. Croft* 5941 (a, US); along Neueces Bay, Neueces County, March 1894, *A. A. Heller* 1441 (a, US); between La Victoria and Gonzalez, dry places, Oct. 1849, *Trécul* 1234 (a, P); between Matamoros (Tamaulipas, Mexico) and Goliad, Apr. 1834, *Berlandier* 2506 (a, P); Goliad, Sept. 1927, *M. Wood* 5997 (2a, US); Rio Brazos, *Drummond* 89 (a, K); Houston, May—June 1910, *R. A. Dixon* 614 (a, F); id., May 1915, *E. J. Palmer* 7750 (a, K); id., 1842, *Lindheimer* (a, B); id., 1872, *E. Hall* (a, US); id., May 1880, *F. Tweedy* (a, US); id., Apr. 1918, *G. L. Fisher* 68 (d, US); id., pine woods, Apr. 1872, *E. Hall* 488 (a, d, K, NH, US); Columbia, common on prairie, Apr. 1900, *B. F. Bush* 81 (a, K, US); Dallas, *J. Reverchon* 661 (a, P); id., sandy soils, rare, May 1875, *J. Reverchon s. n.* (a, US); Kingsville, Apr. 1905, *S. M. Tracy* 9200 (a, B, NH, US); Handley, Oct. 1910, *A. Ruth* 83 (a, F); Fayette Co., 1892, *E. W. Crawford* 12 (a, US); limestone hill near Bracken, Bexar Co., July 1903, *B. H. A. Groth* 35 (d, K, US); San Felipe, *Drummond* (a, K).

MEXICO, *Coulter* 1018 (2a, K); 1844, *Karwinsky* (2a, M); Apr. 1842, *Liebmann* 12510 (a, C); June 1841, *Liebmann* 12528 (a, C); Aug. 1841, *Liebmann* 12535 (a, C); Apr. 1841, *Liebmann* 12679 (a, C); *Sartorius* (a, B); *W. Schaffner* 48 (a, G, P); *W. Schaffner* 726 (a, B); *Schnée* (2a, P); *W.*

Schumann 950 (a, B); Rio Grande, *Tweedie* (a, K); chiefly in the valley of the Rio Grande, below Donana, *Mexic. Bound. Survey, under direct. of Major W. H. Emory, C. C. Parry, J. M. Bigelow, Ch. Wright, A. Schott* (a, d, 2a, US); *id.* 1004 (a, US); Sonora, May 1928, *R. H. Peebles* 5312 (2a, US). Chihuahua, *Potts* (b, NH); vicin. of Madera, about 2250 m, May—June 1908, *Edu. Palmer* 323 (2a, NY, US); near Colonia Garcia, Sierra Madres, 7200 ft, July 1899, *C. H. T. Townsend, C. M. Barber* 98 (a, B, K, NH, P, US); Sierra Madre, June—July 1899, *E. W. Nelson* 6018 (2a, US); Casas Grandes, May 1899, *E. A. Goldman* 411 (2b, US); vicinity of Chihuahua, about 1300 m, Apr. 1908, *E. Palmer* 102 (2b, F, K, US). Coahuila, Mexican National R. R., kilometer 1061, June 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 8238 (d, US); E. of Saltillo, 10,000 ft., Febr. 1880, *Edu. Palmer* 912 (2a, K, P). Nuevo Leon, Monterey, Febr. 1880, *Edu. Palmer* 912 (2a, US); *id.*, May 1921, 500—700 m, on marl slope, *L. Rutten, C. Rutten-Pekelharing* 640 (a, U). Tamaulipas, vicin. of Victoria, 320 m, May—June 1907, *Edu. Palmer* 529 (d, US); *id.*, June—July 1842, *Karwinsky* (d, Len, with *E. alsinoides* L. and *E. glaber* Spreng.); Buena Vista Hac., June 1919, *E. O. Wootton* (a, US). San Luis Potosi, 1879, *J. G. Schaffner* 502 (2a, B, G, M, P); 1851, *Virlet d'Acoust* (a, 2a, P); Sept. 1876, *J. G. Schaffner* 615 b (2a, B, K); Minas de San Rafael, May 1911, *C. A. Purpus* 5402, type of *E. sericeus* Sw. f. *pedunculatus* v. *Ooststr.* (d, B, NH, US). Jalisco, Aug. 1897, *J. N. Rose* 3574 (a, US); between Lagos and Aguas Calientes (Aguas Calientes), 1839, *Hartweg* 20, type of *E. discolor* Benth. (2a, B, K, L, NH, P). Hidalgo, Real del Monte, *Berlandier* 279 (a, P); *id.*, *Berlandier* (2a, Len); Sierra de Pachuca, July 1905, *J. N. Rose, J. H. Painter, J. S. Rose* 8747 (2a, US). Vera Cruz, savannas, 1840, *Galeotti* 1356 (a, Br, P); Orizaba, *Botteri* 547, 882, on the same label (a, US); *id.*, *Bourgeau* (a, P); near Jalapa, fl. Aug, *Schiede* 229 (a, B); *id.*, Aug., 1828, *Schiede* 558 (a, Len); Zucuapan and vicin., dry meadows, July 1906, *C. A. Purpus* 2365 (a, NH, US); near El Manantial, July 1828, *Schiede* 557 (1b, Len); between El Manantial and Paso de Ovejas, fl. July, *Schiede* 230 (1b, B). Puebla, Esperanza, Sept. 1911, *C. A. Purpus* 5671 (2a, NH, US). Tlaxcalla, between Calpulalpan and San Martin de Tesmelucan, sandy pastures, fl. June, type of *E. uniflorus* S. et M. (probably belongs to 2a, not seen). Oaxaca, Cerro de San Felipe, Aug. 1897, *C. Conzatti, V. Gonzalez* 441 (2a, US); thin gravelly soil, hills near Oaxaca, 5500 ft., July 1897, *C. G. Pringle* 6720 (2a, B, Br, G, K, Len, M, NH, P, S, U, US); thin soil of ledges near Oaxaca, 5000 ft., July 1897, *C. G. Pringle* 6733 (a, B, Br, G, K, Len, M, NH, P, S, US); distr. Tlacolula, near Mitla, June 1888, *C. and E. Seler* 27 (a—2a, B); between Guichocovi and Lagunas, 600—900 ft., June 1895, *E. W. Nelson* 2745 (a, US); Rincón Antonio, Apr. 1910, *C. R. Orcutt* 3261 (a, K, US). Chiapas, rocky plains near Monserate, July 1925, *C. A. Purpus* 292 (1b, K, S, US); *id.*, May 1926, *C. A. Purpus* 10292 (1b, M); Cerro de Tonalá, mountains, in pasture, Febr. 1896, *C. and E. Seler* 2054 (a, B).

BRITISH HONDURAS, low pine ridge near Manatee Lagoon, March 1906, *M. E. Peck* 372, type of *E. sericeus* Sw. f. *glaberrimus* (Robins.) v. *Ooststr.* (c, Gr, not seen).

GUATEMALA, June 1909, *C. Deam* 6222 (a, US); dept. Huehuetenango, Chacula, 1600 m, grassy places, Aug. 1896, *C. and E. Seler* 2990 (a, B); dept. Santa Rosa, Santa Rosa, 3000 ft, May 1892, *Heyde and Lux, ed. J. Donnell Smith* 2963 (a, B, K, M, US); dept. Alta Verapaz, Cubilguitz, 1200 ft, 1892, *von Türkheim, ed. J. Donnell Smith* 3584 (a, K, US).

EL SALVADOR, near Chalchuapa, 1922, *S. Caldéron* 999 (a, US); dept. Santa Ana, vicin. of Santa Ana, pine forest, 655—900 m, Jan. 1922, *P. C. Standley* 20421 (a, US).

NICARAGUA, *P. Lévy* (a, P).

COSTA RICA, pastures, Cruz de Guanacaste, 250 m, July 1890, *H. Pittier* 2791 (a, Br).

PANAMA, Febr. 1908, *R. S. Williams* 181 (a, US); pasture near Panama, Apr. 1847, *Seemann* 484 (a, K, NH); prov. Panama, vicin. of Juan Franco Race Track, near Panama, in pasture, Dec. 1923, *P. C. Standley* 27815 (a, US).

WEST INDIES, without precise locality, *von Rohr* 30, type of *Convolvulus proliferus* Vahl (a, C).

BAHAMAS ISLANDS, New Providence, Sept. 1904, *N. L. Britton, L. J. K. Brace* 446 (a, K); id., Hog Island, edge of swamp, May 1909, *P. Wilson* 8280 (a, K).

CUBA, 1843—44, *Linden* 1719 (b, K, NH); *Ramon de la Sagra* 567 (b, P); prov. Pinar del Rio, mountains north of San Diego de los Baños, in grass on poor open hillside, Apr. 1900, *W. Palmer, J. H. Riley* 622 (a, US); id., near Pinar del Rio, on poor upland soil, common, March 1900, *W. Palmer, J. H. Riley* 427 (a, US); id., near Pinar del Rio, on dry parts of prairie, common, Apr. 1900, *W. Palmer, J. H. Riley* 466 (b, US); id., palm-barrens west of Guane, near ditch, Nov. 1911, *J. A. Shafer* 10389 (a, US); id., San Juan y Martinez, in pinelands at La Tea, June 1923, *E. L. Ekman* 16776 (d, S); id., Laguna Jovero and vicin., dry sand, Dec. 1911, *J. A. Shafer* 10756 (b, US); prov. Santa Clara, distr. Cienfuegos, May 1895, *R. Combs* 41 (a, K, P); id., vicin. of Sancti Spiritus, Febr. 1912, *J. A. Shafer* 12065 (b, U, US); prov. Camaguey, savannas near Camaguey, Apr. 1912, *N. L. Britton, E. G. Britton, J. F. Cowell* 13081 (b, U, US); prov. Oriente, Bayata, savanna Miranda, June 1915, *E. L. Ekman* III 5886 (a, b, S); id., Bayata, savanna, San Felipe, wood, March 1915, *E. L. Ekman* III 4962 (a, b, S); Mir, savanna, near railway, Aug. 1916, *E. L. Ekman* 7513 (a, S); Santiago de Cuba, hills, June 1914, *E. L. Ekman* III 1520 b (a, b, S); id., Santiago de Cuba, savannas, Saltadero, May 1844, *J. Linden* 1718 (b, Br, DC, Len, P); Savannas Guamaroca, July 1865, *Wright* 68 (a, b, G, S); Savannas Chingote, fl. July 1865, *Wright* 264 (a, b, S, US); id., fl. July, *Wright* 3104 (a, b, G, K, Len, NH, P, US).

ISLE OF PINES, near Nueva Gerona, Febr. 1904, *A. H. Curtiss, West Ind. Pl.* 344 (b, K, L, Len, M, NH, P, US); id., May 1910, *O. E. Jennings* 614 (b, US); id., on almost bare poor places of open dry ground, July 1900, *W. Palmer, J. H. Riley* 975 (b, US); near San Pedro, pinelands, Febr.—March 1916, *N. L. Britton, P. Wilson* 14321 (b, US).

JAMAICA, *P. Browne* (a, NH); *Heward* (b, Len); *Herb. Miers* (b, NH); *Swartz*, type (a, M, S); *Wright* (a, K); Lititz savanna, *Wullschlaegel* 928 (b, M); id., *W. Harris* 11663 (a, NH); id., amongst grasses, July 1914, *W. Harris* 11765 (a, K, NH, S, US); New Forest, along roadsides, 400 ft, Febr. 1898, *W. Harris* 7244 (a, NH, US); Clarendon, Inverness, waste places, Nov. 1913, *W. Harris* 11690 (a, C, K, Len, NH, P, US); Surrey, Kingston, Nov. 1849, *Prior* (a, K).

HAITI, dept. du Nord, vicin. of St. Michel-de-l'Atalaye, about 350 m, Nov. 1925, *E. C. Leonard* 7127 (a, US); id., id., 450 m, in savannas, June 1927, *E. L. Ekman* H. 8349 (a, S, US).

DOMINICAN REPUBLIC, near Constanza, 1300 m, pinelands, June 1910, *von Türckheim* 3260 (a, K, M, NH); prov. Monte Cristy, distr. Moncion,

Moncion, open savannas, semiarid pine region, 375 m, Oct. 1929, *E. J. Valeur* 233 (a, NY, US); id., distr. Sabaneta, Leonor, 600—700 m, pinelands, Nov. 1930, *E. J. Valeur* 518 (a, K, U, US); S. Domingo, *Bertero* (a, B, Len, M, P); *herb. de Jussieu* 6890 + A (a, P); *Poiteau* (b, Len, P).

PORTO RICO, Guanajibo near Mayaguez, serpentine hillside, Febr. 1915, *N. L. Britton, J. F. Cowell* 4067 (a, US).

LESSER ANTILLES, Virgin Islands, Tortola, Febr. 1913, *N. L. Britton, J. A. Shafer* 879 (a, K, US); St. Croix, *Herb. Ledebour* (a, Len). St. Martin, along roads from Colebayhill to Simonsbay, Aug. 1906, *Boldingh* 3014B (a, U). St. Eustatius, June 1908, *Boldingh* 380B (a, U); top of the Cliff, between Gallowsbay and Whitewall, *Boldingh* 760B (a, K, L, P, U); Whitewall, May 1885, *W. F. R. Suringar* (a, L). Antigua, Monkshill, dry places, 1849, *Wullschlägel* 367 (a, G, also 1402, M). Guadeloupe, 1894, *Père Duss* 3451 (a, US). Tobago, Nov. 1889, *Eggers* 5879 (a, P). Trinidad, St. Joseph savanna, grassy hillside, March 1920, *N. L. Britton, T. E. Hazen, W. E. Broadway* 985 (a, US). Anagada, rocky plain near settlement, Febr. 1913, *N. L. Britton, W. C. Fishlock* 1035 (b, K).

COLOMBIA, *Engels* (1b, Len); *Karsten* 26 (1b, B); *Lehmann K.* 213 (a, K); *Lobb* (a, K); *Mutis* 1226 (1b, US, ex Madrid); Santa Marta, July 1903, *H. H. Smith* 1563 (a, DC, F, K, P, S, U, US); Magdalena Valley, near Lake Zapatosa, fl. Aug., *C. Allen* 227 (1a, K); Upper Magdalena Valley, near Altamira, fl. Dec., *Lehmann K.* 211 (a—1a, K); Santander, Ocaña, fl. May, *Engels* (a, Len); Cauca, western Cordillera, 1000 m, road from Cali to Buenaventura, Febr. 1906, *H. Pittier* 1515 (1b, US); Tolima, Cuamo to Rio Saldaña, dry open loam, 400—450 m, July 1917, *F. W. Pennell, H. H. Rusby* 226 (1b, NY); pastures near La Cuesta de Toluca and near Ibaguè, *Bonpland*, type of *E. holosericeus* HBK. (1a, ex HBK, l.c.); Cundinamarca, la Mesa, March 1868, *A. Stübel* 82c (a, B).

VENEZUELA, *H. Pittier* 10810 (1b, P); 1868, *E. P. Stevens* (1b, NY); banks of Orinoco, *Chaffanjon* (1b, P); Trujillo, near Dividive, savannas, common, Nov. 1922, *H. Pittier* 10812 (1b, K, US); Zamora, Acarigua, R. Portuguesa, savannas, Apr. 1925, *H. Pittier* 11729 (a, M, US); id., Culebra Lagoon, near San Carlos Cojedes, arid savannas, Apr. 1925, *H. Pittier* 11702 (a, US); Federal Distr., Caracas, Apr. 1854, *Gollmer* (1a, B); id., Puerto-Escondido, dry slopes, May 1930, *H. Pittier* 13426 (a, NY, US); Bolivar, Guiana, Jan. 1902, *Passarge, Selwyn* 367 (1b, B); id., 335, 625 (a, B); id., id., Febr. 1902, *Passarge, Selwyn* 659 (a, B); lower Caroni R., savanna, Jan. 1904, *B. Othmer* (1a, M); id., id., Tumeremo, Dec. 1840, *Otto* 1666 (1a, B); id., near Angostura (Ciud. Bolivar), *Bonpland* 1072, type of *E. cuspidatus* HBK. (1b, P); id., sandy places near Angostura (Ciud. Bolivar) and near Ferrara, *Bonpland* 1136, type of *E. angustissimus* HBK. (a, P).

BRITISH GUIANA, Febr. 1842, *Schomburgk* 452 (*E. brevipedicellatus* Klotzsch) (a, B); *Schomburgk* 623 (a, Br, with 1a, K, L, NH, with 1a, P); *Schomburgk* 623 (a—1a, B, Br, K); *Schomburgk s. n.* (1a, L); Tacutu R., March 1842, *Schomburgk* 338/526 (1a, 1b, B, K); Pirara, *Schomburgk* 338 (a, 1a, NH, P); id., June 1867, *C. Appun* 2091 (1b, K); Ireng Valley, *J. J. Quelch* and *F. Mc. Connell* 215 (a, K).

ECUADOR, Avila, fl. March, *Moritz* 375 (a, B); savannas of R. Daule, *Destrüge* (a, K).

PERU, dept. Piura, prov. Huancabamba, valley of River Huancabamba between Sondor and Shumaya, 1700—1800 m, May 1912, *Weberbauer* 6283

(1a, B, US); dept. San Martín, Tarapoto, sandy soil, 360—900 m, Dec. 1929, *L. Williams* 5436, 5790, 6162 (1b, F); id., open places, Oct. 1902, *E. Ule* 6479 (1b, B, K, L); id., Oct. 1902, *E. Ule* s. n. (a, B); id., 1855—56, *R. Spruce* 4043 (1b, Br, K, NH).

CHILE, Nahuelbuta, Dec. 1873, *Reed*, identif. as *E. araucanus* Phil. (1a, K).

BOLIVIA, *M. Bang* 2274 (1b, B, K, Len, M, US); *Th. Bridges* (1b, NH); *Cumming* 158 (1b, V); *A. d'Orbigny* 1156 (a, P); Apr. 1864, *R. Pearce* (1a, K, NH); Bolivian Plateau, *M. Bang* 2275 (1b, NH); "Prov. de la Cordillera", Nov.—Dec. 1845, *Weddell* 3617 (a, P); *El Beni*, pampas near Lake Rogagua, Nov. 1921, *Mulford Biol. Expl. Amaz. Basin* 1696 (a, NY); Nord Yungas, Milluguaya, 1300 m, Dec. 1917, *O. Buchtien* 4221 (1b, US); La Paz, Obrajes, 3400 m, May 1919, *O. Buchtien* 4461 (1a, S, US); id., vicin. of Sorata, 2650 m, Febr.—March 1861, *G. Mandon* 1491 (a, K, NH, P); Apolo, Febr. 1902, *R. S. Williams* 122 (1a, K, NH, US). Cochabamba, vicin. of Cochabamba, 1891, *M. Bang* 951 (a—1a, B, K, Len, M, NH, US); Santa Cruz, 2300 m, Dec. 1921, *Steinbach* 6046 (a, B); id., Chiquitos, Sept.—Oct. 1845, *Weddell* 3488 (1a, P); id., Yapacani, 400 m, June 1892, *O. Kuntze* (1a, US); id., prov. Sara, Buenavista, lomas, 450 m, Aug. 1915, *Steinbach* 1576 (1b, B); id., id., id., sandy campos, 500 m, March 1921, *Steinbach* 5387 (1a, NY); id., id., id., 450 m., Oct. 1924, *Steinbach* 6588 (a—1a, B, K, NH, S); Tarija, Toldos near Bermejo, rocky sandy slope with poor vegetation, Dec. 1903, *K. Fiebrig* 2357 (a, B). Puna, Argentina boundary, 3500 m, Nov. 1903, *K. Fiebrig* 2001c (1a, B).

BRAZIL, *Blanchet* s. n. (1a, C); *Glaziou* 1125 (a, P); *Glaziou* 6813a (a, P, with *E. filipes* Mart.); Apr. 1913, *J. G. Kuhlmann* 3166 (a, R); Jan. 1909, *A. Löfgren* 29 (a, S); *Pohl*, *E. distichophyllus* Mart. (1a, Br, M, NH); *Sellow* 2286, 5050 (a, B); *Sellow* 3050 (1a, B); *Sellow* s. n. (a, B, M). Amazonas, June 1912, *J. G. Kuhlmann* 3470 (1b, R); campos on bank of Surumu, near Serra do Mel, Sept. 1909, *E. Ule* 8274 (a, B, K, L); dry campos near Serra do Mel, Surumu, Aug. 1909, *E. Ule* 8275 (1a, b, B, K, L); id., Sept. 1909, *E. Ule* 8276 (1b, B, K); *Frechal*, Sept. 1927, *Ph. von Luetzelburg* 20960 (1a, M). Pernambuco, *Schornbaum*, (1a, Br); Ilha de Itamaraca, *Ridley*, *Lea*, *Ramage* s. n. (1a, NH). Matto Grosso, dry stony hills near Cuyabá, March 1899, *R. Pilger* 359 (1b, B). Goyaz, between Conceição and Natividade, *Burchell* 8231 (1b, Br, K, L, Len, P); R. Tocantins, between Funil and S. João, *Burchell* 9050 (1a, Br, K, Len, P). Bahia, *Blanchet* 3481 (1a—b, P); *Lockhart* (1b, NH); dry hills, *Salzmann* (1a, K, L, M, P); Caballa, campos, Oct. 1835, *Luschnath* (1a—b, B); sandy campos on the Rio S. Francisco near Joazeiro, fl. March, *Martius*, *E. distichophyllus* Mart. (1a—b, M). Minas Geraes, Nov. 1824, *Riedel* 865 (a, Len); *de St.-Hilaire* s. n. (1a, K, NY, P); *de St.-Hilaire* s. n. (a, P); 1845, *Widgren* 233 (a, S); 1845, *Widgren* 299 (a, B, C, S); Barra do Jiquitiba, dry gravelly campos, Oct. 1824, *Riedel* 799 (1a, Len); Rib. da Catinga, *Pohl* 3076, *E. holosericeus* HBK. var. *incomtus* Meissn. (1a, V); Rib. do Frade, *Pohl* 5195, *E. holosericeus* HBK. var. *incomtus* Meissn. (1a, V); Lagoa Santa, campos, *Warming* 1804 (1a, C); id., Dec. 1863, *Warming* s. n. (a, Br, C); Carandahy, campos, June 1882, *Glaziou* 13475 (1a, b, B, C, K, Len, P). Espiritu Santo, *de St.-Hilaire* B², 259 (1b, P); *de St.-Hilaire* 397 (a, P); Serra de Itabapoana, Sept. 1875, *Glaziou* 11270 (1a, B, P). São Paulo, *A. Löfgren* 283 (1a, C); *de St.-Hilaire* C¹, 1015 (a, P); Mugy, grassy campos, Nov. 1833, *Riedel* s. n. (a, Len); Sorocaba, campos, Nov. 1912, *A. C. Brade* 6021 (a, S); id., *A. C. Brade* 6022, 6023, 6024

- (1a, S); Butantan, Dec. 1917, *F. C. Hoehne 1044*, type of *E. sericeus* Sw. var. *angustifolius* Hoehne (a, Bu); Araraquara, *A. Löfgren 11023*, type of *E. sericeus* Sw. var. *Loefgrenii* Hoehne (a, Bu). Paraná, S. Ignacio, fl. Oct., *Sellow 696* (a, B); Desiro Ribas, Capão Grande, campo, 800 m, Dec. 1904, *P. Dusén 2841* (a, S); Desiro Ribas, campo, Febr. 1910, *P. Dusén 9163* (a, S); Lago, campo, Dec. 1903, *P. Dusén 3776* (a, S). Rio Grande do Sul, *Gaudichaud, Herb. Imp. du Brésil 656* (a, 1a, P); *Gaudichaud, Herb. Imp. du Brésil 1779* (a, P); Porto Alegre, sandy bushy places, Dec. 1903, *A. Bornmüller 42* (a, B); Neu-Württemberg, Estancia Lauro Gomez, 500 m, Oct. 1904, *A. Bornmüller 205* (1a, M); S. Lourenço, 1887, *von Ihering* (a, B); Belém Velho, Nov. 1897, *Reineck, Czermak 144* (a, B, G, M, P, S).
- PARAGUAY, Dec. 1898, *J. D. Anisitz 2728* (1a, S); March 1875, *B. Balansa 1170 a* (a, P); 1914, *Chodat 277, 292, 318* (a, Boiss); 1914, *Chodat 324* (1a, Boiss); N. Paraguay, *E. Hassler 1205* (a, NH); Centr. Paraguay, Luque, 1888—90, *Th. Morong 340* (a—1a, NH, US); Centr. Cordillera, *E. Hassler 6625* (1a, NH); Cordillera de Altos, loma, Oct. 1902, *K. Fiebrig 270* (1a, B); Gran Chaco, w. bank of Paraguay River, Oct. 1903, *E. Hassler 2423* (a—1a, B, K, NH, P); Chaco, 21° lat., 1906, *K. Fiebrig 1483 a* (b—1b, B, Del, K); Chaco, *A. Pride* (a, NH); near Villa Concepcion, Sept. 1901, *E. Hassler 7348* (a, K, NH); Horqueta, 1914, *Chodat 312, 319, 333* (1a, Boiss); Sierra de Maracayú, fl. Oct., *E. Hassler 4977* (1a, B, K, NH, P); Sierra de Maracayú, campos near Ipehu, Oct. 1898, *E. Hassler 4977 a*, *E. sericeus* Sw. f. *erecta* Chod. et Hassl. (a, Boiss); near Tacuaral, campos, *E. Hassler 1031* (a, K, P); between Rio Apa and Rio Aquidaban, Caballero-cué, fl. Febr., *K. Fiebrig 4834* (a, B); id., *K. Fiebrig 4914* (a, B, Del, K, L, M, NH); between Rio Apa and Rio Aquidaban, 1908—09, *K. Fiebrig 5155* (a—1a, B, Del, K, L, M, NH); bank of Rio Apa, *E. Hassler 58* (a—1a, K, P); Upper Rio Apa, Nov. 1901, *E. Hassler 7938* (1a, B, K, NH, P); Paraguari, roadsides, March 1875, *Balansa 1057* (a—1a, K, P); id., on lawn, 1876, *Balansa 1169* (a—1a, P); Villa Rica, *Balansa 1045*, (1a, P); San Bernardino, campo, fl. Jan., *E. Hassler 3717* (a, NH, P); id., roadsides, Sept. 1916, *C. Osten 9037* (a—1a, S); "Cerros de Tobaty", Sept. 1900, *E. Hassler 6329*, type of forma *glabrata* Chod. et Hassl. (a, B, Boiss, K, NH, P); Est. Armonia, bare places, rocks, common, Jan. 1900, *J. D. Anisitz 1959* (a, S); plain of Pirayu, June 1874, *Balansa 1170* (a—1a, P).
- URUGUAY, Nov. 1892, *O. Kuntze* (a, B); *de St.-Hilaire C², 2452 bis*, (b, K, P); *de St.-Hilaire C², 2168 bis* (a, K, P); *de St.-Hilaire C², 2453* (a, P); Montevideo, *Commerson*, *E. sericeus* Sw. var. *Commersoni* Pers. (a, P); id., Jan. 1852, *Courbon* (a, P); id., *Herb. Drake* (a, P); id., Oct. 1873, *Fruchart* (a, P); id., Oct. 1874, *Fruchart* (a, P); id., Oct. 1875, *Fruchart* (a, P); id., Dec. 1858, *Gibert 5* (a, G); id., sandy coast, *Gibert 45* (a, K); id., very common, *Gibert 799* (a, K); id., pasture lands, Oct. 1886, *W. E. Safford* (a—1a, US); id., *Sellow d. 37* (a, B); id., *Sellow 999*, type of *E. anomalus* Meissn. (a, B); id., *Sellow 2286* (a, B); id., *Sellow s. n.* (a, B); id., dry banks, *J. Tweedie* (a, NH); id., *Arsène Isabelle*, 1838, *Webb* (a, K); id., Sta Lucia, Dec. 1876, *Fruchart* (a, P); Peñarol, 50 m, stony dry campo, March 1924, *Herter 273 a* (a, G); Sayago, 30—40 m., Nov. 1925, *Herter 273* (a, M, S, U, US); Fray Bentos, Soriano, Jan. 1877, *Fruchart* (a, P); Sta Elena, Soriano, open camp, O. V. *Aplin* (1a, NH); sandy campos, Arroyo Grande, Soriano, Oct. 1897, *C. Osten 3258* (a, B); banks of the Yi, Durazno, 1888, *Alvarez, Trommel* etc. (a, P); Cuñapiru, Rivera, 6—700 ft., 1928, *Miss D. Wright* (a, NH).
- ARGENTINA, *Hosseus 1279* (3, B); prov. Jujuy, Nevada de Chañi,

dry stony places, 4000 m, Dec. 1901, *R. E. Fries* 822 a (1a, S); id., dept. Santa Catalina, Santa Catalina, sand, stony places, ca. 3650 m, Jan. 1901, *F. Kurtz, Herb. argent. (F. Claren)* 11447 (1a, S); id., Santa Barbara, dry sandy campo, July 1901, *Rob. E. Fries* 330 (1a, S); id., Tumbaya, Volcan, 2300 m., Febr. 1927, *S. Venturi* 4917 (a, U); id., Carunca, Cerro de Zapla, 1500 m, *S. Venturi* 5117 (a, U); prov. Salta, dry, sandy soil, Sept. 1901, *Rob. E. Fries* 588 (a, S); id., El Cármen, dry sandy place, Oct. 1901, *Rob. E. Fries* 588 a (a, S); id., near Salta, Nov. 1873, *P. G. Lorentz, G. Hieronymus* 1089 (a, B, G); id., dept. Oran, Abra Grande, 750 m, Nov. 1927, *S. Venturi* 5517 (b, F, K, NH, S, U, US); id., id., id., 750 m, Nov. 1927, *S. Venturi* 5556 (b, F, U); id., id., Rio Blanco, 650 m, Nov. 1927, *S. Venturi* 5611 (a, U); id., Pasage, Febr. 1873, *P. G. Lorentz, G. Hieronymus* 281 (1b, B, G); id., Rio del Tala, La Florida, Febr. 1873, *P. G. Lorentz, G. Hieronymus* 394 (1b, B, G); id., Cerro Negro, 800 m., Barrancas de Atroyo, March 1930, *S. Venturi* 10381 (1b, NH, S); prov. Catamarca, Dec. 1916, *P. Jørgensen* (a, B); id., dept. Andalgalá, Febr. 1917, *P. Jørgensen* 1585 (a, US); id., id., Apr. 1917, *P. Jørgensen* 1801 (3, US); id., vicin. of Belen, Dec. 1879, *F. Schickendantz* (3, B); prov. La Rioja, Famatina, Dec. 1928, *S. Venturi* 8005 (3, U); id., Sierra Famatina, Los Berros, Febr. 1879, *G. Hieronymus, G. Niederlein* 590 (3, B); prov. Tucuman, Tweedie (3, K); id., dept. Burruyacu, lomas, base of Cerro del Campo, Nov. 1928, *S. Venturi* 7517 (a, F, NH, US); prov. Santiago del Estero, C. Pellegrini, Cerro del Remate, 550 m, Dec. 1927, *S. Venturi* 5636 (a, U); Territorio del Chaco, *P. Jørgensen* 2647 (a, US); Territorio de Formosa, March 1928, *P. Jørgensen* 2662 (a, US); prov. Santa Fé, Ceres, Oct. 1892, *O. Kuntze* (a, US); prov. Misiones, Posadas, "La Granja", Dec. 1907, *E. L. Ekman* 1409 (a, S); id., Posadas, S. Ignacio, Jan. 1908, *E. L. Ekman* 1425 (a, S); prov. Corrientes, Ituzaingo, Oct. 1892, *Niederlein* 175 b (a, B); id., Paraná, Aug. 1892, *Niederlein* 179 (b, B); id., near Rio Aguapey, Oct. 1886, *Niederlein* 1317 (a, B); prov. Entre Rios, Concepcion del Uruguay, bare places, Febr. 1877, *P. G. Lorentz* 925 (a, B, G, V); id., id., hills, Dec. 1877, *P. G. Lorentz* 1251 (a, b, B); id., id., hills, Dec. 1877, *P. G. Lorentz* 1252 (a, B); id., near Colonia Hernandarias, Paraná R., Febr. 1878, *P. G. Lorentz* 1315 (a, B); prov. Mendoza, *E. C. Reed* (3, K); id., 1000—1500 m, *D. O. King* 45 (3, NH); Villa Vicenzio, *Gillies*, type of *E. incanus* Pers. var. *elongatus* Choisy, (3, K); prov. San Luis, *Gillies* (3, K); id., Quines, March 1882, *C. Galander* (1a, B); prov. Córdoba, *W. Bodenbender* (b, Len); id., Nov. 1880, *C. Galander* (a, B); id., *Fielding* (3, NH); id. *D. O. King* 473 (3, NH); id., Dec. 1891, *O. Kuntze* (a, US); id., *P. G. Lorentz* 603 (3, B); id., Jan. 1925, *W. Lossen* 63 (a, B, F, Len, M); id., *W. Lossen* 64 (3, B, F, Len, M); id., Barrancas near Córdoba, common, summer 1871, *P. G. Lorentz* 84, type of *E. falcatus* Griseb. (3, B, G); id., id., *P. G. Lorentz* 846 (a, B, G); id., San Roque, Sierra de Córdoba, Jan. 1881, *G. Hieronymus* (3, B); id., Cosquin, Sierra de Córdoba, Jan. 1881, *C. Galander* (3, B, K); id., Sierra Achala de Córdoba, mouth of Rio de San José, March 1881, *C. Galander* (3, B); id., id., Febr. 1877, *G. Hieronymus* (a, B); id., Achiras, *Herb. John Miers* (3, NH); id., Sierras de Achiras, Dec. 1929, *D. O. King* 528 (a, NH); id., near Lagunas de Tegua, 9 miles north of Rio Cuarto, March 1882, *C. Galander* (3, B); id., Huerta Granda, Dec. 1902, *T. Stuckert* 12223 (a, Del); id., Altos Sud, Dec. 1898, *T. Stuckert* 5582 (a, Del); id., Estancia San Teodoro, March 1907, *T. Stuckert* 17279 (a, Del); prov. Buenos Aires, 1852, *Andersson* (a, S); id., *Gillies* (3, K); id., Buenos Aires — La Plata, Santa Catalina, 1887, *A. Lefebvre* (a, Br); id.,

Sierra de la Ventana, Nov. 1904, *P. Dusén* 6249 (3, S); id., Sierras Pampeanas, Febr.—Apr. 1881, *P. G. Lorentz* 37, 444 (3, B); id., id., Naposta grande, Febr.—March 1881, *P. G. Lorentz* 153 (3, B); id., id., 1881, *P. G. Lorentz* 294 (a, B); id., id., Naposta grande, Febr.—Apr. 1881, *P. G. Lorentz* 4616 (3, M); id., id., id., Febr.—Apr. 1881, *P. G. Lorentz* s. n. (3, L, Len, US).

