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NEW EAST AFRICAN PLANTS

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The Smithsonian African Expedition of 1909-10, under the direction of Col. Theodore Roosevelt, was planned with the purpose of increasing the biological collections of the United States National Museum. While the attention of the expedition was devoted primarily to the larger mammals of the region traversed, collections were also secured of other animals and of plants. The plants were collected chiefly by the late Dr. Edgar A. Mearns, one of the naturalists of the party. Although Dr. Mearns was interested principally in birds, he obtained a large series of plants, consisting of over three thousand numbers, about 2,300 of these coming from British East Africa, 650 from Uganda, and 125 from the Belgian Congo.

It is to be regretted that Dr. Mearns's other duties did not permit him to devote more time to botanical collections, for by his long experience as a field botanist he was eminently qualified for such work. As naturalist of the Mexican Boundary Survey of 1892-93 he collected or had collected under his direction the largest and best representation ever obtained, consisting of several thousand numbers, of the flora of that part of the United States and Mexican boundary which extends from El Paso, Texas, to San Diego, California. Dr. Mearns secured also what is undoubtedly the largest series of plants ever obtained in the Yellowstone National Park, and in addition he collected extensively in the Philippines, Arizona, Florida, Rhode Island, Minnesota, and southern New York. All his collections are deposited in the U. S. National Museum, and probably no one person has contributed a larger number of plants to that institution.

Mr. Edmund Heller, also a naturalist of the Smithsonian African Expedition, secured a smaller collection of plants, most of them from localities not visited by Dr. Mearns. In addition, Mr. Heller accompanied the Paul J. Rainey African expedition of 1911-12, and in connection with his zoological collections obtained an interesting series of plants.

So far only a part of the East African botanical collections has been studied, but even this partial study indicates that the series is of unusual interest. This is notably true of the specimens obtained upon Mount Kenia, one of the three highest peaks of tropical Africa. It is expected that ultimately it will be possible to publish a complete report upon the botanical collections. The present paper consists of descriptions of some of the apparently new species segregated in the groups thus far studied. There are included also a number of necessary nomenclatorial transfers.

The writer is indebted to Mr. Spencer Le M. Moore of the British Museum for the description of the new heath of the difficult genus *Erica*.

RADICULA CRYPTANTHA (A. Rich.) Standley

Nasturtium cryptanthum A. Rich. Tent. Fl. Abyss. 1: 15. 1847

RADICULA INDICA (L.) Standley

Sisymbrium indicum L. Mant. Pl. 93. 1767

RUBUS KENIENSIS Standley, sp. nov.

Caules dense fulvo-pilosi, aculeis numerosis brevibus recurvatis armati; folia pinnata, 3-5-foliolata, stipulis linearibus vel lanceolatis, foliolo terminali ovali vel ovali-orbiculari, basi subcordato vel rotundato, apice acuto vel abrupte acuminato, foliolis lateralibus angustioribus petiolulatis, omnibus rugosis dentatis, supra sparse et breviter pilosis, subtus dense pilosis, venis subtus prominentibus et aculeatis; paniculae pauciflorae; sepala oblonga vel ovalia vel obovata, cuspidata; petala suborbicularia alba; drupae numerosae, siccae vel subsiccae, breviter pilosae, pyrenis rugosis.

Stems stout, brown, densely pilose with short fulvous eglandulose hairs, bearing numerous short stout compressed recurved spines; leaves pinnately 3 or 5-foliolate, the stout petioles 2.5-5 cm. long, armed, like the rachis, with numerous short stout recurved spines, densely short-pilose; stipules linear or lanceolate, about 1 cm. long, attenuate; terminal leaflet oval to ovate-orbicular, 6.5-9 cm. long, 4-6 cm. wide, subcordate or rounded at the base, acute to abruptly acuminate at the apex, on a petiolule 2-4 cm. long, the lateral leaflets slightly narrower than the terminal one, rounded or obtuse at the base, on petiolules 3-5 mm. long, all the leaflets firm, more or less rugose, finely and irregularly dentate, sparsely short-pilose on the upper surface, densely pilose beneath, at least when young, the

veins prominent beneath, the midvein armed with few or numerous short stout recurved spines; panicles few-flowered, 8-10 cm. long, the bracts lanceolate and entire or trilobate; pedicels 1-2 cm. long, densely pilose, armed with short slender recurved spines; sepals oblong, oval, or obovate, 1 cm. long, abruptly cuspidate, the tip 1-2 mm. long, densely sericeous-pilose on both surfaces with fulvous hairs; petals suborbicular, 12-14 mm. long, white, rounded and crenate at the apex; fruit about 1 cm. in diameter, the drupes numerous, dry or nearly so, short-pilose; pyrenes 3-3.5 mm. long, slightly compressed, rugose.

Type in the U. S. National Herbarium, no. 632297, collected on the western slopes of Mount Kenia, British East Africa, in the bamboo zone, altitude about 3,000 meters, September 28 to October 7, 1909, by E. A. Mearns (no. 2325). This specimen is in fruit, but a flowering branch of the same collection is mounted on sheet 632296. Here also belongs no. 1791, from the lower border of the bamboo zone, collected October 8 to 13.

The proposed species is related to *Rubus petitianus* A. Rich., a plant of the mountains of Abyssinia, which is distinguished by its much less pubescent leaves and very differently shaped sepals. It seems to agree with none of the other species described in recent years from the highlands of eastern tropical Africa.

RUBUS MEARNSII Standley, sp. nov.

Caules dense glanduloso-setosi, aculeis sparsis brevibus recurvatis armatis; folia pinnata, foliolis 3-5, ovatis vel oblongo-ovatis, basi rotundatis vel subcordatis, apice subabrupte acuminatis vel longe attenuatis, rugosis, crenato-dentatis, supra sparse et breviter pilosis, subtus breviter pilosis et ad venas prominentes glanduloso-setosis; inflorescentiae axillares et terminales, 1-3-florae; sepala ovata, longe acuminata vel attenuata, dense glanduloso-setosa, aculeata; fructus sepalis multo brevior, drupis numerosis, siccis, apice puberulentis, basi tomentosis.

