

DIAGNOSES.

Specierum novarum chinensium
in herbario Horti Regii Botanici Edinburgensis cognitarum.

I-L.

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BORAGINEAE.

Onosma confertum, W. W. Sm. Sp. nov.

Species affinis *O. paniculato*, Bur. et Franch.; foliis angustioribus insertione angustissima, subtus dense albo-tomentosis, filamentis glabris inter alia distincta.

Planta 60–100 cm. alta, erecta. Caules plures e radice crassa lignosa orti, simplices, foliis basalibus numerosis subdeflexis in glebam circ. 10 cm. diamet. arcte compactis basi velati; caulis inferior foliis omnino celatus; medianus et superior subteres, pube duplici vestitus, scilicet setis albidis et tuberculo ortis et capillis crebris brevibus albidis, sat foliosus praesertim in regione mediana. Folia basalia primo ascendentia lineari-lanceolata vel -oblanceolata, 10–15 cm. longa, 1–1.25 cm. lata, acuta vel acuminata, basi in petiolum brevem cuneatim attenuata, margine revoluta, supra dense scabride adpresso-setulosa, capillis albidis intermixtis, infra tomento denso albido detergili praedita; costa supra immersa, infra eminens, nervi obscurissimi; folia basalia vetustiora, semi-marcida, deflexa, caulem omnino velantia; folia caulina circ. 10 cm. longa, circ. 5 mm. lata, linearia, erecta et cauli subadpressa, insertione angustissima sessilia. Inflorescentia terminalis 20–30 cm. longa, angusta, vix patens, e cymis scorpioideis racemose dispositis composita; bractae primariae 2.5–5 cm. longae, ovato-lanceolatae, ceterum foliis caulinis similia; bractae secundariae multo minores; pedunculi sub anthesin circ. 5 cm. longi, 5–12-flori, cum pedicellis circ. 1 cm. longis dense setulosi. Calyx circ. 1 cm. longus, ad basin usque in lobos quinque lineares partitus, dense setulosus. Corolla 1.5 cm. longa, anguste tubulosa, rosea, extus pube densa cinerascens praedita, lobis circ. 1 mm. longis, late triangularibus obtusis. Stamina infra medium tubum inserta, inclusa, filamentis filiformibus glabris, antheris cohaerentibus. Stylus filiformis glaber, vix vel paululum exsertus. Fructus deest.

" Plant of 2-3½ ft. Flowers soft rose. Dry arid situations in the mountains enclosing the Langkong river. Alt. 8000-9000 ft. Lat. 26° 10' N. August 1910. Yunnan." G. Forrest. No. 6436.

Onosma Forrestii, W. W. Sm. Sp. nov.

Species affinis *O. paniculato*, Bur. et Franch. et *O. conferto*, W. W. Sm. sed corollâ minore, intus basi annulo capillorum longorum alborum praedita, antheris liberis inter alia distincta.

Specimen mancum vidi. Folia eis *O. conferti* subsimilia sed minus albo-tomentosa. Inflorescentia densior quam apud congeneres citatos, undique densissime albido-setulosa. Calyx circ. 1 cm. longus, in lobos quinque lineares partitus, dense setulosus. Corolla vix calyce longior, anguste tubulosa dense adpresse albido-setulosa; lobi 2 mm. longi ovati acuti; corolla interior lineis quinque albo-tomentosis fere ad basin percursa; ad basin tubi squamae nectariferae rotundatae, longe albo-tomentosae, annulum formantes. Stamina ad quartam corollae partem libera, filamentis filiformibus glabris, antheris liberis, apice acutis. Stylus filiformis tandem paululo e corollâ exsertus, glaber vel minute sparse pilosulus.

Grown by Bees Limited, July 1912, from seeds sent by their collector G. Forrest in 1910 from Yunnan, Western China. This species is closely allied to *Onosma paniculatum*, Bur. et Franch. and *O. confertum*, but differs altogether in the details of the flower.

Campanulaceae
CONVOLVULACEAE.

Codonopsis efilamentosa, W. W. Sm. Sp. nov.

Species habitu affinis *C. rotundifoliae*, Royle, et *C. viridi*, Wall.; corollâ alte fissâ ad *C. convolvulaceam*, Kurz, appropinquat, ceterum valde diversa.

Planta scandens, 60-150 cm. longa. Caules volubiles glabri. Folia alterna, rarius superne opposita, ad 4.5 cm. longa, ad 3.5 cm. lata, late ovata, basi alte aequaliter cordata, minora saepe rotundata, acuta vel subacuta, margine obtusissime sinuato-dentata, utraque facie glabra, supra viridia nervis obscuris, infra glaucescentia nervis paulo eminentibus; petioli 1 cm. longi vel paulo ultra, glabri. Flores terminales et axillares, satis numerosi; pedunculi glabri ad 3 cm. longi. Calyx superus; tubus obconicus glaber 4-6 mm. longus; lobi sinu acuto sejuncti, triangulari-ovati, acuti vel subacuti, glabri, circ. 1 cm. longi, circ. 4 mm. lati. Corolla subglobosa vel cylindrico-globosa, caerulea, fere ad basin in lobos quinque lanceolatos subacutos circ. 2 cm. longos,

circ. 8 mm. in medio latos divisa. Antherae circ. 4 mm. longae, glabrae, sessiles. Stylus glaber vix 2 mm. longus; stigma latum trilobum; discus luride purpureus, marginibus lobatis albociliatis praeditus. Fructus deest.

"Scandent plant of 2-5 ft. Flowers blue. On scrub in dry situations on the eastern flank of the Lichiang Range. Lat. $27^{\circ}30'$ N. Alt. 10,000 ft. July 1910." G. Forrest. No. 6258.

A very distinct species presenting no peculiarities in its vegetative parts, but with a deeply cleft corolla which recalls that of *Codonopsis convolvulacea*, Kurz. The sessile anthers serve to distinguish the species from all the others of the genus.

***Codonopsis subglobosa*, W. W. Sm. Sp. nov.**

Species *C. foetenti*, Hook. f. et Thoms. valde affinis; calyce setuloso, corollâ viridi inter alia differt.

Herba perennis scandens 15-30 cm. alta. Radix crassa elongata. lignosa; caules e radice plures subrobusti, sparsius albo-setosi mox glabrescentes, volubiles. Folia opposita vel alterna, 10-15 mm. longa, 8-10 mm. lata, late ovata, basi rotundata, vix cordatula, obtusa, serratula vel subintegra, undique plus minusve dense adpresse albo-setulosa; petioli 1-2 mm. longi, setosi. Flores terminales; pedunculi 5-15 cm. longi, ebracteati, albo-setosi. Calyx semisuperus; tubus hemisphaericus, 7 mm. longus, jugis quinque magnis, quinque parvis, omnibus albo-setosulis, instructus, ceterum glaber; lobi 8-10 mm. longi, 4-5 mm. lati, sinu lato obtuso sejuncti, lanceolati, subacuti, integri vel serratuli, intus subglabri, nisi ad apicem setulosam, extus setiosiores praesertim ad apicem sed nonnunquam subglabri. Corolla supera, globoso-campanulata, viridis; tubus glaber, circ. 2 cm. longus, in sicco 3 cm. latus, intus viridis, basi atro-purpureus; lobi 5-10 mm. longi, late triangulares, subacuti. Filamenta glabra, basi dilatata, 4 mm. longa; antherae glabrae, 4 mm. longae. Stylus glaber; stigma 3-4-lobum; lobi fere rotundati, circ. 6 mm. diametro. Ovarium post anthesin seminferum. Capsula matura deest.

"Scandent plant of 6-12 inches. Flowers green, blotched maroon at base. Growing on scrub at the base of the eastern flank of the Lichiang Range. Lat. $27^{\circ}20'$ N. Alt. 9000 ft. September 1910. Yunnan, West China." G. Forrest. No. 6684.

Also cultivated by Bees Limited from seed supplied by G. Forrest.