40. *Evolvulus rotundifolius* (S. Watson) Hall. f. in Engl. Bot. Jahrb. XVI (1893) p. 530; id. in Bull. Herb. Boiss. V (1897) p. 383, t. 12, fig. 2.

Breweria rotundifolia S. Watson in Proc. Amer. Acad. XXIII (1888) p. 281.

Type: *C. G. Pringle* 1341, Mexico, Chihuahua, damp places, pine plains, base of the Sierra Madre.

Perennial. Stems several from a rather stout woody root, prostrate, simple, 10—15 cm long, sericeo-villose, glabrescent and lignescent towards the base. Leaves in two rows, not imbricate, at right angles to the stem, shortly petioled, petiole 1—2 mm; limb ovate to elliptic, sometimes broad-ovate, obtuse or slightly emarginate at the apex, rounded or slightly cordate at the base, 13—22 mm long, 8—12 mm broad, 1.5—2 times as long as broad, glabrous above, closely appressed sericeo-villose beneath; midrib and 2—3 pairs of lateral nerves, rising from the base, impressed above; internodes 7—14 mm. Flowers solitary in the leaf axils; peduncle none, bracteoles linear-oblong, to 6 mm long; pedicels shorter to slightly longer than the calyx. Sepals ovate-oblong or oblong, acute, 4—5 mm long, appressed-villose. Corolla blue with white throat and midpetaline stripes, much exceeding the calyx, rotate to widely funnel-shaped, tube very short, limb about 13 mm in diam., superficially lobed. Filaments twice as long as the oblong anthers. Ovary globular, glabrous. Capsule globular, as long as the sepals.

Distribution: Mexico.

MEXICO, Chihuahua, damp places, pine plains, base of the Sierra Madre, Sept. 1887, *C. G. Pringle* 1341, type (B, Calc, K, NH). Durango, Otinapa, July—Aug. 1906, *Edw. Palmer* 457 (US).

41. *Evolvulus prostratus* Robins. in Proc. Amer. Acad.

XXIX (1894) p. 320; Reiche in Engl. Bot. Jahrb. LVIII, Beibl. 129 (1923) p. 76 (fig.), 77, 102.

Type: *Coulter 1011*, Mexico, Hidalgo, Real del Monte.

Perennial. Stems few or several from a woody perpendicular root, prostrate, simple, 10—20 cm long, sericeo-villose with fulvous, greyish or whitish hairs, glabrescent and lignescent towards the base. Leaves in two rows, more or less imbricate, at right angles to the stem or somewhat reflexed, concealing the flowerbuds and fruits, shortly petioled, petiole rather broad, grooved above, 0.5—1 mm long, limb broad-ovate to orbicular or sometimes broader than long, rounded or slightly emarginate at the apex, subcordate, truncate or rounded at the base, 9—16 mm long, 7—16 mm broad, covered with appressed silky-villous, shining, light brown or greyish hairs beneath, bright green and glabrous above; midrib and 2—3 pairs of lateral nerves, rising from near the base, impressed above, more or less prominent beneath; internodes 4—6 mm. Flowers solitary or occasionally two in the leaf-axils; peduncle none, rarely developed, up to 2 mm long; pedicels shorter than or as long as the calyx, 2—3 mm, bracteoles oblong or linear-oblong, obtuse or acute, to 3.5 mm long, occasionally longer. Sepals with pellucid dots like the leaves, equal, ovate-oblong to ovate, acute, 3—4.5 mm, appressed-villose. Corolla white, much exceeding the calyx, rotate to widely funnel-shaped, tube very short, limb subentire, 10—12 mm in diam. Filaments inserted a little above the corolla base, 3—4 times as long as the small, ovate anthers. Ovary globular, glabrous. Capsule globular, as long as the sepals or longer, 4- or less-seeded; seeds brown.

Distribution: Mexico.

MEXICO, *A. Duges* (US); *C. Ehrenberg 97* (B); *C. Ehrenberg s. n.* (B); 1868, *L. Hahn* (B); 1835, *Hegewisch* (G); 1862, *v. Olfers 848 b* (B); 1862, *v. Olfers 974* (B); *W. Schaffner 729* (B); *Schiede* (B). Nuevo Leon, Monterey, Cerro de la Mitra, 1000 m, Oct. 1911, *Abbón* (B). Durango, Durango, Aug. 1898, *E. W. Nelson 4632* (US); Hacienda Salcido, Sept. 1921, *J. H. Kempton, G. N. Collins* (US). San Luis Potosi, *Virelet d'Aoust* (P); Aug.—Oct. 1876, *J. G. Schaffner 616* (K). Tepic, Sierra Madre, between Santa Gertrudis and Santa Teresa, Aug. 1897, *J. N. Rose 2106* (US).

Jalisco, meadows near Guadalajara, July 1902, C. G. Pringle 8643 (B, C, F, G, Gr, K, L, Len, M, NH, P, S, US); dry thin soil of hills near Guadalajara, July 1893, C. G. Pringle 4445 (B, Br, Calc, F, G, Gr, K, Len, M, NH, P, S, U, US). Hidalgo, Real del Monte, Coulter 1011, type (K). Vera Cruz, Jalapa, Coulter 1012 (K); Orizaba, Herb. E. Fournier (P). Michoacan, near Morelia, Sa. Maria, June 1909, *Arsène* 2755 (Len, NY, s. n., P, s. n.) id., id., 1840, *H. Galeotti* 1384 (Br); id., 2000 ft., June 1906, *Arsène* 2713 (K, US). Federal distr., Valley of Mexico, *Schaffner* 339, 341 (K, P); 1875, *Schaffner* 440 (G); 1875, *Schaffner* 731 (G); id., near Santa Fe, July 1865, *Bourgeau* 323 (B, Br, K, L, P, S); id., Sept. 1865, *Bourgeau* s. n. (P); id., June 1929, *P. E. Lyonnet* 500 (US); id., Sept. 1899, C. G. Pringle 7902 (B, Gr); Hacienda de la Encarnacion, July 1905, J. N. Rose, J. H. Painter, J. S. Rose 8456 (NY, US); Toluca, June 1831, *Schiede* (B); between S. Angel and S. Bartolo, June 1833, *Schiede* (B). Puebla, May 1907, *Arsène* 1833 (P); Sept. 1909, *Nicolas* (US); fort Guadalupe, July 1906, *Arsène* 473 (B); San Baltazar, June 1909, *Nicolas* (C, P, US); San Francisco near Puebla, June 1910, *Nicolas* (K, US). Oaxaca, fl. Aug., *Ghiesbreght* 261.

42. *Evolvulus Purpusii* v. *Ooststr.* n. sp. ¹⁾

Type: C. A. *Purpus* 5401, Mexico, San Luis Potosi, Minas de San Rafael.

Perennial. Stems several from a woody base, prostrate, simple or slightly branched, 10—20 cm long, densely silky-woolly, white, the young parts light fulvous. Leaves in two rows, at distances of 2—5 mm, patent or somewhat reflexed, sessile or short-petioled, ovate or oblong-elliptic, obtuse at the apex, mucronulate, rounded at the base, 4—8 mm long, 2.5—4 mm broad, bright green and glabrous above, densely silky-woolly beneath and at the margins, with white or in youth light fulvous

¹⁾ *E. Purpusii* v. *Ooststr.* n. sp. Perennis. Caules plurimi e basi lignosa, prostrati, simplices vel subramosi, 10—20 cm longi, dense sericeo-lanati, albi, quoad partes juniores pallide fulvi. Folia disticha, 2—5 mm distantia, patentia vel subreflexa, sessilia vel breviter petiolata, ovata vel oblongo-elliptica, apice obtusa, mucronulata, basi rotundata, 4—8 mm longa, 2.5—4 mm lata, supra laete viridia, glabra, subtus et marginibus dense sericeo-lanata, pilis albis vel in statu juniore pallide fulvis, nervo mediano supra impresso, nervatura cetera indistincta. Flores axillares, solitarii, pedunculo nullo, pedicellis brevibus, 1.5 mm longis, bracteolis lineari-lanceolatis, 2 mm longis. Sepala late lanceolata vel oblongo-lanceolata, acuta vel breviter acuminate, 3—4.5 mm longa, indumento caulium. Corolla coerulea, rotata vel infundibuliformis, 7 mm longa, limbo subintegro, 8 mm diametiente. Filamenta fere 1 mm supra basin corollae inserta, duplo longiora quam antherae oblongae. Ovarium globosum, glabrum. Capsula globosa, calycem superans, seminibus 4 vel paucioribus, brunneis. Type: C. A. *Purpus* 5401, Mexico, San Luis Potosi, Minas de San Rafael (Gr).

hairs. Midrib impressed above, other nervation invisible. Flowers axillary, solitary; peduncle none; pedicels short, 1.5 mm; bracteoles linear-lanceolate, 2 mm. Sepals broad-lanceolate or oblong-lanceolate, acute or short-acuminate, 3—4.5 mm long, hairy like the stems. Corolla blue, rotate to funnel-shaped, 7 mm long, the limb 8 mm in diam., subentire. Filaments inserted about 1 mm above the corolla base, twice as long as the oblong anthers. Ovary globose, glabrous. Capsule globose, exceeding the calyx, 4- or less-seeded. Seeds brown.

Distribution: Mexico,

MEXICO, Coahuila, Cañon del Venado, rocks, Hacienda de la Paila, Sierra de la Paila, 930 m, Apr. 1905, R. Endlich 830 (B); San Luis Potosi, Minas de San Rafael, July 1911, C. A. Purpus 5401, type (B, Gr, Gro, NH, NY, US).

Besides the typical *E. Purpusii* there is also a form with leaves hairy on the upper surface. It is possible we have here a parallelism to what also happens in *E. sericeus* Sw. and in the var. *holosericeus* and *discolor* of that species, so that we can also distinguish here the following two forms:

- a. leaves glabrous above, silky-woolly beneath.
- b. leaves silky-woolly on both sides.

The specimens I have as yet seen of the form b. further differed to a very slight extent from the type of a.; the leaves are ovate or oblong and are somewhat larger, 6—11 (—17) mm long and 3—5 (—6.5) mm broad.

To form b. belongs: C. A. Purpus 5443, San Luis Potosi, Minas de San Rafael, Agua del Medio, July 1911 (B, Gr, Gro, US).

A specimen of erect habit with leaves hairy on both sides, not distinctly distichous, narrow-oblong, acute or obtuse, mucronulate, 13—20 mm long, 3—4 times as long as broad and with longer internodes, 8—15 mm long, probably also belongs here. I suppose that the typical form of *E. Purpusii* stands in the same relation to this specimen as the var. *holosericeus* of *E. sericeus* to the typical specimens of that species. The above specimen was

collected by *H. W. von Rozyński (457a)*, Mexico, Tamaulipas, Jaumave, Sierra near San Vicente, July 1932 (U).

43. *Evolvulus arenicola* Johnston in Proc. Amer. Acad. XL (1905) p. 694.

Type: *O. O. Miller, J. R. Johnston 218*, Venezuela, Island of Margarita, along the trail from Porlamar to San Antonio.

Perennial. Stems several from a woody base, prostrate, simple, 5—10 cm long, densely sericeo-villose, fulvous; internodes about 2 mm. Leaves distichous or secund, subsessile, oblong-lanceolate or ovate-oblong, acute at the apex, rounded or acutish at the base, 6—9 mm long, 2.5—3.5 mm broad, 2.5—3 times as long as broad, densely sericeo-villose on both sides, fulvous, later greyish. Midrib more or less visible beneath. Flowers axillary, solitary, peduncle none; pedicels none or very short, to 2 mm long; bracteoles minute. Sepals lanceolate, acuminate, 3—3.5 mm long, sericeo-villose like stems and leaves. Corolla rotate, pale-blue, 3 times as long as the calyx, limb about 12 mm in diam., almost entire. "Ovary glabrous, containing 4 dull brown seeds".

Distribution: Venezuela.

VENEZUELA, Island of Margarita, along the trail from Porlamar to San Antonio, Aug. 1901, *O. O. Miller, J. R. Johnston 218*, type (K, NH, P, US).

The material that I had at my disposal, did not allow of a closer examination of the corolla, stamens and pistil. Closely related to *E. sericeus* Sw. var. *holosericeus* (HBK.) but different in the kind of the indumentum.

44. *Evolvulus frankenioides* Moric. Pl. Nouv. Amér. (1838) p. 49, t. 33; Mart. Obs. mss. n. 2253; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 70; id. Conv. Rar. (1838) p. 148; id. in DC. Prodr. IX (1845) p. 445; Meissn. in Mart. Fl. Bras. VII (1869) p. 348; Hall. f. in Meded. Rijks Herb. Leiden n. 46 (1922) p. 13, 14.

E. frankenioides Moric. var. *strictus* Choisy in DC. Prodr. IX (1845) p. 445.

Type: *Blanchet 115*, Brazil, Bahia, near Bahia.

Perennial. Stems several from a perpendicular root, prostrate, simple or slightly branched, terete, 10—35 (—60—90, *Choisy*) cm long, densely covered with a brownish or greyish tomentum, mixed with longer patent villose hairs. Leaves distichous or secund, nearly sessile or shortly petioled, the petiole 0.5—2 (—4) mm long, the blade ovate, broad-ovate or orbicular, or rhomboid (rarely oblong), mostly oblique, obtuse or acutish at the apex, rounded or slightly cordate and unequal at the base, rarely acutish, 7—15 (—20) mm long, 1—2 times as long as broad, covered with a generally dense, short tomentum, mixed with longer, appressed hairs, but not densely sericeo-villose. Midrib and basal lateral nerves more or less prominent beneath, impressed at the base above. Flowers axillary, solitary or in clusters of 2—5, over the whole length of the stems; peduncle none; pedicels up to 3 mm long; bracteoles linear or linear-lanceolate, 2—2.5 mm long. Sepals equal, from a lanceolate base long linear-acuminate, shortly tomentose and long villose, (4—) 5—6 mm long. Corolla blue with white throat and bands, widely funnel-shaped, the tube a little shorter than the sepals, 3—4 mm long; the limb 15 (—18) mm in diam. Filaments inserted at the mouth of the tube, 1.5 times as long as the linear-oblong anthers. Ovary globular, glabrous. Capsule globular, shorter than the calyx, 3 mm high, 4-valved, 4 or less-seeded. Seeds brownish black, smooth.

Distribution: Venezuela, Brazil (Ceará, Piauh, Goyaz, Bahia, Minas Geraes), Bolivia.

VENEZUELA, Bolivar, Guiana, Upata, 1864, de *Grosourdy* (P); Guiana, Lower Caroni R., savanna, Jan. 1914, *B. Othmer 453* and *id. s. n.* (M). BRAZIL, Ceará, dry hills near Crato, Oct. 1838, *Gardner s. n.* (NH). Piauh, *Gardner 2256 bis* (K); near Campo de S. Isabella, fl. May, *Martius* (M). Goyaz, Sertao d'Amaroleite, Sept.—Oct. 1844, *Weddell 2687* (P). Bahia, *Blanchet 140* (P); *Blanchet s. n.* (P); *Th. Bernhardt* (B); sandy places, *without collector's name* (L); Serra da Jacobina, *Blanchet 2663* (B, Br, K, Len, NH); Queimadas, June 1915, *J. N. Rose* and *P. G. Russell 19869* (US); near Feira da Conceição, fl. Febr., *Martius* (M); near Bahia, *Blanchet 115*, type (B, NH). Minas Geraes, de *St.-Hilaire B¹*, 1889 (K, P). BOLIVIA, *Th. Bridges* (NH); *Cuming* (V); Cochabamba, near Cochabamba, 1891, *Miguel Bang 970* (B, K, Len, M, NH, US); Cochabamba,

prov. Totorá, Cumbre del Heiguerita, 2500 m, March 1920, *Steinbach* (*Herb. Lillo*) 3880 (B); Santa Cruz, stony pastures near Samaipata, ca. 1700 m, Dec. 1907, *Th. Herzog* 701 (L); id., Samaipata, 1200 m, March 1920, *Steinbach* (*Herb. Lillo*) 3716 (B). Padcaya, 2200 m, Dec. 1903, *K. Fiebrig* 2520 (B, Del, M, NH, S, U, US, V).

Closely related to *E. Riedelii* Meissn. In *E. Riedelii* the sericeo-villose hairs prevail and the tomentum is not much developed or not at all, whilst in *E. frankenioides* the tomentose hairiness is more conspicuous; this is especially the case in the leaves. Choisy distinguished a var. *strictus* which Meissner justly united with the species. The var. *glabrescens* Meissn., based on a specimen collected by the Prince zu Wied-Neuwied in Brazil, state Bahia, near the Mucuri River, must be considered as a variety of *E. jacobinus*. The var. *rariflorus* Meissn. was based on the specimens Burchell 7121 and Regnell III 189, the former represents a distinct species, which I name *E. rariflorus*, the latter belongs to *E. Riedelii* Meissn.

var. 1. elongatus Choisy in DC. Prodr. IX (1845) p. 445.

Type: *Gardner* 2256, Brazil, Piauí, Boa Esperança.

Stems stouter than in the typical form, leaves larger, broad-ovate to orbicular, obtuse, often oblique, 20—25 mm long. Sepals attaining a length of 6 mm. Hairiness of the stems almost as in the typical form, of the leaves less tomentose.

Distribution: Brazil, Piauí.

BRAZIL, Piauí, near Boa Esperança, March 1839, *Gardner* 2254 (K); id., 1840, *Gardner* 2256, type (K, NH, P, US).

var. 2. subglaber v. Ooststr. n. var. ¹⁾

Type: *Fiebrig* 2847, Bolivia, Tarija.

Habit of the species, much less hairy. Stems with sparse, patent, villose hairs, in the younger parts mixed with shorter

¹⁾ *E. frankenioides* Moric. var. *subglaber* v. Ooststr. n. var. Habitu speciei, multo minus pilosus. Caules pilis sparsis, patentibus, villosis, quoad partes juniores pilis brevioribus intermixtis, tecti. Folia supra glabra, subtus sparse, appresse breviterque pilosa vel glabra, nervis subtus prominentibus, pallidis. Sepala breviter villosa. Type: *Fiebrig* 2847, Bolivia, Tarija (U).

ones. Leaves glabrous above, sparsely appressed-short-pilose or glabrous beneath. Nerves prominent beneath, pale. Sepals short-villose.

Distribution: Bolivia.

BOLIVIA, Tarija, Tarija, 1900 m, valley with poor vegetation, Apr. 1904, K. Fiebrig 2847, type (B, M, U, V); id., id., dry sandy places, Jan. 1902, Rob. E. Fries 1138 (S).

45. *Evolvulus Riedelii* Meissn. in Mart. Fl. Bras. VII (1869) p. 351.

E. frankenioides Moric. var. *rariflorus* Meissn. l.c. p. 348, quoad specim. III, 189 a cl. Regnell lecta.

Type: *Riedel 2216*, Brazil, São Paulo, near Araracoara.

Perennial. Stems prostrate, several from a woody root, simple or slightly branched, 10—50 cm long, covered with loosely appressed or patent, brownish, later greyish villose hairs, and either with a very short sparse tomentum or without. Leaves distichous or secund, rather approximate or almost imbricate, patent or reflexed, shortly petioled, petiole 1—2 mm, or the apical ones sessile, broad-ovate, ovate or ovate-oblong, acute at the apex, rounded at the base, often oblique, 8—15 (—20) mm long, about twice as long as broad, the lower ones sometimes 1.5 times as long as broad, densely villose with more or less spreading, curled or tumbled hairs, and either with a short sparse tomentum or without; hairs brownish in the apical parts, later greyish; internodes 2—5 (later to 10) mm long. Flowers axillary, solitary or in 2—4-flowered fascicles, shortly pedicellate, pedicels much shorter than the sepals; peduncle very short or none; bracteoles linear, 2 mm long, villose. Sepals subequal, lanceolate or linear-lanceolate, acuminate, appressed-villose, ciliate, 4—6 mm long. Corolla blue, funnel-shaped, the tube about 3 mm long, the limb about 10 mm in diam. Filaments inserted at the mouth of the tube, 1.5 times as long as the linear-oblong anthers. Ovary globular, glabrous. Capsule globular, shorter than or as long as the calyx.

Distribution: Brazil, São Paulo.

BRAZIL, São Paulo, Feijão, Rio Claro, Oct. 1888, A. Löfgren 985 (C); near Batataés, Febr. 1849, Regnell III, 189, *E. frankenioides* Moric. var. *rariflorus* Meissn. (Br, S); near Araracoara, sandy campos, May 1834, Riedel 2216, type (C, K, Len, US); id., March 1834, Lund (C).

The specimen Burchell 7121, cited by Meissner under *E. frankenioides* Moric. var. *rariflorus* Meissn. represents a distinct species viz. *E. rariflorus* (Meissn.) v. Ooststr.

46. *Evolvulus villosissimus* v. Ooststr. n. sp. ¹⁾

Type: *Mayeul Grisol*, Venezuela, without precise locality.

Stems many from a woody base, simple or sparsely branched, variable in length, 5—30 cm long, prostrate or ascending, densely villose with short and long patent hairs of brown, later grey colour; internodes 3—4 mm. Leaves distichous or secund, sessile, elliptic to elliptic-oblong, sometimes slightly falcate, acute at the apex, rounded at the base or slightly attenuate, 5—8 mm long, 2.5—4 mm broad, densely hairy like the stems. Nervation obsolete or midrib slightly prominent beneath. Flowers in the leaf-axils, solitary or 2 together; peduncle none; pedicels 2—3 mm long; bracteoles small, narrow-lanceolate, 1—2 mm. Sepals narrow-lanceolate, acuminate, patently brown-villose, 4 mm long. Corolla funnel to salver-shaped, presumably about 7.5 mm long. Filaments inserted about 3.5 mm above the corolla base, twice as long as the linear-oblong anthers. Ovary ovoid, glabrous.

¹⁾ *E. villosissimus* v. Ooststr. n. sp. Caules numerosi e basi lignosa oriuntes, simplices vel sparse ramosi, varia longitudine, 5—30 cm longi, prostrati vel ascendentes, pilis brevibus longisque patentibus, brunneis, deinde griseis, dense villosi, internodiis 3—4 mm longis. Folia disticha vel secunda, sessilia, elliptica vel elliptico-oblonga, interdum subfalcata, apice acuta, basi rotundata vel subattenuata, 5—8 mm longa, 2.5—4 mm lata, indumento caulium, nervatura obsolete vel nervo mediano subtus subprominente. Flores singuli vel bini in axillis foliorum, pedunculo nullo, pedicellis 2—3 mm longis, bracteolis parvis, anguste lanceolatis, 1—2 mm longis. Sepala anguste lanceolata, acuminate, pilis patentibus brunneo-villosis, 4 mm longa. Corolla infundibuliformis vel hypocrateriformis, probabiliter fere 7.5 mm longa. Filamenta fere 3.5 mm supra basin corollae inserta, duplo longiora quam antherae lineari-oblongae. Ovarium ovoideum, glabrum. Capsula globosa, glabra, 2.5 mm alta, 4-valva. Semina bina vel singula, glabra vel minute appressequae pilosa, brunnea. Type: *Mayeul Grisol*, Venezuela, without precise locality (P).

Capsule globose, glabrous, 2.5 mm high, 4-valved. Seeds 2 or 1, glabrous or with minute appressed hairs, brown.

Distribution: Venezuela.

VENEZUELA, without precise locality, *Mayeul Grisol*, type (P).

47. *Evolvulus macroblepharis* Mart. in Flora XXIV (1841) 2. Beibl. p. 101; id. Herb. Fl. Bras. p. 341; id. Obs. mss. n. 715; Choisy in DC. Prodr. IX (1845) p. 445; Meissn. in Mart. Fl. Bras. VII (1869) p. 350.

E. aurigenus Mart. var. *macroblepharis* (Mart.) Hassl. in Fedde Rept. IX (1911) p. 197.

Type: *Martius*, Brazil, São Paulo, near Paranangaba.

Perennial, the stems several from a woody root, decumbent or ascending, branched at the base, 10—30 cm long, terete, covered with long brown patent hairs, glabrescent and lignescent at the base. Leaves often secund and conduplicate, shortly petioled, the petiole up to 1.5 mm long, the limb broad-ovate to orbicular, obtuse or acutish at the apex, rounded, truncate or subcordate at the base, 10—20 mm long, 1—1.5 times as long as broad, glabrous on both sides or with some brown hairs on the nerves beneath and along the margins, principally near the base. Midrib and 3—5 pairs of lateral nerves prominent beneath; the lower 2—3 pairs rising from the base. Flowers 1 or 2 in the leaf-axils, peduncle very short or none, pedicels much shorter than the calyx; bracteoles ovate-lanceolate, acute, about 1.5 mm long, more or less scarious. Sepals equal or slightly unequal, ovate-lanceolate, lanceolate or narrow-lanceolate, acute or acuminate at the apex, glabrous or sparsely ciliate near the top, (3—) 3.5—5 mm long. Corolla hypocrateriform, the tube slender, to 15 mm long, white, the limb 14—17 mm in diam., blue with white throat and bands. Filaments inserted at the mouth of the corolla tube, 3 times as long as the linear anthers. Ovary ovoid-cylindric, glabrous. Capsule ovoid, 4-valved, 2- or 1-seeded. Seeds black, 2.5 mm long.

Distribution: Brazil, Minas Geraes, Rio de Janeiro, São Paulo.

BRAZIL, without locality, *Pohl s. n.* (Br); 1844, *Weddell* (P); *Matheos Lemes, ex. reliq. Sellowianus* 700 (B). Minas Geraes, *Claussen* (NY); *de Saint-Hilaire D.* 302 (P); 1916, *Campos Porto* 510 (R, 7917); Lagoa Santa, in clayish campos, *Warming* 1803/3 (C, with the var. *Warmingii*); *id., id.*, 1803/4 (C); *id.*, May 1864, *Warming* 1804 (C); *id.*, in stony campos near Lagoa Santa and Barbacena, fl. Nov.—May, *Warming s. n.* (Br, P, in both with the var. *Warmingii*); *Sitio, campos, March* 1887, *H. Schenck, Herb. Brasil.* 3118 (B); *Caldas, Dec.* 1856, *Regnell* 1, 307 (B, Br, C, Calc, S, US); between Caldas and Serra de Caracol, in arid campos, frequent, Jan. 1876, *Hj. Mosén* 4293 (S); *Cachoeira do Campo, Dec.* 1893, *Glaziou* 20420a (P). Rio de Janeiro, Parahybuna, *Schott* 545 b (V). São Paulo, in campos near Paranangaba, fl. Dec., *Martius*, type (M); *Jacarehy, Febr.* 1888, *R. Mendonça* 707 (B).

var. *Warmingii* v. *Ooststr. n. var.* ¹⁾

Type: *Warming* 1803/1, Brazil, Minas Geraes, Lagoa Santa.

Stems several from a woody root, branched at the base, erect or ascending, 10—18 cm, in contradistinction with the typical form appressed-pilose. Leaves ovate-oblong, ovate or broad-ovate, acute at the apex, rounded or subcordate at the base, 8—11 mm long, 5—8 mm broad, $1\frac{1}{4}$ —2 times as long as broad, often conduplicate, appressed-pilose on both sides, more densely and longer beneath than above, also appressed-pilose at the margins.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Lagoa Santa, in stony campos, very common. Nov. 1863, *Warming* 1803/1, type (C); *id.*, *Warming* 1803/2 (C); *id.*, Dec. 1863, *Warming* 1803/3 (C, with the typical *E. macroblepharis* Mart.) *id.*, *Warming s. n.* (B, with the typical *E. macroblepharis* Mart.).

48. *Evolvulus aurigenus* Mart. in *Flora XXIV* (1841) 2. *Beibl. p.* 100; *id. Herb. Fl. Bras. p.* 340; *Choisy in DC. Prodr. IX*

¹⁾ *E. macroblepharis* Mart. var. *Warmingii* v. *Ooststr. n. var.* *Caules plurimi e radice lignosa, basi ramosi, erecti vel ascendentes, 10—18 cm longi, formae typicae contrarie appresse pilosi. Folia ovato-oblonga, ovata vel late ovata, apice acuta, basi rotundata vel subcordata, 8—11 mm longa, 5—8 mm lata, $1\frac{1}{4}$ —2 partibus longiora quam lata, saepe conduplicata, utrinque sed infra densius longiusque quam supra necnon marginibus appresse pilosa. Type: Warming 1803/1, Brazil, Minas Geraes, Lagoa Santa (C).*

(1845) p. 445; Meissn. in Mart. Fl. Bras. VII (1869) p. 350, t. 123, fig. III (var. *Meissnerianus* v. *Ooststr.*).

Type: *Pohl 737*, Brazil, Minas Geraes, between *Cattas altas* and *Inficionado*.

A low undershrub, the stems decumbent or ascending, sometimes rooting at the nodes, often much branched below, 10—35 cm long, sometimes however attaining a length of 60 cm, terete, covered with patent hairs, mixed with a short tomentum of more or less density, the hairs reddish-brown. Leaves distichous or secund, sessile or shortly petioled, orbicular or broad-ovate, obtuse at the apex or short-apiculate, rounded or subcordate at the base, more or less covered with appressed hairs on both sides, the most on the nerves beneath, ciliate at the margin, 6—10 (—12) mm long, 1—1.5 times as long as broad, the lower ones occasionally broader than long, reniform, 10 mm long, 14 mm broad, glabrescent. Midrib and 3—5 pairs of lateral nerves prominent beneath, the lower pairs rising from near the base. Flowers axillary, solitary or rarely two, sessile or shortly pedicellate, peduncle absent; bracteoles ovate-lanceolate, acute. Sepals lanceolate, long-acuminate, 4—5 mm long, rufous pilose, sometimes nearly glabrous. Corolla white, blue (*Riedel*) or rose (*Martius*), hypocrateriform, the tube narrow, to 10 or sometimes to 12 mm long, the limb 14 mm broad. Filaments inserted at the mouth of the corolla tube, slightly longer than the linear-oblong anthers. Ovary short-cylindrical, glabrous. Capsule ovoid, 4-valved, 1-celled, 1-seeded.

Distribution: Brazil, Minas Geraes.

BRAZIL, without locality, *Sellow 1197* (B); id., *Sellow 6611* (NH); Minas Geraes, 1841, *Claussen 1423* (P); *Claussen s. n.* (NH); *Langsdorff* (Calc, K); near Barbacena, in dry campos, June 1824, *Riedel 106* (Len, with var. *Meissnerianus* v. *Ooststr.* and *E. cressoides* Mart.); near Curvellos, sandy campos, Oct. 1834, *Riedel 2753* (Len, NY); *Cattas Altas*, Oct. 1840, *Gardner 5032* (K); id., *de St.-Hilaire 274* (P); between *Cattas Altas* and *Inficionado*, *Pohl 737*, type (Br, V); near *Inficionado*, Nov. 1834, *Lund* (C); near *Capanema*, gravelly places, Jan. 1825, *Riedel s. n.* (Len, with the typical form and *E. cressoides* Mart.); *Morro de Tapanhuacanga*, *Sellow 1594* (B).

The type specimen and several others cited under this species

have the stems clothed with long patent hairs and a short tomentum, both of reddish-brown colour. The development of the latter may vary very much, occasionally it is almost absent; the long hairs are always well developed. On the leaves there are only the long hairs, here the short tomentum is always lacking. The var. *Meissnerianus* has a different habit, whilst the leaf-form and the colour of the hairiness also differ. The var. *tomentosus* was based by Meissner on a specimen collected by Riedel near Barbacena and on another collected by Pohl, exact locality unknown. The former belongs to *E. cressoides* Mart., the latter may represent a distinct species of the *Phyllostachyi*, viz. *E. tomentosus* (Meissn.) v. Ooststr.

var. *Meissnerianus* v. Ooststr. n. var. ¹⁾

Type: *Claussen 55*, Brazil, Minas Geraes.

Indument not intensively reddish-brown as in the typical form, more brown to greyish-brown, consisting of a short tomentum and long patent hairs or only of the latter. Stems shorter, 8—18 cm long, more caespitose, probably more erect. Leaves ovate, more acute, 8—16 mm long, 1.5 times as long as broad or a little shorter.

Distribution: Brazil, Minas Geraes, São Paulo.

BRAZIL, without locality, *Sellow* (B, L, P). Minas Geraes, *de St.-Hilaire B¹, 1305* (P); *Claussen 1 (1424)* (P); 1840, *Claussen 55*, type (B, Br, Del, with *E. cressoides* Mart.); 1840, *Claussen s. n.* (Br); Dec. 1824, *Riedel 172** (Len); id., in gravelly campos, Dec. 1824, *Riedel 165** (Len); dry hills, Febr. 1839, *Riedel 104* (P, with *E. cressoides* Mart.); near Barbacena, *Riedel 106* (Len, with the typical form and *E. cressoides* Mart.); near Capanema, gravelly places, Jan. 1825, *Riedel s. n.* (Len, with the typical form and *E. cressoides* Mart.); Caxoeira do Campo, fl. Febr., *Claussen s. n.* (DC); Sierra da Moeda, fl. Oct., *Sellow 1595* (B); São Paulo, near Ytú, fl. Dec.—Jan., *Martius* (M).

Meissner gave a representation of this form in the *Flora Brasiliensis VII* (1869) t. 123, fig. III.

¹⁾ *E. aurigenus* Mart. var. *Meissnerianus* v. Ooststr. n. var. Indumento haud ut in forma typica rufo-brunneo, potius brunneo vel griseo-brunneo, pilis longis patentibus vel brevibus tomentosis, longis patentibus intermixtis. Caules breviores, 8—18 cm longi, magis caespitosi, probabiliter magis erecti. Folia ovata, acutiora, 8—16 mm longa, 1.5 partibus longiora quam lata vel paulo minus. Type: *Claussen 55*, Brazil, Minas Geraes (Br).

49. *Evolvulus barbatus* Meissn. in Mart. Fl. Bras. VII (1869) p. 351.

E. aurigenus Mart. var. *viscidulus* Hassl. in Fedde, Rept. IX (1911) p. 197.

Type: *Sellow 5185*, Brazil, São Paulo, near Itarare.

A low undershrub. Stems ascending, several from a woody base, caespitose, often more or less zigzag, terete, 10—15 cm long, densely covered with long brown or light brown patent hairs, the hairs to 4 mm long. Leaves sessile or shortly petioled, often conduplicate, ovate, broad-ovate or suborbicular, rounded or acutish at the apex, rounded, truncate or subcordate at the base, covered with long patent hairs on both sides, long ciliate at the margins, the moderate leaves of typical specimens 15—25 mm long, 1—2 times as long as broad; the apical leaves a little smaller, often approximate and imbricate; the middle internodes 8—10 mm long. Midrib and 4—5 pairs of lateral nerves prominent beneath, pale. Flowers axillary, solitary, sessile or shortly pedicellate, the pedicel to 3 mm long; bracteoles narrow-lanceolate to ovate-lanceolate, acute, ciliate. Sepals pale, slightly unequal, lanceolate or broad-lanceolate to ovate-lanceolate, acuminate, 3.5—7 mm long, sparsely hairy, ciliate at the margin. Corolla hypocrateriform, about 20 mm long, the tube narrow, about 12—15 mm long, white, the limb 15—20 mm in diam., blue, white at the throat and with 5 white bands. Filaments inserted at the mouth of the corolla tube, glabrous, 3 times as long as the linear-oblong anthers. Ovary ovoid-cylindrical, glabrous. Capsule ovoid, 5 mm high, 4-valved, 4- or less-seeded. Seeds smooth, black.