Stems stout, densely glandular-setose with short setae tipped with reddish glands, armed with few short, stout, slightly recurved spines; leaves pinnately 5-foliolate, or the upper 3-foliolate, the stout petioles 3-6 cm. long, densely glandular-setose; leaflets ovate or oblong-ovate, 4.5-8 cm. long, 2.5-4 cm. wide, rounded or subcordate at the base, subabruptly acuminate to long-attenuate at the apex, somewhat rugose, finely crenate-dentate with apiculate teeth, sparsely short-pilose on the upper surface, glandular-setulose

beneath along the veins and short-pilose elsewhere, the veins prominent beneath, bearing a few short weak spines, the terminal leaflet rarely somewhat lobed, on a petiolule 5-14 mm. long, the lateral leaflets sessile, those of the upper pair smaller than those of the lower pair; flowering branches axillary and terminal, 1-3-flowered, the bracts 3-foliolate, the peduncles 2-2.5 cm. long, glandular-setose; sepals ovate, 1.5-2.5 cm. long, 6-8 mm. wide, long-acuminate or attenuate to a subulate tip, densely glandular-setose outside and armed with numerous slender spines, short-pilose within; petals not seen; fruit not more than half as long as the sepals, the drupes numerous, apparently dry, puberulent above, tomentose at the base, the pyrenes 3-4 mm. long, rugose.

Type in the U. S. National Herbarium, no. 631482, collected on the western slopes of Mount Kenia, British East Africa, in the giant heath zone, altitude about 3,630 meters, September 21 to 27, 1909, by E. A. Mearns (no. 1431).

The plant is related to *Rubus mauensis* Engler, described from Mau Mountain, not far from Mount Kenia. That species differs in its trifoliolate leaves, with leaflets about as broad as long, and in its narrower sepals.

RUBUS ROOSEVELTII Standley, sp. nov.

Caules juniores pilis laxis fasciculatis sparse tomentulosi, vetustiores glabrati, aculeis numerosis validis recurvatis armati; stipulae lineares ciliatae; folia palmata, 5-foliolata, foliolis petiolulatis, suborbicularibus usque obovato-ovalibus, basi rotundatis vel subcordatis, apice acutis vel breviter acuminatis, dentatis subcoriaceis rugosis, supra glabris vel sparse adpresso-pilosis, subtus minute glanduloso-puberulentis et ad venas prominentes adpresso-pilosis; paniculae terminales multiflorae, ramulis tomentulosis; sepala lanceolata-oblonga acuminata; petala obovata alba, sepalis dimidio longiora.

Stems reddish brown, the young ones very sparsely tomentulose with weak fasciculate hairs, soon glabrate, armed with numerous stout, short, compressed, strongly recurved spines; stipules linear, 10-12 mm. long, attenuate, ciliate; leaves palmately 5-foliolate, the petioles 2.5-4.5 cm. long, with pubescence and spines like those of the stems; petiolules 4-15 mm. long, fasciculate-pilose with fulvous hairs; leaflets suborbicular to oval, obovate-oval, or oval-ovate, 3-5.5 cm. long, 2-4 cm. wide, rounded or subcordate at the base, acutish to short-acuminate at the apex, finely dentate with narrow acute or mucronate teeth, thick and firm, strongly rugose, dark

green on the upper surface and glabrous or very sparsely appressed-pilose, slightly paler beneath, sparsely appressed-pilose along the veins and minutely glandular-puberulent, the veins very prominent beneath, the midvein armed with numerous slender, strongly recurved spines; panicles terminal, many-flowered, about 10 cm. long and 5 cm. wide, narrowly pyramidal, the branches densely tomentulose; bractlets linear, tomentulose; pedicels 5-10 mm. long, armed with slender recurved spines; sepals lance-oblong, 5-7 mm. long, acuminate, short-apiculate, densely tomentulose with yellowish hairs; petals one and one-half times as long as the sepals, white, obovate, emarginate; fruit not seen.

Type in the U. S. National Herbarium, no. 632343, collected on the western slopes of Mount Kenia, British East Africa, in the bamboo zone, altitude about 3,000 meters, September 28 to October 7, 1909, by E. A. Mearns (no. 2371).

The writer is unable to find any previous report of a *Rubus* with palmate leaves from eastern Africa.

CHAMAECRISTA GRANTII (Oliver) Standley

Cassia grantii Oliver, Fl. Trop. Afr. 2: 279. 1871

CHAMAECRISTA KIRKII (Oliver) Standley

Cassia kirkii Oliver, Fl. Trop. Afr. 2: 281. 1871

CHAMAECRISTA MIMOSOIDES (L.) Standley

Cassia mimosoides L. Sp. Pl. 379. 1753

CHAMAECRISTA NIGRICANS (Vahl) Standley

Cassia nigricans Vahl, Symb. Bot. 1: 30. 1790

CHAMAECRISTA USAMBARENSIS (Taub.) Standley

Cassia usambarensis Taub. in Engl. Pflanzenw. Ost-Afrikas C: 201. 1895

INDIGOFERA MEARNsii Standley, sp. nov.

Frutex ramosus, ramis pilis fuscis dense puberulentis; stipulae lineari-subulatae; folia numerosa, internodiis multo longiora, foliolis 9-13, lateralibus oppositis, ovalibus vel ovali-oblongis, basi et apice rotundatis vel obtusissimis, mucronatis, supra strigillosis, subtus pallidis et densius strigillosis; racemi axillares vel terminales, dense multiflori; bractae subulatae, calycem aequantes vel eo breviores; calyx fusco-puberulentus, lobis tubum aequantibus; legumina deflexa recta subteretia 7-8-sperma.