C. subglobosa is closely allied to *C. foetens* Hook. f. et Thoms. of the East Himalaya, and in the dried state is easily confused with that species. Having seen the Himalayan plant frequently in the wild state, and the Chinese plant in cultivation, I have no

hesitation in keeping the two distinct. I believe Soulié 125, 540, and Pratt 531 in Herb. Kew., placed with *C. foetens* by Chipp in his "Revision of the Genus *Codonopsis*," Journ. Linn. Soc. xxxviii. p. 378, are the same as Forrest, No. 6684.

C. subglobosa is distinguished by the larger leaves with adpressed whitish setae, the setose ridges of the calyx and the green colour of the flower. The flowers of *C. foetens* are a lurid purplish-blue.

Cyananthus lichiangensis, W. W. Sm. Sp. nov.

Species ex affinitate *Cyananthi inflati*, Hook. f. et Thoms.; calyce patenti-fulvo-setoso, flore flavo inter alia differt.

Planta 15-30 cm. alta, annua. Caules e radice multi (10-15), supra sparse ramosi, flexuosi, decumbentes, glabri nisi ad apicem sparse albopilosam, basi subnudi foliis delapsis. Folia alterna 10-14 mm. longa, 8-10 mm. lata, subdeltoidea, apice rotundata, basi cuneata, in petiolum 2-4 mm. longum + sparse albo-pilosum angustata, integra, supra adpresse albo-pilosa, infra sparse et longiuscule. Flores terminales et in apice ramulorum laterali-um; pedunculi 2-3 mm. longi. Calyx circ. 14 mm. longus, 8-9 mm. latus in sicco, late cylindricus, lobulis 5 ovatis, 4 mm. longis, apice rotundatis vel obtusis praeditus, extus setis fulvis patentibus e papillis nigris ortis densius indutus, intus vix sparsius. Corolla 2.5 cm. longa, 7-8 mm. lata, tubulosa, glabra, flava; lobi ovati 4 mm. longi, obtusi. Stamina 5 mm. longa. Fructus deest.

"Plant of 6-12 inches. Flowers light yellow. Moist situations amongst rhododendron scrub on the western flank of the Lichiang Range. Lat. 27° 25' W. Alt. 12,000 ft. August 1910." G. Forrest. No. 6369.

CAPRIFOLIACEAE.

Lonicera chlamydophora, W. W. Sm. Sp. nov.

Species affinis *Lonicerae trichopodae*, Franch.; foliis angustioribus, floribus majoribus ebracteolatis, calyce diverso inter alia recedit.

Frutex 2.5-5 m. altus. Rami seniores robusti, lichenibus dense induti; juniores graciles lineis duabus pilosis percursi. Folia numerosa breviter (2-3 mm.) petiolata, oblanceolata, 2-2.5 cm. longa, 4-6 mm. sub apice lata, apice obtusa, basi cuneata, integra, supra sparse setoso-pilosula marginibus setosociliatis, infra sparse fulvo-setosula, praesertim in venis, quarum axillae inferiores squamulis parvis flavidis setigeris instructae, supra viridia nervis obscuris, infra glaucescentia, nervis distinctis

bene reticulatis purpurascentibus. Pedunculi 2-4-nati in apice ramulorum foliis paucis, bracteis multis squamiformibus imbricatis instructorum, circ. 1.5 cm. longi, arcuato-cernui, subrobusti magis quam filiformes, glabri vel glabrescentes, bracteis linearibus circ. 6 mm. longis, glabris, bracteolis nullis. Flores gemini; calyx carnosulus, pallide viridis, glaber, annulatus, vix 1 mm. longus, ovariis glabris ex toto connatis multo minor, margine undulato-lobatus. Corollae saturate aurantiaco-luteae tubus circ. 11 mm. longus 4-5 mm. latus, basi valde gibbosus extus glaber vel primo ad apicem sparse pilosulus, intus albobilosus; lobi circ. 2 mm. longi rotundati. Stamina alte inserta, vix inclusa, filamentis albo-pilosis parte libera glabra excepta. Stylus breviter exsertus dense longiuscule albo-pilosus.

"Shrub of 8-15 ft. Flowers deep golden yellow. In rhododendron forest on the eastern flank of the Lichiang Range. Lat. 27° 25' N. Alt. 12,000-13,000 ft. June 1910." G. Forrest. No. 5744.

Allied to *Lonicera trichopoda*, Franch., but with very different flowers. The specific name is taken from the thick covering of lichens.

CARYOPHYLLEAE.

Arenaria lichiangensis, W. W. Sm. Sp. nov.

Species affinis *Arenariae kansuensi*, Maxim.; petalis angustis calycem multo superantibus inter alia differt.

Planta densissime pulvinata, glebam 10-15 cm. diametro efficiens subglabra. Caudex lignosus polycephalus, foliorum reliquiis marcidis densissime indutus. Cauliculi simplices; pars viridis brevissima ad 1.5 cm. longa, pars hypogaea emarcida 6-8 cm. longa, *Polytrichi* caulibus simillima. Folia basalia dense conferta, 10-13 mm. longa, circ. 1 mm. lata, linearia, pungentia, coriacea, glabra, margine albido-marginata et indurata; caulina 2, margine ciliata, basi translucetia. Pedicelli circ. 5 mm. longi, fulvo-pilosuli. Calyx basi rotundatus, vix incrassatus; sepala 3 mm. longa, 1 mm. lata, oblonga vel oblongo-ovata, obtusa, glabra, marginibus albo-marginatis minute ciliatis exceptis. Petala 5-6 mm. longa, lineari-spathulata, alba. Stamina 10 fere corollam aequantia. Ovarium obovoideum, nitens, stylis tribus, seminibus reniformibus compressis 12-20 praeditum.

"Plant of 1-4 inches. Flowers white. Forming dense cushions in the crevices of boulders and cliffs in moist situations on the western flank of the Lichiang Range. Lat. 27° 30' N. Alt. 12,000-13,000 ft. July 1910." G. Forrest. No. 6103.

"Matted plant of 1-2 inches. Flowers white. Stony, alpine pasture on the eastern flank of the Lichiang Range. Lat. 27°

30' N. Alt. 14,000-15,000 ft. August 1910." G. Forrest. No. 6379.

Another of the cushion *Arenarias*, which seem so prevalent in the higher mountains of India, Tibet, and China.

***Arenaria roseotincta*, W. W. Sm. Sp. nov.**

Species ex affinitate *Arenariae ciliolatae*, Edgew. et *A. melan-dryoidis*, Edgew.; sepalis roseotinctis corollam aequantibus conspicua.

Planta perennis nana 1-2.5 cm. alta, caespitosa, multicaulis, basi squamulis stramineis induta. Caulis debilis stramineus, ad medium nudus, superne foliorum 3-4 paribus praeditus, flore solitario terminatus. Folia circ. 4 mm. longa, lanceolata, acuta, saepe mucronata, petiolo 1 mm. longo membranaceo instructa, glabra. Pedunculus circ. 5 mm. longus, flexilis, tomentellus. Sepala circ. 3 mm. longa, erecta, oblonga vel ovato-oblonga, obtusa vel subacuta, glabra vel basi sparse puberula, roseo-purpurea nisi costa lata viridis. Petalacalycem aequantia, tenuissima, sepalis fere (in sicco) velata, anguste spathulata, rosea. Stamina 10 calycem fere aequantia. Styli 3. Fructus maturus deest.

"Plant of $\frac{1}{2}$ -1 inch. Flowers rose. Moist, peaty, alpine pasture on the western flank of the Lichiang Range. Lat. 27° 35' N. Alt. 14,000-15,000 ft. August 1910." G. Forrest. No. 6360.

***Silene rosiflora*, F. K. Ward. Sp. nov.**

Species habitu *S. cardiopetalae*, Franch. cui valde affinis est; magnitudine, foliis sessilibus, inflorescentia glandulosa, calyce diverso distinguitur.