Distribution: Brazil (Minas Geraes, São Paulo, Paraná, Sta. Catharina), Paraguay.

BRAZIL, without locality, *Sellow 228* (B). Minas Geraes, de *St.-Hilaire C¹*, 217 (P); *Glaziou 20420* (K, Len, P); *Claussen s. n.* (DC, NH, P); in gravelly campos, Nov. 1824, *Riedel 907*, form with small, narrow leaves, see remarks (Len). São Paulo, Nov. 1829, *Sellow 513* (B); de *St.-Hilaire C²*, 1325 (P); 1883, *Gaudichaud, Herb. Impér. du Brésil 333* (P); near Itarare, campo, *Sellow 5185*, type (B). Paraná, Jaguarihyva, Febr. 1910, *P. Dusén 9237* (S); id., campo, Oct. 1910, *P. Dusén 10680* (S); id., campo, Oct. 1911, *P. Dusén 13207* (S); id., campo, Dec. 1914, *P. Dusén 16177* (S);

id., campo, Apr. 1910, *P. Dusén s. n.* (S); id., campo, Jan. 1915, *P. Dusén s. n.* (S); id., in campo, May 1914, *G. Jönsson 357a* (S); id., *J. Weir 358* (K, NH). Santa Catharina, Col. Hansa, Penha, Jan. 1912, *A. C. Brade 5577* (S).

PARAGUAY, Sierra de Amambay, Dec. 1907, *E. Hassler 9815* (leg. *T. Rojas*), type of *E. aurigenus* Mart. var. *viscidulus* Hassl. (B, K, NH, P).

The specimen Riedel 907, cited by Meissner under this species, has, in contradistinction to the specimen Sellow cited by the same author, small leaves, ovate or broad-ovate in form, acute at the apex, rounded or subcordate at the base, 7—12 mm long and 5—7 mm broad; the corolla is also smaller, the tube only about 8 mm long, the limb about 13 mm in diam. Such specimens with small leaves show a similarity to the closely related var. *Meissnerianus* of *E. aurigenus*, are however to be distinguished from it among other points by the long hairs of 3—4 mm in length; in *aurigenus* the hairs attain only a length of 1—1.5 mm. The type of *E. aurigenus* Mart. var. *viscidulus* Hassl. differs in no respect from the typical *E. barbatus*.

50. *Evolvulus cressoides* Mart. in Flora XXIV (1841) 2. Beibl. p. 100; id. Herb. Fl. Bras. p. 340.

E. incanus auct. non Pers.; Choisy in DC. Prodr. IX (1845) p. 444, quoad specim. Mart.; Meissn. in Mart. Fl. Bras. VII (1869) p. 352, quoad specim. a cl. Martius et Regnell (III 135) lecta; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III p. 489.

E. canescens Meissn. in Mart. Fl. Bras. VII (1869) p. 350.

E. aurigenus Mart. var. *tomentosus* Meissn. l.c. p. 350, quoad specim. a cl. Riedel ad Barbacena lecta.

Type: *Martius*, Brazil, Minas Geraes, near Villa de Campanha.

A low undershrub. Stems several from a woody base, simple or few-branched, 8—25 cm long, decumbent, ascending or almost erect, terete, covered with a dense short tomentum, mixed with loosely appressed or patent villose hairs, brownish, later greyish, finally glabrescent. Leaves very shortly petioled or nearly sessile, broad-ovate, ovate or ovate-oblong, acute or obtusish at the apex.

longer than in that species and much more numerous and patent. Meissner considered this species as a variety of *E. frankenioides* Moric. He mentions 2 specimens, viz. Burchell 7121, the type of the species *E. rariflorus* and a specimen Regnell III 189 greatly differing therefrom, which I consider as belonging to *E. Riedelii* Meissn. *E. rariflorus* differs in the first place from *E. frankenioides* by the form of the corolla.

52. *Evolvulus cardiophyllus* Schlechtend. in *Linnaea* XXVI (1854) p. 653.

E. commelinifolius Fernald in *Proc. Amer. Acad.* XXXIII (1898) p. 89.

Type: *Wagener* 26, Colombia, near Maiquetia.

Perennial, erect or prostrate (?), 30—50 cm high, branched at the base, the branches erecto-patent, the younger parts densely brown-villose, finally glabrescent. The lowest leaves often shortly petioled, ovate or oblong, blunt at the apex, rounded or acutish at the base, the upper ones sessile, gradually decreasing in size, distichous, approximate, ovate, ovate-oblong or deltoid-ovate, mostly acute, rarely obtuse at the apex, mucronulate, cordate at the base with stemclasping, rounded auricles, rarely subcordate or truncate, appressed-short-pilose on both sides, ciliate, seldom almost tomentose, the middle-sized leaves 30—40 mm long and 15—20 mm broad, sometimes to 75 mm long and to 35 mm broad, the upper ones 15—18 mm long and 10—12 mm broad, often conduplicate; midrib and 4—5 pairs of lateral nerves prominent beneath. Flowers 1—3 in the leaf-axils; peduncle absent, pedicels very short, at most 1 mm long; bracteoles narrow-lanceolate, up to 3 mm long, ciliate. Sepals narrow-lanceolate with long linear acumen, patently villose and long ciliate, 5—6 mm long, in fruit sometimes up to 8 mm long. Corolla pale blue with white stripes (*Fernald*) or white, salver-shaped, 13 mm long, the tube narrow, about 5 mm long, the limb widely expanded, almost entire, about 10 mm in diameter, with 5 sparsely pilose bands. Filaments inserted at the mouth of the tube, twice as long

as the linear-oblong anthers. Ovary cylindrical, glabrous. Capsule ovoid, 4 mm high, 4-valved, 4—1-seeded. Seeds brown (olive-green according to *Fernald*), with minute black dots.

Distribution: Mexico, Colombia, Venezuela, N.W. Brazil.

MEXICO, Sinaloa, Cerro del Cajon, 450 m, abundant, Oct.—Nov. 1917, *M. Narvaes Montes*, *Antonio E. Salazar* 2 (US). Guerrero, Acapulco, shady places, Dec. 1894, *Edw. Palmer* 312, type of *E. commelinifolius* Fernald (F, K, US). Oaxaca, Picacho — San Geronimo, Oct. 1913, *Purpus* 6808 (F, NH, US). Chiapas or Jalisco, Sept. 1923, *Purpus* 9288 (C).

COLOMBIA, 1844, *J. Goudot* (K, P); Santa Marta, 1898—99, *H. H. Smith* 1564 (DC, F, K, P, S, U, US); near Maiquetia, fl. Nov., *Wagener* 26, type, not seen; Bolivar, near Cartagena, 1919, *Bro. Heriberto* 219 (US); near Turbaco, 200—300 m, roadside, Nov. 1926, *E. P. Killip*, *A. C. Smith* 14315 (US); north of Arjona, 30—50 m, thickets, Nov. 1926, *E. P. Killip*, *A. C. Smith* 14522 (S, US); Norte de Santander, vic. of Cúcuta, ± 215 m, arid situations, March 1927, *E. P. Killip*, *A. C. Smith* 20994 (US); Cundinamarca, July 1917, *H. H. Rusby*, *F. W. Pennell* 132 (US).

VENEZUELA, Zulia, Maracaibo, 1865, *Moritz* 1237 (B, NH); San Martin on Rio del Palmar, common in forest-clearings, Oct. 1922, *H. Pittier* 10532 (Del, US). Bolivar, Ciudad Bolivar, ca. 35 m, savanna, Nov. 1929, *E. G. Holt*, *W. Gehriger* 45, 95, (US); *id.* 102 (U, US); Vic. of Cristobal Colon, Jan.—Febr. 1923, *W. E. Broadway* 545 (NY); Guiana, Upata, roadside, *de Grosourdy* (P); Lower Caroni R., savanna, Jan. 1904, *B. Othmer* (M); Rosalia, Dec. 1901, *Passarge and Selwyn* 772 (B).

BRAZIL, Amazonas, Aug. 1913, *Kuhlmann* (R 9 and 3455); Serra do Frechal, shady moist woods, Sept. 1927, *Ph. von Luetzelburg* 21174 (M); Rio Branco, Surumu, Serra do Mel, on rocks, Sept. 1909, *Ule* 8277 (B, K, L). Rio de Janeiro (?) *Glaziou* 11274 (B, C, K, P).

Shows some resemblance to *E. latifolius* Ker-Gawl., under which name specimens of this species are often met with in the collections. Is however distinctly different as to the form of the sepals and the corolla. I use the name *E. cardiophyllus* Schlechtend. for this species, although I did not see the type. Schlechtendal's description however corresponds so completely with the numbers cited and with the type of *E. commelinifolius* Fernald, that I do not doubt but they are identical.

Probably also belongs to this subsection:

53. *Evolvulus ramulosus* M. E. Jones. Contributions to Western Botany XV (1929) p. 149.

Type: *M. E. Jones* 23135, Mexico, Tepic, Nayarit, in open places.

"Apparently an annual or short-lived perennial, ramulosely branching and straggling over the ground, with innumerable and rather capillary branches with short internodes. Leaves oval to oval-ovate, 1—2 cm long, on a stout petiole about 3 mm long, softly and finely appressed-silky-pubescent with long and white hairs, as is the whole plant, including the corolla. Pedicels 4—6 mm long and reflexed and capillary. Sepals ovate and acute, about 2 mm long and as long as the widely open and blue corolla. Pods depressed globose, a little longer than the sepals. Seeds globose-ovate, green, smooth."

Distribution: Mexico, Tepic.

MEXICO, Tepic, Nayarit, in open places, Febr. 1927, *M. E. Jones* 23135, type (not seen).

Type not seen. Hereabove I give the original description.

Section II. LINOIDEI Meissn.

Meissn. in Mart. Fl. Bras. VII (1869) p. 330, 340; Peter in Engl.-Prantl, Nat. Pfl. fam. IV, 3a (1897) p. 19, p. p.

Undershrubs or shrubs, generally erect, often greyish or white sericeo-villose to lanate or tomentose. Leaves narrow, linear to linear-lanceolate or oblong-lanceolate. Flowers at the end of distinct peduncles or at the end of the ultimate branches, solitary or in few-flowered groups. Sepals variable, ovate or elliptic to lanceolate, obtuse to acuminate, the inner ones often with scarios margin. Corolla subentire, superficially lobed or deeply lobed, rotate to widely funnel-shaped.

The species of this section seem to be closely related to each other. They show resemblance to definite forms of the *Alsinoidei-Pedunculati*, but in order to enlarge the unity in the latter group, it is better to maintain them as representatives of a separate section. By the erect habit, the often grey or white hairiness, the form of the sepals and the corolla, they are sufficiently characterized. Often there is no distinct difference to be seen between the peduncles and the ultimate flower-bearing branches. At the end of the latter the flowers are often situated in the axils of the uppermost small leaves, close together, sessile, shortly pedicellate or even very shortly pedunculate.

KEY TO THE SPECIES.

1. Corolla entire or superficially lobed.
2. Leaves 30 mm long or more, linear or narrow-linear-lanceolate, densely appressed-sericeous beneath with white, shining hairs, appressed short-pilose above. Sepals lanceolate, acuminate, interior ones with broad scarios margin. 56. *E. elaeagnifolius*.
- 2.* Leaves always smaller, at most 20 mm long.
3. Sepals 5—7 mm long, oblong-lanceolate, acuminate. Leaves narrow-linear, densely appressed-sericeous or sericeo-tomentose on both sides, glabrescent above. 54. *E. gypsophiloides*.

- 3.* Sepals 2—2.5 mm long, the 2 exterior ones elliptic, obtuse or mucronulate, the interior ones broad-elliptic to orbicular with broad scarios margin. Leaves linear with greyish or whitish hairs on both sides or only beneath. 55. *E. ericaefolius*.
- 1.* Corolla deeply 5-lobed.
4. Ovary hairy. Sepals about 2.5 mm long, outer ones ovate-lanceolate to oblong-lanceolate, acute or slightly acuminate, inner ones broader, ovate with scarios margin. Leaves linear. 59. *E. Hasslerianus*.
- 4.* Ovary glabrous.
5. Leaves narrow-linear to linear-ob lanceolate, 15—40 × 1.5—4 mm. Sepals 1.5—2 mm long, outer ones ovate, obtuse, apiculate, inner ones with broad scarios margin. 58. *E. linoides*.
- 5.* Leaves linear-lanceolate to oblong-lanceolate, smaller, 4—10 (—12) × 1—2.5 mm. Sepals 1.5—2.5 mm, ovate to lanceolate, acuminate, inner ones with broad scarios margin. 57. *E. elegans*.

54. *Evolvulus gypsophiloides* Moric. Pl. Nouv. Am. (1838) p. 52, t. 35; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 73; id. Conv. Rar. (1838) p. 151; id. in DC. Prodr. IX (1845) p. 443 excl. syn.; Meissn. in Mart. Fl. Bras. VII (1869) p. 340; Glaziou in Bull. Soc. Bot. France LVII (1910) Mém. III p. 488.

E. gypsophiloides Moric. var. *brevifolius* Meissn. l.c. p. 340; Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. VI (1922) p. 37.

Type: *Blanchet* 2686, Brazil, Bahia, Serra da Jacobina.

An undershrub, 20—40 cm high. Stems many from a thick perpendicular root, terete, stiff, erect, straight or little curved, corymbosely ramified with erecto-patent branches, appressed-sericeous with fulvous or whitish hairs. Leaves sessile, narrow-linear, attenuate towards both ends, acute or shortly acuminate at the apex, acute at the base, densely appressed-sericeous or sericeo-tomentose on both sides, glabrescent above, greyish beneath, 5—18 mm long, 0.25—2 mm broad, gradually diminishing in size towards the top and the base of the stems; the middle internodes 4—5 mm long, the upper ones longer. Midrib slightly visible. Flowers at the end of the branches, solitary or in few-flowered groups, the pedicels shorter than or as long as the calyx, 2—5 mm long, appressed-pilose. Sepals oblong-lanceolate, acuminate, villose outside and at the margins, 5—7 mm long. Corolla blue, widely funnel-shaped, to 12 mm long.

the limb slightly lobed, to 15 mm broad, with 5 sericeous bands outside. Filaments inserted 3 mm above the base of the corolla, $1\frac{1}{2}$ times as long as the linear anthers. Ovary ovoid, glabrous. Capsule ovoid, glabrous, 4-valved, 2-celled, 2-seeded.

Distribution: Brazil.

BRAZIL, Ceará, fl. Aug. 1929, *G. Bolland* 43 (K); below Icó, dry hills, fl. Aug. 1838, *Gardner* 1772 (K, NH, P, US); Barreiros, sandy campo, fl. March 1910, *A. Löfgren* 157 (S). Pernambuco, *Schorndorff* (Br.). Piauí, *Gardner* 2254 (K). Bahia, Serra da Jacobina, *Blanchet* 2686, type (B, K, Len, NH, P); Monte Santo, campo, *Martius, Herb. Fl. Bras.* 635 p. p. (B, K, M, NH, P). Matto Grosso, near Cuyabá, wet places, *Mart. Herb. Fl. Bras.* 635 p. p., *Silva Manso* 87 (Br, H, L, Len, M); id., dry sandy places, fl. Febr. 1827, *Riedel* 792 (C, K, Len, P, US); id., fl. Febr. 1899, *R. Pilger* 262 (B); id., Coxipó de Ponte, *Hoehne* (Rondon 3065, 3067, ex *Hoehne* l.c.). Rio de Janeiro, cult., *Glaziou* 9972 (K); Cabo Frio, Morro do Phare, *Glaziou* 9972 (C, P).

The var. *brevifolius*¹⁾ based by Meissner on specimens with small and narrow leaves (5—10 mm long and 0.25—1 mm broad) must be united with the species as the differences are of little value and transitional forms are known. The var. *confertus* Choisy²⁾ belongs to *E. ericaefolius* Schrank.

55. *Evolvulus ericaefolius* Schrank, Plant. Rar. Hort. Monac. I (1819) fol. 94, t. 94; Mart. Herb. Fl. Bras. (1837) p. 336, quoad nomen, ceteris exclusis, ad *E. gypsophiloidem* referendis.

Cladostyles ericoides Nees in *Flora* IV (1821) p. 301; Steud. *Nom. ed. 2, I* (1841) p. 377.

Evolvulus phylicoides Schrader in *Goett. Gel. Anz. I* (II) (1821) p. 707, non Mart. (1841).

E. gypsophiloides Moric. var. *confertus* Choisy in DC. *Prodr. IX* (1845) p. 443.

E. ericaefolius Mart. α *subcapitatus* Meissn. in *Mart. Fl. Bras. VII* (1869) p. 340.

E. confertus Hall. f. in *Engl. Bot. Jahrb. XVI* (1893) p. 502, nota 1; id. in *Bull. Herb. Boiss. V* (1897) p. 383, t. 12, fig. 1.

¹⁾ Meissn. in *Mart. Fl. Bras. VII* (1869) p. 340.

²⁾ Choisy in DC. *Prodr. IX* (1845) p. 443.

- 3.* Sepals 2—2.5 mm long, the 2 exterior ones elliptic, obtuse or mucronulate, the interior ones broad-elliptic to orbicular with broad scariosus margin. Leaves linear with greyish or whitish hairs on both sides or only beneath. 55. *E. ericaefolius*.
- 1.* Corolla deeply 5-lobed.
4. Ovary hairy. Sepals about 2.5 mm long, outer ones ovate-lanceolate to oblong-lanceolate, acute or slightly acuminate, inner ones broader, ovate with scariosus margin. Leaves linear. 59. *E. Hasslerianus*.
- 4.* Ovary glabrous.
5. Leaves narrow-linear to linear-oblong-lanceolate, 15—40 × 1.5—4 mm. Sepals 1.5—2 mm long, outer ones ovate, obtuse, apiculate, inner ones with broad scariosus margin. 58. *E. linoides*.
- 5.* Leaves linear-lanceolate to oblong-lanceolate, smaller, 4—10 (—12) × 1—2.5 mm. Sepals 1.5—2.5 mm, ovate to lanceolate, acuminate, inner ones with broad scariosus margin. 57. *E. elegans*.

54. *Evolvulus gypsophiloides* Moric. Pl. Nouv. Am. (1838) p. 52, t. 35; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 73; id. Conv. Rar. (1838) p. 151; id. in DC. Prodr. IX (1845) p. 443 excl. syn.; Meissn. in Mart. Fl. Bras. VII (1869) p. 340; Glaziou in Bull. Soc. Bot. France LVII (1910) Mém. III p. 488.

E. gypsophiloides Moric. var. *brevifolius* Meissn. l.c. p. 340; Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. VI (1922) p. 37.

Type: *Blanchet 2686*, Brazil, Bahia, Serra da Jacobina.

An undershrub, 20—40 cm high. Stems many from a thick perpendicular root, terete, stiff, erect, straight or little curved, corymbosely ramified with erecto-patent branches, appressed-sericeous with fulvous or whitish hairs. Leaves sessile, narrow-linear, attenuate towards both ends, acute or shortly acuminate at the apex, acute at the base, densely appressed-sericeous or sericeo-tomentose on both sides, glabrescent above, greyish beneath, 5—18 mm long, 0.25—2 mm broad, gradually diminishing in size towards the top and the base of the stems; the middle internodes 4—5 mm long, the upper ones longer. Midrib slightly visible. Flowers at the end of the branches, solitary or in few-flowered groups, the pedicels shorter than or as long as the calyx, 2—5 mm long, appressed-pilose. Sepals oblong-lanceolate, acuminate, villose outside and at the margins, 5—7 mm long. Corolla blue, widely funnel-shaped, to 12 mm long.

the limb slightly lobed, to 15 mm broad, with 5 sericeous bands outside. Filaments inserted 3 mm above the base of the corolla, $1\frac{1}{2}$ times as long as the linear anthers. Ovary ovoid, glabrous. Capsule ovoid, glabrous, 4-valved, 2-celled, 2-seeded.

Distribution: Brazil.

BRAZIL, Ceará, fl. Aug. 1929, *G. Bolland* 43 (K); below Icó, dry hills, fl. Aug. 1838, *Gardner* 1772 (K, NH, P, US); Barreiros, sandy campo, fl. March 1910, *A. Löfgren* 157 (S). Pernambuco, *Schorubaum* (Br). Piauh, *Gardner* 2254 (K). Bahia, Serra da Jacobina, *Blanchet* 2686, type (B, K, Len, NH, P); Monte Santo, campo, *Martius, Herb. Fl. Bras.* 635 p. p. (B, K, M, NH, P). Matto Grosso, near Cuyabá, wet places, *Mart. Herb. Fl. Bras.* 635 p. p., *Silva Manso* 87 (Br, H, L, Len, M); id., dry sandy places, fl. Febr. 1827, *Riedel* 792 (C, K, Len, P, US); id., fl. Febr. 1899, *R. Pilger* 262 (B); id., Coxipó de Ponte, *Hoehne* (Rondon 3065, 3067, ex *Hoehne* l.c.). Rio de Janeiro, cult., *Glaziou* 9972 (K); Cabo Frio, Morro do Phare, *Glaziou* 9972 (C, P).

The var. *brevifolius*¹⁾ based by Meissner on specimens with small and narrow leaves (5—10 mm long and 0.25—1 mm broad) must be united with the species as the differences are of little value and transitional forms are known. The var. *confertus* Choisy²⁾ belongs to *E. ericaefolius* Schrank.

55. *Evolvulus ericaefolius* Schrank, *Plant. Rar. Hort. Monac.* I (1819) fol. 94, t. 94; *Mart. Herb. Fl. Bras.* (1837) p. 336, quoad nomen, ceteris exclusis, ad *E. gypsophiloidem* referendis.

Cladostyles ericoides Nees in *Flora* IV (1821) p. 301; *Steud. Nom. ed. 2, I* (1841) p. 377.

Evolvulus phyllicoides Schrader in *Goett. Gel. Anz. I* (II) (1821) p. 707, non *Mart.* (1841).

E. gypsophiloides Moric. var. *confertus* Choisy in *DC. Prodr.* IX (1845) p. 443.

E. ericaefolius Mart. α *subcapitatus* Meissn. in *Mart. Fl. Bras.* VII (1869) p. 340.

E. confertus Hall. f. in *Engl. Bot. Jahrb.* XVI (1893) p. 502, nota 1; id. in *Bull. Herb. Boiss.* V (1897) p. 383, t. 12, fig. 1.

¹⁾ Meissn. in *Mart. Fl. Bras.* VII (1869) p. 340.

²⁾ Choisy in *DC. Prodr.* IX (1845) p. 443.

Type: *Prince zu Wied-Neuwied*, Brazil, Rio de Janeiro, between Coral de Battuba and Paulista.

An undershrub, 10—50 cm high, the stems ascending or erect, branched, the branches erect or erecto-patent, straight or slightly curved, greyish-white appressed-villose-strigillose above. Leaves often very dense in the lower parts, more remote upwards and at the flowering branches, curved, erect or patent, linear, attenuate at both ends, with long, appressed, greyish-white hairs beneath, quite glabrous above, the lower ones 5—10 mm long, to 1.5 mm broad, the upper ones smaller. Midrib impressed above. Flowers terminal at the branches and on axillary peduncles, in more or less broadly ramified corymbs, approximate in few-flowered globular groups, rarely solitary; pedicels as long as the calyx or shorter; bracteoles lanceolate, 2 mm long. Sepals with purple apex, sparsely appressed-villose-strigillose, the 2 exterior ones elliptic, obtuse or mucronulate, the 3 interior ones broad-elliptic to orbicular with broad scarious margin, 2—2.5 mm long. Corolla blue, rotate to funnel-shaped, limb subentire, 10—14 mm in diam., with densely sericeous bands outside; tube very short. Filaments about three times as long as the linear anthers. Ovary obovoid, glabrous. Capsule globular, 4 mm high, brown, with 2 brownish-purple seeds.

Distribution: Brazil, Bahia, Rio de Janeiro.

BRAZIL, Bahia, Serra da Jacobina, *Blanchet 3633*, type of *E. gypso-philoides* Moric. var. *confertus* Choisy (Len, NH, P). Rio de Janeiro, between Coral de Battuba and Paulista, on sand, fl. Sept., *Prince zu Wied-Neuwied*, type (Br, Len); Macahé, fl. Apr. 1845, *Herb. John Miers* (NH); between Macahé and Campos, in sandy campo, fl. June 1832, *Riedel 686* (K, Len, US).

var. *singuliflorus* Meissn. in Mart. Fl. Bras. VII (1869) p. 340.

Type: *Burchell 7649*, Brazil, Goyaz, between Goyaz and Cavalcante.

Leaves with appressed greyish-white hairs on both sides, the lower leaves rather dense, erect, the upper more remote. Flowers generally solitary at the end of the branches and the peduncles.

Distribution: Brazil, Goyaz, Bahia.

BRAZIL, without locality. *Burchell* 8106 (K, Len, P); id., *Burchell* 8210 (K, P); id., 1844, *Weddell* 2144 (P); central Brazil, Salinas, *Weddell* 2110 (P). Goyaz, *Pohl* (Br, M, V); Villa da Palma, *Pohl* 1278 (V); between Goyaz and Cavalcante, *Burchell* 7649, type (Br, K, L, in Len specimens collected between Cavalcante and Conceição); id., *Burchell* 7696 (Br, K); between Cavalcante and Conceição, *Burchell* 7963 (Br, K, P); dry sandy campo Mission Douro, fl. Oct. 1839, *Gardner* 3349 (K); Villa de Natividade, fl. Dec. 1839, *Gardner* 3350 (NH). Bahia, 1913, *Ph. von Luetzelburg* 1587a (M); *Martius* (M).

56. *Evolvulus elaeagnifolius* Dammer in Engl. Bot. Jahrb. XXXIII, Beibl. 57 (1897) p. 38.

Type: *Glaziou* 11271, Brazil, Minas Geraes, Ayuruoca au Pico de Papagaio.

A shrub, 40 cm or more high. Stems erect, terete, 2—2.5 mm thick, white woolly-sericeous. Leaves sessile, linear or narrow-linear-lanceolate, shortly acuminate at the apex, attenuate at the base, the upper surface green, appressed short-pilose, the lower surface densely appressed-sericeous with white, shining hairs; on the main stems to 6 cm long and 6 mm broad, on the branches much smaller, 7—15 mm long, 1—2 mm broad. Peduncles on the main stems generally shorter than the leaves, on the branches often exceeding them, 1.5—3 cm long, appressed-pilose, 1 or few-flowered, in the latter case the peduncle dichotomously ramified at the top; pedicels shorter than the calyx; bracteoles small, setaceous, 1.5—2 mm long. Sepals equal in length, 3 mm long, lanceolate, acuminate, light brownish pilose and ciliate, the interior ones with broad scarious margin. Corolla blue, widely funnel-shaped to rotate, the limb up to 12 mm in diam., subentire, with 5 pilose bands outside. Filaments as long as the linear anthers. Ovary globular, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Ayuruoca au Pico de Papagaio, rocky places, fl. Sept. 1878, *Glaziou* 11271, type (B, C, K, P).

Stems more robust than in *E. linoides* Moric., hairs not so closely appressed, leaves larger, sepals lanceolate and corolla not 5-lobed.

57. *Evolvulus elegans* Moric., Pl. Nouv. Amér. (1838) p. 53, t. 36; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 80; id. Conv. Rar. (1838) p. 158; id. in DC. Prodr. IX (1845) p. 449; Meissn. in Mart. Fl. Bras. VII (1869) p. 340, t. 122, fig. I (var. *confertifolius*).

E. elegans Moric. var. *strictus* Meissn. l.c. p. 341.

Type: *Blanchet 2570 p. p.*, Brazil, Bahia, Serra da Jacobina.

An undershrub, to 45 cm high, widely branched, the branches erect or ascending, straight or slightly curved, appressed-sericeous, glabrescent, the young parts fulvous, soon greyish or white. Leaves patent or erect, rather remote, linear-lanceolate to oblong-lanceolate, acute or shortly acuminate at the apex, mucronulate, attenuate, acute or rounded at the base, densely appressed-sericeous or woolly-sericeous with white or greyish hairs, more densely beneath than above, 4—10 (—12) mm long, 1—2.5 mm broad, 5—3 times as long as broad, gradually diminishing in size towards the top of the branches, the uppermost ones finely subulate, 1.5—2 mm long. Midrib impressed above, prominent beneath. Peduncles in the axils of the upper leaves, much exceeding them, filiform, (4—) 12—35 mm long, 1—3-flowered; pedicels to 3 mm long; bracteoles subulate, 1 mm long. Sepals ovate to lanceolate, acuminate, 1.5—2.5 (—3) mm long, shortly appressed-pilose outside and at the margins, the base of the inner ones with broad scarious margin. Corolla pale-blue, 5—6 mm long, rotate to widely funnel-shaped, the limb deeply 5-lobed, about 8 mm in diam., the lobes obtuse, sericeous outside. Filaments about three times as long as the linear sagittate anthers. Ovary globular, glabrous. Capsule globular or ovoid, sometimes oblique-ovoid, 3 mm long, 4-valved, 4—1-seeded; seeds brown.

Distribution: Venezuela, Bolivia, Brazil (Pernambuco, Bahia, Minas Geraes).

VENEZUELA, *E. Otto 984* (B); Bolivar, Upata, 1864, de *Grosourdy* (P).

BOLIVIA, prov. Chiquitos, Sept.—Oct. 1845, *Weddell 3470* (P).

BRAZIL, Pernambuco, Garanhuns, June 1887, *H. Schenck Herb.*

Bras. 4209 (B). Bahia, *Herb. Bunge* (P); Serra da Jacobina, *Blanchet 2570* p. p. type (B, Br, C, H, K, Len, with *E. arbuscula* Poir., NH, P); Joazeiro, dry campo, *Martius* (M). Minas Geraes, *A. de St.-Hilaire B¹, 1482*, (P); Uberaba, *Regnell III, 190* p. p. (Br); between Barreira grande and Valle Juado (Sertão), March 1892, *W. Schwacke 8204* (B).

Specimens collected by Otto (984) in Venezuela possess very short peduncles, only 4—10 mm long.

var. 1. confertifolius Meissn. l.c. p. 341, t. 122, fig. I.

Type: *Regnell III, 190*, Brazil, Minas Geraes, Uberaba.

Often lower than the typical form, 15—25 (—30) cm, stems several, caespitose, strictly erect or ascending. Leaves approximate, only the upper flower-bearing ones more remote, appressed or patent, densely white woolly-sericeous on both sides, 5—7 (—10) mm long.

Distribution: Brazil, Minas Geraes, São Paulo.

BRAZIL, Minas Geraes, Uberaba, Dec. 1848, *Regnell III, 190* pro majore parte, type (B, Br, K, M, S, US). São Paulo, Villa de Batataës, *Regnell III, 190** (Br); id. *190b* (C); Canna Verde, fl. Oct., *Regnell III, 190* p. p. (Len, S).

var. 2. capillaceus Meissn. l.c. p. 341, except the specimen *Martius*, collected near Joazeiro, Bahia, Brazil, which belongs to the typical form.

Type: *Regnell III, 190***, Brazil, São Paulo, near Batataës.

Stems several, erect or ascending, 20—35 cm high, widely branched with long filiform branches. Lower leaves almost as in the typical form, the upper ones very small, subulate, very remote. Peduncles filiform.

Distribution: Brazil (Goyaz, Minas Geraes, São Paulo), Paraguay.

BRAZIL, Goyaz, dry places, Aug. 1834, *Riedel s. n.* (Len). Minas Geraes, Serra de Ouro Branco, Jan. 1889, *Glaziou 17711a* (P). São Paulo, Batataës, *Regnell III 190***, type (B, Br, C, S, US).

PARAGUAY, "Sierra de Amambay", Jan. 1908, *Hassler Pl. Parag. 10750*, leg. T. Rojas (B, K, P), distributed as ssp. *microphyllus* Hassl.

58. *Evolvulus linoides* Moric. Pl. Nouv. Amér. (1844) p. 139, t. 83; Choisy in DC. Prodr. IX (1845) p. 448; Meissn. in

Mart. Fl. Bras. VII (1869) p. 341; Hall. f. in Meded. Rijks Herb. Leiden n. 46 (1922) p. 13.

E. rosmarinifolius Dammer in Engl. Bot. Jahrb. XXIII, Beibl. 57 (1897) p. 38; Glaziou in Bull. Soc. Bot. France LVII (1910) Mém. III p. 488.

Type: *Blanchet 3898*, Brazil, Bahia, near Pouso d'Areia.

An erect shrub, according to *Meissner* probably several feet high, much branched, the branches erecto-patent, slender, straight or slightly curved, terete, appressed-sericeous in the young parts, later glabrous, brown or brownish-black, shining. Leaves not very dense, sessile or shortly petioled, narrow-linear to linear-oblongate, attenuate towards both ends, acute or obtusish at the apex, mucronulate, the margins often revolute, the upper surface appressed-sericeous, glabrescent, the lower surface densely sericeous with silvery appressed hairs; 1.5—4 cm long, 1.5—4 mm broad, gradually diminishing in size towards the top of the branches; midrib rather distinct beneath, more or less impressed above. Flowers at the end of the branches; peduncles axillary, erecto-patent, 10—25 mm long, 1 or occasionally 2—3-flowered, the upper ones and sometimes also the lower ones often very short or none, 1-flowered; pedicels as long as the sepals or a little longer, up to 5 mm, short-pilose; bracteoles small, filiform, 1—2 mm. Sepals equal in length, 1.5—2 mm, outer ones ovate, obtuse, apiculate, shortly pilose, ciliate, inner ones with broad scarious margins, orbicular or broader than long. Corolla light-blue, rotate, the limb 1 cm in diam., deeply 5-lobed, lobes broad-ovate, obtuse or slightly emarginate, with sericeous band outside. Filaments about twice as long as the linear anthers. Ovary globular, glabrous.

Distribution: Bolivia, Brazil (Bahia, Minas Geraes).

BOLIVIA, "Abayóí", near Sta Ana de Chiquitos, and near Tucabaca, May 1907, *Herzog 195* (L).

BRAZIL, Bahia, near Pouso d'Areia, 1857, *Blanchet 3898*, type (Br, H, NH, P); near Machado Portello, fl. June 1915, *J. N. Rose, P. G. Russell 19930* (US). Minas Geraes, Congonhas do Campo, fl. March 1880, *Glaziou 13014*, type of *E. rosmarinifolius* Dammer (B, C, K, P).

59. *Evolvulus Hasslerianus* Chodat in Bull. Herb. Boiss. Sér. II, 5 (1905) p. 685.