Erect shrub, much branched, the branches ascending, stout, dark brown or grayish brown, densely puberulent with dark brown hairs: stipules linear-subulate, 2-3 mm. long; leaves numerous, much longer than the internodes, the rachises 3-5 cm. long, shallowly sulcate on the upper side, densely brown-puberulent; leaflets 9-13, the lateral ones opposite, oval or oval-oblong, 9-20 mm. long, 4-8 mm. wide, rounded or very obtuse at each end, mucronate at the apex, rather firm, grayish green and strigillose on the upper surface, pale beneath and more densely strigillose; flowers partly in dense axillary racemes up to 10 cm. long, on peduncles 3 cm. long or shorter, but also in terminal racemes, these sometimes corymbose, the racemes very dense, many-flowered, the rachis densely brown-puberulent; bracts subulate, equaling or shorter than the calyx; pedicels 1-2 mm. long; calyx 2 mm. long, densely brown-puberulent, the lobes about as long as the tube; banner 5-7 mm. long, densely brown-sericeous outside; legumes deflexed, straight, subterete, 2.5-3.5 cm. long, acuminate at the apex, mostly 7-8-seeded, densely covered with short, closely appressed, dark brown hairs.

Type in the U. S. National Herbarium, no. 631040, collected in the vicinity of Nairobi, British East Africa, altitude about 2,000 meters, August 16 to September 3, 1909, by E. A. Mearns (no. 1004). Mearns's no. 958 from the same locality is this species, as well as no. 208, from Juja Farm, near Nairobi.

The proposed species is an ally of *Indigofera macrophylla* Schum., which differs in its large leaflets, long slender racemes, and glabrous legumes. It may be that *I. mearnsii* is the same as *I. oliveri* Schweinf.¹ That name was applied to a plant collected in the Masai Highlands near N'doro by Von Höhnelt, but no description has ever been published.

ERIOSEMA DICTYONEURON Standley, sp. nov.

Herba erecta, basi fruticosa, ramis validis striatis, pilis fuscis vel fulvis dense et breviter pilosis; stipulae lanceolatae; folia unifoliolata, petiolis brevissimis, laminis ovato-ovalibus vel late oblongo-ovatis, basi subcordatis, apice rotundatis vel late obtusis, subcoriaceis, supra rugulosis et sparse sericeis, subtus fulvo-sericeis, venis subtus prominentibus, reticulatis; racemi axillares et terminales, densi, bracteis ovatis vel lanceolatis; calyx 8-10 mm. longus, lobis linearibus, extus piloso-sericeis; legumina dense pilosa.

¹ Engl. Hochgebirgsflora Trop. Afr. 259. 1892.

Plants erect, fruticose at the base, sparsely branched, the branches erect or strongly ascending, stout, striate, densely short-pilose with fulvous or brown hairs; stipules lanceolate, 2-4 mm. long, brown, densely pilose-sericeous outside; leaves simple, the petioles very stout, about 2 mm. long; leaf blades ovate-oval or broadly oblong-ovate, 2.5-4 cm. long, 1.6-2.8 cm. wide, subcordate at the base, rounded or broadly obtuse at the apex, subcoriaceous, rugulose on the upper surface and thinly sericeous with short hairs, sericeous beneath with short fulvous hairs, very prominently veined beneath, the lateral veins about 5 on each side, the secondary veins coarse, closely reticulate; flowers in short axillary racemes and in dense terminal racemes up to 5 cm. long; bracts ovate or lanceolate, 3 to 4 mm. long, densely pilose; pedicels 2 to 8 mm. long; corolla not seen; calyx 8 to 10 mm. long, the tube very short, the lobes linear, attenuate, pilose-sericeous outside; legume about 2 cm. long, 7-8 mm. wide, obtuse or acute, mucronate, 2-seeded, densely pilose with long brown hairs; seeds 3.5-4 mm. long, finely spotted with brown and black.

Type in the U. S. National Herbarium, no. 631103, collected between Thika and Fort Hall, British East Africa, altitude 1,200 to 1,500 meters, September 3 to 9, 1909, by E. A. Mearns (no. 1067).

Distinguished from the other African species with simple leaves by the broad, coriaceous, reticulate-veined leaf blades.

GERANIUM KENIENSE Standley, sp. nov.

Caules graciles, procumbentes, dense et minute viscido-puberuli; folia opposita petiolata, laminis angulata-orbicularibus 5-7-lobatis, lobis late cuneatis 5-dentatis, minute puberulis et sparse setosopilosis; pedunculi 1-flori; sepala anguste oblonga vel lanceolato-oblonga, acuminata; petala late obovata purpurascens; fructuus rostrum breviter hirtellum, valvulis hirsutis.

Stems slender, procumbent, 20-30 cm. long, densely and minutely viscid-puberulent, the internodes 3.5-9 cm. long; cauline leaves opposite, the slender petioles 3.5-12 cm. long, minutely viscid-puberulent and sparsely pilose; leaf blades angulate-orbicular, 2.5-4 cm. broad, 5-7-lobed two-thirds the distance to the base, the lobes broadly cuneate, usually 5-dentate, the teeth oval-oblong or ovate, obtuse or acutish, the blades rather firm, minutely puberulent and sparsely setose-pilose with appressed hairs; stipules oval-ovate,

5-6 mm. long, 3 mm. broad, acute or acuminate, membranaceous, minutely puberulent and sparsely pilose; peduncles 5-6.5 cm. long, slender, 1-flowered, the bracts lanceolate, 2.5-3 mm. long; pedicels minutely viscid-puberulent; sepals narrowly oblong or lance-oblong, 6-7 mm. long, acuminate, mucronate, densely and minutely puberulent and sparsely short-pilose, the mucro 1 mm. long; petals broadly obovate, purplish, 8 mm. long; fruit (immature) 15 mm. long, the beak short-hirtellous and puberulent, the valves hirsute.

Type in the U. S. National Herbarium, no. 631573, collected on the western slopes of Mount Kenia, along the trail from West Kenia Forest Station to summit, in the giant heath zone, British East Africa, altitude about 3,630 meters, September 21 to 27, 1909, by E. A. Mearns (no. 1513).

The proposed species is doubtless most closely related to *Geranium simense* Hochst. That species, however, is clearly distinguished by its very different pubescence, which is composed of long, slender, reflexed hairs, without any trace of the minute puberulent pubescence characteristic of *G. kenianse*. There is a difference also in leaf outline, the blades in *G. simense* being more deeply lobed and uniformly with 5 divisions.

MONSONIA PUMILA Standley, sp. nov.