Perennis, 15-30 cm. alta, ramosa. Caulis suberectus vel procumbens, dense pubescens; rami fere recto angulo abeuntes. Folia vix petiolata, ad 2.5 cm. longa, ad 1 cm. lata, lanceolata, basi parum attenuata, apice acuta, submucronulata, supra sparse puberula infra densius, margine ciliata. Inflorescentia terminalis 7-8 cm. longa, laxe dichotome cymoso-corymbosa ramis dense glanduloso-pubescentibus; bracteae lanceolatae vel lineares; pedicelli 2-4 cm. longi. Calyx fere 1.5 cm. longus, 6 mm. latus, tubulosus, basi subtruncatus, parum constrictus, viridis, lineis 10 eminentibus, saturate purpureis, dense glanduloso-pubescentibus pererratus, dentibus circ. 4 mm. longis, triangularibus, acutis, margine membranaceis. Corolla 2 cm. longa vel ultra, rosea; unguis glaber in auriculas latas dilatatus, ad faucem constrictus; lamina late obcordata, apice ad tertiam partem sinu angustissimo divisa, pulchre reticulata; squamae faucis oblongae, fere integrae. Stamina paulo exserta, filamentis glabris, antheris pallido-purpureis. Styli tres; ovarium oblongum carpophoro longius.

China :—N.W. Yunnan, near Atuntsi.

The description is based on plants grown from seed obtained by F. Kingdon Ward. These flowered in July 1912 at the nurseries of Bees Limited, Sealand, near Chester, and also in the Royal Botanic Garden, Edinburgh.

COMPOSITAE.

Cremanthodium bupleurifolium, W. W. Sm. Sp. nov.

Species affinis *Cremanthodio plantagineo*, Maxim. sed caule gracili glabriore, capitulo minore fere glabro, pappo deficiente, inter alia facile distinguenda.

Planta unicaulis, 18–35 cm. alta, basi fibris multis erectis circ. 4 cm. longis induta. Caulis suberectus flexuosus, debilis, striatus, inferne glaber, superne minute tomentosus, capitulo solitario terminatus. Folia radicalia 3–4, petiolata ad 2 cm., oblanceolata vel subelliptica, 2–5 cm. longa, circ. 1–5 cm. lata, apice subobtusata, basi cuneata, subintegra, chartacea, glabra penninervia; folia caulina 2–3, eis *Bupleuri Candollii* similia, 4–5.5 cm. longa, circ. 1.5 cm. lata, oblonga, apice rotundata vel obtusa, basi angustata amplexicaulia, subintegra, glabra. Capitulum in sicco 3–4 cm. diametro, cernuum; involucri phylla circ. 1 cm. longa, lanceolata vel ovato-lanceolata, acuta, glabra vel fere glabra, ligulae circ. 1.5 cm. longae, lineari-lanceolatae, 5-nerviae luteae; achaenia immatura glabra; pappus nullus.

“China :—N.W. Yunnan, at Atuntsi, at an elevation of 14,000–15,000 ft. in alpine grassland. July 1911.” F. Kingdon Ward. No. 75.

Lactuca Forrestii, W. W. Sm. Sp. nov.

Species *Lactucae grandiflorae*, Franch. affinis; capitulis minoribus multo angustioribus, involucri phyllis valde diversis facile distinguenda.

Planta 30–75 cm. alta, erecta, robusta. Caulis 4–10 mm. diamet., infra simplex, in regione inflorescentiae ramosus, teres, in parte inferiore glaber, purpureo-maculatus et -striatus, superne pedunculique setoso-glandulosi. Folia radicalia petiolo ad 10 cm. longo valido praedita, 15–25 cm. longa, 5–10 cm. lata, runcinata, lobis grosse rotundatis indurato-dentatis, lobo terminali triangulari subacuto, glabra, subtus glaucescentia, nervis eminentibus; folia caulina sessilia, ad 15 cm. longa, ad 5 cm. lata, runcinata, auriculis rotundatis dentatis amplexicaulia, supra sparsissime pilosula, infra glabra glaucescentia. Rami floriferi (praeter supremos) numerosi axillares, saepe foliis inferioribus orti, 3–6-cephali, praesertim ad

apicem setoso-glandulosi; inflorescentia terminalis copiosa ramulis fere rectangulo abeuntibus, foliis reductis ovatis vel lanceolatis praedita. Capitula ovato-oblonga, 2 cm. longa vel ultra, basi 6-8 mm. lata, cernua, circ. 10-flora; involucri phylla 3-seriata, lineari-lanceolata, acuta vel acuminata, purpureo-viridia, setoso-carinata, exteriora subreflexa, circ. 1 cm. longa, interiora erecta, circ. 2 cm. longa, 3 mm. lata; ligulae coeruleae involucri multo superantes, 5-dentatae, tubo extus glabro; ovarium oblongum, valde compressum, faciebus 3-5-costatum, glabrum, in rostrum albidum gracile attenuatum, pappo albedo fragili praeditum.

"Plant of 1-2½ ft. Flowers blue. On rocks and ledges of cliffs on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 10,000 ft. September 1910." G. Forrest. No. 6703.

Also flowered in the Royal Botanic Garden, Edinburgh, in September 1912.

Lactuca funebris, W. W. Sm. Sp. nov.

Species e grege *Scariolarum*; foliis atroviridibus, capitulis saepe apice glomeratis more *Cardui palustris*, floribus albidoceruleis vel albidis conspicua.

Herba 30-120 cm. alta, erecta, in schedâ simplex (sed culta a basi ad apicem ramis erectis ramosa) succo lacteo praedita, radicibus fasciculatis fusiformibus. Caulis robustus, .5-2 cm. diamet. vel ultra, subteres, basi glabrescens, medio sparse, apice dense rufo-tomentellus, purpureo-striatus atque -maculatus; ramuli similes, apice bene foliati. Folia infima et mediana sub-similia, alterna, crebra, petiolo 10-15 cm. longo, anguste alato, praedita; lamina 9-12 cm. longa, 7-9 cm. lata, ambitu irregulariter et late triangularia, varie 3-5-loba vel -fida, lobis oblongis serratis, serraturis apiculatis, supra atro-viridia, nigro-pilosula, nervis immersis, infra pallidiora, sparsius pilosula vel subglabra, nervis eminentibus; folia superiora minus divisa, saepe fere integra, obovata vel oblanceolata, vel lanceolata vel lineari-lanceolata, acuta vel acuminata. Inflorescentiae numerosae caulem et ramulos terminantes et cymas breves axillares formantes; capitula 5-20-aggregata, pedunculis brevissimis rufo-pilosulis praedita, circ. 1.5 cm. longa, circ. 7 mm. lata, 20-30-flora; involucri cylindrici phylla exteriora lanceolata, 5-8 mm. longa, carinâ albo-setosulâ praedita, interiora lineari-lanceolata, 1 cm. longa vel ultra, subglabra, omnia arcte imbricata; receptaculum planum nudum. Corolla circ. 5 mm. exserta, sordide albida vel pallido-caerulea. Ovarum ovoideum, compressum, glabrum, apice in rostrum breve productum, pappo albo praeditum.

"Plant of 1-2 ft. Flowers pale blue. Ledges of cliffs and humus covered boulders on the eastern flank of the Lichiang

Range. Lat. $27^{\circ} 30'$ N. Alt. 11,000–12,000 ft. September 1910." G. Forrest. No. 6677.

The plant was cultivated in the Royal Botanic Garden, Edinburgh, in the cold, wet season of 1912. It grew to a height of 4 ft., branched freely from base to top with strict erect branches, while the inflorescences remained compacted and were slow to flower. The colour of the corolla was whitish at first, but the bloom was imperfectly developed; later, bluish heads were observed. In the wild plant the collector notes that the flowers were pale blue.

Saussurea loriformis, W. W. Sm. Sp. nov.