Type: *Hassler 7836*, Paraguay, Upper Apa River.

A low undershrub, 10—30 cm high, with several, branched stems from a woody base, the stems erecto-patent, densely appressed-sericeous to finely tomentose, whitish, shining, finally glabrescent. Leaves rather dense, erecto-patent, sessile, linear, attenuate and acute at both ends, hairy on both sides like the stems, 6—15 mm long, 6—9 times as long as broad, the upper ones gradually becoming smaller, the ultimate ones only 2 mm long. Midrib generally prominent beneath. Flowers 1 or 2 at the end of the branchlets and the peduncles; pedicels 2 mm long; bracteoles subulate, about 1 mm long. Sepals appressed-sericeous, about 2.5 mm long, the outer ones ovate-lanceolate to oblong-lanceolate, acute or slightly acuminate, the inner ones broader, ovate, with scarious margin. Corolla white or light-blue, rotate, the limb 12—13 mm in diam., deeply 5-lobed, the lobes obdeltoid, emarginate, appressed-sericeous outside. Filaments about twice as long as the linear anthers. Ovary ovoid, villose. Capsule exceeding the calyx, ovoid, 4-valved, sparsely hairy at the top.

Distribution: Northern Paraguay.

PARAGUAY, near the Upper Apa River, on stony ground, Nov. 1901, *Hassler 7836*, type (B, Boiss, K, NH, P).

Section III. PANICULATI Peter ¹⁾

Peter in Engl.-Prantl, Nat. Pfl. fam. IV, 3a (1897) p. 18, nomen.

Perennial (?), lignescent at the base, erect, quite glabrous or sparsely appressed-pilose. Leaves lanceolate to oblong-lanceolate, attenuate towards both ends. Flowers solitary at the end of the ultimate filiform branchlets, in a very broad panicle. Sepals oblong-lanceolate or lanceolate, acute, the inner ones with scarious margin. Corolla 5-lobed, rotate to funnel-shaped.

This section is no doubt closely related to the preceding one. The general habit of the only species shows some resemblance to the widely branched var. *capillaceus* of *E. elegans*. In order not to break the unity in the *Linoidei*, I deemed it better to keep the sections separate. Whilst the hairiness in the *Linoidei* is in general strongly developed, it is totally or almost lacking in *E. paniculatus*. The leaves of the latter are also different and the plant is presumably a perennial, whilst the *Linoidei* are undershrubs or shrubs.

60. *Evolvulus paniculatus* (H. B. K.) Spreng. Syst. I (1825) p. 862; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 80; id. Conv. Rar. (1838) p. 158; id. in DC. Prodr. IX (1845) p. 449.

Cladostyles paniculata H. B. K. Pl. Aequin. I (1808) p. 202, t. 57; id. Nov. Gen. et Spec. III (1818) p. 118; col. ed. p. 93; Roem. et Schult. Syst. VI (1820) p. 199.

¹⁾ Sectio **Paniculati** Peter, nomen. Descriptio: Plantae perennes (?), basi lignescentes, erectae, glaberrimae vel sparse adpresseque pilosae. Folia lanceolata vel oblongo-lanceolata, apicem et basin versus attenuata. Inflorescentia late paniculata, floribus solitariis ramulos ultimos filiformes terminantibus. Sepala oblongo-lanceolata vel lanceolata, acuta, interiora margine scariosa. Corolla 5-lobata, rotata vel infundibuliformis.

Type: *Bonpland*, Colombia, Bolivar, near Turbaco.

Perennial (?), lignescent at the base, about 60 cm high, erect, very widely paniculately branched, glabrous or with some appressed hairs, the ultimate branches long and filiform, glabrous. Leaves glabrous, or very sparsely pilose, the lower ones lanceolate to oblong-lanceolate, attenuate towards both ends, acute and mucronulate at the apex, sessile or shortly petioled. 4—6 cm long and 10—18 mm broad, the higher ones smaller, linear-lanceolate or linear, those at the base of the ramifications 1.5—3 cm long, the ultimate ones narrow-linear to subulate, 1—2 mm long. Midrib of the lower leaves prominent beneath, lateral nerves ascending. Inflorescence widely paniculate, many-flowered. Flowers solitary at the end of the ultimate branchlets; pedicels $1\frac{1}{2}$ —3 times as long as the calyx. Sepals oblong-lanceolate or lanceolate, acute, the inner ones with scarious margin, 3—3.5 mm long, glabrous or sparsely ciliate. Corolla yellow, about $1\frac{1}{2}$ times as long as the calyx, rotate to funnel-shaped, 5-lobed to about the middle, the lobes ovate, obtuse, pilose outside. Filaments inserted at $\frac{1}{3}$ from the base of the corolla, white, as long as the oblong yellow anthers. Ovary ovoid, glabrous. Styles cleft to about the middle; stigmas subclavate. Capsule ovoid or oblique-ovoid, exceeding the sepals, 4 mm long, 1-seeded; seed ovoid.

Distribution: Colombia, Venezuela.

COLOMBIA, Bolivar, vicin. of Barranquilla, fl. Dec. 1928, *Bro. Elias* 656 (Len, US); vicin. of Cartagena, 1919, *Bro. Heriberto* 246 (US); Since, 120—170 m, thicket, fl. Jan. 1918, *F. W. Pennell* 4027 (US); Chinu, 150—200 m, edge of thicket, fl. Jan. 1918, *F. W. Pennell* 4092 (US); near Turbaco, *Bonpland*, type (B, P); id., 200—300 m, fl. Nov. 1926, *E. P. Killip*, *A. C. Smith* 14185 (NY, US); id., thicket, 200—300 m, fl. Nov. 1926, *E. P. Killip*, *A. C. Smith* 14216 (S, US); between Tocaima (Cundinamarca) and Rio Seco, above Honda, *I. F. Holton* 534 (Calc, K).

VENEZUELA, Merida, near Tovar, *Fendler* 1896 (Calc, G, K).

Vernacular name: Tembladera (*Colombia, Bro. Heriberto*).

In their *Plantae Aequinoctiales* I (1808, p. 202, t. 57), H. B. K. describe this species as the type of a new genus, *Cladostyles*,

a genus according to them closely related to *Evolvulus* but differing from it in the calyx, the number of styles, the number of seeds and the indehiscent fruit. As to the first difference, the calyx is not obviously different from other species of the genus *E.*, only it is glabrous, and this seldom occurs. The number of the styles is quite the same as in all other species of the genus. The number of ovules is four; only one develops, the other being suppressed, a character not rare in the genus. As to the indehiscence of the fruits, I was able to examine a number of them, which showed distinct valves.

Section IV. PASSERINOIDEI Meissn.

Meissn. in Mart. Flora Bras. VII (1869) p. 332, 355; Peter in Engl.-Prantl, Nat. Pfl. fam. IV, 3a (1897) p. 19.

Racemulosi Meissn. l.c. p. 330, 339; Peter l.c. p. 19.

Ambigui Meissn. l.c. p. 332, 354.

Undershrubs or shrubs, generally erect; leaves and hairiness variable. Flowers axillary, solitary or in few-flowered clusters, spread over the stems or on short lateral branches, sometimes more or less approximate at the top of the stems but never aggregate in dense spikelike, terminal inflorescences, generally pedicellate; peduncle when present extremely short, only in one species longer. Corolla rotate to widely funnel-shaped, the tube always very short, the limb subentire or superficially to distinctly 5-lobed.

Of the species which Meissner included in the Passerinoidei *E. speciosus* belongs to the Alsinoidei-Epedunculati. The elements composing the section *Ambigui* Meissn., viz. *E. latifolius*, *E. thymiflorus* and *E. daphnoides* seem to be closely related to definite species of the Passerinoidei, so that I have united these two sections under the name of the latter.

The only representative of Meissner's *Racemulosi* viz. *E. phyllanthoides* Moric. must be also reckoned to this section.

KEY TO THE SPECIES.

1. Erect shrubs. Leaves small, generally not broader than 0.5—3 mm, linear, narrow-oblong, linear-lanceolate or oblong-lanceolate, in one species almost scale-like. West Indian Islands.
2. Leaves linear-lanceolate or oblong-lanceolate, 5—10 × 1—3 mm, occasionally elliptic. Corolla pale or dark-blue, pale-violet or white, 10—14 mm in diam. Ovary glabrous. 61. *E. arbuscula*.

- 2.* Leaves narrow-linear to narrow-oblong, 6—15 × 0.5—1.5 mm, occasionally longer. Corolla white, 8 mm in diam. Ovary densely hairy, very seldom glabrous. 62. *E. bahamensis*.
- 2.** Leaves almost scale-like, triangular to short-lanceolate, 1—2 or the lower ones up to 3.5 mm long. Corolla white, 6—9 mm in diam. Ovary densely hairy, seldom almost or quite glabrous. 63. *E. squamosus*.
- 1.* Shrubs or undershrubs of variable habit. Leaves larger. Continental South America.
3. Corolla not or slightly lobed.
4. Leaves broad, suborbicular, broad-ovate, elliptic, ovate or narrow-ovate.
5. Leaves orbicular or broad-ovate, densely appressed-villose-tomentose, brown, 4—8 (—10) mm long and nearly as broad. Flowers in the upper leaf axils, shortly pedicellate. 67. *E. Maximiliani*.
- 5.* Leaves elliptic, ovate or narrow-ovate.
6. Flowers in the upper leaf axils sessile or almost so, in the lower ones generally with distinct peduncle; pedicels very short or none. Leaves ovate to elliptic. 64. *E. passerinoides*.
- 6.* Flowers not or very shortly pedunculate; pedicels filiform, often longer than the sepals.
7. Leaves elliptic, ovate or narrow-ovate, sparsely appressed-pilose, soon glabrescent. 65. *E. jacobinus*.
- 7.* Leaves ovate or narrow-ovate, woolly villose on both sides, finally glabrescent above. 66. *E. Luetzelburgii*.
- 4.* Leaves narrow-linear, linear-lanceolate, linear-oblong or narrow-oblong.
8. Leaves densely tomentose or sericeo-tomentose on both sides.
9. Leaves linear-lanceolate or linear, 12—20 mm long, densely appressed-sericeo-tomentose on both sides, fulvous, later greyish. Sepals with long spreading hairs. Ovary hairy. 68. *E. Weberbaueri*.
- 9.* Leaves linear-lanceolate or linear-oblong, 10—20 (—25) mm long, densely and shortly tomentose on both sides, fulvous, later greyish. Sepals densely covered with short appressed sericeous hairs. Ovary glabrous. 69. *E. peruvianus*.
- 8.* Leaves sparsely pilose or glabrous.

10. Leaves linear-oblong or narrow-oblongeolate, quite glabrous or with a few hairs at the margins, 7—14 mm long. 70. *E. scoparioides*.
- 10.* Leaves narrow-elliptic to oblong, appressed-sericeous beneath with white hairs, sparsely so or glabrous above, 10—18 mm long (in the var. smaller). 71. *E. thymiflorus*.
- 3.* Corolla distinctly 5-lobed.
11. Leaves not longer than 20 mm and not broader than 8 mm, rather dense.
12. Leaves densely appressed-sericeo-tomentose on both sides, margin more or less revolute. 72. *E. genistoides*.
- 12.* Leaves sparsely appressed-pilose in youth, finally glabrous, margin slightly revolute. 73. *E. diosmoides*.
- 11.* Leaves larger, more remote.
13. Leaves linear-lanceolate or linear-oblong, obtuse at the apex, acute or obtuse at the base; moderate-sized ones 30—35 × 4—9 mm. Sepals ovate or elliptic, obtusish, almost 3 mm. Corolla 12 mm in diam. 74. *E. daphnoides*.
- 13.* Leaves broader than in the preceding species, ovate, ovate-oblong to oblong-lanceolate, obtuse, mucronulate at the apex, rounded or acutish at the base, moderate-sized ones 15—40 × 10—20 mm. Sepals narrow oblong-lanceolate, lanceolate or narrow-lanceolate, acute or acuminate, 4—5 (—6) mm. Corolla 6—7 mm in diam. 75. *E. phyllanthoides*.
- 13.** Leaves broader than in *E. daphnoides*, ovate, narrow-ovate or ovate-oblong, obtusish or acutish at the apex, truncate or subcordate at the base, moderate-sized ones 30—60 × 15—30 mm. Sepals lanceolate or linear-lanceolate, long-acuminate, 3—6 mm. Corolla 8—9 mm in diam. 76. *E. latifolius*.

61. *Evolvulus arbuscula* Poir. in Lam. Encycl. Suppl. III (1813) p. 459; Roem. et Schult. Syst. VI (1820) p. 199; Griseb. Fl. Brit. W. Ind. Isl. (1864) p. 475 excl. specim. Bahamens.; Griseb., Cat. Plant. Cub. (1866) p. 207; Urb. Symb. Antill. VIII (1921) p. 558.

E. purpuro-coeruleus Hook. in Bot. Mag. LXXI (1845) t. 4202, col.; Walp. Rept. VI (1846—'47) p. 542; Fl. des Serres Sér. 1, II (1846) p. 42, t. 3, col.; Floricult. Cab. XIV (1846) 25.

col.; Paxton, Magaz. Bot. XV (1849) 171, col.; Walp. Ann. III (1852—'53) p. 116; Schnizlein, Iconogr. II (1856—'65) t. 144; Nichols. Dict. prat. hort. II (1893—'94) p. 359.

E. pulchellus Meissn. in Mart. Fl. Bras. VII (1869) p. 341.

Type: *Nectoux*, Dominican Republic.

An erect shrub, 50 cm high, much branched, the branches terete, erecto-patent, more or less densely villose with appressed or slightly spreading hairs when young, glabrescent, the ultimate branchlets often short, patent, with small leaves, flower-bearing, later often leafless, stiff and more or less pungent. Leaves erecto-patent, sessile or shortly petioled, linear-lanceolate or oblong-lanceolate, 5—10 mm long, 1—3 (4) mm broad; those of the ultimate branches sometimes still smaller, almost scale-like; occasionally elliptic, 3—5 mm long and 2—2.5 mm broad, acute at both ends, sparsely villose on both sides, glabrescent. Midrib prominent beneath, pale. Flowers in the upper axils, on the main branches or on the short lateral branchlets, solitary in the leaf-axils; peduncles very short or none, pedicels shorter than or longer than the sepals, pilose, 5 mm or less; bracteoles small, filiform. Sepals equal, lanceolate or sometimes broader, acute or acuminate, (1.5)—2.5—3 mm long, shortly pilose. Corolla pale or dark blue, light purple or white, rotate, the tube short, the limb 10—14 mm in diam., obscurely lobed, with pilose bands outside. Stamens shorter than the corolla, their filaments 2—2.5 times as long as the linear-oblong anthers. Ovary glabrous, ellipsoid. Styles 2, 2-cleft to about the middle. Capsule globular, glabrous, 4-valved, 4 or less-seeded.

According to *Ekman* the plant has an aromatic scent.

Distribution: West Indies, Cuba, Haiti, Dominican Republic, Jamaica.

CUBA, Prov. Santa Clara, Caibarién, Cayo Francis, in open places, Febr. 1924, *E. L. Ekman* 18553 (S); Prov. Camaguey, Pastelillo near Nuevitas, on loose limestone rocks, Oct. 1922, *E. L. Ekman* 15428 (S); id. *E. L. Ekman* 15544 (K, S); id., Cayo del Sabinal, in a kind of sweet water meadows, Oct. 1922, *E. L. Ekman* 15494 (S); id., Vicin. of Pueblo Romano, Cayo Romano, Oct. 1909, *J. A. Schafer* 2468 (US); E. Cuba, *Wright* 456 (Br, K); id., 1860, *Wright* 1658 (G, K, Len, P); Prov. of Oriente, Ensenada

de Mora, coastal woods, March 1912, *Britton, Cowell, Shafer* 13057 (US); id., Playa Siboney near Santiago, calcareous hills, Nov. 1917, *E. L. Ekman* 8727 (S, US); id., El Cobre, dry hills, Aug. 1844, *Linden* 2061 (Br, K, Len, NH, P).

HAITI, March 1925, *G. S. Miller* 269 (US); Vicin. of Cabaret, Baie des Moustiques, Jan. 1929, *E. C. and G. M. Leonard* 12082 (US); Massif des Matheux, Croix-des-Bouquets, Source-Matelas, Oct. 1924, *E. L. Ekman* H. 2143 (US); Montagnes du Trou d'Eau, Source-Matelas, id. (S); near Rivière froide, 200 m, Apr. 1920, *W. Buch* (*ex herb. Krug et Urban*) 1878 (US); Vicin. of Port-de-Paix, Jan. 1929, *E. C. Leonard, G. M. Leonard* 12358 (K, US); Port-de-Paix, edge of Saline-Michel, road to Jean-Rabel, Apr. 1925, *E. L. Ekman* H. 3831 (S, US); Gonaïves, rocky places, limestone, 100 m, Febr. 1925, *E. L. Ekman* H. 3287 (S); Gonaïves, July 1927, *W. J. Eyerdam* 70 (US).

DOMINICAN REPUBLIC, *Nectoux*, type (P); *Richard* (C, P); *Rob. Schomburgk* 32 (B, K); Azua, March 1913, *Rose, Fitch, Russell* 3846 (US); near Constanza, June 1910, *v. Türkheim* 3259 (K, M); Prov. Monte Cristi, Guayubin, 100 m or less, Febr. 1921, *W. L. Abbott* 905 and 938 (US); Prov. Barahona, Barahona, Las Salinas, 800 m, June 1911, *Fuertes* 892 (U, US).

JAMAICA, Pedro Bluff, Sept. 1907, *W. Harris* 9720 (C, K, NH, P, US); Manchester, rocky places above the Devils race, Nov. 1843, *Purdie*, type of *E. purpuro-coeruleus* Hook. (K, S, U).

Vernacular names: Tevenque (Cuba, *Ekman*); Romerillo (Domin. Rep., *ex Urban* l.c.).

Hooker stated as the difference between *E. purpuro-coeruleus* and *E. arbuscula* that the leaves in *E. arbuscula* are smaller and erect, not tapering at the base, but a comparison of the type specimens of the two species and an examination of different other numbers indicated that both represent the same species. Hooker termed the colour of the flower of *E. purpuro-coeruleus* "rich ultramarine blue, with the centre white and a purple ray diverging from that up the centre of each lobe".

The hairiness of the different specimens of *E. arbuscula* is rather variable, from densely whitish villose or tomentose to nearly glabrous. The very densely white villose-tomentose forms with small scale-like leaves correspond with *E. canus* Spreng.; this I consider as a variety of *E. arbuscula*.

The specimen *Ekman* 15494 has the corollas only 5 mm in diam.

The type of *E. pulchellus* Meissn., which fully agrees with *E. arbuscula* is represented by a specimen in the herbarium Leningrad bearing the number Blanchet 2570. Under that number

Blanchet also collected specimens of *E. elegans* Moric. and I presume that a branch of the non-Brazilian *E. arbuscula* has been accidentally included here.

var. canus (Spreng.) v. Ooststr. nov. var.

E. canus Spreng. ex Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 73 in syn.; id. Conv. Rar. (1838) p. 151 in syn.

Type: *Bertero*, Dominican Republic.

The young parts densely white or grey villose-tomentose. Leaves small, more appressed to the branches, those of the short and stiff ultimate branches often almost scale-like. According to *Ekman* the plant has an aromatic scent.

Distribution: West Indies, Cuba, Haiti, Dominican Republic.

CUBA, prov. Oriente, El Cobre, dry hills, Oct. 1916, *E. L. Ekman* 7830 (S); id., Daiquiri, calcareous hills near the harbour, Nov. 1916, *E. L. Ekman* 8426 (S); id., Maria Pilar, Rio Baconao, dry hills, Nov. 1916, *E. L. Ekman* 8242 (K, S); id., Santiago de Cuba, between Campo Columbia and the coast, calcareous hills, Dec. 1916, *E. L. Ekman* 8516 (S).

DOMINICAN REPUBLIC, *Bertero*, type (B, Len, M, P).

HAITI, vicin. of Cabaret, Baie des Moustiques, arid slope, coastal mountain east of Cabaret, Jan. 1929, *E. C. and G. M. Leonard* 11959 and 11961 (US); id., arid downs on cliffbordered coast west of Cabaret, Jan. 1929, *E. C. and G. M. Leonard* 11928 (US); vicin. of Port à L'Écu, steep and mountain slope west of bay, March 1929, *E. C. and G. M. Leonard* 13861 (K, US); Massif de la Selle, Morne des Commissaires, Anses-à-Pitres, dry plains, Aug. 1926, *E. L. Ekman* H. 6702 (S).

Vernacular name: Tevenque (Cuba, *Ekman*).

62. *Evolvulus bahamensis* House in Bull. Torr. Bot. Club XXXV (1908) p. 89; Journ. N.Y. Bot. Gard. IX (1908) p. 49; Britton and Millspaugh, Bahama Flora (1920) p. 346.

Type: *Nash and Taylor* 1176, Bahama Islands, Inagua, James Hill.

"A tall, stout, erect, shrubby, perennial, intricately branching plant, 40—100 cm tall; branches rigid and wiry, relatively long and obliquely ascending" (*House*), appressed-pilose, glabrescent below. Leaves sessile, narrow-linear, occasionally broader, narrow-oblong, acute at both ends, "strongly ascending or appressed

to the stem", 3—15 (—25) mm long, about 0.5—1.5 mm broad, rarely broader, up to 3 mm broad, appressed-pilose like the stems. Midrib prominent beneath, pale. Flowers in the upper axils, solitary; peduncle very short or none, pedicels shorter to longer than the calyx, appressed-pilose, reflexed in fruit. Sepals lanceolate, sometimes broader, acuminate, mostly 2.5—3 mm long, appressed-pilose like the pedicels. Corolla white, rotate, the tube very short, the limb 8 mm in diam., subentire, with pilose bands outside. Stamens shorter than the corolla, their filaments about twice as long as the oblong anthers. Ovary ovoid, densely hairy, very rarely glabrous. Styles 2, 2-cleft to below the middle. Capsule globular, as long as or exceeding the sepals, 4-valved, 4- or less-seeded.

Distribution: Bahama Islands.

BAHAMA ISLANDS, Watling's Island, Cockburn Town and vicin., scrublands, March 1907, *N. L. Britton, C. F. Millspaugh 6082* (US); Long Cay, cove, south side, Dec. 1905, *L. J. K. Brace 4022* (F, US); Acklins Island, Febr. 1888, *Eggers 3926* (C ex p., G, L, M, P, US); id., Spring Point, Dec. 1905—Jan. 1906, *L. J. K. Brace 4262* (F, US); Fortune Island, Febr. 1888, *Eggers 3823* (C, M, S); Conception Island, summit of rocky hills, March 1907, *N. L. Britton, C. F. Millspaugh 6022* (F, US); Mariquana, Abraham Bay and vicin., Dec. 1907, *P. Wilson 7475* (F, K, US); Inagua, James Hill, Oct. 1904, *G. V. Nash, N. Taylor 1176*, type (F, K); Caicos Group, Ambergris Cay, March 1911, *C. F. and C. M. Millspaugh 9279* (F); id., East Caicos, Jacksonville and vicin., low scrublands, Febr. 1911, *C. F. and C. M. Millspaugh 9114* (F); id., North Caicos, Kew and vicin., March 1911, *G. Dellis 2* (F, US) and 7 (F).

63. *Evolvulus squamosus* Britton in Bull. New York Bot. Gard. III (1905) p. 449; id. in Fedde Rept. sp. nov. V (1908) p. 183; Britton and Millspaugh, Bahama Flora (1920) p. 346.

Type: *Curtiss 197*, Bahama Islands, New Providence, near Nassau.

"An intricately branched erect shrub", to 40 cm high, the slender terete twigs straight or curved, more or less appressed-pilose, later glabrous. Leaves very small, sessile, remote, almost scale-like, short-lanceolate, acute or acuminate, glabrous or with a few hairs, 1—2 mm or the lower ones up to 3.5 mm long; midrib prominent, pale. Flowers in the upper axils, solitary; peduncles

very short or absent, pedicels about as long as the calyx, or a little longer, 2—3 mm long, appressed-pilose like the stems, but denser. Sepals ovate or narrow-ovate, acute, appressed-pilose, 2—2.5 mm long. Corolla white, rotate, the tube very short, the limb 6—9 mm in diam., slightly 5-lobed, the lobes broad, obtuse, a little emarginate, with pilose band outside. Stamens a little shorter than the corolla, their filaments 1.5—2.5 times as long as the oblong anthers. Ovary ovoid, densely hairy, seldom nearly or quite glabrous. Styles 2, 2-cleft to about the middle. Capsule globular, hairy at the top or glabrous, exceeding the calyx, 4-valved, 4 or less-seeded.

Distribution: Bahama Islands.

BAHAMA ISLANDS, without locality, *Richard* (P); id., March 1879, *Robinson* (K); Andros, Fresh Creek settlement, Apr. 1905, *A. E. Wright* 258 (K); id., Fresh Creek, June 1890, *J. I. and A. R. Northrop* 607 (K); id., Coppice near Deep Creek, Long Bay Cays section, Jan. 1910, *J. K. Small, J. J. Carter* 8635 (K, P, US); New Providence, Race course, among grass, Sept. 1904, *N. L. Britton, L. J. K. Brace* 843 (F, K, US); id., near Nassau, May 1903, *A. H. Curtiss* 197, type (Len, M, NH, P); id., Palmetto lands near South Beach, Apr. 1904, *N. L. Britton* 73 (K, US); Eleuthera, Rock Sound, Nov. 1866, *H. Krebs* (S); id., id., Febr. 1907, *N. L. Britton, C. F. Millspaugh* 5582 (US); id., Harbor Island to Lower Bogue, Febr. 1907, *E. G. Britton* 6452 (US); Exuma Chain, Cay north of Wide Opening, rocks, Febr. 1905, *N. L. Britton, C. F. Millspaugh* 2798 (F, US); Cat Island, the Bight and vicin., Nov. 1907, *P. Wilson* 7191 (F, K); id., id., rocky scrubland, March 1907, *N. L. Britton, C. F. Millspaugh* 5808 (F); Great Ragged Island, Dec. 1907, *P. Wilson* 7837 (F, K); Acklins Island, Febr. 1888, *Eggers* 3926 (C, ex p.).

The type and the greater part of the remaining specimens have a hairy ovary. The specimens Britton and Brace 843 and Eggers 3926 p. p. (only in C), which do not differ in any respect from the others, have a glabrous one.

64. *Evolvulus passerinoides* Meissn. in Mart. Fl. Bras. VII (1869) p. 355.

Type: *Riedel* 1084, Brazil, Minas Geraes, Serra da Lapa.

A low shrubby plant, 30—45 cm high (*Meissn.*), probably branched at the base, the branches simple or branched again, erect or decumbent (*Riedel, Meissn.*), densely appressed-sericeo-

villose in youth with brownish shining hairs, later greyish-white, glabrescent and liginous at the base, terete. Leaves approximate, generally exceeding the internodes, sessile or very shortly petioled, the limb ovate, elliptic or oblong, acute or obtusish at the apex, rounded at the base, hairy like the branches, densely beneath, less densely above, 6—14 mm long, 2.5—8 mm broad, the middle leaves the largest, decreasing in size towards top and base; the middle internodes 4—8 mm long. Midrib more or less prominent beneath, lateral nerves indistinct. Flowers in the upper leaf-axils, sessile or nearly so, in the lower generally pedunculate, in the former case the peduncle at most 3 mm long, in the latter case often exceeding the subtending leaf, up to 14 mm long, but sometimes attaining a length of 25 mm, appressed-pilose. Pedicels very short or none. Bracteoles linear-lanceolate, 2—2.5 mm long, appressed-pilose. Sepals equal, lanceolate, acuminate, often with recurved top, densely patently pilose, 3.5—4 mm long. Corolla blue, rotate to funnel-shaped, 8 (?) mm long, the tube short, the limb 8 (?), according to *Meissner* 6 mm broad, subentire, with 5 pilose bands outside. Filaments 3—4 times as long as the linear anthers. Ovary globose, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Serra da Lapa, rocky places, Nov. 1824, *Riedel 1084*, type (K, Len).

Meissner justly points out the great resemblance with *E. jacobinus* and *E. thymiflorus*. He is incorrect when he mentions *E. rufus* as closely related. This species differs to a great extent from *E. passerinoides* and belongs to another section.

65. *Evolvulus jacobinus* Moric., Pl. Nouv. Amér. (1844) p. 135, t. 81; Choisy in DC. Prodr. IX (1845) p. 444; *Meissner* in Mart. Fl. Bras. VII (1869) p. 357.

Type: *Blanchet 3630*, Brazil, Bahia, Serra da Jacobina.

A 25—50 cm high shrubby plant. Stems several from a woody base, simple or slightly ramified in the upper half, slender,

straight, leafy over the whole length, terete, shortly whitish appressed-villose, glabrescent; internodes 8—15 mm long. Leaves sessile or the lower ones shortly petioled, shorter than or little exceeding the internodes, elliptic, ovate or ovate-lanceolate, rounded at the base, the lower ones generally obtuse, the upper ones acute at apex, appressed-pilose in youth, later nearly glabrous above, the surface often finely shagreenish, the largest leaves up to 15 mm long and 9 mm broad, the moderate ones 6—10 mm long and 3—7 mm broad, the leaves of the ultimate branchlets often very small, only 4—5 mm long. Midrib and lateral nerves often prominent beneath, pale. Flowers few, generally solitary in the leaf-axils; peduncle very short or none, pedicels filiform, villose, often curved, 2—6 mm long, with 2 linear-lanceolate bracteoles at their base. Sepals equal, lanceolate, acute or acuminate, villose at back and margins, with minute pellucid lines, 3—3.5, later to 4 mm long. Corolla blue, rotate to broadly funnel-shaped, according to *Moricand* twice as long as the calyx, the tube short, the limb subentire, 6—8 mm in diam. (*Meissn.*), with 5 sericeous bands outside. Filaments twice as long as the linear anthers. Ovary globular, glabrous. Capsule shorter than the calyx, globular, glabrous, 2.5—3 mm high, 4-valved, 4 or less-seeded. Seeds smooth, dark brown.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, near Bahia, *Blanchet 1414* (NH); Serra da Jacobina, *Blanchet 3630*, type (Br, C, F, K, Len, NH, P).

var. ramosus v. Ooststr., nom. nov.

E. frankenioides Moric. var. *glabrescens* Meissn. in Mart. Fl. Bras. VII (1869) p. 348.

Type: *Prince zu Wied-Neuwied*, Brazil, Bahia, near the Mucury River.

Lower than the species, 10—20 cm high, ramified from the base, branches spreading or ascending, the indumentum often more dense than in the species and the hairs more spreading, especially on the stems and the margins of the leaves. The leaves often broader than in the typical form, ovate to broad-ovate,

broadly rounded, truncate or very slightly cordate at the base, obtuse or acutish at the apex.

Distribution: Brazil, Bahia, Espiritu Santo.

BRAZIL, without locality, *Freireiss* (S); *Lund* (C, with E. Maximiliani Mart.); *Sellow* 70 (B); N. W. *Schröder*, *Herb. Mertens* (Len); Macaraíba (?), *Hb. Liebmann* (C). Bahia, Serra da Jacobina, *Blanchet s. n.* (Br); Serra da Sincorá, 1400 m, Nov. 1906, *Ule* 7341 (B, K, L); near the Mucury R., *Prince zu Wied-Neuwied*, type (Br). Espiritu Santo, Vittoria, *Sellow* 1128 (B).

No doubt is near *E. jacobinus* Moric. and very closely resembles it, only differs in the characteristics mentioned above. Meissner described it as a var. of *E. frankenioides*, with which species it has only a very superficial likeness. The hairiness being less dense than in the typical form of *E. frankenioides*, Meissner called this var. *glabrescens*, but as the hairiness is just much denser than in *E. jacobinus*, it is inconsequent to maintain this name. I therefore propose to change it into var. *ramosus*.

66. *Evolvulus Luetzelburgii* Helwig in Notizblatt Berlin—Dahlem IX, n. 91 (1927) p. 106.

Type: Von Luetzelburg 243 A, Brazil, Bahia, Carrasco district, Minas de Contas.

A low shrub, up to 40 cm high, branched below, the branches strictly erect, little curved, slender, the young parts densely light brown woolly-villose, becoming grey in adult state, finally glabrous. Leaves sessile or nearly so, rather remote, ovate to narrow-ovate, acute at the apex, rounded at the base, woolly-villose on both sides like the stems, finally glabrescent above, 7—12 mm long and 3—5 broad, gradually decreasing in size towards the top; the internodes 8—12, the lower ones to 20 mm long. Midrib slightly prominent beneath. Flowers few, axillary, solitary; peduncle absent, pedicels densely villose, soon reflexed, generally longer than the calyx, the lower ones shorter than the subtending leaves, the upper ones often exceeding them. Bracteoles small, subulate. Sepals lanceolate, acuminate, densely villose at back and margins, 3.5 mm long. Corolla red (*Helwig*).

about 6 mm long, widely funnel-shaped, the tube short, the limb about 10 mm (?) in diam., subentire, with sericeous bands outside. Filaments 4 times as long as the linear anthers. Ovary globular, glabrous. Styles 2, 2-cleft to about the middle. Capsule globose, glabrous.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, Carrasco-district, Minas de Contas, July 1913, *Ph. von Luetzelburg* 243 A, type (B).

67. *Evolvulus Maximiliani* Mart. ex Choisy in DC. Prodr. IX (1845) p. 444; Meissn. in Mart. Fl. Bras. VII (1869) p. 356, t. 124.

E. imbricatus Mart. ex Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 72; id. Conv. Rar. (1838) p. 150; id. in DC. Prodr. IX (1845) p. 445, in syn.

Type: *Prince zu Wied-Neuwied*, Brazil, Espiritu Santo, on marshy ground along the Mucury R., near Villa de Porto Alegre.

A low shrub, 30—60 cm high (*Meissn.*). Branches erect, stout, 3—4 mm thick, from a short, stout, woody stem, densely appressed-woolly-villose, the younger parts brown, densely leafy, the older parts greyish, leafless, the branches often narrowed beneath and apparently articulate with the stems. Leaves dense, sessile, small, patent or recurved, nearly orbicular, broadly rounded or shortly apiculate at the apex, rounded at the base, the moderate ones 4—8 (—10) mm long and nearly as broad, gradually decreasing in size towards the top, densely brownish appressed-villose-tomentose, gradually glabrescent. Nerves indistinct. Flowers solitary or 2—3 in the upper leaf-axils forming a cylindrical spike-like inflorescence, shortly pedicellate, peduncle none, bracteoles linear-lanceolate, acute, 1 mm long. Sepals equal, ovate or ovate-lanceolate, acute, 2.5—3.5 mm long, long sericeous outside, the margins patently villose. Corolla blue, rotate to funnel-shaped, 8 mm long; the tube short, the limb 8 mm in diam., slightly 5-lobed. Filaments shorter than or as long as the oblong anthers.