Herba perennis, erecta vel adscendens, caulibus dense cinereis; folia opposita, petiolis laminis aequilongis, laminis rhombeo-ovatis, apice obtusis vel rotundatis, basi truncatis vel rotundatis, crenulatis, crispatis, supra glabris, subtus ad venas cinereis; pedunculi 1-2-flori; sepala lineari-oblonga, minute glandulosa et albo-hirsuta; petala late cuneato-obovata integra.

Plants erect or ascending, 4-6 cm. high, perennial from a thick branched caudex; stems stout, sparsely branched, very densely cinereous, the pubescence short, coarse, appressed; leaves cauline, opposite, the petioles about equaling the blades, cinereous; stipules linear-setaceous, 4-7 mm. long, white-hirsute; leaf blades rhombic-ovate, 8-16 mm. long, obtuse or rounded at the apex, truncate or rounded at the base, crenulate, crispate, very thick, glabrous above, cinereous beneath along the veins; peduncles 1-2-flowered, 1-1.8 cm. long, cinereous, the bracts linear-lanceolate; sepals linear-oblong, 1 cm. long, finely glandular and white-hirsute, the broad margins membranaceous, the mucro 1.5 mm. long; petals 1.5 cm. long, apparently purplish, broadly cuneate-obovate, entire; fruit (immature) appressed-hirsute.

Type in the U. S. National Herbarium, no. 630563, collected on the Southern N'guaso Nyiro River, "Sotik Country," British East Africa, altitude 1,800 to 2,100 meters, July 1 to 3, 1909, by E. A. Mearns (no. 540).

Although the specimens are only in flower, it is evident from their general appearance that they belong to the section *Plumosae*.¹ The proposed species seems to be related to *Monsonia longipes* Knuth, described from Makindu, British East Africa, but that is a very different plant in stature and pubescence.

VIOLA MEARNSII Standley, sp. nov.

Herba perennis, decumbens vel prostrata, caulibus gracilibus, retrorse hirtellis; stipulae ovatae usque lineari-lanceolatae, laciniatolobatae punctatae ciliatae; folia petiolata, laminis suborbicularibus vel reniformi-orbicularibus, apice late rotundatis, basi subcordatis vel truncatis, crenatis, ad venas minute hirtellis, subtus punctatis; sepala anguste lanceolato-oblonga ciliata; petala caerulea.

Decumbent or prostrate perennial, much branched, the branches slender, brownish, finely retrorse-hirtellous with white hairs; stipules thin, green, ovate to narrowly oblong or linear-lanceolate, 4-6 mm. long, acuminate to attenuate, ciliate, brown-punctate, laciniately lobed; petioles slender, 0.5-2 cm. long, retrorse-hirtellous; leaf blades suborbicular or reniform-orbicular, 7-18 mm. broad, broadly rounded at the apex, subcordate or truncate at the base, finely crenate, ciliate, minutely hirtellous on the upper surface along the veins, paler beneath and brown-punctate, retrorse-hirtellous along the veins; peduncles axillary, 1-6.5 cm. long, retrorse-hirtellous, bracteate at about the middle, the bracts lance-linear; sepals narrowly lance-oblong, 5-6 mm. long, ciliate; petals blue, 6-8 mm. long, the spur 2-2.5 mm. long and nearly as thick; capsules 5 mm. long, brown-punctate; seeds oval, 1.8 mm. long, pale brown, smooth.

Type in the U. S. National Herbarium, no. 631672, collected in the bamboo zone, western slopes of Mount Kenia, along the trail from West Kenia Forest Station to summit, British East Africa, altitude about 3,000 meters, September 28 to October 7, 1909, by E. A. Mearns (no. 1718). Mearns's no. 1754 from the same locality is also this species; likewise his no. 1344, which was collected in the giant heath zone at an altitude of about 3,630 meters.

Very probably this plant is the one described by Engler as *Viola abyssinica eminii*, from Mount Kilimanjaro and Mount Ruwenzori.

¹ Knuth in Engl. Pflanzenreich 53: 293. 1912.

His description, however, is too incomplete to be certain. *Viola mearnsii* is a near relative of *V. abyssinica* Steud. but the latter is well distinguished by the narrower, acute leaves, narrow stipules, larger capsules and flowers, and especially by the spreading pubescence.

ERICA KENIENSIS S. Moore, sp. nov.

Fruticulus glaber ramulis elongatis erectis apice floriferis, foliis suboppositis nisi alternis satis dense erecto-imbricatis sessilibus angustissime lineari-lanceolatis breviter acuminatis glabris pagina superiore planis pagina inferiore carinatis, floribus tetrameris in foliorum summorum axillis solitariis pedicellis juxta medium bibracteolatis quam corolla plane brevioribus fultis, calycis segmentis erectis basi latis sursum lanceolatis acuminatis corollam fere semiaequantibus, corollae urceolatae lobis rotundatis obtusissimis, staminibus 8 filamentis paullo supra basin antherarum dorsifixis antheris quadrato-oblongis loculis superne liberis obtusis basi curvatoaristatis, ovario globoso quam stylus inclusus brevior.

TABLE I

	Leaves	Pedicels	Bracteoles	Calyx and Corolla	Anthers
<i>Whyteana</i>	Frequently in verticels or subverticels of 4.	3 mm. long.	Rather more than 1 mm. long.	Calyx segm'ts reflexed. Corolla tube 3.5 × 3 mm.	Oblong throughout, 0.7 mm. long.
<i>Swynnertonii</i> .	Usually in verticels or subverticels of 3.	6-7 mm. long.	3-4 mm. long.	Calyx segm'ts reflexed. Corolla tube 4 × 3.5 mm.	Narrowed above, 1 mm. long.
<i>Keniensis</i>	Usually subopposite or alternate.	2 mm. long.	1.5 mm. long.	Calyx segm'ts erect. Corolla tube 5.5 × 3.5 mm.	Not narrowed above, 1 mm. long.

Hab. British East Africa, Mt. Kenia, bamboo zone, from West Kenia Forest Station to summit, at about 3,000 meters, *E. A. Mearns* 1734. Type in the Herbarium of the British Museum.¹

Planta bispithamea. Folia pleraque 6-7 mm. long., 0.75-1 mm. lat., crassiuscula, in sicco brunnea. Pedicelli 2 mm. long.; bracteolae anguste lineares, 1.5 mm. long. Calycis segmenta 2.5 mm. long., margine microscopice ciliolata. Corolla rosea, in toto 5.5 mm. long., 3.5 mm. lat. Filamenta 3 mm. long., antherae 1 mm.