Species affinis *S. subulatae*, C. B. Clarke et *S. Hookeri*, C. B. Clarke; foliis loriformibus, bracteis dense et longe albo-tomentosis, inter alia distincta.

Planta nana caespitosa, facie *S. subulatae*, stolonifera, multiceps; radix crassa, superne (cum caule inferiore) foliorum pristinorum vaginis siccis nigrescentibus dense oblecta. Caulis brevissimus, 1–3 cm. longus, foliis bracteisque velatus et capitulo solitario terminatus; e caudice multicapite plerumque oriuntur caulis unus capitulifer, ceteri (5–6) steriles. Folia omnia radicalia, rosulata, circ. 4–8-fasciculata, suberecta (saltem primo), linearia, 3–4 cm. longa, 2–3 mm. lata, apice obtusa vel rotundata, basin versus angustata in vaginam brevem purpurascenscentem tomento denso albo celatam, integra, supra dense fulvo-tomentosa, infra dense et longe albo-tomentosa. Capitulum 2–2.5 cm. diametens, involucri phylla 1–1.5 cm. longa, lineari-lanceolata, apice caudato-acuminata, basi dilatata, extus dense albo-tomentosa, intus (nisi apice ipso albo-tomentosissimo) glaberrima viridia. Receptaculi setae numerosae, circ. 5 mm. longae. Corolla (purpurea?) circ. 12 mm. longa; tubi pars infera angustissima 6–7 mm. longa, supera circ. 3 mm. longa; limbi segmenta circ. 3 mm. longa. Pappi series exterior setulis 2–3 mm. longis composita; seriei interioris pili basi paulo coaliti plumosi circ. 10 mm. longi. Achaenium immaturum, 2 mm. longum.

"N.W. Yunnan, China:—At Pei-ma-shan, on screes at an altitude of 17,000 ft. July 1911." F. Kingdon Ward. No. 74.

The *Saussureas* of the Himalayan-Chinese Mountain-systems seem endless in their number and variety. The present species recalls *Saussurea subulata*, but differs widely in the leaves and bracts from the Himalayan plant. *Saussureas* are about the last survivors of the phanerogams as the limit of vegetation is approached in these regions, and the appearance of *S. loriformis* is quite in keeping with its habitat on the screes as 17,000 ft.

Saussurea quercifolia, W. W. Sm. Sp. nov.

Species in grege "*Acaulis*," C. B. Clarke ponenda, ex affinitate *S. subulatae*, C. B. Clarke; foliorum forma, capitulis aggregatis, pappo atrofusco conspicua.

Planta nana caespitosa rhizomate praelongo (ad 30 cm.), repenti foliorum delapsorum vaginis nigrescentibus dense obsito. Caulis brevis circ. 4 cm. longus, hinc inde albo-flocculoso-tomentosus, capitulis 4-5 dense aggregatis terminatus. Folia fere omnia radicalia, ad 1 cm. petiolata, 3-4 cm. longa, 1-1.25 cm. lata, elliptica vel anguste obovata, apice subobtusata, basi cuneata, grosse serrato-dentata, supra rugosula, sparse albo-tomentosa, pallide viridia, infra dense minute albo-tomentosa. Capitula dense conferta, fere sessilia, basi albo-tomentosa; involucri phylla obovata, circ. 3 cm. longa, albo- vel rufo-tomentosa; corolla circ. 1.5 cm. longa, coerulea; pappus circ. 1 cm. longus, plumosus, atrofuscus; achenia vix matura, anguste obovata, circ. 2 mm. longa, fusca, glabra.

"China:—N.W. Yunnan, at Atuntsi, scree plant at an altitude of 14,000 ft. September 1911." F. Kingdon Ward. No. 73.

Senecio cymbulifer, W. W. Sm. Sp. nov.

Species sectionis *Ligulariae*, affinis *Senecioni lapathifolio*, Franch. et *Senecioni stenoglosso*, Franch.; ab hoc foliis distinguitur; ab illo floribus minoribus, ligulis diversis recedit.

Planta 60-120 cm. alta, erecta robusta. Caulis 1 cm. vel ultra diametro, striatus, albo-araneosus. Folia basilaria 1-2, ampla, ad 35 cm. longa, ad 25 cm. lata, elliptica vel obovato-elliptica, brevipetiolata, vaginâ magnâ praedita, basi vix cordata, apice rotundata circumcirca multidentata, dentibus parvis in-crassatis, sparsius utraque facie albo-araneosa, chartacea; caulina pauca, 2-3, omnia vaginâ permagnâ cymbiformi praedita, petiolo deficiente; supremum saepius ad vaginam reductum; vaginarum albo-araneosarum orae denticulis glandulosis saepe instructae. Inflorescentia ampla, paniculata, 10-15 cm. diametro; paniculae ramuli nunc contracti, inflorescentiam densam formantes, nunc praelongi, inflorescentiam diffusiolem praebentes, albo- vel fulvo-araneosi; bractae lineares; capitula brevius vel longius pedunculata, mediocria. Involucri phylla 8-10, ovato-lanceolata vel lanceolata, acuta vel obtusa, 7-8 mm. longa, margine nigrescentia, extus puberula vel subglabra. Flores ligulati, 5-6, flavi, circ. 12-13 mm. longi; flores tubulosi circ. 12, flavi; pappus albidus fragilis 6 mm. longus; achaenium immaturum 1 mm. longum.

"Plant of 2-4 ft. Ray and disc florets similar, yellow. Open mountain meadows on the eastern flank of the Lichiang

Range. Lat. 27° 30' N. Alt. 11,000-12,000 ft. July 1910." G. Forrest. No. 6236.

"Plant of 2-3 ft. Ray and disc florets orange. Mountain meadows on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 11,000-12,000 ft. August 1910." G. Forrest. No. 6451.

"Plant of 2-3½ ft. Ray and disc florets bright orange. Open mountain meadows on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 12,000 ft. August 1910." G. Forrest. No. 6485.

This number I take to be the same as the two preceding; the inflorescence is much more diffuse as one would expect in a specimen collected later in the season.

Senecio latihastatus, W. W. Sm. Sp. nov.

Species e grege *Ligularia*, ex affinitate *Senecionis cacaliaefolii*, Sch. Bip. et forsan varietas illius speciei polymorphae; interim melius pro specie propria militat; foliis latihastatis, floribus magnis conspicua.

Planta 45-60 cm. alta, robusta. Caulis striatus, superne fulvo- et albo-araneoso-tomentosa, inferne glabrescens, basi fibris rigidis erectis ad collum radicale indutus. Folia radicalia circ. 6, longe (ad 16 cm.) petiolata, 7-9 cm. longa, ad 14 cm. lata, triangulari-hastata, margine dentata, chartacea, glabra; caulina minora, 2, vaginâ magna amplexicauli praedita, petiolo brevi vel deficiente. Capitula circ. 10, magna, racemose disposita, erecta, basi fere 1 cm. lata. Involucri phylla circ. 10, vix libera, 8-9 mm. longa, lineari-oblonga, acuta vel breviter acuminata, extus minute araneoso-puberula; corolla 3 cm. longa vel ultra, saturate aurantiaca; pappus 6 mm. longus, sordide albus; achaenium immaturum anguste oblongum 2.5 mm. longum.

"Plant of 18-24 inches. Flowers deep orange, fragrant. Moist situations on mountain meadows on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 12,000 ft. August 1910." G. Forrest. No. 6409.

The plant resembles in habit *Senecio Sagitta*, Maxim, from Western Kansu.

Senecio orotrephes, W. W. Sm. Sp. nov.

Species ob capitula racemosa discoidea affinis *Senecioni subspicato*, Bur. et Franch., a quo habitu robusto, pedunculis longioribus, involucri phyllis diversis inter alia recedit.