Ovary ovoid, glabrous, styles 2, 2-cleft far below the middle, stigmas subclavate.

Distribution: Brazil, Bahia, Espiritu Santo.

BRAZIL, without locality, *Freireiss* (S); *Lund* (C, with *E. jacobinus* Moric. var. *ramosus* v. *Ooststr.*); *Macaraiba* (?), *Hornemann* (C). Bahia, Rio Belmonte, *Martius* (K, NH). Espiritu Santo, on marshy ground along the Mucury R., near Villa de Porto Alegre, May 1816, *Prince zu Wied-Neuwied*, type (B, Br, G).

A remarkable plant with its densely woolly-villose branches becoming thinner underneath and its small, orbicular, densely appressed-villose-tomentose leaves, densely approximate at the upper parts of the branches.

var. acutifolius Meissn. in Mart. Fl. Bras. VII (1869) p. 356.

Type: *Sellow*, Brazil, Espiritu Santo, near Vittoria.

Differs from the species by having the leaves ovate to broad-ovate, acute, 5—7 mm long, 3—4 mm broad, erect or patent.

Distribution: Brazil, Espiritu Santo.

BRAZIL, Espiritu Santo, near Vittoria, *Sellow*, type (B).

Two other specimens, a stout and large one, and a more slender one collected by *Sellow*, in herb. Berlin, are intermediate between the species and the variety with regard to the form of the leaves. These are ovate to broad-ovate, obtuse and mucronulate and attain a length of 7—10 mm and a width of 5—8 mm in the largest of the branches and of respectively 5—6 mm and 4—4.5 mm in the smallest. A specimen in herb. Copenhagen, collected by *Lund* agrees with the largest branch.

68. *Evolvulus Weberbaueri* Helwig in Notizblatt Berlin—Dahlem, Bd. IX, n. 91 (1927) p. 104.

Type: *Weberbauer* 6237, Peru, Dept. Cajamarca, Prov. Ica, mountains between the valleys of the Tabaconas R. and the Marañon R.

A small shrub (*Weberbauer*), 40—60 cm high. Stems several from a thick, woody base, stiff, erect, simple or branched in the upper parts, the branches erect or slightly curved, densely greyish

or greyish-brown sericeous-tomentose with appressed hairs, lignescent in the lower parts and gradually glabrescent, 2 mm thick at the base. Leaves sessile or very shortly petioled, erect or erecto-patent, at distances of 4—5 mm, linear-lanceolate or linear, the apex acute and mucronulate, often slightly falcate, the base rounded or acutish, densely appressed-sericeo-tomentose on both sides, light brown in the younger parts, later greyish, 12—20 mm long, 2—3 mm broad, gradually diminishing in length towards the top of the branches, the upper flower-bearing ones 4—8 mm long. Midrib prominent beneath at the base. Flowers in the axils of the apical leaves, subracemose; peduncles none or very short, sometimes excrescent afterwards, and then to 4 mm long; pedicels slender, filiform, erect at first, afterwards curved, 5—8 mm long, with appressed and patent hairs; bracteoles setaceous, acute, 1—2 mm long. Sepals equal, lanceolate, acuminate, 4—4.5 mm long, densely covered with long spreading hairs. Corolla blue, widely funnel-shaped, with short tube and slightly 5-lobed limb; limb to 10 mm in diam., the 5 midpetaline areas with long sericeous hairs outside. Filaments twice as long as the linear-oblong anthers. Ovary ovoid, hairy. Capsule globose, with a few hairs at its top, glabrescent, a little shorter than the calyx, 4-seeded. Seeds glabrous.

Distribution: Peru.

PERU, Dept. Cajamarca, Prov. Ica, mountains between the valleys of the Tabaconas R. and the Marañon R., 1000—1100 m, grassy campos, May 1912, A. *Weberbauer* 6237, type (B, F, U); id., id., between the Shumba valley and Ica, 700—800 m, grassy campos, Apr. 1912, A. *Weberbauer* 6187 (B, US).

69. *Evolvulus peruvianus* Helwig in Notizblatt Berlin—Dahlem, Bd. IX, n. 91 (1927) p. 104.

Type: *Weberbauer* 4799, Peru, Dept. Amazonas, Prov. Luga, Valley of the Marañon R. near Tupen.

A shrub, up to 1 m high with rather stiff, straight or slightly curved branches, rather densely leafy, densely short-tomentose, the younger parts light brownish, becoming grey, the adult parts glabrous with grey bark. Leaves very shortly petioled (petiole

to 1 mm long), erecto-patent or erect, linear-lanceolate or linear-oblong, acute or obtusish and mucronulate at the apex, acute at the base, densely short-tomentose on both sides, light brownish at the top of the branches, afterwards more greyish, 10—20 (—25) mm long, 3—4 (—5) mm broad, little diminishing in size towards the top. Midrib somewhat prominent beneath, 3—4 pairs of lateral nerves partly visible, partly indistinct. Flowers axillary, few or several, approximate at the apical end of the branches; peduncles shortly tomentose, very short, or none; pedicels straight or curved, 5—8 mm long; bracteoles subulate, 1—2 mm long. Sepals linear-lanceolate, gradually attenuate to the apex, 5—6 mm long, densely covered with short sericeous hairs. Corolla blue, widely funnel-shaped, with very short tube and slightly 5-lobed limb; the limb about 10 mm in diam., the 5 midpetaline areas sericeous outside. Filaments $1\frac{1}{2}$ times as long as the linear-sagittate anthers. Ovary globular, glabrous.

Distribution: Peru.

PERU, without locality, *Lobb* 305 (K); Dept. Amazonas, Prov. Luga, valley of the Marañon R. near Tupen, 800 m, Jan. 1905, *A. Weberbauer* 4799, type (B).

70. *Evolvulus scoparioides* Mart. in *Flora XXIV* (1841) 2. *Beibl.* p. 97; *Herb. Fl. Bras.* p. 337; Choisy in DC. *Prodr.* IX (1845) p. 446; Meissn. in Mart. *Fl. Bras.* VII (1869) p. 355.

Type: *Martius*, Brazil, Minas Geraes, Tejuco.

A shrub, 90—120 cm high, corymbosely ramified with stiff, terete, brownish-black branches, the younger parts sparsely appressed-strigillose with whitish hairs, later glabrous. Leaves shortly petioled, rather firm in texture, stiff, linear-oblong or narrow-oblancoelate, obtuse at the apex, sometimes short-apiculate, attenuate at the base, quite glabrous or with a few hairs at the margins, 7—14 mm long and 2—4 mm broad; petiole 0.5—1 mm long. Midrib impressed above, prominent beneath, lateral nerves invisible. Flowers at the end of the branches or often on short lateral branchlets, solitary on very short axillary peduncles (at most 4 mm) or peduncles absent; pedicels glabrous,

mostly longer than the calyx, 2—5 mm, reflexed in fruit. Bracteoles lanceolate, acute, glabrous, 0.5—1 mm long. Sepals ovate-oblong to nearly orbicular, obtuse or minutely apiculate or acute, ciliate at the margin, for the rest glabrous, 1.5—2 (—3) mm long. Corolla pale-rose, rotate, the tube very short, the limb 4—6 mm in diam., obscurely 5-lobed, sericeous outside. Anthers oblong. Ovary glabrous, ovoid. Stigmas subclavate. Capsule ovoid, 4-valved, 1-seeded, 4 mm high.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, *A. de St.-Hilaire B², 2180* (B, K, P); Tejuco, fl. May, *Martius*, type (M).

The type has the sepals ovate or nearly orbicular, obtuse or minutely apiculate, 1.5—2 mm long. The specimen de *St.-Hilaire B², 2180* which greatly corresponds with it has more oblong and acute sepals, 2—3 mm long.

For differences with *E. diosmoides* see under that species.

71. *Evolvulus thymiflorus* Choisy in *Mém. Soc. Phys. Genève VIII* (1837) p. 69; id. *Conv. Rar.* (1838) p. 147; id. in *DC. Prodr. IX* (1845) p. 444; Meissn. in *Mart. Fl. Bras. VII* (1869) p. 354.

Type: *Blanchet 1929*, Brazil, Bahia, near Bahia.

A suffrutex, 40—70 cm high with stout, slightly ramified (perhaps only at the base?), terete, erect stems, appressed-sericeous, with brownish, later white hairs, finally glabrescent, with dark brown bark. Leaves very shortly petioled or sessile, at distances of 1.5—2 cm, narrow-elliptic to oblong, acute or obtusish and mucronulate at apex, attenuate to the base or sometimes rounded, the margin often revolute, the middle ones of the stems 10—18 mm long and 4—6.5 mm broad, diminishing in size upwards and downwards, appressed-sericeous beneath with white hairs, very sparsely sericeous above or nearly glabrous and only with some hairs near the midrib. Flowers in the axils of the small (5 × 2.5 mm) upper leaves over a length of 6—20 cm, 5—8 or sometimes more in each axil, shortly pedicelled (2 mm); peduncle absent;

bracteoles small, 1 mm long. Sepals narrow-lanceolate, acuminate, 3—4 mm long, villose at back and margins. Corolla blue, rotate, with sericeous bands outside, twice as long as the calyx (*Choisy*). Capsule small, globose, glabrous, 1-seeded; seed globose, glabrous, black (*Choisy*).

Distribution: Brazil, Bahia, Minas Geraes.

BRAZIL, Bahia, near Bahia, *Blanchet 1929*, type (NH, P). Minas Geraes, *A. de St. Hilaire B¹*, 1115 (P).

var. hirtellus Meissn. in *Mart. Fl. Bras. VII* (1869) p. 354.

Type: *Riedel 158**, Brazil, Minas Geraes, Serra da Lapa.

Much smaller than the species. Stems erect or ascending with erect branches, 12—20 cm high, with loosely appressed or patent villous hairs, brown, later white. Leaves very shortly petioled or sessile, generally smaller than in the species, oblong or ovate-oblong, obtusish and mucronulate at the apex, rounded at the base, appressed-sericeous beneath with brown, later white hairs, sparsely so or later glabrous above, flat or with revolute margins, the moderate leaves 4—8 mm long and 2—3.5 mm broad, slightly diminishing in size to the top of the stems. Flowers in the axils of the uppermost leaves over a length of 1—2 cm, mostly solitary, peduncle none, pedicels 2—3 mm. Bracteoles small, 1 mm. Sepals lanceolate, acuminate, often with spreading tips, 2.5—3.5 mm long, villose at back and margin. Corolla rotate with sericeous bands outside, blue, the limb slightly lobed, 8 mm in diam. Filaments twice as long as the narrow-oblong anthers. Ovary globular, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Serra da Lapa, rocky places, Nov. 1824, *Riedel 158**, type (Len).

72. *Evolvulus genistoides* v. Ooststr. nom. nov.

E. phyllicoides Mart. in *Flora XXIV* (1841) 2. Beibl. p. 98; id. *Herb. Fl. Bras.* p. 338, non Schrad.; Meissn. in *Mart. Fl. Bras. VII* (1869) p. 356.

E. diosmoides Mart. var. *sericeus* Choisy in DC. *Prodr.* IX (1845) p. 446.

E. diosmoides Mart. var. *subsericeus* Meissn. in Mart. Fl. Bras. VII (1869) p. 357.

E. Maximiliani auct. non Mart.; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III p. 490.

Type: *Prince zu Wied-Neuwied*, Brazil, Espiritu Santo, Praya Molle.

A shrub with stiff, erect, branches, 30—65 cm high, densely appressed-sericeous-tomentose, with brownish or greyish hairs. Leaves rather dense, patent, very shortly petioled, ovate, ovate-oblong, oblong or nearly lanceolate, obtuse or slightly emarginate, rarely acutish at the top, mucronulate; rounded or acutish at the base, the margins revolute, sometimes the leaves strongly enrolled and apparently linear, in the type 8—16 mm long and 4—7 mm broad, but often smaller, 4—8 mm long, 1—4 mm broad, densely appressed-sericeo-tomentose on both sides like the stems, brownish-grey, the indumentum more or less shining. Midrib impressed above, prominent beneath, lateral nerves indistinct by the hairs. Flowers 1—3 in the leaf-axils; peduncle very short, at most to 4 mm long, hairy like the stems; pedicels appressed-sericeous, 1—2 mm long, reflexed in fruit; bracteoles minute. Sepals ovate or ovate-oblong, acute or shortly acuminate, about 3 mm long, appressed-pilose. Corolla white, broadly funnel-shaped with short tube and deeply 5-lobed limb. Lobes ovate, obtuse, with appressed-sericeous band outside. Filaments $1\frac{1}{2}$ —2 times as long as the oblong anthers. Ovary ovoid, glabrous. Stigmas subclavate. Capsule broad-ovoid, glabrous, 4-valved, 2-celled, 2 or 1-seeded; seeds finely verrucose.

Distribution: Brazil, Espiritu Santo, Rio de Janeiro.

BRAZIL, without locality, *Booms* (V); Tocaja (?), sandy seashore, *Schott 4448* (V); Restingas da Tocaiá, Dec. 1838, *Guillemin 221* (P). Espiritu Santo, Praya Molle, fl. March, *Prince zu Wied-Neuwied*, type (Br). Rio de Janeiro, *A. de St. Hilaire B² 200* (K, P); near Rio de Janeiro, *Weddell 573* (P); between Rio de Janeiro and Campos, *Sellow 166* (B); Morro dos Cabritos, March 1873, *Glaziou 6054* (K, S); Restinga da Tijuca, *Glaziou 6054* (C, P, S); id., Nov. 1866, *Glaziou 606* (Br, C, P); Restinga de Cabo Frio, Oct. 1899, *Ule 4756* (B).

As the name *E. phyllicoides* was already preoccupied by Schrad. before 1841 when Martius used it, it has to be changed. In accordance with the general habit of the plant which resembles some species of *Genista* I chose the name *E. genistoides*.

The type has the leaves not very revolute at the margins, other specimens, e.g. Booms, Glaziou 606, 6054, de St.-Hilaire B² 200 have leaves with a so strongly enrolled margin that they appear to be linear. In the remaining characteristics they resemble the type so fully that it is not doubtful whether they belong to this species. The type of Meissner's var. *subsericeus* of *E. diosmoides* Mart. corresponds very closely with the type of *E. genistoides*. Choisy considered the species as a variety of *E. diosmoides*. Indeed *E. diosmoides* and *E. genistoides* very much resemble each other, but the differences in hairiness, in leaf-form and density of the leaves are so great that I keep them apart for the time being. Moreover transitional forms are unknown.

73. *Evolvulus diosmoides* Mart. in Flora XXIV (1841) 2. Beibl. p. 97; id. Herb. Fl. Bras. p. 337; Choisy in DC. Prodr. IX (1845) p. 446 excl. β ; Meissn. in Mart. Fl. Bras. VII (1869) p. 356.

Type: Prince zu Wied-Neuwied, Brazil, Bahia, near Porto Seguro.

A widely, corymbosely branched shrub, up to 90 cm high (*Martius*), the young branches silky strigillose, with loosely appressed hairs, densely leafy, finally quite glabrous with black or brown bark. Leaves chartaceous, shortly petioled, narrow-elliptic or oblong, acute or rounded at the base, obtuse and mucronulate at the apex, the margins revolute, 10—20 mm long and 4—8 mm broad, those of the younger branches narrow-oblong, 5 mm long and 1—3 mm broad, sparsely appressed-pilose in youth, finally quite glabrous above and with some appressed hairs beneath. Midrib impressed above, prominent beneath, with 3—4 pairs of lateral nerves, prominent beneath. Flowers 1 or 2 in the leaf-axils; peduncle none; pedicels appressed-pilose, 2—3 mm long, reflexed in fruit; bracteoles small,

linear-subulate. Sepals ovate or ovate-oblong, shortly acuminate, 2—3 mm long, with minute brown dots and with some appressed hairs on back and margins, glabrescent. Corolla white, broadly funnel-shaped, about 6 mm long; the tube short, the limb deeply 5-lobed, 4—6 mm in diam. (*Martius, Meissn.*), the lobes ovate, obtuse, with appressed-sericeous bands outside. Filaments $1\frac{1}{2}$ times as long as the oblong anthers. Ovary ovoid, glabrous. Capsule broad-ovoid or globose, glabrous, 4-valved, 2-celled, 2 or 1-seeded. Seeds finely verrucose.

Distribution: Brazil.

BRAZIL, Southern Brazil, *Sellow 639* (B); Bahia, near Porto Seguro, sandy places, *Prince zu Wied-Neuwied*, type (Br, G).

Differs from *E. scoparioides* Mart. principally by its broader leaves, which are narrow-elliptic to oblong instead of linear-oblong or narrow-oblong, by the revolute leaf-margins and the at the lower surface of the leaves prominent nerves. The deeply 5-lobed corolla is also different.

E. genistoides v. Ooststr. differs from *E. diosmoides* by the dense indumentum and the form and density of the leaves.

Specimens described as *E. diosmoides* Mart. var. *sericeus* Choisy and as *E. diosmoides* Mart. var. *subsericeus* Meissn. belong to *E. genistoides* v. Ooststr.

74. *Evolvulus daphnoides* Moric., Pl. Nouv. Amér. (1839) p. 59, t. 40; Choisy in DC. Prodr. IX (1845) p. 446; Meissn. in Mart. Fl. Bras. VII (1869) p. 355.

Type: *Blanchet 2875*, Brazil, Bahia, Serra do Açurua.

A shrub, several feet high, much branched (*Meissn.*). Branches spreading, the young parts appressed-pilose with short soft hairs, the older parts glabrous, brown or blackish. Leaves subsessile or shortly petioled, linear-lanceolate or linear-oblong, attenuate towards both ends, obtuse at the apex, acute or obtuse at the base, densely or sparsely and shortly pilose beneath, sparsely pilose above, especially on the midrib, or quite glabrous above, 20—35 mm long and 4—9 mm broad; petiole at most 1 mm long. Midrib prominent beneath, lateral nerves indistinct. Flowers

solitary or in 2—3-flowered groups in the leaf-axils; peduncle very short or none, pedicels slender, mostly longer than the sepals, 4—6 mm, short-pilose. Sepals equal, ovate or elliptic, obtusish, glabrous or sparsely short-pilose, sparsely ciliate, nearly 3 mm long. Corolla light-blue, with white centre, rotate, the tube short, the limb 12 mm in diam., distinctly 5-lobed; the lobes broad-ovate, obtuse, with sparsely sericeous band outside. Filaments inserted near the base of the corolla, $1\frac{1}{2}$ times as long as the linear anthers. Ovary ovoid, glabrous; primary style branches shorter than the secondary. Capsule ovoid, 6—7 mm high, 2-valved, 1-seeded. Seed ovoid, black, smooth.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, Barra on the Rio S. Francisco, *Blanchet 3162* (B, K, Len, NH, P); Ithabira, in marshy places, *Blanchet 2875*, type (B, Br, H, K, Len, NH, P); id., *Blanchet s. n.* (C, P).

Vernacular name: Piqui (Bahia, *Moricand*).

The specimens *Blanchet 2875* in herb. Berlin and Brussels and *Blanchet* without number in herb. Paris show together with the normal flowers with broad rotate corolla, others of a very peculiar form. The corolla here is provided with a narrow-ovoid fleshy tube, not much longer than the sepals, which on the top bears 5 erect, small lobes. The stamens are inserted at the top of the tube and are provided with very short filaments. The ovary seems to be normally developed. I suppose that we have to do with a gall here.

75. *Evolvulus phyllanthoides* Moric. Pl. Nouv. Amér. (1840) p. 82, t. 54; Choisy in DC. Prodr. IX (1845) p. 446; Meissn. in Mart. Fl. Bras. VII (1869) p. 339.

E. tenuis auct. non Mart.; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III, p. 489.

Type: *Blanchet 3116*. Brazil, Bahia, Serra dos Olhos d'Água, near Barra.

A widely branched shrub with rather stiff, patent branches, the younger parts with short, stiff, loosely appressed hairs on

minute warts and consequently the older glabrous parts minutely verrucose. Leaves sessile or shortly petioled, sparsely appressed-pilose on both sides, glabrescent above, the middle ones of the flowering branchlets ovate or ovate-oblong to oblong-lanceolate, gradually attenuate towards the top, obtuse and mucronulate at the apex, rounded or acutish at the base, 1.5—4 cm long and 1—2 cm broad, the lower and upper ones much smaller, the former often ovate or elliptic, obtuse or slightly emarginate, the latter narrow-oblong or lanceolate, only 4—7 mm long and 1.5—3 mm broad. Midrib and 1—3 pairs of lateral nerves prominent beneath in the larger leaves. Flowers in the axils of the small apical leaves, sometimes also in those of the lower ones, solitary or in few-flowered clusters. Peduncle none or very short, pedicels slender, appressed-pilose, 2—6 mm long. Bracteoles lanceolate, 1.5 mm long. Sepals narrow-oblong-lanceolate, lanceolate or narrow-lanceolate, acute or acuminate, 4—5 (—6) mm long, sparsely pilose, ciliate, nerved, the tips often spreading. Corolla white, rotate to funnel-shaped, the tube very short, the limb 6—7 mm in diam., 5-lobed, the lobes broad, densely brownish sericeous outside. Filaments 1.5—2 times as long as the linear anthers. Ovary ovoid-globular, glabrous. Style-branches subclavate.

Distribution: Brazil, Piauhy, Bahia, Minas Geraes.

BRAZIL, Piauhy, Serra da Lagoa, Jan. 1907, *Ule* 7487 (B, K, L). Bahia, Serra dos Olhos d'Água, near Barra, marshy ground, *Blanchet* 3116, type (B, Br, C, K, Len, N, H, P). Minas Geraes, Morro de São Vicente, campo, *Glaziou* 11272 (B, from Rio de Janeiro?, C, K, P); id., *Glaziou* 13015 (B, C, K, P); id., Febr. 1884, *Glaziou* 15268 (B, Br, C, Len, P); Aldea da Serra de Ouro Branco, in woods, Jan.—Febr. 1883, *Glaziou* 14126 (B, Br, P, with *E. stellariifolius* n. sp.).

76. *Evolvulus latifolius* Ker-Gawl. in Bot. Reg. V (1819) t. 401; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 69; id. Conv. Rar. (1838) p. 147; id. in DC. Prodr. IX (1845) p. 446; Meissn. in Mart. Fl. Bras. VII (1869) p. 354; *Glaziou* in Bull. Soc. Bot. France LVIII (1911) Mém. III p. 490; Hall. f. in Bull. Herb. Boiss. VII (1899) p. 44; Hall. f. in Jahrb. Hamb. wiss. Anst. XVI, Beih. 3 (1899) p. 23; Chod. et Hassl. in Bull. Herb. Boiss. sér. II, V (1905) p. 685.

E. sericeus Leand. ex Choisy in Mém. Soc. Phys. Genève l.c.;
id. Conv. Rar. l.c.

E. Balansae Peter in sched., ex Schlepegrell in Bot. Centralbl.
XLIX (1892) p. 292.

Type: (lectotype): *Gaudichaud 565*, Brazil, Rio de Janeiro.

An erect undershrub, 90—120 cm high (*Martius*), more or less branched, the branches straight or curved, terete, the young parts appressed-pilose, with short brownish hairs, the older parts brownish and glabrous. Leaves often distichous, patent, sessile or very shortly petioled, the petiole at most 5 mm long, the blade ovate, narrow-ovate or ovate-oblong, gradually attenuate towards the apex, or subacuminate, mucronulate; truncate, subcordate or cordate at the base, paler beneath than above, appressed-short-pilose on both sides or only beneath, or almost glabrous on both sides; the lower and middle leaves 3—6 cm long and 1.5—3 cm broad, decreasing in size towards the top of the stems, and there only 1.5—3 cm long and 1—1.5 cm broad; midrib and 4—6 pairs of lateral nerves prominent beneath. Flowers in small, axillary, 7- or less-flowered clusters, rarely solitary; the common peduncle short, scarcely 1 mm long, or absent, the pedicels up to 1.5 mm long. Bracteoles linear, 1—2 mm long, pilose. Sepals lanceolate or linear-lanceolate, long acuminate, often more or less falcate at the apex, variable in length, 3—6 mm long, sparsely pilose, ciliate, glabrescent, nerved. Corolla white, rotate, 6 mm long, the tube short, 1 mm long, the limb distinctly 5-lobed, 8—9 mm in diam.; the lobes broad-ovate, obtuse, with sparsely sericeous bands. Filaments twice as long as the linear-oblong anthers. Ovary ovoid, glabrous, primary style-branches as long as the secondary. Capsule ovoid, glabrous, 4—5 mm long, 4-valved, 2 or 1-seeded; seeds glabrous, dark brown, 2.5 mm long.

Distribution: Brazil (Bahia, Rio de Janeiro, Paraná), Paraguay and N. E. Argentina.

BRAZIL, without locality, 1840, *Armstrong* (K); *Blanchet s. n.* (P); *Bowie and Cunningham* (NH); *Freyreiss* (S); Oct. 1818, *Herb. Gay* (K); 1819, *Leandro* (named *E. sericeus*) (P); *J. Lépine* (P); *Herb. Link* (B); *Lund 154* (C); *Lund s. n.* (C); *de Moura 571 a* (B); *Sellow 175* (K); *Sellow 341*

(B, M); *Sellow s. n.* (B, NH); *Widgren* 993 (S). Bahia, Serra do Açurua, *Blanchet* 2831 (B, H, K, Len, NH, P). Rio de Janeiro, Oct. 1901, *P. Dusén* 30, 34 (S); *Gaudichaud* 565, type, 565 bis (B, Del, P); July 1878, *Miers* 3691 (K); *Mikan* (K, V); 1829, *Riedel* (Len); on shady hills, Dec. 1831, July-Aug. 1832, *Riedel* 687 (B, Bog, C, Calc, K, Len, P, S, US); *A. de St. Hilaire* A¹, 362 (K, P); *A. de St. Hilaire* C², 9 (P); 1843, *Weddell* 412 (P); *Herb. U. S. Exploring Expedition, Capt. Wilkes* (US); *Döllinger* (B, Br, M); Copacabana, June 1867, *Glaziou* 1311 (Br, C, P); Larangeiras, Dec. 1869, *Glaziou* 4147 (C, K, P); Praia Vermelha, fl. Aug., *Luschnath* (Br); Nictheroy, July 1915, *J. N. Rose, P. G. Russell* 20322 (U, US); Jurujuba, *Herb. Miers* (NH, P); id., Jan. 1841, *Gardner* 5554 (NH); Sebastianopol, grassy shady hills, *Martius* (M). Paraná, Itararé, Febr. 1915, *P. Dusén s. n.* (S).

PARAGUAY, near Lake Ypacaray, Apr. 1913, *E. Hassler* 12192, f. glabrior Hassl. in sched., (B, C, K, L, NH, US); id., *E. Hassler* 12192a (B, L, K, NH, US), Asuncion, in woods, May 1874, *Balansa* 1069 (B, Br, G, K, Len, P, S); Tobati, Cerro Aparepy and Cordillera de Altos, Jan. 1903, *K. Fiebrig* 789 (B, K, L, M); Cordillera de Peribebuy, Apr. 1883, *Balansa* 4386 (P).

ARGENTINA, Corrientes, *Herb. Bonpland* (P).

A cultivated specimen from the Berlin Botan. Garden (Len).

This species has often been confounded with *E. cardiophyllus* Schlechtend., a native of Mexico and the north-western part of South America, with which species there is a great resemblance in the form of the leaves and in the place of the flowers. The flower itself however differs to a great extent. The original description and drawing of *E. latifolius* were made from a specimen which flowered "in the hothouse at the nursery of Messrs. Colville, King's Road, Chelsea" (Ker-Gawler l.c.). As I do not know if any dried material of this plant was preserved I choose as lectotype of this species the specimen *Gaudichaud* 565, cited by Choisy in DC. Prodr. l.c.

Section V. PHYLLOSTACHYI Meissn.

Meissn. in Mart. Fl. Bras. VII (1869) p. 330, 337, excl. *E. stricto* et *E. echioides*; Peter in Engl.-Prantl, Nat. Pfl. fam. IV, 3a (1897) p. 18.

Bracteosi Meissn. l.c. p. 330, 334 pro majore parte; Peter l.c.

Perennials or suffrutices, rarely annuals. Stems generally erect, rarely ascending, terete. Leaves of different shape, linear, lanceolate, oblong, elliptic or ovate; the upper leaves passing into the leaf-like bracts of the terminal, generally dense, inflorescences. Flowers sessile. Corolla salver to funnel-shaped, exceeding the sepals; tube long or short; filaments inserted at the mouth of the tube.

Meissner l.c. distinguishes a section *Bracteosi* and a section *Phyllostachyi*. The former he characterizes with the following words: Flores dense capitati v. spicati, omnes vel saltem inferiores folio (caulinis simili) fulti; the latter with: Flores in axilla foliorum summorum caeteris conformium approximati, spicam dense foliosam formantes. In the former section he distinguishes successively plants with inflorescences with leaflike bracts to the top (*E. alopecuroides*, *Chamaepitys* and *lithospermoides*) and with inflorescences showing only at the base leaflike bracts and at the top small lanceolate bracts (*E. glomeratus*). The first three species totally correspond, as concerns the inflorescence, with the *Phyllostachyi*, to which group I attach them. On the other hand I consider *E. glomeratus* as a representative of a separate section, that of the *Involucrati*. The name *Bracteosi* I do not maintain as it is not so applicable in this case. The species *E. strictus* Benth. and *E. echioides* Moric. which Meissner places with the *Phyllostachyi* belong to *E. glomeratus*.

KEY TO THE SPECIES.

1. Leaves 3 or mostly more than 3 times as long as broad (in doubtful cases see also 1*).
2. Sepals narrow linear-filiform, long ciliate, 8—10 (—12) mm long. Leaves linear to narrow-oblancoate, sparsely appressed-pilose above, ciliate, 18—30 mm long, 5—8 times as long as broad. Corolla funnel to salver-shaped. Inflorescence an ovoid or cylindrical spike. Annual. 77. *E. alopecuroides*.
- 2.* Sepals narrow-lanceolate to ovate-lanceolate, acuminate, not exceeding 8 mm. Perennials or suffrutices.
 3. Upper surface of the leaves glabrous or sparsely pilose.
 4. Leaves glabrous or sparsely pilose above, sparsely pilose beneath, erect, lanceolate, narrow-lanceolate or linear, 8—15 mm long. Corolla 12—15 mm long, funnel-shaped, the tube rather wide, 3—5 mm long. 78. *E. lithospermoides*.
 - 4.* Leaves generally densely villose beneath, patent or even reflexed, generally longer.
 5. Leaves densely sericeo-villose beneath with brownish shining hairs, quite glabrous above, patent or slightly reflexed, narrow-lanceolate to linear, 12—20 mm long. 79. *E. kramerioides*.
 - 5.* Leaves densely sericeo-lanate beneath with whitish or greyish hairs, glabrous or sparsely pilose above, patent, narrow-linear, linear or lanceolate to oblong, 12—25 mm long. 80. *E. Chamaepitys*.
 - 3.* Leaves densely hairy on both surfaces.
 6. Leaves densely sericeo-tomentose beneath with very short, closely appressed hairs, more sparsely so above, erecto-patent, oblong or narrow-oblong to linear-oblong, (10—) 15—20 mm long. 81. *E. rufus*.
 - 6.* Leaves villose on both sides with more or less spreading hairs.
 7. Leaves densely sericeo-villose on both sides with loosely appressed hairs, margin not conspicuously ciliate, leaves erect or occasionally more patent, oblong-lanceolate or narrow-oblong, 12—20 mm long. Inflorescence cylindrical, longer than broad. 82. *E. Martii*.
 - 7.* Leaves densely whitish villose beneath, more sparsely so above, margin with long spreading hairs. Leaves erect, ovate-lanceolate, oblong-lanceolate or lanceolate, 12—15 mm long. Inflorescence almost globular. 83. *E. comosus*. (see also *E. helichrysoides* Moric.).
- 1.* Leaves broader, commonly 3 or less than 3 times as long as broad.
 8. Corolla funnel-shaped, tube short, about 1 mm long. Leaves densely appressed-sericeo-tomentose on both sides, greyish above, brownish grey beneath, erecto-patent, oblong or narrow-obovate, acute or obtusish at the apex, attenuate to cuneate at the base, 8—12 mm long, 2—2.5 times as long as broad. 91. *E. Glaziovii*.
 - 8.* Corolla salver to funnel-shaped, tube longer.

9. Inflorescence globular. Leaves densely sericeo-villose on both sides with more or less appressed hairs, fulvous later greyish, ovate or ovate-lanceolate, acute at the apex, rounded at the base, 12—20 mm long, 2—3 times as long as broad.
84. *E. helichrysoides*.
- 9.* Inflorescence longer.
10. Leaves large, elliptic, ovate or oblong, mostly obtuse at the apex, obtuse or subcordate at the base, 30—55 × 17—25 mm; upper flower-bearing leaves imbricate, generally broad-ovate to orbicular. Indumentum dense, ferrugineous or greyish.
85. *E. fuscus*.
- 10.* Leaves smaller.
11. Indumentum ferrugineous or brown, later often greyish.
12. Leaves ovate or ovate-oblong, acute at the apex, rounded or subcordate at the base, 15—24 mm long, 2—3 times as long as broad, the upper, flower-bearing, leaves in a dense cylindrical spike, imbricate, broad-ovate.
86. *E. goyazensis*.
- 12.* Upper, flower-bearing, leaves not aggregate in such a dense cylindrical spike, generally not broader than the others.
13. Leaves densely villose-tomentose, ovate, ovate-oblong or narrow-oblong, acute at the apex, rounded at the base, 5—8 (—10) mm long. Stems 10—15 cm high. Corolla tube ca. 7 mm.
87. *E. chapadensis*.
- 13.* Leaves densely villose-tomentose, narrow-oblong, oblong, ovate-oblong or narrow-ovate, acute or obtuse, 15—28 mm long. Stems 15—35 cm. Corolla tube ca. 10 mm.
88. *E. tomentosus*.
- 13.** Leaves densely villose-tomentose, oblong or elliptic, obtuse at both ends, 10—15 mm long. Stems 20—30 cm. Corolla tube ca. 4.5 mm.
89. *E. brevifolius*.
- 11.* Indumentum white or greyish-white. Leaves densely sericeo-villose, ovate, acute or shortly acuminate at the apex, rounded at the base, often stem-clasping, 12—15 mm long; the upper, flower-bearing, ones broad-ovate to orbicular, acuminate, imbricate.
90. *E. hypocrateriflorus*.

77. *Evolvulus alopecuroides* Mart. in Flora XXIV (1841) 2. Beibl. p. 96; id. Herb. Fl. Bras. p. 336; Choisy in DC. Prodr. IX (1845) p. 441; Meissn. in Mart. Fl. Bras. VII (1869) p. 334.

Type: *Martius*, Brazil, Minas Geraes, Serra do Grão Mogor.