¹ Mearns's nos. 1485, 1662, and 1767, from Mt. Kenia, are also this species.—P. C. S.

Ovarium 1 mm. diam., subprofunde 8-sulcatum; ovula in loculo plura. Stylus 2.75 mm. long.

The affinity of this is with the Southern Tropical montane species *E. whyteana* Britten and *E. swynnertonii* S. Moore. The chief differences between the three are as in Table I.

ASTROCHLAENA MENISPERMOIDES Standley, sp. nov.

Caules graciles prostrati, pilis fulvis stellato-pubescentes; foliorum laminae ovato-orbiculares vel rhombeo-orbiculares vel summae late rotundato-ovatae, apice late rotundatae vel obtusae, basi truncatae usque subcordatae, integrae, pilis brevibus stellatis pubescentes; pedunculi plerumque 3-flori, bracteis linearibus; sepala oblonga vel anguste oblonga, exterioribus obtusis, dense stellato-pubescentibus, interioribus acutis, costa excepta glabris; corolla glabra; capsulae glabrae; semina dense et minutissime puberulae.

Stems slender, prostrate, about 1 meter long, branched, stellate-pubescent with fulvous hairs; petioles slender, 0.5-2 cm. long; leaf blades ovate-orbicular or rhombic-orbicular, or the uppermost broadly rounded-ovate, 1.5-2.8 cm. long, 1.4-3.5 cm. wide, usually broader than long, broadly rounded to obtuse at the apex, truncate or subcordate at the base, entire, stellate-pubescent on both surfaces with fulvous hairs; peduncles axillary, slender, 1.5-2.8 cm. long, mostly 3-flowered, the bracts linear, 2-3 mm. long, the pedicels 5-10 mm. long, recurved in age; sepals 8-10 mm. long, oblong or narrowly oblong, the outer obtuse, densely stellate-pubescent, the inner acute, glabrous except along the costa; corolla about 3.5 cm. long, glabrous, the tube 4-5 mm. in diameter; capsule 7-9 mm. in diameter, glabrous; seeds densely and very minutely pubescent.

Type in the U. S. National Herbarium, no. 630249, collected in the vicinity of Nairobi, British East Africa, altitude about 2,000 meters, May 26 to June 1, 1909, by E. A. Mearns (no. 236).

Readily distinguished from the other East African species by the broad, small leaf blades, associated with the long, prostrate stems. The corolla appears to be rose purple.

CONVOLVULUS KENIENSIS Standley, sp. nov.

Caules herbaceae, scandentes, pilis brevissimis patulis fulvis pilosae; folia petiolata, laminae late cordato-ovatis vel triangulari-ovatis, interdum subhastatis, apice acutis usque acuminatis, basi leviter vel profunde cordatis, lobis basalibus rotundatis vel angulatis, integris, junioribus dense piloso-sericeis, vetustioribus sparse

et breviter pilosis; pedunculi multiflori, apice bracteas 2 foliaceas gerentes, floribus capitatis, capitibus solitariis vel pluribus, bracteis floralibus late ovalibus vel suborbicularibus, calycem aequantibus vel excedentibus; sepala late ovata usque suborbicularia, scariosa; corolla campanulata alba; ovarium glabrum.

Stems herbaceous, scandent, slender, pilose with very short spreading fulvous hairs; petioles 0.6-3 cm. long; leaf blades broadly cordate-ovate or deltoid-ovate, sometimes subhastate, 3-8 cm. long, 2.3-6 cm. long, acute to acuminate at the apex, shallowly or deeply cordate at the base, the lobes rounded or angulate, thin, entire or slightly undulate, densely pilose-sericeous when young with fulvous hairs, thinly short-pilose in age; peduncles 2-10 cm. long, many-flowered, bearing at the apex 2 leaflike bracts, the flowers numerous, capitate, the heads 1 or several, the pedicels 5 mm. long or shorter, the bracts subtending the flowers broadly oval or suborbicular, equaling or exceeding the calyx, obtuse or abruptly short-cuspidate, short-pilose; sepals 10-13 mm. long, 10 mm. wide or narrower, broadly oval, ovate-oval, or suborbicular, scarious, the outer ones pilose with very short fulvous hairs; corolla campanulate, 2.8 cm. long, white, the margin dentate, densely sericeous in bud; filaments about 1 cm. long, short-pilose below; style as long as the filaments, the 2 stout filiform styles 3 mm. long; ovary glabrous.

Type in the U. S. National Herbarium, no. 631345, collected on the western slopes of Mount Kenia, British East Africa, in the giant heath zone, altitude about 3,630 meters, September 21 to 27, 1909, by E. A. Mearns (no. 1294).

Related, apparently, to *Convolvulus kilimandschari* Engler, a plant with longer pubescence, obtuse leaf blades, and acute bracts.

EHRETIA INAMOENA Standley, sp. nov.

Rami juniores hirsuti, vetustiores glabrescentes; folia petiolata, laminis ovalibus usque ovali-obovatis, basi subcordatis usque obtusis, apice obtusis usque acuminatis, integris, supra glabris vel ad costam sparse hirtellis, subtus sparse hirsutis vel hirtellis; paniculae terminales, dense multiflorae, ramulis breviter pilosis; calyx 5-lobatus, ferrugineo-puberulus, lobis ovatis acutis; corolla glabra, tubo 3 mm. longo, lobis ovalibus, apice rotundatis, 2-3 mm. longis; stamina exserta; fructus 4-lobatus.