Planta 40-50 cm. alta, erecta, robusta. Caulis subteres, striatulus, 4-5 mm. diametro, subnudus, basi ad apicem dense capillis nigris patentibus indutus, racemo 3-8-floro terminatus. Folia radicalia 1-2, vaginâ 3-4 cm. longâ extus nigro-tomentosa et

petiolo 4-8 cm. longo dense nigro-tomentoso praedita, 5-10 cm. longa, 5-9 cm. lata, subreniformia, apice rotundata, basi alte cordata, margine indurato-dentata, subcoriacea, supra viridia glabra nervis obscuris, infra pallidiora, in venis distinctioribus sparsius nigro-tomentosa; folium caulinum solitarium, medio vel infra insertum, vagina 4-6 cm. longa praeditum, petiolo deficiente; lamina nunc ovata, 3 cm. longa, 3 cm. lata, nunc minor, vix ab vaginâ discreta. Scapus ad apicem bractea 1 cm. longa vel ultra, lineari instructus, ceterum nudus; pedunculi 1-3 cm. longi, dense nigro-villosuli, bracteis linearibus nigris praediti. Capitula 3-8 cernua, in sicco 1.5 cm. diametro, discoidea; involucri phylla circ. 8, medio in tubum latum extus nigro-villosulum circ. 6 mm. longum, circ. 8 mm. latum connata; partes liberae 6 mm. longae, lanceolatae, nigro-villosulae, intus glabrae. Corolla saturate aurantiaca, circ. 8 mm. longa; pappus pallide rufus, 6-7 mm. longus; achaenium (immatuum) 3 mm. longum, oblongum.

"Plant of 16-20 inches. Flowers deep orange. Stony pasture on the eastern flank of the Lichiang Range. Lat. 27° 35' N. Alt. 12,000 ft. September 1910." G. Forrest. No. 6548.

Senecio pteropodus, W. W. Sm. Sp. nov.

Species habitu affinis *Senecioni Faberi*, Hemsl.; foliis medianis deltoideis, petiolis late alatis, capitulis discoideis differt.

Planta 60-75 cm. alta, erecta, unicaulis. Caulis striatus flexuosus, basi mox defoliatus infra glaber, supra et in ramulis inflorescentiae fulvo-tomentosus. Folia basalia delapsa; caulina inferiora 3-4, cum petiolo 12 cm. longa, 5-6 cm. lata; petiolus 6 cm. longus, basi amplexicaulis, ad 10-13 mm. alatus; lamina deltoidea, 6 cm. longa, grosse acute dentata; folia superiora 3-4, minora, amplexicaulia, sessilia, oblonga, ad 9 cm. longa, circ. 3 cm. lata, acuminata acute dentata. Inflorescentia corymbosopaniculata, mediocris, capitulis approximatis parvis vix 1 cm. longis, bracteis linearibus. Involucri phylla circ. 10, linearia vel lineari-lanceolata, 6-8 mm. longa, apice nigrescentia, basi villosula, cetera glabra. Flores ligulati, 0; tubulosi, 20-30; saturate lutei, 6-8 mm. longi; pappus albidus fragilis, 5-6 mm. longus; achaenium vix 1 mm. longum.

"Plant of 2-2½ ft. Flowers deep lemon yellow. Margin of pine forests on the eastern flank of the Tali Range. Lat. 25° 40' N. Alt. 10,000 ft. August 1910." G. Forrest. No. 6981.

Senecio remipes, W. W. Sm. Sp. nov.

Species affinis *Senecioni liatroides*, C. Winkl.; foliis late obovatis, inflorescentiâ angustâ strictâ parviflorâ conspicua.

Planta 75-120 cm. alta, robusta, erecta. Caulis striatus, superne plus minusve fulvo-tomentosus, medio inferneque subglaber, basi fibris rigidis erectis ad collum radicale circumdatus. Folium basale vix petiolatum, in vaginam brevem amplexicaulem contractum, circ. 16 cm. longum, 10 cm. latum, late obovatum, apice breviter acuminatum, margine dentibus incrassatis denticulatum, coriaceum, undique glabrum, nervis supra subobscuris, infra bene reticulatis; folia caulina 2-3, minora, cetera subsimilia folio radicali. Scapus sub inflorescentiâ ad 12 cm. subnudus, bracteis paucis 2-4 cm. longis linearibus instructus; racemus simplex 20 cm. longus vel ultra; capitula 30-50, infra subremota, supra densiora, 10-12 mm. longa, circ. 5 mm. lata, nutantia; pedunculi 5-10 mm. longi, fulvo-tomentosi, bracteolis 1-2, linearibus, 1-2 cm. longis, nigro-(glanduloso ?)-capitatis instructi. Involucri phylla 4-5, lineari-oblonga, circ. 6 mm. longa, extus puberula vel subglabra, pallide marginata, apice nigrescentia; ligulae 3-4, aurantiacae, 6-8 mm. longae; disci flores circ. 12; corolla circ. 6 mm. longa; pappus albus fragilis 4 mm. longus; achaenium 4 mm. longum.

"Plant of 2½-4 ft. Ray florets orange, disc florets darker. Alpine pasture on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 13,000 ft. August 1910." G. Forrest. No. 6493.

Characterised among the allied species by the broad obovate leaves resembling the blade of a paddle and by the relatively small flowers.

Senecio sciatrephes, W. W. Sm. Sp. nov.

Species affinis *Senecioni cymatocrepidi*, Diels sed foliis remote indurato-dentatis, involucro glabro recedit.

Planta 15-75 cm. alta, erecta. Caulis striatus, basi longe defoliatu et nudus, infra sparsius, supra densius tomento albo deterrenti indutus. Folia 5-6 in medio caule plerumque aggregata, itaque nunc alterna, nunc subopposita, in petiolum 4-6 cm. longum, complanatum, subalatum sparse flocculoso-tomentosum leniter angustata, 12-16 cm. longa, 4-6 cm. lata, lanceolata vel ovato-lanceolata, apice subacuminata, basi cuneata, margine remote indurato-dentata, supra viridia sparse minute pilosula vel glabrescentia, venis obscuris, infra pallidiora, tomento minuto griseo deterrenti praedita, nervis 5-6 paribus distinctis. Inflorescentia paniculata; ramuli paniculae corymbis 5-8-floris terminati; corymbi 2-12; capitula subsessilia vel ad 1 cm. pedunculata; bracteolae lineares circ. 1 cm. longae, cum pedunculis flocculoso-tomentosae. Involucri tubuloso-cylindrici 6 mm. longi phylla 5 viridia oblongo-linearia, apice subobtusata, glabra, margine pellucida. Flores ligulati nulli; tubulosi 4-5

aurantiaco-flavi, circ. 1 cm. longi; pappus albus, 5-6 mm. longus, fragilis; achaenia immatura linearia 2 mm. longa.

"Plant of 1-2½ ft. Flowers orange yellow. Shady situations in pine forests on the eastern flank of the Tali Range. Lat. 25° 40' N. Alt. 8000-9000 ft. July 1910." G. Forrest. No. 6811.

"Plant of 6-12 inches. Flowers deep dull orange. Shady situations in pine and mixed forests on the eastern flank of the Tali Range. Lat. 25° 40' N. Alt. 10,000-11,000 ft. September 1910." G. Forrest. No. 6911.

Tanacetum quercifolium, W. W. Sm. Sp. nov.

Species distinctissima; habitu, foliis formâ eis *Quercis Roburis* subsimilibus, inflorescentiâ amplâ conspicua.

Planta basi suffrutescens, 60-120 cm. alta, basi et in regione inflorescentiae ramosa, bene foliata. Caules 2-10 e basi orti, robusti, erecti, striatuli, cinereo-adpresso-tomentulosi. Folia alterna, numerosa, inferiora et media similia, superiora minora tandem integra et bracteiformia; inferiora 10-15 cm. longa, 4-5 cm. lata, obovato-oblonga, irregulariter 5-9-dentato-sinuata vel lobatula, lobulis circ. 1 cm. longis triangularibus apiculatis, supra viridia, nervis utrinque circ. 6, immersis, infra dense minute cinereo-tomentella, nervis multum prominentibus. Inflorescentia ampla, 20 cm. longa vel ultra, ramosissima, paniculato-corymbosa; prope basin corymborum ultimorum folia numerosa supposita, bracteiformia, 1-3 cm. longa, lanceolata, integra, subtus cinereo-tomentella, 5-10 capitula amplexantia; pedunculi ultimi 2-3 mm. longi; involucri campanulati phyla exteriora lanceolata, viridia, basi lateribusque cinereo-tomentellosa, interiora late oblonga, scariosa. Capitula ± 20-flora, circ. 4 mm. longa, circ. 3 mm. lata, homogama. Corolla flava, vix. 3 mm. longa, nitenti-glandulosa.