Annual. Root simple, perpendicular. Stems erect, thin, terete, not or somewhat branched, brownish patently villose or hirsute in the upper part, glabrescent, (10—) 25—35 cm high. Leaves at distances of 1—1.5 cm, more closely together upwards, erecto-patent, narrow-linear to narrow-oblongate, acute or obtusish at the apex, attenuate at the base, sessile or very shortly petioled, sparsely appressed-pilose on both sides or glabrous above, long ciliate at the margin, 18—30 mm long, 5—8 times as long as broad, slightly diminishing in size towards the top of the stem. Midrib prominent beneath, lateral nerves indistinct. Flowers in a terminal, solitary, ovoid or cylindrical, dense spike, often interrupted at the base, 2—5 (—9) cm long. Bracts all leaflike, long hirsute-ciliate at the margin, greatly exceeding the sepals. Bracteoles much shorter than the calyx, long villose, 2—3 mm long. Sepals subequal, narrow linear-filiform, villose, long ciliate at the margins, 8—10 (—12) mm long. Corolla purple (*Pittier*), hypocrateriform, 8—10 mm long, the tube 3—5 mm, the limb pilose outside. Filaments inserted at the mouth of the corolla tube, about twice as long as the ovate anthers. Ovary ovoid, glabrous. Capsule ovoid, glabrous, 2-valved, 2- or 1-seeded, 2—3.5 mm high. Seeds minutely verrucose, opaque, nearly 2 mm long.

Distribution: Venezuela, Brazil.

VENEZUELA, Merida, near Tovar, 1854—'55, *Fendler* (G); id. *Fendler* 1792 (K, US). Carabobo, Valencia, in savannas, Dec. 1919, *Pittier* 8665 (US); id. *Warming* 452 (C); Hacienda de Cura, near San Joaquín, Oct. 1918, *Pittier* 2821 (or 8221?) (US).

BRAZIL, without locality, *Glaziov* s. n. (P). Minas Geraes, Serra do Grão Mogor, in grassy campo, fl. July—Aug., *Martius*, type (M).

Martius based the species on a plant collected by himself in the state of Minas Geraes. This is the only specimen I saw from Brazil. The other numbers are all of Venezuela origin and fully agree with the type.

78. *Evolvulus lithospermoides* Mart. in Flora XXIV (1841) 2. Beibl. p. 99; id. Herb. Fl. Bras. p. 339; Mss. obs. n. 1290; Choisy in DC. Prodr. IX (1845) p. 443; Meissn. in Mart. Fl. Bras. VII (1869) p. 335.

Type: *Martius*, Brazil, Minas Geraes, near Diamantina.

Annual (*Lindman*) or perennial. Stems slender, erect, terete, whitish or brownish strigillose, glabrescent and lignescent at the base, 10—40 cm high, simple or slightly branched below, with erect branches; the internodes 5—10 mm long. Leaves rather small, erect, lanceolate, narrow-lanceolate or linear, acute or obtusish at the apex, rounded to acutish at the base, sessile, rather firm in texture, glabrous or very sparsely pilose above, sparsely whitish appressed-hairy beneath, glabrescent, 8—15 mm long, 2—4 mm broad, slightly diminishing in size towards the top, passing into the bracts of the inflorescence. Midrib prominent beneath, impressed above. Inflorescences terminal, dense, globose, pyramidal or cylindrical, 1.5—3 cm long; the bracts 10—8 mm long, leaflike, linear-lanceolate, equal to or somewhat exceeding the sepals, long villose with brownish or white hairs; bracteoles linear-lanceolate, about 2 mm long. Exterior sepals with a lanceolate base, interior with an ovate-lanceolate base, all long acuminate or setaceous-acuminate, 5 or later to 8 mm long, long brownish or whitish villose outside and at the margins. Corolla greatly surpassing the bracts, 12—15 mm long, pale blue or white, funnel-shaped, the limb 1—1.5 cm broad (nearly 2.5 cm according to *Martius*), with 5 pilose bands outside, the tube rather wide, 3—5 mm long. Stamens inserted at the mouth of the tube, the filaments glabrous, 1.5—2 times as long as the oblong, sagittate anthers. Ovary globular, glabrous. Capsule ovoid, 4-valved, 1-celled, 1-seeded.

Distribution: Brazil, Matto Grosso, Minas Geraes.

BRAZIL, Matto Grosso, Serra do Itapirapuan, May 1894, C. A. M. *Lindman* A. 3429 (S); Minas Geraes, A. de *Saint-Hilaire* B¹, 2043 (NY); A. de *Saint-Hilaire* C¹, 444 (P); near Diamantina, in high campos, fl. May, *Martius*, type (M); Mordo Velho, A. de *Saint-Hilaire* s. n. (P).

The type specimen has the inflorescence globose, small and

few-flowered and the leaves linear to linear-lanceolate. In the specimen Lindman the inflorescences are more cylindrical, more-flowered and the leaves are somewhat shorter and broader. De Saint-Hilaire C¹, 444 has the upper leaf-surface more densely pilose than the typical specimens.

79. *Evolvulus kramerioides* Mart. in Flora XXIV (1841) 2. Beibl. p. 98; id. Herb. Fl. Bras. p. 338; Choisy in DC. Prodr. IX (1845) p. 443; Meissn. in Mart. Fl. Bras. VII (1869) p. 338 excl. specim. a cl. Warming coll.; Hall. f. in Jahrb. Hamb. wiss. Anst. XVI, Beih. 3 (1899) p. 22.

Type: *Martius*, Brazil, Minas Geraes, in Morro de Negro Rio.

A low suffrutex, 20—30 (—45) cm high. Stems erect, few or several from a woody base, densely appressed-villose, brownish when young, becoming greyish, densely leafy, the basal parts leafless and verrucose by the scars of fallen leaves. Leaves sessile, patent or somewhat reflexed, often conduplicate, narrow-lanceolate to linear, attenuate towards both ends, acute, glabrous above, densely villose with loosely appressed hairs beneath, brownish and shining in youth, later greyish; 12—20 mm long, 3.5—5 times as long as broad, the upper flower-bearing leaves not different from the others, only somewhat shorter, forming a dense, 1—3 cm long, globular or cylindrical inflorescence, this inflorescence sometimes excrescent and then crowned by a tuft of leaves. Midrib impressed above. Sepals from a linear-lanceolate base long subulate, patently villose outside and at the margins, about 7 mm long. Corolla blue, salver to funnel-shaped, 12—15 mm long, the tube shorter than the sepals, about 3—4 mm long. Filaments inserted at the mouth of the tube, about 4—5 times as long as the linear-oblong anthers. Ovary ovoid-globose, glabrous. Capsule globose, shorter than the calyx.

Distribution: Brazil, Minas Geraes.

BRAZIL, without locality, *Herb. A. R. Ferreira* 733 (K); *Sellow* (M). Minas Geraes, *Claussen* 114 (NH); *id.* 166 p. p. (NH, with E. Martii); *id.*, s. n. (K); in Morro de Negro Rio. fl. Apr., *Martius*, type (M); Serra do

Ouro-Preto, fl. Febr., *Ulle* 2651 (hb. *Ulle*, ex Hall. f. l.c.); Capanema, 1843, *Claussen* 146 (P).

The excrescent inflorescence is sometimes crowned by a tuft of leaves, as *Meissner* observes in the manner of a *Melaleuca*. Later on flower-bearing leaves develop again so that in this case it occurs, e.g. in the specimens collected by *Sellow*, that at the top of the stem flowers appear, thereunder leaves without flowers and thereunder leaves with capsules in their axils.

80. *Evolvulus Chamaepitys* Mart. in *Flora XXIV* (1841) 2. *Beibl.* p. 98; id. *Herb. Fl. Bras.* p. 338; *Choisy* in *DC. Prodr.* IX (1845) p. 443; *Meissn.* in *Mart. Fl. Bras.* VII (1869) p. 335, t. 119, (incl. var. *caespitosa* *Meissn.*).

Type: *Martius*, Brazil, Minas Geraes, near *Contendas*.

Perennial, stems erect or ascending, widely branched at the base, more or less caespitose, 10—20 cm high, the upper parts greyish or whitish woolly-villose, glabrescent and lignescent at the base, densely to very densely leafy, especially above; the internodes 2—5 mm long. Leaves patent, straight or curved, sessile, linear or narrow-linear, attenuate to both ends, acute at apex and base, bright green and glabrous or very sparsely pilose above, densely greyish-white woolly-villose beneath, especially in the younger parts, sometimes more villose-strigillose afterwards, 1.5—2.5 cm long, 1—2.5 mm broad, 8—10 times as long as broad. Midrib prominent beneath, impressed above, lateral nerves indistinct. Inflorescences globose or ovoid, often interrupted at the base. Bracts leaflike, greatly exceeding the sepals, 2—1 cm long. Bracteoles filiform, as long as or exceeding the sepals, 5—8 mm long. Sepals subequal, narrow-lanceolate, long-acuminate, patently villose 4—6, later up to 8 mm long. Corolla 12—14 mm long, hypocrateriform with narrow tube, the tube 5 mm long, the limb 6—7 mm broad, with 5 pilose bands outside. Filaments inserted in the mouth of the tube, 3—4 times as long as the linear, sagittate anthers. Ovary globular, glabrous. Capsule (according to *Meissner*) ovoid-globose, as long as the calyx or a little shorter.

Distribution: Brazil, Goyaz, Minas Geraes.

BRAZIL, without locality, *Pohl* (Br. M, V). Matto Grosso, Coxipó da Ponte, Cuiabá, *Hoehne* (Rondon 3035 and 4634, ex *Hoehne* l.c.), Goyaz, between Faz. Bolivia and Herculano Lobo, June 1895, *Glaziou* 21795 (C, K, Len, P). Minas Geraes, Contendas, in campo, fl. Apr., *Martius*, type (M); Alegres, *Pohl* 2941 (V); id. *Pohl* s. n. (V); id., dry places in campo, Sept. 1834, *Riedel* 2755 (Len); without precise locality, *A. de Saint-Hilaire* B¹, 1912 (P).

The type-specimen has the leaves distinctly woolly-villose beneath, they are rather flat and are rather dense. Other specimens, e.g. *Pohl* 2941 (Meissner!), in herb. Vienna and *Glaziou* 21795 very closely resemble it, they are however more strongly branched and the upper leaves are more dense. Still more dense are the leaves in *Pohl* 2941 (without Meissner's handwriting) and *Pohl* s. n. both in herb. Vienna. Moreover the leaves are often folded longitudinally and curved in dried specimens. Next to the species Meissner distinguished a var. *caespitosus*, based on specimens of *Pohl* in herb. Vienna (*Pohl* s. n., with Meissner's identification), Brussels and Munich. In habit these specimens fully agree with the other plants collected by *Pohl* under n. 2941. The hairiness however is less woolly, at any rate in the older parts, the younger parts have a haircloth which much resembles that of the typical form. Anyhow the variety of Meissner seems of little value and had better to be united with the species.

1. Leaves linear or narrow-linear. Corolla not exceeding 15 mm.
E. *Chamaepitys* Mart. typical form.
 - 1.* Leaves broader, lanceolate to oblong.
 2. Leaves acute, narrow-lanceolate to oblong. Corolla not exceeding 15 mm. var. *paraguayensis*.
 - 2.* Leaves obtuse, oblong or oblong-oblancoate. Corolla about 20 mm long. var. *desertorum*.
- var. 1. *paraguayensis* v. Ooststr. n. var. ¹⁾

Type: *E. Hassler* 11103, Paraguay, Upper Apa River.

Habit of the species, much branched. Stems greyish or whitish woolly-villose as in the species, glabrescent. Leaves patent, rather

¹⁾ *E. Chamaepitys* Mart. var. *paraguayensis* v. Ooststr. n. var. Planta valde ramosa, habitu formae typicae. Caules canescenti-vel albido-villoso-lanugininosi ut in forma typica, glabrescentes. Folia patentia, densiuscula, latiora, anguste lanceolata, anguste oblongo-lanceolata vel anguste oblonga, basi et apice acuta, 12—18 (—25) mm longa, 2.5—4 (—7) mm lata, 3—5

dense, broader, narrow-lanceolate, narrow-oblong-lanceolate or narrow-oblong, acute at apex and base, 12—18 (—25) mm long and 2.5—4 (—7) mm broad, 3—5 times as long as broad, greyish-white woolly-villose beneath, sparsely pilose above. Flowers blue or white (f. *albiflora* Hassl. in sched.). Bracteoles linear-filiform, exceeding the sepals, 8 mm long. Form of the inflorescence, form and size of sepals, corolla, etc. as in the species.

Distribution: Paraguay.

PARAGUAY, Upper Apa R., in calcareous region, Febr. 1913, *E. Hassler* 11103, type (B, K, NH, P); id., *E. Hassler* 11103a, type of f. *albiflora* Hassl. in sched. (B, K, NH).

var. 2 *desertorum* (Mart. ex Choisy) v. Ooststr.

E. desertorum Mart. ex Choisy in DC. Prodr. IX (1845) p. 442, quoad specim. Mart.; excl. specim. Gomes. et Luschnath., ad *E. glomeratum* ssp. *obtusum* transferend., excl. synn. *E. phyllicoides* Schrad., *E. ericoides* Nees, *Cladostyles ericoides* Neuw.

E. glomeratus auct. non Nees et Mart.; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 70; id. Conv. Rar. (1838) p. 148, excl. syn. et specim. a cl. Gomes lecta.

E. glomeratus Nees et Mart. var. *desertorum* (Mart. ex Choisy) Meissn. in Mart. Fl. Bras. VII (1869) p. 336.

E. longitubulosus Helwig in Notizblatt Berlin-Dahlem IX, n. 91 (1927) p. 102.

Type: *Martius*, Brazil, Bahia, campos in the interior.

Habit as in the species or more erect and robust. Stems greyish-white woolly-villose, glabrescent below. Lower leaves more remote, broader, oblong or oblong-ob lanceolate, obtuse at the apex, long attenuate at the base, 15—30 mm long, 5—9 mm broad, greyish-white woolly-villose beneath, sparsely pilose

partibus longiora quam lata, infra albido-canescens villosa-lanuginosa, supra sparse pilosa. Flores coerulei vel albi (f. *albiflora* Hassl. in sched.). Bracteolae lineari-filiformes, sepala superantes, 8 mm longae. Forma inflorescentiae, forma magnitudineque sepalorum, corollae ceterarumque partium, formae praecedenti similis. Type: *E. Hassler* 11103, Paraguay, Upper Apa River (B).

above. Bracteoles filiform, greatly exceeding the sepals, about 10 mm long. Inflorescence globular, larger and broader than in the preceding forms, bracts large, leaflike. Corolla blue, about 20 mm long, the tube about 12 mm long.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, campos in the interior, fl. March, *Martius*, type (M); Joazeiro, March 1914, *Ph. von Luetzelburg 790 A* (B); S. Disiderio, rainy season 1914, *Ph. von Luetzelburg 790*, type of *E. longitubulosus* Helwig (B, M).

The type of this variety in herb. Munich, collected by Martius, bears the name *E. desertorum* Mart. in his own handwriting. The great resemblance with *E. Chamaepitys* Mart. led me to consider it as a variety of this species. The label bears also the name *E. desertorum* Mart. in the handwriting of Choisy. Meissner later on added his identification as *E. glomeratus* Nees et Mart. var. *desertorum* Meissn. Surely this plant does not belong to the group of forms of *E. glomeratus* but is more closely related to *E. Chamaepitys* Mart. In his work in De Candolle's Prodr. Choisy mentions under *E. desertorum* the specimens Gomes and Luschnath, both belonging to *E. glomeratus* N. et M. ssp. *obtusus* (Meissn.). Helwig's *E. longitubulosus* fully agrees with the type of Martius.

81. *Evolvulus rufus* St.-Hil. Voy. distr. diam. I (1833) p. 138, 377; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 72 parte descript., syn. et specim. Martianis except.; id. Conv. Rar. (1838) p. 150, id. except.; id. in DC. Prodr. IX (1845) p. 445, id. except.; Meissn. in Mart. Fl. Bras. VIII (1869) p. 356.

E. kramerioides auct. non Mart.: Glaziou in Bull. Soc. Bot. France LVII (1910), Mém. III p. 488.

Type: *A. de St.-Hilaire*, Brazil, Minas Geraes, Serra da Piedade.

A low suffrutex, 15—20 (—30, *Warming*) cm high; stems erect, simple or slightly branched, densely appressed-sericeo-villose, brownish, later greyish, densely leafy in the upper parts, leafless below and there verrucose by the scars of fallen leaves. Leaves sessile, erecto-patent, generally flat, oblong, narrow to

linear-oblong, obtuse and mucronulate or acute at the apex, slightly attenuate at the base, densely and closely appressed-sericeo-tomentose, shining, brownish, later greyish beneath, more sparsely so and finally glabrescent above, and then with only a few hairs near the impressed midrib, (10)—15—20 mm long, 3—6 (—7) times as long as broad, the upper leaves slightly diminishing in size, dense, the flowers sessile in the upper axils. Midrib prominent beneath. Bracteoles linear, about half as long as the sepals. Sepals from a linear-lanceolate or ovate-lanceolate base long subulate, loosely appressed-villose outside and along the margins, about 7 mm long. Corolla blue, salver to funnel-shaped, 10—12 (—18) mm long, the tube shorter than the sepals, about 4—6 mm long, the limb to about 16 mm in diam. Filaments twice as long as the linear-oblong anthers. Ovary ovoid-globose, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, Serra da Piedade, A. de Saint-Hilaire, type (P); id. 4000 ft. high, May 1865, Warming 1800 (Br, C, P); id., in campo, fl. Nov.—Dec., Glaziov 20421 (Br, C, K, Len).

Choisy (1837, 1838) gives a description which partly refers to this species, partly to *E. Maximiliani* Mart. He confused the original description of St.-Hilaire with that of a specimen of *E. Maximiliani*, which Martius collected near the Rio del Monte. This specimen bears in Martius' handwriting the name *E. imbricatus*. Choisy thought this specimen to be identical with the species of St.-Hilaire, the type of which he did not know. This appears from the fact that Choisy gives the name *E. imbricatus* Mart. as synonymous to *E. rufus*. Meissner (1869) did not know the type of *E. rufus* either. He places this species, based on St.-Hilaire's description, next to *E. Maximiliani* in the section Passerinoidei. A specimen collected by Warming, which really belongs to *E. rufus*, Meissner classifies as *E. kramerioides*. Glaziov also places a specimen of *E. rufus* in the last named species. Indeed *E. rufus* is closely related to *E. kramerioides* but differs from it by the short sericeo-tomentose strongly appressed, dense indument, the non-glabrous upper surface of the leaves, perhaps

also in the larger corolla and in the length of the filaments and anthers, the latter being in *E. kramerioides* about 1 mm and in *E. rufus* about 3 mm long.

82. *Evolvulus Martii* Meissn. in Mart. Fl. Bras. VII (1869) p. 337, t. 121, fig. 1; Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. VI (1922) p. 37.

Type: *Martius*, Brazil, São Paulo, near Jundiáhy.

A low suffrutex, 15—25 (—35) cm high. Stems solitary or few from a woody base, erect, simple or slightly branched, densely brown, later grey villose, terete, densely leafy, especially above, the leaves more or less appressed to the stems or patent. Leaves sessile, oblong-lanceolate or narrow-oblong, attenuate towards both ends, acute or obtusish at the apex, rounded or acute at the base, the upper ones densely sericeo-villose on both sides, with brown, loosely appressed hairs, the lower more appressed-sericeo-villose and grey, 12—20 mm long, about 4 times or the upper ones about 3 times as long as broad. Midrib more or less prominent beneath. Upper leaves not different from the others, forming a not very distinct, 2.5—5 cm long terminal cylindrical inflorescence. Flowers solitary in the leaf axils, sessile. Sepals narrow-lanceolate, long acuminate, 7—8 mm long, patently villose. Corolla blue, hypocrateriform, about 13 mm long, the tube about 6 mm, the limb with 5 sericeous bands outside. Filaments inserted at the mouth of the tube, 1.5—2 times as long as the linear anthers. Ovary globular, glabrous.

Distribution: Brazil, Minas Geraes, São Paulo.

BRAZIL, without locality, *Claussen* 336 (NH); *Lund* (C). Minas Geraes, 1832, *Ackermann* (Br); *Claussen* 166, p. p. (NH, with *E. kramerioides*); *id.* 186 (P); Caxoeira do Campo, 1843, *Claussen* 145 (DC, P); 1840, *Claussen s. n.* (Br, DC, K); Aug. 1839, *Martius Herb. Fl. Bras.* 985 (Br, Len, M, P); Tejuco, in sandy places, Dec. 1824, *Riedel* (Len); between Curvelho and Lagoa Santa, near Curvelho and in campos S. Luzia, Oct. 1834, *Riedel* 2754 (Len); Caeté, Nov. 1834, *Lund* (Br, C), Morro de S. Vicente, Febr. 1884, *Glaziou* 15270 (B, K, P); Olhos d'Água, Caeté, *Hoehne* (Rondon 6189, ex *Hoehne* l.c.); São Paulo, near Jundiáhy, in grassy campos, fl. Jan., *Martius*, type (M).

Little variable in habit; the leaves are generally erect, more

or less appressed to the stems, occasionally they are more patent. The specimens collected by Riedel near Tejuco have the older leaves nearly glabrous above. A specimen collected by Martius near Jundiahy, cited by Choisy¹⁾ under *E. helichrysoides* Moric. belongs here and so does a specimen collected by Lund, cited by Meissner l.c. under *E. glomeratus* Nees et Mart. var. *strigosus* Choisy.

f. *saltense* Arech. in Anal. Mus. Nac. Montevideo VII (1911) p. 215.

Type from Uruguay, Salto.

Stems leafless or with a few leaves near the inflorescences or between those and the lower middle part.

Distribution: Uruguay.

URUGUAY, stony places near Salto, fl. Nov., collector?, type.

I did not see the type of this form of which I hereabove give the translation of the Spanish description.

83. *Evolvulus comosus* v. Ooststr. n. sp.²⁾

Type: *Warming*, Brazil, Minas Geraes, near Lagoa Santa.

A low suffrutex. Stems erect, simple, or slightly branched, terete, brownish or whitish appressed-villose-strigillose, lig-

¹⁾ Choisy in DC. Prodr. IX (1845) p. 442.

²⁾ *E. comosus* v. Ooststr. n. sp. Suffrutex humilis. Caules erecti, simplices vel parce ramosi, teretes, appresse brunneo- vel albido-villoso-strigillosi, basi lignescentes et glabrescentes 10—20 cm alti, internodiis 4—5 mm longis. Folia erecta, ovata, oblongo-lanceolata, vel lanceolata, utrinque attenuata, acuta, 12—15 mm longa, 3—5 mm lata, 2.5—4.5 partibus longiora quam lata, pagina inferiore densiuscule, pagina superiore sparsius albido-villosa, marginibus pilis longis divaricatis praedita, amplitudine apicem ramulorum versus paulo decrescentia, summis floriferis densis, quam cetera paulo minoribus, lanceolatis, inflorescentiam globosam vel breviter cylindricam efformantibus, 1.5—3 cm longis, nervo mediano sub superiore prominente. Flores sessiles. Bracteolae lineari-filiformes, 5—6 mm longae. Sepala anguste lanceolata, acuminata, extus longe patenti-villosa, margine longe ciliata, 6.5—7 mm longa. Corolla coerulea, probabiliter hypocrateriformis vel infundibuliformis, fere 14 mm longa, tubo angusto fere 5 mm longo, limbo fasciis 5 sericeis praedito. Filamenta in ore tubi inserta, fere 1.5 partibus quam antherae lineares longiora. Ovarium globosum, glabrum. Type: *Warming*, Brazil, Minas Geraes, near Lagoa Santa (C).

nescent and glabrescent at the base, 10—20 cm high, the internodes 4—5 mm long. Leaves erect, ovate-, oblong-lanceolate or lanceolate, attenuate at both ends, acute, 12—15 mm long, 3—5 mm broad, 2.5—4.5 times as long as broad, rather densely whitish villose beneath, more sparsely so above, and with long spreading hairs along the margins, the leaves slightly diminishing in size towards the apex, the upper flower-bearing ones slightly smaller than the others, lanceolate, forming a globular or short-cylindric inflorescence, 1.5—3 cm long. Midrib prominent beneath. Flowers sessile; bracteoles linear-filiform, 5—6 mm long. Sepals narrow-lanceolate, acuminate, long patently sericeo-villose outside, long ciliate at the margins, 6.5—7 mm long. Corolla blue, probably salver to funnel-shaped, about 14 mm long, the tube narrow, about 5 mm long, the limb with 5 sericeous bands. Filaments inserted at the mouth of the tube, about 1.5 times as long as the linear anthers. Ovary globular, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, near Lagoa Santa, in stony campos, fl. Dec., Jan., Febr., *Warming*, type (Br, C).

The type of this species was considered by Meissner as belonging to *E. glomeratus* Nees et Mart. var. *strigosus* Choisy. The inflorescences leafy to the top however greatly differ from those of *E. glomeratus*. This species is typical in the appressed hairiness of the stem and the long patent hairs on the leaves, especially at the margins. In the inflorescences the hairiness is sometimes somewhat floccose.

84. *Evolvulus helichrysoides* Moric. Pl. Nouv. Amér. (1844) p. 134, t. 80; Choisy in DC. Prodr. IX (1845) p. 442, excl. specim. Martii ad Jundiahy coll., ad *E. Martii* transferendo; Meissn. in Mart. Fl. Bras. VII (1869) p. 337, excl. specim. Riedel.

E. aureo-brunneus Helwig in Notizbl. Berl.-Dahl. IX n. 91 (1927) p. 103.

Type: *Blanchet* 3632, Brazil, Bahia, Serra da Jacobina.

A low shrub, to 30 (40, *Helwig*) cm high. Stems erect, slightly

branched, densely greyish brown, later greyish appressed-sericeo-villose, terete, densely and imbricately leafy above, leafless beneath and there verrucose by the scars of fallen leaves and glabrescent. Internodes 3—5 mm long. Leaves sessile, more or less erect and appressed to the stems, ovate or ovate-lanceolate, acute at the apex, rounded at the base, 12—20 mm long, about 2—3 times as long as broad, the upper ones only slightly smaller, densely appressed-sericeo-villose on both sides, fulvous, later greyish-brown or greyish, more or less shining. Midrib often prominent beneath. Flowers in the axils of the uppermost leaves, in an almost globular head, sessile. Sepals subequal, narrow-lanceolate, long acuminate, 6—7 mm long, long patent-villose at the margins. Corolla blue, salver to funnel-shaped, 15—18 mm long, the tube narrow, 7—8 mm long. Filaments inserted at the mouth of the corolla tube, $1\frac{1}{2}$ —2 times as long as the anthers. Ovary globular, glabrous.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, Serra da Jacobina, *Blanchet 3632*, type (C, K, Len, ex parte, NH, P); Serra de Tiuba and Monte Santo, in grassy places, fl. Apr., *Martius (M)*; Serra Masalina, 1914, *Ph. von Luetzelburg 70 (B)*; Campos Casa Pedra, very dry, July 1914, *id. 38*, type of *E. aureo-brunneus (B)*.

The type of *E. aureo-brunneus* Helwig closely resembles the specimens of *E. helichrysoides* Moric. Helwig mentions a difference in the indument and in the form of the leaves but in the specimens of the type-number I could compare with Helwig's plant both are quite the same. The specimen of Martius has the leaves slightly broader than the type, more ovate and about twice as long as broad.

Specimens collected by Riedel (Riedel 1336 in herb. Len.) habitually show a striking resemblance to this species and are at first sight not or hardly to be distinguished from this. The indument is completely identical. However, the flowers are different, the style is simple with 2 globular stigmas and the corolla is funnel-shaped. On close comparison the leaves also appear to have a slightly different shape; whilst the greatest breadth of the leaves in *E. helichrysoides* lies in or under the middle, this

lies above the middle in the specimens of Riedel; the leaves are oblong to narrow-obovate, attenuate to the base, short-apiculate. Presumably the specimens represent a new species of the genus *Merremia*.

85. *Evolvulus fuscus* Meissn. in Mart. Fl. Bras. VII (1869) p. 339, t. 121, fig. II.

Type: *Pohl 863*, Brazil, Goyaz, Serra dos Cristaes.

An undershrub, densely ferrugineous tomentose throughout, the stems rather thick, erect or ascending, few or several from a woody base, simple or ramified in the lower part, 15—35 cm high. Leaves sessile or with a very short petiole, elliptic, ovate or oblong, generally obtuse at the apex, sometimes acute; obtuse or rarely subcordate at the base, 3—5.5 cm long, 1.75—2.5 cm broad, 1.5—2 times as long as broad, (midrib and 2—4 pairs of lateral nerves prominent beneath), gradually diminishing in size towards the base and the apex, the upper ones imbricate and generally broad-ovate to orbicular, obtuse or acutish, 12—24 mm long and about as broad, forming a terminal spike, sometimes accompanied by a few short lateral spikes in the axils of the upper leaves. Flowers sessile or very shortly pedicelled in the axils of the imbricate leaves, the lower ones also more remote in the axils of the other ones. Bracteoles linear, as long as the sepals, villose (*Meissn.*). Sepals equal in length, narrow-lanceolate, long acuminate, scarious, glabrous or almost so at the base, villose towards the apex, long ciliate at the margins, about 6 mm long. Corolla blue or white, hypocrateriform, to 20 mm long, the tube narrow, 8—12 mm long, the limb about 15 mm in diam. Filaments inserted in the mouth of the tube, 1.5—2 times as long as the linear anthers. Ovary cylindrical, glabrous. Capsule ovoid, glabrous, 4-valved, 1-celled, 1-seeded.

Distribution: Brazil, Goyaz, Minas Geraes, São Paulo.

BRAZIL, Goyaz, *A. de Saint-Hilaire C¹, 911 bis* (P); Serra dos Cristaes, *Pohl 863*, type (V); Minas Geraes, near Uberaba, Nov. 1848, *Regnell III, 187* (B, S, US); id., *Regnell III, 187a* (S); Caldas, *Regnell III, 187* (Br). São Paulo, between Canna Verde and Casa Branca, Oct. 1855, *Regnell III, 187* (P, S); R. Pardo, in campo, Oct. 1826, *Riedel 611* (Len).

Chiefly due to differences in the shape of the leaves and in the hairiness we can distinguish the following varieties.

var. 1 canescens v. Ooststr. nov. var. ¹⁾

Type: *Regnell III, 188**, Brazil, Minas Geraes, in campos.

Indument not ferrugineous as in the typical form but more greyish-brown or greyish. Leaves often smaller, elliptic to elliptic-oblong, obtuse at the apex and at the base, 2.5—3.5 (—4.5) cm long, 1.5—2 cm broad, 1.5—2 times as long as broad. Bracts broad-ovate to orbicular, obtuse or acutish.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, in campos, Febr. 1869, *Regnell III, 188**, type (B, S, US); Caldas, *Regnell III, 188* (Br, US); without precise locality, *A. de Saint-Hilaire C¹, 296* (P).

var. 2 villosus Dammer in Engl. Bot. Jahrb. XXIII, Beibl. 57 (1897) p. 37.

Type: *Glaziou 21801*, Brazil, Goyaz, Fazenda do Lambary, near Lagoa Formosa.

Shape of the leaves as in the typical form. Indumentum longer, especially on the bracts, in the youngest parts ferrugineous, soon greyish or whitish, floccose, on the leaves resembling much that of var. *canescens*, but also longer.

Distribution: Brazil.

BRAZIL, Central Brazil, 1844, *Weddell 1946* (P); Goyaz, Fazenda do Lambary, near Lagoa Formosa, Jan. 1895, *Glaziou 21801*, type (B, Br, K, P).

var. 3 virescens Meissn. in Mart. Fl. Bras. VII (1869) p. 339, quoad specim. Stephan.

Type: *Stephan*, Brazil, Minas Geraes, Congonhas do Campo.

Leaves ovate, more acutish at apex, slightly cordate at base, 2.5—4 cm long, 1.5—2.5 cm broad, 1.5—2 times as long as

¹⁾ *E. fuscus* Meissn. var. *canescens* v. Ooststr. nov. var. Indumentum haud ferrugineum ut in forma typica sed potius brunnescens vel canescens. Folia saepe angustiora, elliptica vel elliptico-oblonga, basi et apice obtusa, 2.5—3.5 (—4.5) cm longa, 1.5—2 cm lata. Bractae late ovatae vel orbiculares, obtusae vel subacutae. Type: *Regnell III, 188**, Brazil, Minas Geraes, campos (S).

broad. Indument more or less shining, less dense than in the preceding forms; leaves consequently more distinctly green. Nervation more prominent beneath. Bracts ovate to broad-ovate, acute.

Distribution: Brazil, Goyaz, Minas Geraes.

BRAZIL, Goyaz, Fazenda dos Porcos, Rio Pizarão, Jan. 1895, *Glaziou* 21800 (B, Br, C, K, Len, P, S). Minas Geraes, Congonhas do Campo, 1844, *Stephan*, type (Br).

The specimen Regnell III, 188 mentioned by Meissner under this name, belongs to the var. *canescens*. The leaves of the collection Glaziou 21800 in herb. Br are narrower than in the type, more oblong and resemble those of var. *acutifolius*; hairiness shining.

var. 4 *acutifolius* Meissn. in Mart. Fl. Bras. VII (1869) p. 339; Hoehne in Anex. Mem. Butantan, Bot. I, fasc. VI (1922) p. 37.

Type: *Riedel*, Brazil, Minas Geraes, near Alegres.

Indument resembling that of var. *canescens*; leaves much narrower, narrow-oblong, acute at the apex, rounded at the base, 3—5 cm long, 1—2 cm broad, 2.5—3 times as long as broad. Bracts narrow-ovate, acute or slightly acuminate.

Distribution: Brazil, Minas Geraes, São Paulo.

BRAZIL, Minas Geraes, near Alegres, in campo, Sept. 1839, *Riedel* s. n., type (Len). São Paulo, Fortaleza, "perto do Rio Claro", *Löfgren* (Mus. Paulista 1046, ex Hoehne l.c.).

86. *Evolvulus goyazensis* Dammer in Engl. Bot. Jahrb. XXIII, Beibl. 57 (1897) p. 37.

Type: *Glaziou* 21802 ex parte, Brazil, Goyaz, "Barra du Rio Torto avec le Rio Paranana".

A low suffrutex, to 40 cm high, branched at the base or in the lower half, stiff, erect, densely tomentose and patent-villose, brown, later greyish. Leaves sessile, densely villose-tomentose, the middle ones at distances of 10—15 mm, ovate or ovate-oblong, acute at the apex, rounded or subcordate at the base,

15—24 mm long, 2—3 times as long as broad, the upper ones ovate or broad-ovate, 8—12 mm long, about 1.5 times as long as broad, much denser, imbricate, forming a cylindric terminal spike, 4—10 cm long. Flowers in the axils of the upper imbricate leaves, sessile. Sepals equal, ovate or ovate-lanceolate, acute or short-acuminate, brownish-villose, 4—4.5 mm long. Corolla blue, hypocrateriform, 10—12 mm long, the tube slender, pubescent, 4—5 mm long, the limb with 5 pilose bands outside. Filaments inserted at the mouth of the corolla tube, 1.5 times as long as the linear anthers. Ovary cylindric-ovoid, glabrous. Fruit ovoid, glabrous.