Branches stout, brownish, hirsute when young with rather short slender stiff whitish hairs, glabrate in age; petioles 0.8-1.8 cm. long, hirsute; leaf blades oval, oval-obovate, or oval-oblong, 5.5-12

cm. long, 2.5-6.5 cm. wide, subcordate to obtuse at the base, obtuse to acuminate at the apex, sometimes abruptly acuminate, entire, thin, glabrous on the upper surface or sparsely hirtellous along the midvein, thinly hirsute or hirtellous beneath, the veins impressed on the upper surface, prominent beneath, the secondary ones laxly reticulate; panicle terminal, up to 12 cm. broad, many-flowered, dense, the branches densely short-hirsute; calyx 5-lobed, 2 mm. long, ferrugino-puberulent, the lobes ovate, acute, minutely ciliate; corolla tube 3 mm. long, glabrous, the lobes 2-3 mm. long, oval, rounded at the apex, ciliate; stamens exserted, inserted in the corolla throat; style long-exserted, divided one-fourth its length; fruit 5-6 mm. in diameter, 4-lobed.

Type in the U. S. National Herbarium, no. 631940, collected along the trail from Nyeri to Wambugu, British East Africa, altitude 1,500 to 1,800 meters, October 21 to 25, 1909, by E. A. Mearns (no. 1981). Nos. 1939 and 1970 from the same region also represent this species.

The proposed species is related to *Ehretia abyssinica* R. Br., but that has nearly or quite glabrous leaves and a lax, less pubescent inflorescence, as well as a larger corolla.

ACHYROSPERMUM MEARNsii Standley, sp. nov.

Caules subteretes, dense fulvo-pilosi; folia petiolata, laminis ovalibus vel ovali-ovatis, apice abrupte et breviter acuminatis, basi abrupte ad petiolum gracilem decurrentibus, tenuibus, crenatis, sparse pilosis, subtus punctatis; racemi spiciformes densi; bractee latae, apice late rotundatae et apiculatae, longe ciliatae; calyx pilosus, lobis ovatis apiculatis, tubo multo brevioribus; corolla parva, extus pilosa vel puberula.

Stems very stout, subterete, densely fulvous-pilose or finally glabrate; leaf blades oval or oval-ovate, 5-10 cm. long, 3-7 cm. wide, abruptly short-acuminate at the apex, abruptly decurrent at the base to a slender petiole, the lower naked part of the petiole 7-15 mm. long, densely pilose, the blades thin, crenate, rather sparsely pilose, slightly paler beneath and finely punctate; inflorescence terminal and on short weak lateral branches, the racemes spicate, very dense, 2-6 cm. long, about 2 cm. thick; bracts about 6 mm. long and 10 mm. broad, broadly rounded at the apex and apiculate, long-ciliate; pedicels about 1 mm. long; calyx 6 mm. long, pilose, the lobes ovate, apiculate, much shorter than the tube; corolla 8-9 mm. long, pilose or puberulent outside.

Type in the U. S. National Herbarium, no. 631392, collected on the western slopes of Mount Kenia, British East Africa, in the giant heath zone, altitude 3,630 meters, September 21 to 27, 1909, by E. A. Mearns (no. 1343). No. 1321 from the same locality also is this plant. Two other collections belong here: no. 1214 from the vicinity of Fort Hall, altitude 1,200 meters; and no. 1992, collected on the trail from Nyeri to Wambugu, altitude 1,500 to 1,800 meters. In view of the remarkable altitudinal range it may be that the specimens purporting to come from Mount Kenia are really from some other locality.

The proposed species seems to be near *Achyrospermum parviflorum* S. Moore, but that has different pubescence and short racemes. It is said, also, to have red corollas, while in *A. mearnsii* these seem to be white.

COLEUS KENIENSIS Standley, sp. nov.

Caules herbacei, puberuli vel sparse et breviter villosi, plus minusve glandulosi; folia longe petiolata, laminis ovato-deltaideis, basi truncatis, apice acutiusculis usque acuminatis, crenatis, copiose glandulosis et sparse villosulis; inflorescentia terminalis, racemis laxis, cymis 3-floris, longe pedunculatis, bracteis parvis persistentibus; calyx minute glanduloso-puberulus, lobis anguste triangularibus, acutis vel acuminatis; corolla 1.5 cm. longa.

Stems herbaceous, apparently scandent or recumbent, puberulent or thinly short-villous and more or less glandular; petioles slender, 2-6.5 cm. long; leaf blades ovate-deltoid, 2.5-5 cm. long, 2-4 cm. wide, truncate at the base, acutish to acuminate at the apex, coarsely but regularly crenate, thin, bright green, copiously glandular and sparsely short-villous on both surfaces; inflorescence terminal, racemose, 8-12 cm. long, 4-6 cm. broad, very lax, the cymes 3-flowered, on peduncles 1-2 cm. long, the pedicels slender, 5-8 mm. long, densely glandular-puberulent; bracts small, foliaceous, persistent; calyx in flower 2.5 mm. long, in fruit 4-5 mm. long, minutely glandular-puberulent, naked inside, the teeth narrowly triangular, acute or acuminate; corolla about 1.5 cm. long, puberulent or sparsely short-villous outside, the tube slender, several times longer than the calyx, the lower lip about 9 mm. long.

Type in the U. S. National Herbarium, no. 631384, collected on the western slopes of Mount Kenia, British East Africa, in the giant heath zone, altitude about 3,630 meters, September 21 to 27, 1909, by E. A. Mearns (no. 1334). The species is represented also

by no. 1287 from the same locality, and by nos. 1780 and 1797 from the lower border of the bamboo zone, altitude about 2,550 meters.

SOLANUM HELLERI Standley, sp. nov.

Frutex, ramis dense et minute stellato-tomentulosis, aculeis numerosis validis compressis recurvatis dense stellato-tomentosis armatis; folia breviter petiolata, laminis late ovatis, basi rotundatis vel subcordatis, apice acutiusculis usque acuminatis, integris vel undulatis, coriaceis, glabris vel pilis sparsis minutis stellatis onustis, ad costam et supra et subtus aculeis validis fulvis rectis 1 vel pluribus armatis; flores solitariae vel geminatae vel laxe cymosae, pedicellatae; calyx ad basin minute stellato-pubescent, aculeis numerosis armatus, aetate paulo accrescens, lobis ovalibus; corolla rotata, lobis anguste lanceolato-triangularibus, acuminatis; fructus juventute minute stellato-pubescent, mox glabrescens.