"Shrub of 2-4 ft. Flowers brassy yellow. Shady situations in pine forests on the eastern flank of the Lichiang Range. Lat. 27° 25' N. Alt. 11,000-12,000 ft. September 1910." G. Forrest. No. 6671.

Also in cultivation in the Royal Botanic Garden, Edinburgh, and flowering September 1912.

CRUCIFERAE.

Braya Forrestii, W. W. Sm. Sp. nov.

Species affinis *Brayae aeneae*, Bunge sed habitu, foliis linearibus, scapo brevioris piloso, floribus majoribus differt; a *B. tibetica*, H. f. et T. floribus majoribus, sepalis glabris recedit.

Planta perennis, dense caespitosa, radice crassissimâ multicipiti praedita. Scapi 3-5 cm. longi, basi foliis hornotinis multis et vaginis pristinorum marcidis dense obsiti, superne nudi, plus minusve dense pilis albis patentibus praediti, racemo 5-9-floro terminati. Folia omnia radicalia linearia, 2-3 cm. longa, 1 mm. lata, subobtusata, integra, glabra. Racemus brevis, circ. 1 cm. longus, subcorymbosus, pedicellis circ. 2 mm. longis albo-patenti-villosis. Sepala 3 mm. longa, vix 2 mm. lata, elliptica, distincte albo-marginata, viridia, apice purpurata glabra. Petala calycem fere duplo excedentia, obovata, alba, Siliqua (immatura) oblonga, compressiuscula, stylo circ. 1 mm. longo, seminibus paucis (circ. 4).

"Tufted plant of 1-3 inches. Flowers white. Crevices of limestone cliffs on the western flank of the Lichiang Range. Lat. 27° 20' N. Alt. 12,000-13,000 ft. June 1910." G. Forrest. No. 5749.

Cardamine ? verticillata, Jeffrey et W. W. Sm. Sp. nov.

Species habitu *C. Franchetianae*, Diels (= *Loxostemon Delavayi*, Franch.) et *C. granuliferae* (Franch.) Diels sed foliis integris verticillatis facile distinguenda; fructu ignoto et inflorescentiâ bracteis praeditâ, in genere *Cardamine* dubie posita.

Planta circ. 10 cm. alta gracilis. Radix, in locis saxosis errans, praelonga, ad 10 cm. longa vel ultra, flagelliformis, ad collum folia pauca 2-4 mm. longa squamiformia gerens; bulbilli, ut videtur, desunt. Caulis solitarius (rarius duo) simplex, tenuis, glaber, nisi ad apicem foliis nudus. Folia 4-8-verticillata, circ. 1-2 cm. sub inflorescentia posita, petiolo 10-12 mm. longo praedita, spathulata, 5-8 mm. longa, 3-4 mm. lata, apice rotundata, basi in petiolum attenuata, integerrima, glabra carnosula venis indistinctis, subtus rugosula. Inflorescentiae 1-3 ex axillis foliorum verticillatorum ortae, 1-2 cm. longae, corymbosae, densiores; bractae foliis subsimiles sed minores; pedunculus pilis albidis deflexis sparse praeditus; pedicelli ad 5 mm. longi glabri. Sepala 2-2.5 mm. longa, ovata vel ovato-oblonga, obtusa, margine translucida. Petala 5-6 mm. longa, obovata, ungue angustâ, alba. Filamenta circ. 3 mm. longa, antherae in sicco nigrae. Ovarium immaturum obovoideum circ. 2 mm. longum.

"China:—N.W. Yunnan, near Atuntsi, at an altitude of 15,000 ft. July 1911." F. Kingdon Ward. No. 17.

A peculiar plant recalling the *Cardamines* of the section *Dentaria* and placed provisionally in *Cardamine*. The whorled leaves and the bracts are against its inclusion in that genus, but in the absence of fruit the affinity is doubtful.

***Draba alpina*, Linn., var. *involutrata*, W. W. Sm. Var. nov.**

Dense caespitosa; caules permulti arcte intertexti; folia sub anthesin rosulatum conferta, quasi involucrem formantia; pedunculus brevissimus; flores subcapitati.

Differs much in habit from typical *Draba alpina*, Linn. The older portions of the stems, almost hypogeal, form a dense weft, in extreme cases like a mass of *Polytrichum*. At the summit of this are the numerous short shoots of the year usually only 1 cm. high, the leaves rosulate and forming almost an involucre round the contracted inflorescence.

"Tufted plant of 1-3 inches. Flowers bright golden yellow. Crevices and ledges of moist limestone cliffs on the eastern flank of the Lichiang Range. Lat. 27° 25' N. Alt. 11,000-12,000 ft. June 1910." G. Forrest. No. 5732.

"Matted plant of 1 inch. Flowers golden yellow. On boulders and limestone drift on the eastern flank of the Lichiang Range. Lat. 27° 40' N. Alt. 15,000-16,000 ft. July 1910." G. Forrest. No. 6138.

Also grown from seed in the Royal Botanic Garden, Edinburgh, where it flowered in the beginning of April 1912.

***Megacarpaea Delavayi*, Franch., var. *minor*. W. W. Sm. Var. nov.**

Planta minor, foliolis angustissimis, floribus saturate roseis praedita.

"Plant of 6-24 inches. Flowers deep rose, fragrant. Open alpine meadows on the western flank of the Lichiang Range. Lat. 27° 20' N. Alt. 11,000 ft. July 1910." G. Forrest. No. 6021.

GENTIANAEAE.

***Gentiana atuntsiensis*, W. W. Sm. Sp. nov.**

Ex affinitate *Gentianae microdontae*, Franch. sed habitu nano, foliis angustioribus, floribus subcapitatis inter alia recedit.

Planta erecta vel subdecumbens, 7-12 cm. alta, e rhizomate crasso ad collum haud filamentoso radicibus fibrosis multis praedito orta, caules steriles plures, florentem unum gignens. Caulis 5-8 cm. longus sparse foliatus, subangulatus, glaber, rubescens. Folia basalia pauca, laxius rosulata, 3-4 cm. longa, 4-8 mm. lata, lineari-lanceolata vel oblanceolata, apice obtusa, vix vel breviter petiolata, carnosula; caulina 1-3-paria, basalibus subsimilia, minora. Flores 3-5, subcapitati, ad axillas foliorum superiorum orientes, speciosi; pedicelli subnulli. Calycis tubus 1 cm. longus vel ultra, anguste obovoideus membranaceus ore truncatus; lobi inaequales, lineari-lanceolati, 3-5 mm. longi.

Corolla 3-3.5 cm. longa, in sicco ad 1.5 cm. lata, tubulosa, azurea, extus maculata; lobi circ. 5 mm. longi, ovati, plicas asymmetricas 3-4-plo superantes. Antherae circ. 4 mm. longae, liberae; filamenta haud alata. Ovarium sub anthesin circ. 1.5 cm. longum, circ. 1.5 cm. stipitatum, stylo brevi. Semina (immatura) testâ lamelloso-rugosâ praedita lamellis albis areolas hexagonas formantibus.

"China:—Near Atuntsi, on the borders of Yunnan and Tibet, at an elevation of 14,000-16,000 ft. September 1911." F. Kingdon Ward. No. 108.

Gentiana Wardii, W. W. Sm. Sp. nov.