Distribution: Brazil, Goyaz.

BRAZIL, Goyaz, "Barra du Rio Torto avec le Rio Paranana", Febr. 1895, *Glaziou* 21802, type (B, ex p., Br, C, K, Len, P, S, ex p.); between Fazenda de Amoreira and Bolivia, June 1895, *Glaziou* (NH, P).

var. penicillatus v. Ooststr. n. var. ¹⁾

Type: *Glaziou* 21802 ex parte in herb. B; Brazil, Goyaz, with the type of the species.

Stems simple or branched at the base, ramified again in the upper half, close to the apex, the branches erect, the upper leaves imbricate, but not so dense as in the typical form, narrower, ovate, acute, rounded at the base, about twice as long as broad.

Distribution: Brazil, Goyaz.

BRAZIL, Goyaz, "Barra du Rio Torto avec le Rio Paranana", Febr. 1895, *Glaziou* 21802, ex parte, type (B, ex p., S, ex p.).

Two specimens on the same sheet as the typical form of *E. goyazensis* Dammer in the Berlin Herbarium and one in Stockholm differ from the others in the characteristics mentioned above.

¹⁾ *E. goyazensis* Dammer var. **penicillatus** v. Ooststr. n. var. Caules simplices vel basi ramosi, parte superiore prope ad apicem iterum ramosi, ramis erectis, foliis superioribus imbricatis sed minus dense quam in forma typica, angustioribus, ovatis, acutis, basi rotundatis, fere duabus partibus longioribus quam latis. **Type:** *Glaziou* 21802 ex p., Brazil, Goyaz, "Barra du Rio Torto avec le Rio Paranana" (B, ex p.).

87. *Evolvulus chapadensis* Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III p. 489, nomen. ¹⁾

E. passerinoides auct. non Meissn.; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III p. 490.

Type: *Glaziou 21804*, Brazil, Goyaz, Chapadão dos Veadeiros near Olho d'Água do Vente.

A low suffrutex, 10—15 cm high, with several erect stems from a woody base, the stems simple or branched at the base, fasciculate, densely appressed-villose-tomentose, ferrugineous, finally greyish. Leaves sessile, ovate, ovate-oblong or narrow-oblong, acute at the apex, rounded at the base, 5—8 (—10) mm long, 2.5—3 times as long as broad, densely appressed-villose-tomentose on both sides, brown in youth, later grey. Middle and lower leaves at distances of 5—7 mm, the upper ones more approximate. Flowers solitary, sessile in the upper leaf axils. Bracteoles linear, villose, 2.5 mm long. Sepals equal, lanceolate, acuminate, villose outside and at the margins, 4.5—5 mm long. Corolla blue, hypocrateriform, about 15 mm long, the tube narrow, 7 mm long, the limb with 5 pilose bands outside, about 11 mm in diam. Filaments 2—2.5 times as long as the oblong anthers. Ovary cylindric-ovoid, glabrous. Capsule unknown.

Distribution: Brazil, Goyaz.

BRAZIL, Goyaz, Chapadão dos Veadeiros near Olho d'Água do Vente, Jan. 1895, *Glaziou 21804*, type (Br, C, K, Len, P, S).

Glaziou l.c. mentions the number 21804 twice, once rightly as

¹⁾ *E. chapadensis* Glaziou, nomen. Descriptio: Suffrutex 10—15 cm altus; caules plurimi e basi lignosa oriuntur simplices vel basi ramosi fasciculati dense adpresseque villosi-tomentosi ferruginei demum incani. Folia sessilia ovata oblonga vel anguste oblonga apice acuta basi rotundata 5—8 (—10) mm longa 2.5—3-plo longiora quam lata dense adpresseque villosi-tomentosa primo ferruginea dein incana basalia et media 5—7 mm distantia superiora congestiora. Flores solitarii in axillis foliorum superiorum sessiles. Bracteolae lineares 2.5 mm longae villosae. Sepala aequalia lanceolata acuminata extus et margine villosa 4.5—5 mm longa. Corolla coerulea hypocrateriformis circ. 15 mm longa, tubo angusto 7 mm longo, limbo circ. 11 mm diametente fasciis mesopetalis extus pilosis. Filamenta antheris oblongis 2—2.5-plo longiora. Ovarium cylindrico-ovoideum glabrum. Capsula mihi ignota. Type: *Glaziou 21804*, Brazil, Goyaz, Chapadão dos Veadeiros near Olho d'Água do Vente (P).

a new species, *E. chapadensis*, yet without description, secondly as *E. passerinoides*.

88. *Evolvulus tomentosus* (Meissn.) v. Ooststr. nov. comb.

E. aurigenius Mart. var. *tomentosus* Meissn. in Mart. Fl. Bras. VII (1869) p. 350 quoad specim. a cl. Pohl lecta.

Type: *Pohl 5196*, Brazil, without precise locality.

A low suffrutex. Stems few from a woody base, erect, terete, simple or slightly branched, densely villose-tomentose with ferruginous hairs, 15—35 cm high. Leaves sessile, narrow-oblong, oblong, ovate-oblong or narrow-ovate, acutish or obtuse at the apex, rounded at the base, 15—28 mm long, 5—10 mm broad, densely villose-tomentose on both sides; midrib and 3—4 pairs of lateral nerves either distinct or obsolete; internodes 10—20 mm long. Flowers solitary, sessile in the axils of the upper approximate leaves and sometimes also in the axils of the lower more remote ones over a length of 4—8 cm. Bracteoles lanceolate, acute, little shorter than the sepals. Sepals equal or slightly unequal, lanceolate or narrow-lanceolate, acuminate, brownish-villose, 4—5 mm long. Corolla blue, hypocrateriform, ca. 15 mm long, the tube narrow, ca. 10 mm, the limb ca. 12 mm in diam., subentire. Filaments inserted in the mouth of the tube, twice as long as the linear anthers. Ovary narrow-ovoid, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, without precise locality, *Pohl 5196*, type (Br, V); Minas Geraes, *A. de Saint-Hilaire C¹*, 358 (P).

89. *Evolvulus brevifolius* (Meissn.) v. Ooststr. nov. comb.

E. glomeratus Nees et Mart. var. *brevifolius* Meissn. in Mart. Fl. Bras. VII (1869) p. 336.

Type: *Riedel s. n.*, Brazil, Bahia, near Rio S. Francisco.

A suffrutex, 20—30 cm high. Stems erect or ascending, woody in the basal parts, branched, densely brownish villose or almost tomentose with loosely appressed hairs. Leaves rather dense, sessile or nearly so, oblong or elliptic, obtuse at both apex and

base, mucronulate, 10—15 mm long, 5—6 mm broad, $2-2\frac{1}{4}$ times as long as broad, densely brownish villose-tomentose; lower leaves at distances of 5—10 mm, upper flower-bearing ones more approximate, not much distinct from the others, slightly narrower, gradually diminishing in size upwards. Flowers solitary, sessile in the upper leaf-axils. Bracteoles linear-lanceolate, 2.5 mm long, villose. Sepals equal, linear-lanceolate, acuminate, villose, 5.5—6.5 mm long. Corolla blue, salver to funnel-shaped, about 12 mm long, the tube about 4.5 mm long. Filaments about twice as long as the linear anthers. Ovary ovoid-globose, glabrous.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, in dry campos near Rio S. Francisco, Sept. 1834, Riedel s. n., type (Len).

Meissner describes the type of this species as a variety of *E. glomeratus* Nees et Mart. However there is a great difference with the other forms of this species. In *E. glomeratus* only the lower bracts of the inflorescence are leafshaped whilst in this species all bracts are. It is true the upper ones are somewhat smaller, but the mutual difference is but slight. As regards this characteristic *E. brevifolius* corresponds with the *Phyllostachyi* and appears to be closely related to *E. chapadensis* Glaz. As it has already been observed with *E. glomeratus* Nees et Mart. ssp. *eu-glomeratus*, f. *strigosus*, the plate of the type of *E. echioides* Moric.¹⁾ shows a much greater resemblance to *E. brevifolius* than to the type-specimen of Moricand.

90. *Evolvulus hypoc crateriflorus* Dammer in Engl. Bot. Jahrb. XXIII, Beibl. 57 (1897) p. 37.

Type: *Glaziou 21803*, Brazil, Goyaz, between Fazenda da Boa Vista and Rio dos Couros.

A low suffrutex, 20—27 cm or sometimes up to 40 cm high, with several erect stems from a stout woody base, the stems simple or ramified in the upper half with erect branches, densely

¹⁾ Moric., Pl. Nouv. Amér. (1838) t. 37.

greyish-white appressed-sericeo-villose. Leaves sessile, densely sericeo-villose, white or later grey, ovate, acute or short-acuminate at the apex, rounded at the base, close to the stems and often clasping them, the margins sometimes overlapping at the opposite side of the stem; the lower and middle ones 12—15 mm long and about half as broad, at distances of 6—15 mm, the upper flower-bearing ones smaller, broad-ovate to orbicular, acuminate, 5—8 mm long, imbricate, at distances of 3—5 cm, in slender cylindrical spikes. Flowers axillary, solitary, sessile. Bracteoles lanceolate, about 2 mm long. Sepals equal, ovate, acute or short-acuminate, 3 mm long, pilose in the upper half and at the margins, further glabrous. Corolla blue, hypocrateriform, 15 mm long, the tube very narrow, 7 mm long (10 mm, *Dammer*), the limb with sericeous bands outside, 10 mm in diam. (according to *Dammer*). Filaments inserted at the mouth of the tube, 3—4 times as long as the ovate anthers. Ovary cylindrical, glabrous.

Distribution: Brazil, Goyaz.

BRAZIL, Goyaz, between Fazenda da Boa Vista and Rio dos Couros, in campo, Jan. 1895, *Glaziou* 21803, type (B, Br, C, K, P, S).

91. *Evolvulus Glaziovii* Dammer in Engl. Bot. Jahrb. XXIII, Beibl. 57 (1897) p. 37.

Type: *Glaziou* 19675, Brazil, Minas Geraes, near Diamantina.

A low erect shrub, to 30 cm high, branched near the base and often again in the upper parts, densely leafy above, appressed-sericeous, greyish-brown, the older parts glabrous and dark grey, warty by the scars of fallen leaves; internodes 1—2 mm long. Leaves sessile or attenuate into a very short petiole, oblong or narrow-obovate, acute or obtusish and mucronulate at the apex, attenuate to nearly cuneate at the base, 8—12 mm long, 2—2.5 times as long as broad, densely appressed-sericeo-tomentose on both sides, shining, greyish above, brownish-grey beneath; midrib rather prominent beneath. The upper, flower-bearing leaves crowded, not different from the others, only the

uppermost slightly smaller. Flowers sessile, solitary in the leaf axils. Bracteoles linear, about 2 mm long. Sepals equal, or the interior ones a little shorter, lanceolate, acuminate, 4—5 mm long, appressed-pubescent, with distinct midrib. Corolla blue, funnel-shaped, about 8 mm long, the tube about 1 mm, the limb with 5 pilose bands outside. Filaments inserted 1 mm above the base of the corolla, about 3 times as long as the oblong anthers. Ovary ovoid-globose, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, near Diamantina, in campo, Apr. 1892, Glaziou 19675, type (B, Br, C, K, Len).

Different from the preceding species of this section by the funnel-shaped corolla with tube only 1 mm long. The hairiness shows resemblance to some specimens of *E. helichrysoides*, is however more appressed. There is also resemblance in hairiness to *E. rufus*.

Section VI. INVOLUCRATI v. Ooststr. n. sect. ¹⁾

Bracteosi Meissn. in Mart. Fl. Bras. VII (1869) p. 330, 334, p. p.; Peter in Engl.-Prantl, Nat. Pfl. fam. IV, 3a (1897) p. 18, p. p.

Perennial or suffruticose. Stems erect or ascending, sometimes prostrate, terete. Leaves variable, linear, lanceolate, oblanceolate, oblong or elliptic. Flowers in dense, terminal or sometimes lateral, globose or ovoid spikes, sessile. Lower bracts leaflike, more or less involucrate, upper ones much smaller and narrower, villose like the bracteoles and the sepals. Corolla salver to funnel-shaped, exceeding the sepals, filaments inserted at the mouth of the tube.

Only one sessile flower generally occurs in the axil of the bract. In richly flowered inflorescences as are met with in the form *strictus* of the ssp. *eu-glomeratus*, clusters of sessile flowers are sometimes found in the axils of the lower bracts, these clusters show a dichasial character. Respecting the limits of Meissner's *Bracteosi* see Section *Phyllostachyi*, p. 199.

92. *E. glomeratus* Nees et Mart. in Nov. Act. Nat. Cur. XI, 1 (1823) p. 81; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 70 et id. Conv. rar. (1838) p. 148, quoad nomen, excl. descript., synn. et specim. Gomes.; Steud. Nom. bot. ed. 2 (1841) p. 621, excl. synn. *E. ericoides* Nees, *phylicoides* Schrad., *Cladostyles ericoides* Neuw.; Choisy in DC. Prodr. IX (1845) p. 442; Meissn. in Mart. Fl. Bras. VII (1869) p. 335.

¹⁾ Sectio *Involucrati* v. Ooststr. n. sect. *Plantae perennes vel suffruticosae*. *Caulis erecti vel ascendentes, interdum prostrati, teretes. Folia variabilia, linearia, lanceolata, oblanceolata, oblonga vel elliptica. Flores sessiles in spicas densas terminales vel interdum laterales, globosas vel ovoideas congesti. Bracteae inferiores foliaceae, subinvolucratae, superiores multo minores angustioresque, ut bracteolis sepalisque villosae. Corolla hypocrateriformis vel infundibuliformis, sepala superans, staminum filamentis ore insertis.*

Type: *Prince zu Wied-Neuwied*, Brazil, Bahia, near Tamburil and Valos.

Perennial, herbaceous, lignescent at the base or suffruticose. Stems few or several from a woody base, erect or ascending, sometimes prostrate, terete, more or less ramified, sparsely to densely villose or villose-tomentose, variable in height. Leaves shortly petioled or sessile, variable in form and size in the different subspecies, linear, lanceolate, oblanceolate, oblong or elliptic, acute or obtuse, mostly hairy like the stems. Inflorescences terminal or sometimes lateral, globose or ovoid, often elongating afterwards. Lower bracts leaflike, the upper ones smaller and narrower. Bracteoles lanceolate or linear-lanceolate, much shorter than the sepals, villose. Sepals linear-lanceolate, long acuminate, villose and ciliate. Corolla salver to funnel-shaped, exceeding the sepals, the tube distinct and narrow, 3.5—5 mm long, the limb variable in diameter, slightly 5-lobed, with 5 pilose bands outside. Filaments inserted in the mouth of the corolla tube, generally longer than the linear-oblong anthers. Ovary globular, glabrous.

Meissner¹⁾ divided this species into 8 varieties. Of these I consider the var. *E. brevifolius* as a distinct species; the var. *desertorum* belongs to the forms of *E. Chamaepitys* Mart. The var. ζ *obtusus* represents a distinct ssp. of *E. glomeratus*. Of the remaining ones β *lanceolatus*, δ *excrecens* and θ *albicans* are united with the type of *E. strictus* Benth. under the name f. *strictus* as a form of the ssp. *eu-glomeratus* of *E. glomeratus*. Of this ssp. I further distinguish the forms *genuinus* (var. α *genuinus* Meissn.) and *echioides* (*E. echioides* Moric., *E. glomeratus* N. et M. var. *strigosus* Choisy). The third ssp. is based on *E. grandiflorus* Parodi.

Perennial, lignescent at the base. Stems generally erect, or ascending, 10—45 cm high, straight or curved; hairiness variable, more or less villose or villose-tomentose to tomentose, hairs appressed or spreading. Leaves variable in form and size, linear, lanceolate, oblong or ovate-oblong, sometimes broader, 2.5—5 times as long as broad or sometimes longer, obtuse or acutish at the apex;

¹⁾ Meissner in Mart. Fl. Bras. VII (1869) p. 335, 336.

indumentum like that of the stems. Inflorescences few or often many-flowered, dense, often elongated afterwards. Corolla limb 12—15 mm in diam.

A. ssp. eu-glomeratus.

Perennial, lignescent at the base. Stems prostrate or ascending, 6—15 cm long, villose with more or less spreading hairs. Leaves generally rather small, oblong to elliptic, obtuse or acutish at the apex, 10—15 mm long, 4—7 mm broad, 2—3 times as long as broad. Inflorescences few or several-flowered. Corolla limb 15—20 (—25) mm in diam.

C. ssp. grandiflorus.

Suffruticose. Stems erect with erecto-patent branches, 20—40 cm high, appressed-pilose. Leaves oblong, elliptic or spatulate, 2—3 times as long as broad, rounded at the apex. Inflorescences generally few-flowered. Corolla limb about 13 mm in diam.

B. ssp. obtusus.

A. ssp. eu-glomeratus v. Ooststr. n. ssp. 1)

Type: *Prince zu Wied-Neuwied*, Brazil, Bahia, near Tamburil and Valos.

Perennial, lignescent at the base, variable in height, 10—45 cm. Stems generally erect, or ascending, straight or curved, more or less villose or villose-tomentose to tomentose, hairs spreading or appressed. Leaves variable in form and size, linear, lanceolate, ovate or ovate-oblong, sometimes broader, obtuse or acute at the apex, 2.5—5 times as long as broad, or longer, often with small axillary shoots; indumentum like that of the stems. Inflorescences globose or ovoid, later often elongated and cylindric, few or mostly many-flowered. Sepals linear-lanceolate, 4.5—6 (—8) mm long. Corolla blue or white, 10—15 mm long, tube 4—5 mm long, limb 12—15 mm in diam. Filaments 1.5—2 times as long as the anthers.

This subspecies can be divided into three more or less distinct forms. Besides typical clearly characterized specimens intermediate

1) *E. glomeratus* Nees et Mart. ssp. *eu-glomeratus* v. Ooststr. n. ssp. Plantae perennes, basi lignescentes, dimensionibus variabilibus, 10—45 cm altae. Caules ut plurimum erecti vel ascendentes, stricti vel curvati, plus minusve villosi vel villosito-tomentosi vel tomentosi, pilis divaricatis vel appressis. Folia variabilia, linearia, lanceolata, ovata vel ovato-oblonga, interdum latiora, apice obtusa vel acuta, 2.5—5-plo longiora quam lata vel longiora, in axillis fasciculis foliorum minorum saepe praedita, indumento eo caulis simile tecta. Inflorescentia primo globosa vel ovoidea, deinde saepe elongata, cylindrica, pauci- vel plerumque multiflora. Sepala lineari-lanceolata, 4.5—6 (—8) mm longa. Corolla coerulea vel alba, 10—15 mm longa, tubo 4—5 mm longo, limbo 12—15 mm diametiente. Filamenta quam antheras 1.5—2-plo longiora. Type: *Prince zu Wied-Neuwied*, Brazil, Bahia, near Tamburil and Valos (Br).

ones occur, both between forms 1 and 2 and 1 and 3. Especially the habit, the density and kind of indumentum and the density and form of the leaves are characteristics of importance for the distinction of the forms.

The collectors' numbers are mentioned at the end of this ssp.; the number of the form may be found between the brackets.

f. 1. *genuinus* (Meissn.) v. Ooststr. n. comb.

E. glomeratus Nees et Mart. var. *genuinus* Meissn. in Mart. Fl. Bras. VII (1869) p. 335; Hoehne in Mem. Instit. Butantan I, VI (1922) p. 36.

E. glomeratus Nees et Mart. in Nov. Act. Nat. Cur. XI, 1 (1823) p. 81; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 70 et id. Conv. rar. (1838) p. 148, quoad nomen, excl. descr. synn. et specim. Gomes.; Choisy in DC. Prodr. IX (1845) p. 442 p. p.

E. capitatus Nees et Mart. l.c. p. 80; Choisy in Mém. Soc. Phys. Genève l.c. p. 71; id. Conv. rar. l.c. p. 149; id. in DC. Prodr. l.c. p. 442.

Type: *Prince zu Wied-Neuwied*, Brazil, Bahia, near Tamburil and Valos.

Perennial. Stems erect, or ascending, slender, terete, herbaceous, ramified and lignescent at the base, loosely appressed brownish villose, glabrescent below, 20—45 cm high. Leaves often with short axillary shoots, consisting of small leaves and sometimes with small, lateral inflorescences, shortly petioled, patent or erect, the lower ones at distances of 1—1.5 cm, the upper ones remote, distances up to 5 cm; the blade ovate-oblong, oblong, oblanceolate or spatulate, attenuate into the petiole, obtuse or short-apiculate at the apex, appressed-pilose on both sides, finally glabrescent above, 15—30 mm long, 6—12 mm broad, 2.5—3.5 times as long as broad, rarely longer; the petiole 2—3 mm long. Midrib and lateral nerves more or less conspicuous. Inflorescences rather small, dense, brown villose, terminal and lateral in the upper leaf-axils or at the end of short, apical, lateral branches, ovoid or globose, sometimes

elongating afterwards. Lower bracts leaflike, obovate or oblanceolate, forming a kind of involucre, the upper ones narrower, linear, as long as the sepals or slightly longer, 4.5—6 mm long, later often longer. Corolla blue, 10—12 mm long, the tube 4—5 mm long, the limb about 12 mm in diam., with 5 pilose bands outside. Filaments 1.5—2 times as long as the linear-oblong anthers.

f. *2. strictus* (Benth.) v. Ooststr. n. comb.

E. strictus Benth. in Hook. Lond. Journ. Bot. V (1846) p. 354; N. E. Brown in Transact. Linn. Soc. 2, VI (1900) p. 52.

E. guianensis Klotzsch in Schomb. Faun. et Fl. Guian. (1848) p. 1153, nomen.

E. glomeratus Nees et Mart. var. *excrescens* Meissn. l.c. p. 336, t. 120, fig. 2, p. p.; Hall. f. in Jahrb. Hamb. wiss. Anst. XVI, Beih. 3 (1899) p. 21.

E. glomeratus Nees et Mart. var. *lanceolatus* Meissn. l.c. p. 336.

E. glomeratus Nees et Mart. var. *albicans* Meissn. l.c. p. 336.

Type: *Schomburgk*, British Guiana, dry savannas near Roraima.

Stems generally erect, woody in the basal part, densely greyish or brownish appressed-villose to villose-tomentose, glabrescent below, 20—40 cm high. Leaves sessile or very shortly petioled, erecto-patent, patent or sometimes deflexed, oblong-lanceolate, lanceolate or linear-lanceolate, obtuse or acute at the apex, attenuate at the base, densely appressed-villose to villose-tomentose on both sides like the stems, 20—30 (—40) mm long, 2—6 (rarely —10) mm broad, (2.5—) 3.5—4.5 (—10) times as long as broad, rarely shorter, gradually diminishing in size towards the apex, the upper leaves mostly less remote than in the preceding form. Small axillary shoots often developed. Inflorescences at the end of the stem and the branches, sometimes aggregated into a terminal panicle, densely flowered, globose or ovoid, afterwards often elongated and cylindric, often interrupted at the base; lower bracts leaflike, upper ones narrower,

as long as the sepals or exceeding them, often with more or less incurved apex. Bracteoles lanceolate, 1.5 mm long. Sepals linear-lanceolate, about 5 mm long. Corolla as in the typical form, blue or white.

Typical specimens of this form are mostly robust, erect plants with a dense villose-tomentose to tomentose indument from brown to grey colour. Plants with very dense greyish indument, which have been described by Meissner as var. *albicans*, do not or scarcely differ. Leaves often more or less conduplicate or with revolute margins.

f. 3. *echioides* (Moric.) v. Ooststr. n. comb.

E. echioides Moric. Pl. Nouv. Amér. (1838) p. 55, t. 37; Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 71; id. Conv. rar. (1838) p. 149; id. in DC. Prodr. IX (1845) p. 442; Meissn. in Mart. Fl. Bras. VII (1869) p. 338.

E. glomeratus Nees et Mart. var. *strigosus* Choisy in DC. Prodr. IX (1845) p. 443; Meissn. in Mart. Fl. Bras. VII (1869) p. 336, excl. specim. Sellow.; Hall. f. in Jahrb. Hamb. wiss. Anst. XVI, Beih. 3 (1899) p. 21; Hoehne in Mem. Inst. Butantan I, fasc. VI (1922) p. 36.

Type: *Blanchet 2558*, Brazil, Bahia, Serra da Jacobina.

Perennial, generally 10—20 or occasionally to 40 cm high, densely brown hairy with spreading hairs. Stems few or several from a woody base, erect or ascending, densely patent-villose and appressed-villose to villose-tomentose. Leaves subsessile, narrow-elliptic, oblong or lanceolate, acute or sometimes obtuse, the middle-sized ones 10—20 (—25) mm long, 3—5 times as long as broad, densely hairy like the stems; lower leaves rather crowded, upper more or less remote. Inflorescences dense, globose or short-cylindric, not or slightly excrescent, the lower bracts leaflike, the upper ones narrow-oblong to linear. Sepals 4.5—5 mm long or sometimes longer, attaining a length of 8 mm. Corolla blue, 10—15 mm long, the tube 4—5 mm, the limb about 15 mm in diam. Filaments twice as long as the anthers.

The specimens of *E. echioides* Moric. [Blanchet 2558, type (K, Len, NH)] closely resemble the type of *E. glomeratus* N. et M. var. *strigosus* Choisy, they are only more robust, the leaves and inflorescences being also larger. From a closer comparison of the different parts of the flower it appears there is only a slight difference in the size of the sepals. These are somewhat larger than in the typical *strigosus* viz. to 8 mm long. Such small differences often occur and the very great resemblances, which undoubtedly exist, induce me to decide to unite the var. *strigosus* with *E. echioides*.

When the specimens Blanchet 2558 in the various herbaria are compared with the plate of Moricand, then a peculiar difference is to be found. On the plate the inflorescence is much longer and the bracts are not much different from the other leaves, whilst in the dried specimens a distinct difference exists between the under and upper leaves in the inflorescences, the under ones resembling the normal leaves, the upper ones being much smaller and linear. The plant on the plate shows a remarkable resemblance to the var. *brevifolius* Meissn. of *E. glomeratus* Nees et Mart. See under *E. brevifolius* (Meissn.) v. Ooststr.

Choisy distinguished a var. *longepilosus* of *E. echioides*, based on a single specimen collected by Martius in the state of Minas Geraes, Brazil, between Contendas and Rio S. Francisco. The original label of this specimen bears the name *E. longepilosus* in the handwriting of Martius (obs. n. 1653). It is not clear if this specimen really represents an *Evolvulus*. The bad condition of the flowers being destroyed by insects does not permit of a further examination. There are some resemblances to the type of *E. echioides* but the inflorescences, as far as present seem to be distinct. In *E. echioides* there is a difference between the lower more leaf-like bracts and the upper narrow-linear ones, one of the reasons that I placed it under *E. glomeratus*. In this specimen however the flower-bearing leaves are not much different from the others, only they are smaller and more densely placed, as is the case in the species of the *Phyllostachyi*.

Two other specimens mentioned by Meissner as belonging here are representatives of another genus having a style with 2 branches each ending in a globular stigma.

A specimen collected by Riedel in Minas Geraes, Brazil, being the type of the var. *minor* Meissn. l.c. belongs to *Croton timandroides* Müll. Arg. (identification by Dr. J. Lanjouw, Utrecht). A specimen Lund, mentioned by Meissner under var. *strigosus* belongs to *E. Martii* Meissn. (sect. *Phyllostachyi*). A specimen Warming (Lagoa Santa) mentioned by Meissner is the type of a distinct species *E. comosus* v. Ooststr. (sect. *Phyllostachyi*).

Description of *E. longepilosus* Mart. in sched. (*E. echioides* Moric. var. *longepilosus* Choisy in DC. Prodr. IX (1845) p. 442; Meissn. in Mart. Fl. Bras. VII (1869) p. 338, excl. specim. Pohl. et Riedel.)

Stems and leaves villose, brown, later greyish. Leaves oblong to oblong-lanceolate, to 30 mm long and about 3 times as long as broad, not very dense. Upper flower-bearing leaves shorter, lanceolate, 12—20 mm long, 3—4 times as long as broad, more approximate. Flowers solitary in the axils, sessile. Sepals linear, about 6 mm long, brown-villose. Corolla etc. not seen.

Description from a specimen collected by Martius, Brazil, Minas Geraes, between Contendas and Rio S. Francisco.

Distribution of ssp. *eu-glomeratus* v. Ooststr.: British Guiana, Bolivia, Brazil.

BRITISH GUIANA, May 1842, *Rich. Schomburgk* 575 (2¹), B); in savannas, Apr. 1842, *Rich. Schomburgk* 296/557 (2, B, K, P); *C. Appun* 2322 (2, K); dry savannas near Roraima, *Schomburgk* 1036, type of *E. strictus* Benth. (2, K, NH); Mount Roraima, Ireng Valley, Autumm 1894, *Quelch and Mc Connell* 218, 219, 261 (cf. N. E. Brown in *Transact. Linn. Soc.* 2, VI (1900) p. 52) (2, K).

BOLIVIA, Dept. Cochabamba, prov. Totora, Chilispe, Dec. 1921, *Steinbach* 6003 (3¹), B).

BRAZIL, without locality, *A. de Saint-Hilaire* D 286 (2, P); *Blanchet* 3632 (3, Br); *Regnell III* 186a (3, C, S); *Dauville* (1—2, Del); *Glaziou* 13016 (1—3, C, Len). Amazonas, July 1912, *Kuhlmann, hb. Rio* 3469 (2, R);

¹) 1 = f. 1. *genuinus* (Meissn.) v. Ooststr.; 2 = f. 2. *strictus* (Benth.) v. Ooststr.; 3 = f. 3. *echioides* (Moric.) v. Ooststr.

Rio Branco, Surumu, dry campo near Serra do Mel, Aug. 1909, *Ule* 8271 (2, B, K, L). Matto Grosso, Cuyabá, Nov. 1902, *Malme* 2659 (2, S); Corumbá, 500 ft, Apr. 1927, *Miss Dorrien Smith* 35 (2, K); Corumbá, *Hoehne* (Rondon 3053 and 4858, 1 ex *Hoehne* l.c.). Goyaz, in dry places, inundated in the rainy season, *Riedel s. n.* (3, Len); Piauh y, Guaribas, caatinga, Aug. 1914, *Ph. von Luetzelburg* 457 (1, M); Lagoa do Matto, caatinga, 1914, *Ph. von Luetzelburg* 459 (1, M); campos near Oeiras, Febr. 1839, *Gardner* 2255 (1, K, NH); near Lagoa Comprida, Febr. 1839, *Gardner* 2257 (3, K, with intermediate form of this and f. *genuinus*, NH). Bahia, *Martius* (3, L, Len); near Jacobina, *Blanchet* 3631, type of var. *strigosus* Choisy (3, Br, with *E. helichrysoides*, C. K. M, NH, P); Serra da Jacobina, *Blanchet* 2558, type of *E. echioides* Moric. (3, B, H, K, Len, NH, P); id. *Blanchet* 2719 (1, Del, K, NH, P); near Joazeiro, in campo, fl. March, *Martius* (1, M); near Tamburil and Valos, *Prince zu Wied-Neuwied*, type of *E. glomeratus* Nees et Mart. (1, Br); Barra da Vareda, *Prince zu Wied-Neuwied*, type of *E. capitatus* Nees et Mart. (1, Br); Pouso d'Areia, *Blanchet* 3899 (1, Br, NH, P). Minas Geraes, *Glaziou* 19674 (2, C, K, with *E. pterocaulon floccosus*, Len, P, as in K); *A. de Saint-Hilaire D* 467ter (2, P); *A. de St.-Hilaire B*¹, 1542bis (2, P); *A. de Saint-Hilaire B*², 2373bis (2, P); 1845, *Widgren* 99 (2, B, Br, C, G, S, U); in dry sandy meadows near Parauna, Dec. 1824, *Riedel* 1167 (2, Len); Caldas, Jan. Febr. March 1861, *Regnell I* 306 (2, B, Br, C, K, Len, M, P, S, US); id., in dry campos, Dec. 1873, *Hj. Mosén* 1500 (2, S); id. campos, Jan. 1855, *Lindberg* 631 (2, Br.); Serra de Caldas, in dry stony places, Febr. 1876, *Hj. Mosén* 4475 (2, S); near Uberaba, *Regnell I* 306* (2, Br, S); Uberaba, *Regnell III* 186 (3, Br, S, US); Contendas, fl. Apr., *Martius* (2, M). Rio de Janeiro, near Farhina, in campos, *Sellow* 5527 (2, B); near Rio de Janeiro, Nov. 1879, *Glaziou* 11275 (2, C, with 1, K, P); Pico do Papagaio, in campos, fl. Jan., *Glaziou* 16276 (2, C, K, Len, P); Copacabana, July 1875, *Glaziou* 8186a (2, P). São Paulo, Franca, Jan. 1893, *Löfgren* and *Edwall* 2187 (3, C); *Martius* (2, M); Ytú, in dry campos, Febr. 1834, *Riedel* 2015 (2, Bog, K, Len, P, US); *Gaudichaud, Herb. Imp. du Brésil* 332 (2, P); Febr.—March 1834, *Lund* (2, C); Ypanema, in campos, at R. Tieté near Porto Feliz, *Martius* (2, M). Paraná, Dec. 1915, *Dusén* 17391 (2, S). Santa Catharina, Isl. Santa Catharina, *Linden* 1102 (1—3, Br).

B. ssp. obtusus (Meissn.) v. Ooststr. n. comb.

E. glomeratus auct. non Nees et Mart.; Choisy in *Mém. Soc. Phys. Genève* VIII (1837) p. 70; id. *Conv. Rar.* (1838) p. 148, quoad descr. et specim. Gomes., excl. synn.

E. glomeratus Nees et Mart. var. *obtusum* Meissn. in *Mart. Fl. Bras.* VII (1869) p. 336, t. 120, fig. 1; Hall. f. in *Jahrb. Hamb. wiss. Anst.* XVI, Beih. 3 (1899) p. 22.

Type: *Riedel* 688, Brazil, Rio de Janeiro, near Rio de Janeiro.

Suffruticose, 20—40 cm high. Stems erect, with erecto-patent, stiff branches, appressed-pilose above, soon glabrous and woody.

Leaves sessile or very shortly petioled, narrow-oblong, oblong, elliptic or spatulate, rounded or seldom slightly emarginate at the apex, attenuate at the base, rather densely appressed-short-villose or almost tomentose beneath, less densely so and glabrescent above, 10—25 mm long, 4—10 mm broad, 2—3 times as long as broad. Upper leaves not more remote than the others. Inflorescences globose, few-flowered, the lower bracts leaflike, elliptic to oblong or spatulate, the upper ones narrower. Sepals lanceolate, acuminate, 6—6.5 mm long. Corolla blue, about 13 mm long, the tube 5 mm. Filaments 1.5 times as long as the anthers.