Shrub, the branches spreading, stout, very densely and finely stellate-tomentulose with yellowish white hairs, armed with numerous spines, these very stout, compressed, recurved, densely stellate-tomentulose, 8-13 mm. long, 6-10 mm. broad at the base; petioles stout, 2-5 mm. long; leaf blades broadly ovate, about 2 cm. long, rounded or subcordate at the base, acutish to acuminate at the apex, entire or undulate, coriaceous, bright green, glabrous or bearing a few remote minute stellate hairs, armed on the midrib on each side with 1 to several stout straight yellowish spines 0.5-1.5 cm. long; flowers solitary or geminate or in slender few-flowered racemose cymes, the pedicels 5-10 mm. long, sometimes armed with spines like those of the stems; calyx campanulate, 6 mm. long, finely stellate-pubescent at the base, armed with numerous stout straight spines 4-10 mm. long, slightly accrescent in age and partially inclosing the fruit, the lobes oval, rounded at the apex; corolla rotate, about 2.5 cm. broad, the lobes narrowly lance-triangular, acuminate, 4 mm. broad at the base, densely and finely stellate-pubescent outside; anthers 7-8 mm. long; fruit (immature) globose, 8 mm. in diameter, finely stellate-pubescent when young, early glabrate.

Type in the U. S. National Herbarium, no. 634351, collected on the Northern Guaso Nyiro, British East Africa, September 26, 1911, by Edmund Heller.

The plant is said to be an abundant shrub, forming thickets. It seems to be very different from the East African species heretofore described.

SOLANUM KENIENSE Standley, sp. nov.

Caules scandentes, inermes, juventute pilis hispidulis vel laxe ramulosis fulvo-tomentosi, glabrescentes; folia petiolata, laminis ovali-ovatis vel rotundato-ovatis, apice obtusis vel breviter acuminiatis, basi truncatis vel late rotundatis, subcoriaceis, integris, supra sparse, subtus dense pilis fulvis, ramulosis vel hispidulis praeditis; cymae multiflorae, paniculas terminales formantes; calyx 5-lobatus, stellato-tomentosus, lobis tubum aequantibus, triangulari-ovatis; corollae lobi deltoidei, acuti.

Stems scandent, subangulate, unarmed, when young fulvous-tomentose with long, matted, hispidulous or loosely branched hairs, soon glabrate; petioles 1-2 cm. long, densely tomentose like the stems; leaf blades oval-ovate or rounded-ovate, 3.5-9 cm. long, 2.5-6.5 cm. wide, obtuse or short-acuminate at the apex, truncate or broadly rounded at the base, subcoriaceous, entire, grayish green on the upper surface and sparsely furnished, especially along the impressed nerves, with short, brown, stellate or hispidulous hairs, beneath densely covered with long, brownish, stalked, branched or hispidulous hairs, the pubescence persistent; cymes many-flowered, arranged in a terminal divaricate panicle 8 cm. long and broad, densely tomentose; pedicels 8 cm. long; calyx 3 mm. long, 5-lobed, densely stellate-tomentose outside, the lobes about as long as the tube, deltoid-ovate, obtuse or acutish; corolla 12-15 mm. broad, finely stellate-pubescent outside, the lobes deltoid, acute or acutish; stamens 5, shorter than the corolla tube; fruit not seen.

Type in the U. S. National Herbarium, no. 631465, collected in the giant heath zone, western slopes of Mount Kenia, British East Africa, altitude about 3,630 meters, September 21 to 27, 1909, by E. A. Mearns (no. 1416).

A very distinct species, apparently, and from an unusually high altitude for a plant of this genus.

BARTSIA KENIENSIS Standley, sp. nov.

Caules robusti, minute puberuli vel glabrati; foliorum laminae anguste lanceolato-oblongae, apice obtusae vel rotundatae, basi cuneatim in petiolum brevem angustatae, crenatae, glabrae vel supra obscure scaberulae; calyx minute glanduloso-puberulus, fere aequaliter 4-lobatus, lobis tubum aequantibus, oblongis, obtusissimis, apice crenatis; corollae tubus curvatus, limbus bilabiatus, labio superiore galeato, labio inferiore profunde 3-lobato, lobis obovato-orbicularibus; ovarium dense sericeum.

Stems terete, stout, about 3 mm. in diameter, minutely puberulent or glabrate; leaves numerous, rather crowded, the internodes 1-1.5 cm. long; leaf blades narrowly lance-oblong, 3.5-5 cm. long, 6-10 mm. wide, obtuse or rounded at the apex, cuneately narrowed at the base into a very short marginate petiole, thick and firm, flat, crenate, glabrous, or obscurely scaberulous on the upper surface, the leaves of the inflorescence only slightly smaller than the lower ones; pedicels 1-2 mm. long; calyx 13-16 mm. long, minutely glandular-puberulent, almost equally 4-lobed, the lobes as long as the tube, oblong, very obtuse, crenate about the apex; corolla tube 2.5 cm. long, 2 mm. in diameter, curved, minutely glandular-puberulent, the limb bilabiate, the upper lip galeate, sparsely villous inside, 6-7 mm. long, the lower lip deeply 3-lobed, the lobes obovate-orbicular, 8 mm. long, crenate; stamens attached near the top of the tube, the anthers mucronate at the base, sparsely bearded; ovary densely sericeous.

Type in the U. S. National Herbarium, no. 631542, collected on the western slopes of Mount Kenia, British East Africa, in the giant heath zone, altitude about 3,630 meters, September 21 to 27, 1909, by E. A. Mearns (no. 1487). No. 1426 from the same locality is also this species.

Related to *Bartsia kilimandscharica* Engler, which differs in its small leaves and flowers. *B. keniensis* is a shrub which blackens when dried. The four branches of the specimens are practically simple, but slender, weak, sterile branches are borne in the axils of some of the leaves.

RHAMPHICARPA TENUISECTA Standley, sp. nov.

Caules graciles, bifarie puberuli et pilis sparsis brevibus antrorse curvatis praediti; folia breviter petiolata, laminis pinnatifidis vel bipinnatifidis, segmentis anguste linearibus, scaberulis; flores in axillis superioribus solitariae, pedicellatae, bracteolis lineari-filiformibus; calyx scaber, lobis lanceolato-linearibus vel lineari-subulatis, tubum fere aequantibus; capsulae obliquae, calycem aequantes vel paulo superantes, acuminatae.