Species habitu *Gentianae phyllocalycis*, Clarke; in eadem sectione *Frigida*, Kusnezow ponenda; flore maximo pro magnitudine plantae foliorumque inter species sectionis conspicua.

Planta nana rhizomate repenti gracillimo praedita. Caulis simplex, basi subdecumbens, deinde erectus, $\pm$ 1 cm. longus, foliis fere velatus. Folia rosulatum conferta, caulem et calycis tubum velantia, 4-5 mm. longa, circ. 4 mm. lata, late obovata vel late spathulata, apice rotundata, basi in petiolum latum brevissimum angustata, in sicco translucetia, subnitentia. Calyx vix 1 cm. longus, ad tertiam partem divisus in lobos 5, alios lanceolatos acutos, alios (rarius) obovatos, foliis similes. Corolla 2-2.2 cm. longa, in sicco circ. 8 mm. lata, dense coerulea, medio paululum ampliata, in lobos 3 mm. longos ovatos obtusos cum tubo continuos divisa; plicae asymmetricae, vix 1 mm. longae. Antherae liberae inclusae. Ovarium immaturum, longe stipitatum, stigmatibus linearibus revolutis coronatum; testa lamellosa, lamellis areolas hexagonas formantibus.

"China:—Near Atuntsi, on the borders of Yunnan and Tibet, at an elevation of 14,000-16,000 ft. September 1911." F. Kingdon Ward. No. 103.

A beautiful dwarf species with the flowers exceeding in size the short stem and leaves together.

LABIATAE.

Nepeta complanata, Dunn. Sp. nov.

Rhizoma crassum, ramosissimum, ramis late vagantibus caules foliosos florentesque solitarios emittentibus. Caules prostrati, subglabri, 9-14 cm. longi. Folia approximata, arcte imbricata, ex origine decussata, mox complanata, rotundata, apice obtusa, basi cordata, in petiolum brevissimum contracta, crenata, 1-3 cm. longa, papyracea, basi membranacea, albescentia, utrinque primo dense pubescentia, subtus glandulosa, tandem

glabrescentia, venis supra impressis, infra prominentibus. Flores in verticillastris brevibus paucifloris axillaribus sub tecto complanato foliorum juxta humum enati, bracteis parvis foliaceis et bracteolis linearibus suffulti, 1.8–2.0 cm. longi. Calyx tubulosus, oblique 5-dentatus, 1 cm. longus, membranaceus, extus sparse, intus dense hirsutus, 15-nervius, dentibus aequalibus, 2–3 mm. longis, ovatis obtusis. Corolla tubulosa, 1.6–1.8 cm. longa, 5-lobata, extus sparse puberula, intus glabra, pallide purpurea, labio maculato, lobis 4, superioribus ovatis obtusis, 4 mm. longis, inferiore bis longiore emarginato. Stamina 2 superiora exserta, 2 inferiora inferius inserta, inclusa. Stylus longe exsertus. Nuculi non maturi.

"China:—N.W. Yunnan, scree plant, 16,000 ft. July 1911. The leaves twist so that they all appear to develop on one side (the upper) and overlap a great deal. The flowers lie under them next to the ground (protected from radiation)." F. Kingdon Ward. No. 138.

It has exactly the general habit of *Nepeta decolorans*, Hemsl., discovered by Littledale in the same region in 1895 and figured in Hooker's *Icones Plantarum*, t. 2470; its calyx, however, is very different, being equally cleft into 5 lobes, not bilabiate.

LEGUMINOSAE.

Astragalus Balfourianus, N. D. Simpson. Sp. nov.

Species ab *A. camptodonto*, Franch. et *A. tangutico*, Batalin pilis nigris albisque brevibus immixtis, foliolis supra glabris, bracteolis longioribus, calycis dentibus erectis, alis margine integris, ovario nigro-hirsuto distinguenda.

Herba perennis, rhizomate conspicue ramoso crasso, multicaulis, caulibus decumbentibus pilis nigris albisque brevissimis basifixis parce vestitis. Folia breviter petiolata, ad 3 cm. longa, imparipinnata, 6–10-juga; foliola oblonga, apice retusa vel mucronulata, distincte petiolulata ad 10 mm. longa et 5 mm. lata, glabrescentia, supra glabra, subtus pilis albis paucis adpressis vestita; stipulae triangulares, saepe reflexae, ad 4 mm. longae. Racemi 4–7-flori, pedunculis ad 3.5 cm. longis folia excedentibus; bractae lanceolatae, 5 mm. longae; bracteolae 2, ad 4 mm. longae, rarissime calycis tubum aequantes; pedicelli graciles, circiter 4 mm. longi. Calyx campanulatus 4–5 mm. longus, pilis adpressis nigris vel nigris albisque vestitus, dentibus erectis vel apice parum recurvatis linearibus saepissime involutis ad 6 mm. longis ut tubo pilis brevibus dense instructis. Corolla calycem multo excedens, sicco purpurea; vexillum orbiculare, bilobum, 14–15 mm.

longum, 11-12 mm. latum, in unguem 4 mm. longum abrupte contractum; alae 12-14 mm. longae, 4-4.5 mm. latae, lamina apice integra obtusa basi obtuse auriculata; unguis ad 4.5 mm. longus; carina ad 16 mm. longa, 5.5 mm. lata, apice obtusa, ungui 5-6 mm. longo. Ovarium breviter stipitatum, nigro-hirsutum, circiter 20-ovulatum; stigma conspicue barbatum.

"Plant of 8-10 inches, flowers purple. Mountain pastures on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 20,000 ft. September 1910. N.W. Yunnan." G. Forrest. No. 6606 (Type).

"Plant of 8-10 inches. Flowers purple. Open stony pastures on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 12,000-13,000 ft. August 1910." G. Forrest. No. 6514.

"Plant of 9-15 inches. Flowers bright blue. Grassy slopes at the base of cliffs on the eastern flank of the Lichiang Range. Lat. 27° 20' N. Alt. 10,000-12,000 ft. July 1906." G. Forrest. No. 2745.

***Astragalus Forrestii*, N. D. Simpson. Sp. nov.**

Species *A. florido*, Benth ex Bunge, habitu persimilis sed racemis densissime multifloris, floribus bibracteolatis, calycis dentibus inaequalibus, ovario sessili facile distinguenda.

Herba robusta, rhizomate crasso ramoso; caules circiter 45-60 cm. alti (ex *Forrest*), canaliculati, rigidi, pilis albis nigrisque basifixis dense vestiti, juveniles indumento densissimo instructi. Folia ad 14 cm. longa, imparipinnata, ad 19-juga, petiolo circa 1 cm. longo suffulta; rhachis pilis nigris dense vestita; foliola late linearia, acuta, breviter petiolulata, ad 20 mm. longa et 7 mm. lata, supra glabra, subtus margineque pilis albis vestita, costis petiolulisque pilis nigris albisque dense instructis; stipulae liberae, membranaceae, ovatae, acuminatae, pilis longis albis nigrisque vestitae. Racemi terminales, multiflori floribus compactis; bracteae membranaceae, ascendentes, ad 10 mm. longae; bracteolae duae, 3 mm. longae, pedicellis pilis nigris dense vestitis. Calyx campanulatus, circa 5 mm. longus, lutescens, pilis paucis nigris vestitus, dentibus inaequalibus inferioribus 2.5 mm. longis superioribus 1 mm. longis, pilis nigris dense instructis. Corolla calyce duplo longior; vexillum obovatum, emarginatum, 10.5 mm. longum, 5.5 mm. latum, glabrum, alas paullo superans; alae 9 mm. longae, 2 mm. latae, lamina anguste oblonga apice margine integro basi obtuse auriculata, ungui 4.5 cm. longo; carina 8.5 mm. longa, 2 mm. lata, apice obtusa. Ovarium sessile glabrum, semi-biloculare, 4-ovulatum; stigma nudum.