Distribution: Brazil, Rio de Janeiro.

BRAZIL, without locality, *Warming 1799/2* (C). Bahia (?) Monte Buraco de Onça, *Luschnath* (Br). Rio de Janeiro, *Glaziou s. n.* (P); *Gomes* (L, K, P); Sept. 1835, *Raben* (C); *Herb. Richard* (P); *Warming 1799/1* (Br, C); granitic rocks near Rio de Janeiro, March—June 1832, *Riedel 688*, type (C, K, Len, US); *Weddell 134* (P); Pedra dos Cabritos, Copacabana, July 1880, *Glaziou 12086* (Br, C, K, Len, P); Copacabana, Sept. 1876 (July in herb. P), *Glaziou 8186* (C, Len, K, NH, P).

Suffruticose. Characterized by the erect habit and the stiff branches which run from green to brown or red colour. The form of the leaves is also characteristic. Limited as far as known to the state of Rio de Janeiro (perhaps also in Bahia?).

C. ssp. grandiflorus (Parodi) v. Ooststr. n. comb.

E. grandiflorus Parodi, *Contrib. a la Flora del Paraguay*, f. 1 (1877) p. 30.

E. paraguariensis Chod. et Hassl. in *Bull. Herb. Boiss. Sér. II. V* (1905) p. 685.

Type: *Parodi*, Paraguay, Corrientes, Paso de la Patria.

Hairs spreading, less dense than in the form *strigosus* and not so intensively brown, or more appressed. Stems lower, 6—15 cm long, rarely longer, few or several, prostrate or ascending, woody in the basal parts, more or less densely leafy. Leaf-blades narrow-oblong, oblong or elliptic, generally obtuse at the apex, acutish or rounded at the base, very shortly petioled or sessile,

10—15 mm long and 4—7 mm broad. Inflorescences few to several-flowered, the lower bracts leaflike, the upper ones linear. Bracteoles linear-lanceolate, about 3 mm long. Sepals linear-lanceolate, about 5 mm long. Corolla blue with white tube, rather large, to 14 mm long, the tube 5 mm, the limb 15—20 (—25) mm in diam. Filaments about as long as the linear anthers.

Distribution: S. Brazil, Paraguay, Uruguay. N. E. Argentina.

BRAZIL, without locality, *Sellow* (L, M, P). Rio Grande do Sul, *A. de Saint-Hilaire C², 1818⁵* (P); *Gaudichaud, Herb. Imp. du Brésil 635* (P); *Tweedie* (K); *Fox 299* (K).

PARAGUAY, S. Paraguay, Sept. 1892, *O. Kuntze* (UIS); Cordillera de Villarica, Dec. 1918, *P. Jorgensen 3477* (C); Corrientes, Paso de la Patria, sandy places, not rare, *Parodi*, type (ex *Parodi l.c.*); La Plata and adjacent countries, 1853—'56, *Edw. Palmer s. n.* (UIS); Cerros de Paraguay, woody campos, Dec. 1900, *E. Hassler 6700*, type of *E. paraguariensis* *Chod. et Hassl.* (Boiss); Leite, Ypoa, 1914, *Chodat 308, 309* (Boiss).

URUGUAY, *A. de Saint-Hilaire, C², 2518 bis* (P).

ARGENTINA, Corrientes, Itati, Sept. 1892, *Niederlein 177* (B); Buenos Aires, *Tweedie 163* (K).

Although I did not see the type of *E. grandiflorus* *Parodi*, the above specimens so completely agree with *Parodi's* description that I do not hesitate to accept that they are the same.

Section VII. LAGOPODINI Meissn.

Meissn. in Mart. Fl. Bras. VII (1869) p. 330, 332; Peter in Engl.-Prantl, Nat. Pfl. fam. IV, 3a (1897) p. 18.

Erect undershrubs, woody in the basal parts; leaves generally narrow, linear or linear-lanceolate, rarely broader, the lower ones rather dense, the upper mostly remote, with decurrent base, the stems consequently winged or with narrow ribs. Flowers in dense terminal spikes; bracts not leaflike, bracts, bracteoles and sepals densely villose, corolla hypocrateriform, filaments inserted at the mouth of the tube.

The erect habit, the decurrent leaf-bases, the remote upper leaves, except in *E. niveus* Mart., passing into the bracts of the dense, spicate, well-defined inflorescence form a very typical group of characters for this section and distinguish it at once from the other representatives of the genus. Especially the decurrent leaf-base is very remarkable in this genus and even in the family; in all the species of the section it is very conspicuous, except in *E. lagopus*, where only small narrow ribs at both sides of the leaf-base are present.

KEY TO THE SPECIES.

1. Leaves distinctly decurrent on the stems.
2. Stems and leaves glabrous or only with some hairs in the apical parts (cf. *E. pterygophyllus* Mart. var. *puberulus* Meissn.).
3. Leaves small, mostly not exceeding 20×2.5 mm. Inflorescence greyish-white or brownish villose. Stems narrow-alate. Bracts not exceeding the sepals. 93. *E. lagopodioides*.
- 3.* Leaves larger, 20—45 mm long and 3—5 mm broad. Inflorescence brown villose. Stems broadly alate. Bracts exceeding the sepals. 94. *E. pterygophyllus*.
- 2.* Stems and leaves villose or lanate. (cf. *E. pterygophyllus* Mart. var. *puberulus* Meissn.).
4. Leaves strongly diminishing in size towards the top; upper leaves remote. Inflorescences ovoid or cylindric. Stems and leaves sericeo-villose (floccose-lanate in the var. *floccosus*). 95. *E. pterocaulon*.

- 4.* Leaves not strongly diminishing in size towards the top; upper leaves dense. Inflorescences globular. Stems and leaves greyish-white lanate. 97. *E. niveus*.
- 1.* Leaves not distinctly decurrent, only with very narrow ribs at both sides of the base. 96. *E. lagopus*.

93. *Evolvulus lagopodioides* Meissn. in Mart. Fl. Bras. VII (1869) p. 333.

E. pterygophyllus auct. non Mart.; Glaziou in Bull. Soc. Bot. France LVIII (1911) Mém. III, p. 487.

Type: *Riedel 2515*, Brazil, Goyaz, Chapada de S. Marcos.

Stems several from a thick woody base, simple or branched, erect or slightly curved, glabrous or with sparse, appressed, whitish hairs in the apical parts, narrow-alate below by the decurrent leaf bases, terete towards the top, up to 40 cm high. Leaves sessile, narrow-linear, often revolute at the margins, attenuate and acute at the apex, not attenuate at the base, stiff, erect, the lower ones to 2.5 cm long and 2.5 (—3) mm broad, rather dense, often somewhat appressed to the stems, gradually decreasing in size towards the top, the upper leaves almost subulate, about 8 mm long and 0.5—1 mm broad, remote, all glabrous, reddish-brown in dried state like the stems. Lower internodes 4—8 mm long, upper ones 10—20 mm. Midrib prominent beneath. Inflorescences dense, solitary at the end of the stem and the branches or sometimes accompanied by a lateral one, globose, ovoid or cylindric, greyish-white or brownish villose by the dense hairiness of bracts and sepals, 1—2.5 cm long. Bracts narrow-lanceolate, long acuminate, a little shorter than the sepals, long whitish or brownish villose. Bracteoles linear, subulate, 3—3.5 mm long, villose. Sepals from a linear-lanceolate base long setaceous, whitish or brownish villose, 5—6 mm long. Corolla salver to funnel-shaped, blue, 15 mm long, tube slender, 6—7 mm long, limb pilose outside, 8—10 mm in diameter (*Meissner*). Anthers linear, filaments inserted at the mouth of the corolla tube. Ovary ovoid, glabrous. Capsule globose (*Meissner*).

Distribution: Brazil, Goyaz, Minas Geraes.

BRAZIL, without locality, *A. de Saint-Hilaire* (K). Goyaz, Chapada de S. Marcos, Sept. 1834, *Lund* (Br. C); id. in sandy grassy campos, Aug. 1834, *Riedel* 2515, type (K, Len); between the sources of Rio Torto and Sobradinho, in sandy campos, Nov. 1894, *Glaziou* 21798 (Br. K, P). Minas Geraes, 1844, *Weddell* 1916 (P); *A. de St.-Hilaire* C¹, 379 (P).

94. *Evolvulus pterygophyllus* Mart. in *Flora XXIV* (1841) 2. Beibl. p. 96; id. *Herb. Fl. Bras.* p. 336; Choisy in DC. *Prodr. IX* (1845) p. 441; Meissn. in *Mart. Fl. Bras. VII* (1869) p. 333, t. 119, fig. 2; Hoehne in *Anex. Mem. Inst. Butantan, Bot. I*, fasc. VI (1922) p. 35.

Type: *Pohl*, Brazil, Goyaz, near S. Isidoro.

Stems ramified at the woody base, erect, rather stiff, alate by the long-decurrent bases of the leaves, quite glabrous or sparsely villose in the upper parts, bright green or brown, to 70 cm high, leafy over the whole length. Leaves sessile, rather stiff, narrow-linear to linear-lanceolate, acute or acuminate at the apex, not or slightly attenuate at the base, glabrous or sparsely villose in youth, bright green or brown in dried state, 2—4.5 cm long, 3—5 mm broad, very gradually diminishing in size towards the top of the stems, the upper ones narrow-linear or linear-setaceous, 1—2 cm long, 1—2 mm broad, the wings of the medium-sized leaves 0.5—1 mm broad, the uppermost part of the stem almost wingless. Midrib prominent beneath, pale. Internodes to 10 mm long in the lower parts, the upper ones to 20 mm. Inflorescences terminal, solitary or accompanied by 1 or 2 smaller lateral ones, densely spicate, ovoid or cylindric, 2—3.5 cm long, 2 cm broad, long brown-villose. Bracts linear, with long filiform acumen, exceeding the sepals, 10—11 mm long, long brown-villose. Bracteoles filiform, 1—1.5 mm long. Sepals linear with long filiform acumen, villose like the bracts, 7—8 mm long. Corolla as in *E. pterocaulon* Moric. (according to *Meissner*). Ovary ovoid-globose, glabrous.

Distribution: Brazil, Matto Grosso (ex *Hoehne* l.c.). Goyaz, Minas Geraes.

BRAZIL, Matto Grosso, Porto Esperidião, Rio Jaurú, *Hoehne* (Rondon 702, ex *Hoehne* l.c.). Goyaz, near Goyaz, *Burchell* 6780 (Br. K);

near S. Isidoro, *Pohl 1470* (M, V); id., *Pohl s. n.*, type (Br). Minas Geraes, A. de *St.-Hilaire C¹, 414* (P).

This species is well characterized by its glabrous, winged stems, its stiff, glabrous leaves with strongly prominent midrib and its brown-villose, dense, spicate inflorescences. Martius based his description on a specimen collected "in deserto Minarum". The only specimen in herb. Martius (Br.) is a plant collected by Pohl near S. Isidoro, Goyaz, Brazil. This bears the handwriting of Martius and I suppose that this plant has to be considered as the type. The materials did not allow an examination of the corolla and the stamens. According to Meissner the flowers agree with those of *E. pterocaulon* Moric.

var. *puberulus* Meissn. l.c. p. 333.

Type: *Riedel 1386*, Brazil, Minas Geraes.

In the herbaria accessible to me this variety was only represented by *Riedel 1386* (Len.). This collection shows the habit of the species, but the stems and leaves are appressed-pilose. The stems are to 48 cm high, the leaves have a length of 3—4.5 cm and a breadth of 5—7 mm; the upper ones are also decurrent. Corolla funnel-shaped, blue, about 15 mm long, the tube narrow, about 5 mm long. Filaments inserted at the mouth of the tube. Ovary ovoid, glabrous.

Distribution: Brazil, Minas Geraes.

BRAZIL, Minas Geraes, in grassy campos, Jan. 1825. *Riedel 1386*, type (Len).

See the remarks under *E. pterocaulon* Moric.

95. *Evolvulus pterocaulon* Moric. Pl. Nouv. Amér. (1844) p. 140, t. 84; Choisy in DC. Prodr. IX (1845) p. 441; Meissn. in Mart. Fl. Bras. VII (1869) p. 333; Ule in Engl. Bot. Jahrb. XXI (1896) p. 416; Hall. f. in Jahrb. Hamb. Wiss. Anst. XVI, 3. Beih. (1899) p. 21; Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. VI, (1922) p. 35.

Type: *Blanchet 3824*, Brazil, Bahia, near Tamandua.

Stems robust or slender, simple or ramified in the basal half, erect, straight or slightly curved, alate by the decurrent leaf-

bases, terete upwards, densely appressed-villose or villose-tomentose, glabrescent and lignescent at the base, up to 80 cm high, densely leafy in the basal part, the upper leaves more remote. Leaves sessile, more or less densely appressed-villose or villose-tomentose, with brownish or whitish hairs, long and broad-decurrent, lanceolate to oblong-lanceolate, rarely ovate-oblong or obovate-oblong, more or less attenuate at the base, acute, apiculate or the lower ones obtusish at the apex, 1.5—5 cm long, 3—8 or rarely to 15 mm broad, strongly diminishing in size towards the top of the stems and branches, the upper ones linear, 7—10 mm long, 1—3 mm broad. Lower internodes 5—10 mm long, upper ones to 25 mm. Midrib generally conspicuous, lateral nerves indistinct. Inflorescences terminal, solitary or accompanied by 1 or 2 lateral shorter ones near the end of the branches, rarely at the end of short apical branches, densely spicate, ovoid or cylindrical, 2—5 cm long, 1—1.5 cm broad, rarely longer, long brownish or greyish villose; lower bracts slightly longer than the sepals, the upper ones as long as the sepals or a little shorter, long brownish or greyish villose, all linear-lanceolate, with filiform acumen. Bracteoles minute, 0.5 mm long, villose. Sepals linear-lanceolate or linear at their base, with long filiform acumen, villose like the bracts, 5—7.5 mm long. Corolla salver to funnel-shaped, blue or white, 12—13 mm long, the slender tube about as long as the sepals, 6—7 mm long, the limb with 5 pilose bands, 10—12 mm in diam. (*Meissner*). Filaments inserted at the mouth of the corolla tube, twice as long as the linear anthers. Ovary globose, glabrous, style branches divided above the middle. Capsule globose or ovoid, 4-valved, 2-seeded; seeds smooth, greyish brown.

Distribution: Brazil.

BRAZIL, without locality, *Swainson* (K); id., *Riedel* 2515 (Boiss., ex Hall. f. l.c.); Southern Brazil, 1842, *Dupré* (P); Western Brazil, *Tamberlik* (V, ex Hall. f. l.c.). *Matto Grosso*, Juruena, Rondônia, *Hoehne* (Rond. 1885, ex Hoehne l.c.); *Diamantino*, *Kuhlmann* (Rond. 2270, ex Hoehne l.c.). *Goyaz*, dry campo near São Domingos, May 1840, *Gardner* 4289 (K); *Almas*, *Pohl* (2981 according to Hall. f.) (M); sandy campo between Franca and Rio Parana, June 1834, *Riedel* 2358 (Len, NY). *Bahia*, *Blanchet* 72 (P); *Blanchet* 704 and 6021 (DC, ex Hall. f. l.c.); dry places, in thicket,

Blanchet 246 (DC); *Blanchet 375* (DC); catinga near Remanso, Dec. 1906, *Ule 7407* (K, L); near Tamandua, *Blanchet 3824*, type (Br, K, NH, P). Minas Geraes, campo between Rio Grande and Uberaba, July 1834, Lund, (Br, C); Parauna, Apr. 1892, *Glaziou 19674* p. p. (with *E. glomeratus*) (K, P); id. *Schwacke 8208* (B, ex Hall. f. l.c.); Serra do Cipo, *Herb. Warming 391* (C.). Espiritu Santo, Pão d'Alho, *Glaziou 9968* (C) São Paulo, between Franca and Rio Grande, in sandy campo, June 1834, *Riedel 2358* (K, Len, US); Araraquara, Nov. 1888, *A. Löfgren 1080* (C).

The hairiness of this species is rather variable. In the type and in several other specimens (e.g. *Ule 7407*, *Blanchet 246*, id. *375*) it is densely villose-tomentose with brown or whitish hairs, other plants show a less dense villosity. Here belong among others the specimens *Löfgren 1080*, Lund, *Riedel 2358*. The type-specimen of *E. pterygophyllus* Mart. var. *puberulus* Meissn. (*Riedel 1386*) shows a remarkable resemblance to certain specimens of this species, especially to the less densely hairy ones. The form and the stiffness of the leaves however is much like *E. pterygophyllus*, they show the same attenuate, acute apex as this species. A further research of specimens from the type- and neighbouring localities has to decide in how far *E. pterygophyllus* var. *puberulus* and *E. pterocaulon* are distinct from one another. The leaves of *E. pterocaulon* are generally lanceolate or oblong-lanceolate; occasionally they are broader, ovate- or obovate-oblong (*Ule 7407*, *Blanchet 375*). The first of these specimens has the bracts and sepals also broader, they are respectively lanceolate, short-acuminate and narrow-lanceolate, long-acuminate. *Blanchet 246* has the stems densely leafy throughout. *Blanchet 375* has the cylindrical inflorescence to 12 cm long.

As regards the hairiness of the stems and leaves 2 forms may be distinguished, the typical form and the var. *floccosus*.

var. *floccosus* Meissn. in Mart. Fl. Bras. VII (1869) p. 333; Hall. f. in Jahrb. Hamb. Wiss. Anst. XVI, 3. Beih. (1899) p. 21; Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. VI (1922) p. 35.

Type: *Burchell 6700—6*, Brazil, Goyaz.

Stems and leaves densely floccose or floccose-lanate. Hairs generally white or greyish-white.

Distribution: Venezuela, Bolivia, Brazil.

VENEZUELA, Guiana, savanna near Lower Caroni, Jan. 1904, Othmer (M).

BOLIVIA, Prov. Velasco, 200 m, Nov. 1892, O. Kuntze (US).

BRAZIL, without locality, A. de St.-Hilaire (P). Matto Grosso, between São Antonio and Cuyabá, in dry open sandy places, Dec. 1893, Malme 1258 (S, US); Lambari, Hoehne (Rond. 5449, 5450, ex Hoehne); Salto do Utiariti, Kuhlmann (Rond. 2266, ex Hoehne). Goyaz, Serra Dourada, Jan. 1893, Ule 453 (P); id., fl. Jan., Ule 3015 (ex Hall. f. l.c.); near Goyaz, Burchell 6700—6, type (Br, K, P). Bahia, near Bahia, Blanchet 704 (NH). Minas Geraes, near Uberaba, Dec. 1848, Regnell III, 184 (Br, C, Len, S, US); id., Jan., 1849, Regnell III, 184* (Calc, US). São Paulo, near Batataés, Regnell III, 184* (Br); between Canna Verde and Cajuru, Febr. 1849, Regnell III, 184* (P, S); between Canna Verde and Retiro da Laguna, March 1857, Regnell III, 184* (S); Miguel Calmon, J. F. Gomes (Osw. Cruz 1726, ex Hoehne l.c.); Brotas, G. Gehrt (OC 3655, ex Hoehne l.c.).

The numbers Swainson and Othmer respectively mentioned under the typical form and the var. *floccosus* are intermediate. The former is perhaps nearer to the typical, the latter to the floccose form.

96. *Evolvulus lagopus* Mart. in Flora XXIV (1841) 2. Beibl. p. 96; id. Herb. Fl. Bras. p. 336; Choisy in DC. Prodr. IX (1845) p. 441; Meissn. in Mart. Fl. Bras. VII (1869) p. 334.

Type: *Martius*, Brazil, Bahia, near Joazeiro.

Stems erect or slightly curved, slender, slightly branched, terete, only with very narrow decurrent ribs at both sides of the leaf-bases, sparsely appressed-pilose towards the top, glabrescent and lignescent at the base, green or reddish-brown, up to 60 cm high (*Martius*). Leaves sessile, linear, attenuate towards both ends, acute at the apex; moderate leaves to 40 mm long and 3 mm broad, diminishing in size towards the top of the branches, the upper ones narrow-linear, only 10 mm long and 0.5 mm broad, remote; all covered with short, soft, appressed hairs, glabrescent above; internodes 1—2 cm long, the upper ones longer, to 4 cm. Midrib generally distinct, lateral nerves invisible. Inflorescences terminal, solitary or rarely accompanied by a lateral one, densely spicate, sometimes interrupted at the base, ovoid or cylindric, 2—6 cm long, long brown villose; lower

bracts narrow linear-lanceolate, upper ones linear, all with long filiform acumen, exceeding the sepals, long brown villose, bract-
 coles minute, 0.5 mm. Sepals from a linear-lanceolate base long
 filiform, long brownish villose, 5 mm long. Corolla salver to
 funnel-shaped, bright lilac, up to 15 mm long, the tube slightly
 exceeding the sepals, 6—7 mm long, the limb with 5 pilose bands,
 according to *Meissner* 12—16 mm in diam. Filaments 1.5—2
 times as long as the linear anthers. Ovary globose, glabrous.
 Capsule not seen.

Distribution: Brazil, Piauhy, Bahia, Espiritu Santo,
 Rio de Janeiro.

BRAZIL, Piauhy, sandy campos near Oeiras, Apr. 1839, *Gardner* 2249
 (DC, K, NH, P). Bahia, near Joazeiro, in campos, fl. Apr.—May, *Martius*,
 type (M). Espiritu Santo, Pão d'Alho, in campos, May 1875, *Glaziou*
 9968 (P). Rio de Janeiro, *Glaziou* 9988 (K).

Shows a resemblance to some specimens of *E. pterocaulon*, has,
 however, a slighter habit, narrower leaves and not the rather
 broad-alate stems of the last species. On the contrary only small
 ribs occur here on each side of the leaf base. Characteristic are
 the long, slender, slightly curved branches with remote leaves.

var. pilosus Choisy in DC. Prodr. IX (1845) p. 441; *Meissn.*
 in Mart. Fl. Bras. VII (1869) p. 334.

Type: *Martius*, Brazil, Bahia, Serra de Tiuba.

Leaves and stems villose with whitish spreading hairs; leaves
 smaller than in the species, 10—14 mm long and 1—2 mm broad,
 more dense. Internodes short, only 2 mm long in the basal parts,
 in the apical parts longer.

Distribution: Brazil, Bahia.

BRAZIL, Bahia, Serra de Tiuba, in herbaceous vegetation, fl. March,
Martius, type (M).

Meissner was incorrect when he considered this as a young
 specimen of the species, the woody stem, densely covered with
 leafscars making this opinion improbable. For the present I wish
 to maintain the var. beside the species till further material is
 available. No doubt it is closely related to *E. lagopus*, it shows

the same ribs at both sides of the leafbase, just as in this species, the ribs are however shorter and the leaves more dense.

97. *Evolvulus niveus* Mart. in Flora XXIV (1841) 2. Beibl. p. 97; id. Herb. Fl. Bras. p. 337; Choisy in DC. Prodr. IX (1845) p. 442; Meissn. in Mart. Fl. Bras. VII (1869) p. 332; Hoehne in Anex. Mem. Inst. Butantan, Bot. I, fasc. VI, (1922) p. 35.

Type: *Martius*, Brazil, Minas Geraes, Serra do Grão Mogor.

Stems simple or slightly branched, erect, with erecto-patent branches, according to *Meissner* 30—45 cm, according to *Choisy* 60—90 cm high (the branches in herb. Munich are 30—40 cm long), densely leafy throughout, lignescent at the base, alate by the decurrent leaf bases. Leaves linear-lanceolate, attenuate to the apex, acuminate, slightly contracted at the base, decurrent on the stem (the wings 0.5—1 mm broad), greyish-white lanate-sericeous on both sides, 2—3 cm long, 3—5 mm broad, slightly diminishing in size towards the top of the stems, the upper leaves very dense, almost imbricate; midrib distinct, impressed above, prominent beneath. Inflorescences terminal, solitary or accompanied by a smaller lateral one, sometimes also a small sessile lateral one at half the height of the stem, all more or less globular, dense, long greyish or brownish villose, 1—2 cm in diam. Bracts linear-lanceolate, long acuminate, long villose, one-nerved, the upper ones 6—8 mm long, the lower ones longer and more leaflike. Sepals equal, with a lanceolate base and a long, slender, filiform acumen, long greyish-white or brownish villose, 6 mm long. Corolla etc. not seen.

Distribution: Brazil, Minas Geraes, Matto Grosso (ex *Hoehne* l.c.).

BRAZIL, Minas Geraes, Serra do Grão Mogor, *Martius*, type (M). Matto Grosso, Morro Pôdre, Chapada, *Hoehne* (Rondon 3054, ex *Hoehne* l.c.).

Very probably the specimen collected by *Martius* represents a species of *Evolvulus* and then belongs to the section *Lagopodini*,

the habit, decurrent leaves and inflorescences being much like those of the other representatives of this group. Corolla with stamens and pistil were absent in the only specimen I saw, and neither Martius nor Choisy or Meissner gave a description of these parts.

Doubtful and little-known species.

Evolvulus albiflorus Schlechtend. in *Linnaea* XXVI (1854) p. 654, see *E. tenuis* Mart. ssp. *sericatus* (House) v. Ooststr.

E. cuneifolius Raf. Fl. Tell. IV (1836, issued about the middle of 1838, according to Barnhart in *Torreya* VII (1907) p. 182) p. 82; id. *New Fl. of N. Amer.* IV (1836, according to Barnhart in *Torreya* VII (1907) p. 177 not issued until late in 1838) p. 56. "Erect smooth, leaves linear cuneate acute, peduncles uniflore pilose longer than leaves, calyx pilose linear, capsule pilose longer than calyx. Pine barrens of New Jersey, pedal, my specimen has no corolla and is in fruit which appear unilocular with one or two seeds, 2 styles persistent, stigmas obtuse. Probably a subgenus or genus *Plesilia* Raf. but the corolla and stamens must be described, the calyx as in *Stylisma*."

E. ellipticus Larrañaga, *Escritos* II (1923) p. 122, see *E. sericeus* Sw. var. *holosericeus* (HBK.) v. Ooststr.

E. ramulosus M. E. Jones, *Contrib. to Western Bot.* XV (1929) p. 149 probably belongs to the *Alsinoidei*—*Epedunculati*.

E. uniflorus Sessé et Moc., *Fl. Mexic.*, ed. 2 (1894) p. 78, see *E. sericeus* Sw. var. *discolor* (Benth.) Gray.

Excluded species.

Evolvulus agrestis Schweinf. *Beitr. Fl. Aethiop.* (1867) p. 92 = *Convolvulus agrestis* (Schweinf.) Hall. f. in *Engl. Bot. Jahrb.* XVIII (1894) p. 101.

E. capensis E. Mey. ex Choisy in *DC. Prodr.* IX (1845) p. 444 = *Seddera capensis* (E. Mey.) Hall. f. in *Bull. Herb. Boiss.* VI p. 529.

E. capitatus Moon, *Catal. indig. and exot. pl. Ceylon* (1824) p. 23 = *Cressa cretica* L. *Spec. Pl.* ed. 1 (1753) p. 223; cf. *Trimen, Fl. Ceylon* III (1895) p. 228.

E. digynus Sessé et Moc. Fl. Mexic. ed. 2 (1894) p. 78; according to the description this species has 2 filiform styles with capitate stigmas; does not belong to the genus *Evolvulus*, perhaps a *Dichondra*?

E. echioides Moric. var. *minor* Meissn. in Mart. Fl. Bras. VII (1869) p. 338 = *Croton timandroides* Muell. Arg. in Linnaea XXXIV (1865—'66) p. 132; identification by Dr. J. Lanjouw. Utrecht.

E. emarginatus Burm. f. Fl. Ind. (1768) p. 77, t. 30, fig. 1 = *Merremia emarginata* (Burm. f.) Hall. f. in Engl. Bot. Jahrb. XVIII (1894) p. 118.

E. erectus Glaziou in Bull. Soc. Bot. France LVIII (1911), Mém. III p. 490, nomen = *Jacquemontia evolvuloides* (Moric.) Meissn. in Mart. Fl. Bras. VII (1869) p. 307.

E. ferrugineus Wall. Cat. (1828) n. 1316 = *Convolvulus pluricaulis* Choisy Conv. Orient. (1834) p. 95 and id., var. *macra* Clarke in Hook. Fl. Brit. Ind. IV (1883) p. 218.

E. gangeticus L. Spec. Pl. ed. 2 (1762) p. 391 = *Cocculus villosus* DC. Syst. I (1818) p. 525; cf. Hall. f. in Bull. Herb. Boiss. VI (1898) p. 720, 723 = *Cocculus hirsutus* (L.) Diels in Pflanzenreich IV, 94 (1910) p. 236.

E. Glechoma Welw. Apont. Phytogeogr. Angola (1859) p. 589, n. 64 = *Merremia emarginata* (Burm. f.) Hall. f. in Engl. Bot. Jahrb. XVIII (1894) p. 118.

E. graminifolius Damm. in Engl. Bot. Jahrb. XXIII, Beibl. 57 (1897) p. 38 = *Jacquemontia linoides* (Choisy) Meissn. var. *major* (Choisy) Meissn. in Mart. Fl. Bras. VII (1869) p. 308; identification by Dr. H. Hallier of a specimen in the Berlin herbarium.

E. hederaceus Burm. f. Fl. Ind. (1768) p. 77, t. 30, fig. 2 = *Merremia hederacea* (Burm. f.) Hall. f. in Engl. Bot. Jahrb. XVIII (1894) p. 118.

E. Lavae Schweinf. ex Penzig in Atti Congr. bot. Genova (1892) p. 351 = *Cladostigma dioicum* Radlk. in Abh. Naturw. Ver. Bremen VIII (1883) p. 412.

E. macrophyllus Willd. ex Roem. et Schult. Syst. VI (1820) p. 199 = *Jacquemontia floribunda* (HBK.) Hall. f. in Engl. Bot. Jahrb. XVI (1893) p. 543.

E. madagascariensis Vatke in Linnaea XLIII (1882) p. 522 = *Heliotropium madagascariensis* (Vatke) Johnst. in Contrib. Gray Herb. XCII (1930) p. 91; cf. Hall. f. in Engl. Bot. Jahrb. XVI (1893) p. 536; id. in Bull. Herb. Boiss. VI (1898) p. 530, 723.

E. Muehlenbergii Spreng. Pugill. I (1813) p. 27. The leaves with aculeate margins and the peduncles opposite the leaves make it very improbable that this plant belongs to the family Convolvulaceae.

E. ovalifolius Torr. Bot. Mexic. Bound. (1858) p. 150 = *Breweria ovalifolia* A. Gray, Syn. Fl. N. Am. II, I (1886) p. 217 = *Bonamia ovalifolia* (Gray) Hall. f. in Engl. Bot. Jahrb. XVI (1893) p. 528.

E. Palmeri House in Bull. Torr. Bot. Club XXXIII (1906) p. 317 = *Krameria* spec.; identification by Dr. A. Pulle, Utrecht.

E. pilosus Roxb. Fl. Ind. II (1832) p. 106 = *Convolvulus pluricaulis* Choisy var. *macra* Clarke in Hook. Fl. Brit. Ind. IV (1883) p. 218.

E. Rutenbergianus Vatke in Abh. Naturw. Ver. Bremen IX (1885) p. 128 = *Linum* spec.; cf. Hall. f. in Bull. Herb. Boiss. VI (1898) p. 531, 723.

E. Sherardi Choisy in Mém. Soc. Phys. Genève VIII (1837) p. 82 = *Convolvulus micranthus* Roem. et Schult. Syst. IV (1819) p. 276; cf. Gray, Syn. Fl. N. Am. II, I, Suppl. (1886) p. 436 = *Jacquemontia micrantha* (Roem. et Schult.) G. Don, Gen. Syst. IV (1838) p. 283.

E. tridentatus L. Spec. Pl. ed. 2 (1762) p. 392 = *Merremia tridentata* (L.) Hall. f. in Engl. Bot. Jahrb. XVIII (1894) p. 116.

E. virgatus Choisy in DC. Prodr. IX (1845) p. 446 = *Convolvulus chondrilloides* Boiss. Diagn. Ser. I, 11 (1849) p. 83; cf. Boiss. Fl. Orient. IV (1879) p. 92.

LIST OF COLLECTORS' NUMBERS.

The collectors' numbers are printed in *italics*; the numbers in parentheses are the species numbers; *s. n.*: unnumbered specimens.

- Abbon *s. n.* (1, 41).
 Abbott 662 (35); 905 and 938 (61);
 962a (25); 1058 (25); *s. n.* (1).
 Ackermann *s. n.* (82).
 Afzelius *s. n.* (1).
 Agassiz *s. n.* (25).
 Aitchison 151 (1); 526 (1).
 Albans, St. *s. n.* (13).
 Allen, C. 119 (5); 227 (39).
 Allen, C. E. F. 53 (1); 124 (1).
 Allen, G. O. 61 (1).
 Alvarez, Trommel etc. *s. n.* (39).
 Andeer *s. n.* (35).
 Anderson 612 (1); *s. n.* (1).
 Andersson 35 (25); 137 (36); 138
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STELLINGEN.

I.

Het onderscheiden van een orde der Convolvulales is gerechtvaardigd.

II.

De Angiospermen kunnen verdeeld worden in vormen met en zonder echte vruchtbladen.

III.

De naamgeving van phytosociologische eenheden moet vastgesteld worden door een door het Internationaal Botanisch Congres benoemde commissie.

IV.

Indien op een Internationaal Botanisch Congres bij de vaststelling der nomenclatuurregels niet tot overeenstemming wordt gekomen, is het noodzakelijk, dat voor de betreffende punten een voorloopige regeling wordt gemaakt, geldend tot de definitieve vaststelling.

V.

De proeven van Cholodny met *Avena* leveren geen grond voor een critiek op de opvattingen van Blaauw over de phototropie van *Sinapis*.

Cholodny, N. in *Planta* 20, 1933.

VI.

De verklaring van Sierp van het verschil in transpiratie in licht van verschillende golflengte is te verkiezen boven die van Iwanoff en Thielmann.

Iwanoff, L. A. und Thielmann, M. in Flora N. F. 16, 1923.
Sierp, H. in Flora N.F. 28, 1933.

VII.

De infectiemethode van Stapp bij zijn onderzoekingen omtrent resistentie van *Phaseolus* tegenover *Pseudomonas medicaginis* var. *phaseolicola* Burkh. is onbetrouwbaar voor beoordeeling van de resistentie der verschillende boonenrassen tegenover deze bacterie.

Stapp, C. in Angewandte Botanik 15, 1933 en 16, 1934.

VIII.

De pseudobranche der Muraenidae is niet, zoals Grassi beweert, van hoïdalen oorsprong.

IX.

De theorie van Brücke-Sabatier over de bloedverdeling in het hart van de Anura is onjuist.

X.

De oogspies van het gewei van de Reuzenherten is niet homoloog met die van de recente vertegenwoordigers van het geslacht Cervus.

Soergel, W. in Abh. Senckenb. Naturf. Ges. 39, 1927.