Stems erect or ascending, simple, 40-50 cm. long, very slender, bifariously puberulent, bearing also a few short, upwardly recurved hairs; internodes 2.5-7 cm. long; petioles about 2 mm. long; leaf blades 1.5-2.5 cm. long, pinnatifid or bipinnatifid into rigid, narrowly linear segments about 0.5 mm. wide, the segments acute, scaberulous; flowers solitary in the upper axils, on pedicels 2-4 mm. long;

bractlets linear-filiform, half as long as the calyx; calyx 1 cm. long, scabrous, the lobes lance-linear or linear-subulate, nearly as long as the tube; corolla tube 2 cm. long, minutely puberulent, the limb 5-6 mm. long; capsule oblique, equaling or slightly longer than the calyx, acuminate; seeds coarsely tuberculate.

Type in the U. S. National Herbarium, no. 632310, collected on the western slopes of Mount Kenia, British East Africa, in the bamboo zone, altitude about 3,000 meters, September 28 to October 7, 1909, by E. A. Mearns (no. 2338). No. 2328 from the same region also represents this species.

In general characters this plant is related to *Rhamphicarpa meyeri-johannis* Engler, described from Kilimanjaro, but that has more copious pubescence and shorter, triangular calyx lobes.

JUSTICIA ROOSEVELTII Standley, sp. nov.

Frutex dense ramosus, ramis dense cinereo-puberulis; folia numerosa, sessilia vel subsessilia, laminis parvis, oblongo-lanceolatis, apice acutis vel acutiusculis, basi obtusis, integris, dense cinereo-puberulis, coriaceis; flores axillares et solitariae, subsessiles, bracteis subulatis, medium calycis vix aequantibus; calyx dense puberulus, lobis lanceolato-subulatis; corolla rosea, 1 cm. longa, extus dense puberula; capsulae cinereo-puberulae, seminibus 4.

Shrub about 30 cm. high, fruticose nearly throughout, intricately branched, the branches stout, densely cinereo-puberulent, whitish; leaves numerous, sessile or subsessile, the blades oblong-lanceolate, 3-6 mm. long, 1-1.4 mm. broad, acute or acutish at the apex, obtuse at the base, entire, densely cinereo-puberulent or in age subglabrate, coriaceous, the margins often slightly revolute; flowers axillary, solitary, subsessile; bracts subulate, less than half as long as the calyx; calyx 3-4 mm. long, the lobes lance-subulate, densely cinereo-puberulent; corolla 1 cm. long, rose-colored, densely cinereo-puberulent outside; anthers hirtellous, the lower cell long-caudate; capsule 6 mm. long, densely cinereo-puberulent; seeds 4, coarsely tuberculate.

Type in the U. S. National Herbarium, no. 630746, collected along the Southern N'guaso Nyiro River, "Sotik Country," British East Africa, altitude 1,800 to 2,100 meters, July 24 to 30, 1909, by E. A. Mearns (no. 721). No. 524 from the same region is also this species.

Related, apparently, to *Justicia urbaniana* Lindau, of Somaliland, but differing conspicuously in pubescence as well as in size of flowers.

SAMBUCUS AFRICANA Standley, sp. nov.

Caules juniores minute villosuli, vetustiores glabrati; folia plerumque 5-7-foliolata, foliolis brevissime petiolulatis, serratis, supra glabris vel ad venas obscure puberulis, subtus sparse puberulis, lateralibus oblongis vel lanceolato-oblongis, basi oblique rotundatis, ad apicem abrupte acuminatum vel attenuatum angustatis, foliolo terminali ovato; inflorescentia cymosa, ampla, ramulis dense ferrugineo-villosulis; drupae magnae, pyrenis 3, angustis.

Stems minutely villosulous when young, glabrate in age, the internodes short; leaves numerous, usually 5-7-foliolate, the petioles 4-8 cm. long, the rachis 4-12 cm. long or longer; leaflets very shortly petiolulate, the lateral ones narrowly oblong or lance-oblong, 8.5-13 cm. long, 2.5-4.5 cm. wide, obliquely rounded at the base, narrowed to an abruptly acuminate or attenuate apex, the terminal leaflet ovate, rounded at the base, long-acuminate at the apex, all thin, sharply and finely serrate, glabrous on the upper surface or obscurely puberulent along the veins, sparsely puberulent beneath; inflorescence cymose, flat-topped, at anthesis about 7 cm. broad and very dense, in fruit 8-15 cm. broad, the branches densely ferrugineo-villosulous; pedicels very short, stout; calyx lobes ovate, acute or acutish, about 1 mm. long; corolla 4 mm. long; fruit about 7 mm. in diameter, the 3 nutlets 4-4.5 mm. long, 1.5 mm. broad.

Type in the U. S. National Herbarium, no. 631698, collected in the bamboo zone, western slopes of Mount Kenia, British East Africa, altitude about 3,000 meters, September 28 to October 7, 1909, by E. A. Mearns (no. 1746). No. 1731 from the same region is also this species. Two other collections also belong here: no. 832, from the vicinity of Lake Naivasha, altitude 1,860 to 1,950 meters; and no. 1898, collected along the trail from the Kasorongai River to the Katheroni River, altitude 1,800 to 1,950 meters. It seems probable that the last two specimens are wrongly labeled.

The only previous report of a *Sambucus* from tropical East Africa is found in Engler's *Pflanzenwelt Ost-Afrikas*.¹ That writer lists a single specimen from Abori, which he refers to *S. ebulus*, the common species of Europe which occurs also in Algeria. Concerning his material Engler says: "The occurrence in Abori is most surprising; but the plant agrees wholly with our species, even to the ovaries which are metamorphosed and enlarged, doubtless as the result of insect work."

¹C: 374. 1895.

The ample material before the present writer represents a plant differing from *Sambucus cbulus* in at least two important respects: the branches of the inflorescence are pubescent rather than glabrous, as in that species, and the nutlets are about twice as long and much narrower proportionally. The difference in size of fruit is not the result of insect work, the drupes appearing quite normal.