"Plant 1½ to 2 ft. Flowers pale lemon yellow. Alpine

pastures, on the western flank of the Lichiang Range. Lat. 27° 25' N. Alt. 11,000 ft. June 1910. Yunnan." G. Forrest. No. 6041.

Astragalus lichiangensis, N. D. Simpson. Sp. nov.

Species ab *A. dolichochoete*, Diels, calycis dentibus brevioribus, vexillo in unguem sensim attenuato alas carinamque superante, ovario stipitato glabro distinguenda.

Herba perennis, rhizomate crasso ramoso, multicaulis, caulibus pilis nigris brevissimis basifixis parce vestitis. Folia ad 4 cm. (petiolis ad 1 cm. longis inclusis) longa, imparipinnata, 4-8-juga; foliola breviter petiolulata, ovato-oblonga vel obovata, basi cuneata, apice acuta vel obtusa, saepe mucronulata, circa 7 mm. longa et 3 mm. lata, supra glabra, subtus pilis albis parce vestita, margine minute ciliata; stipulae lanceolatae, acuminatae, 5 mm. longae. Racemi 4-6-flori, pedunculis foliis paulo longioribus; bracteae reflexae, lanceolatae, 5 mm. longae, pedicellos et calycis tubum aequantes; bracteolae 2, calycem subtendentes, 3.5-4 mm. longae, tubum subaequantes. Calyx campanulatus, 4 mm. longus, pilis nigris brevissimis vestitus, dentibus subulatis 5.5 mm. longis pilis nigris adpressis dense obtectis. Corolla calycem multo excedens; vexillum suborbiculare, emarginatum, 17 mm. longum, 13 mm. latum, in unguem brevem sensim attenuatum, alas carinamque superans; alae lamina apice obtusa, 13 mm. longa, 4.5 mm. lata, auricula parva obtusa, ungui 4 mm. longo; carina 13 mm. longa, 5 mm. lata, apice obtusa. Ovarium stipitatum, glabrum, 16-ovulatum; stigma pilis longis cinctum.

"Plant of 10-12 inches; flowers greenish yellow. Dry, open situations amongst pine scrub on the eastern flank of the Lichiang Range. Lat. 27° 25' N. June 1910." G. Forrest. No. 5920.

Astragalus pullus, N. D. Simpson. Sp. nov.

Species ab *A. nigrescente*, Franch. ovario glabro stipitato, calycis dentibus tubum aequantibus, stipulis maioribus recedit.

Herba perennis, multicaulis, caulibus erectis 30-60 cm. altis (ex *Forrest*), pilis nigris brevibus parce vestitis. Folia ad 10 cm. (petiolis ad 2 cm. longis inclusis) longa, imparipinnata, 9-11-juga; foliola opposita, laxè disposita, breviter petiolulata, elliptico-oblonga, apice obtusa, saepe fere retusa, ad 12 mm. longa, 5 mm. lata, supra glabra, subtus pilis albis parce pilosa; stipulae caulinae, liberae, late lanceolatae, acutae, herbaceae, subtus pilis paucis nigris instructae. Racemi capitati, circa 12-flori; pedunculi ad 14 cm. longi, folia excedentes, apice densissime pilis nigris adpressis basifixis vestiti; bracteae

lineares, 3 mm. longae; bracteolae nullae; pedicelli 1 mm. longi. Calyx campanulatus, 3 mm. longus, pilis nigris adpressis densissime vestitus, dentibus subulatis calycis tubum aequantibus. Corolla calycem multo superans; vexillum obovatum, emarginatum, 11 mm. longum, 5.5 mm. latum, alas carinamque superans; alarum lamina apice acuta, 5 mm. longa, 1.5 mm. lata, basi obtuse auriculata, ungui 4 mm. longo; carina 9 mm. longa, 2.5 mm. lata. Ovarium pubescens, stipitatum, 4-ovulatum; stigma nudum.

"Plant 1-2 ft. high. Flowers blue. On rocky, grassy slopes of side valleys on the eastern flank of the Lichiang Range. Lat. 27° 12' N. Alt. 10,000-10,500 ft. June 1906. N.W. Yunnan." G. Forrest. No. 2379 (Herb. Edin. ! et Kew!).

LOGANIACEAE.

Buddleia heliophila, W. W. Sm. Sp. nov.

Species ex affinitate *Buddleiae officinalis*, Maxim.; foliis fere sessilibus, calycis dentibus acutis, corollâ longiore, inter alia recedit.

Frutex 1-2 m. altus, ramulis teretiusculis, novellis dense incano-tomentellis. Folia vix petiolata, superiora ad 8 cm. longa, circ. 3 cm. lata, opposita, aequalia vel inaequalia, membranacea elliptica, apice breviter acuminata, basi subrotundata vel lata cuneata, integra, supra adpresse pilosula nervis obscuris, infra dense incano-stellato-tomentella nervis eminentibus tomentosioribus; folia juniora fulvido-tomentella. Thyrsi in apice ramorum crebri 4-8-flori, longiuscule pedunculati, pedicellis brevissimis dense tomentellis, floribus fere capitatis. Calyx circ. 2.5 mm. longus, dense stellato-tomentosus, dentibus triangularibus acutis vix 1 mm. longis. Corolla circ. 13 mm. longa, rosea; tubus 1 mm. latus in sicco, extus tomentellus intus pilosulus; lobi rotundati circ. 2.5 mm. diametro, intus glabri. Stamina in medio tubo affixa. Ovarium dense albobilosum. Fructus deest.

"Shrub of 3-6 ft. Flowers soft magenta rose shading to crimson at base. Open, sunny situations along the base of the eastern flank of the Tali Range. Lat. 25° 40' N. Alt. 7000-8000 ft. July 1910." G. Forrest. No. 6796.

Buddleia nana, W. W. Sm. Sp. nov.

Species affinis *Buddleiae brachystachyae*, Diels, eadem magnitudine habituque sed foliis calyceque diversa.

Frutex ramosus 30-60 cm. altus, ramulis mox glabrescentibus novellis albido-tomentellis. Folia opposita breviter (ad 2-3 mm.)

petiolata, ad 2.5 cm. longa, circ. 5 mm. lata, lanceolata, vel oblongo-lanceolata, acuta vel subobtusata, integra, supra sparse pilosula, infra densius stellato-tomentella, nervis utraque facie obscuris. Thyrsi breves 1.5-2 cm. longi, floribus 6-12 fere capitatis. Calyx tubulosus dense tomentellus; tubus 2 mm. longus; dentes triangulares vix 1 mm. longi. Corollae lavandulaceae tubus 8 mm. longus extus stellato-pubescent; lobi rotundati circ. 3 mm. diametro intus glabri. Stamina in medio tubo inserta. Ovarium dense albo-pilosum. Fructus deest.

"Dwarf shrub of 1-2 ft. Flowers greyish lavender. Moist, open situations on the divide between the Sha-yang and Chutong valleys. Lat. 25° 20' N. Alt. 6700 ft. April 1910." G. Forrest. No. 5519.

OLEACEAE.

Jasminum subhumile, W. W. Sm. Sp. nov.

Species affinis *Jasmino humili*, Linn., sed pedicellis calyceque dense minute villosis differt; haud remota ex descriptione ab *Jasmino pubigero*, Don, foliis trifoliatis fere glabris recedit.

Frutex 1-2 m. altus. Caulis flexuosus teres dense molliter albido-crispato-villosulus. Folia alterna trifoliolata; petioli 2.5-4 cm. longi, molliter villosuli; petioli laterales circ. 1 mm. longi, medianus circ. 1 cm. longus; lamina 3-10 cm. longa, 1.5-2.5 cm. lata, mediana vix major, ovata vel ovato-lanceolata, apice obliqua vel deflexa, acuta vel subacuta, basi rotundata vel late cuneata, coriacea, supra glabra vel basi sparsissime pilosula, nervis obscuris infra pallidiora rugosula glabra, costâ pilosula exceptâ, nervis gracilibus circ. 5 paribus. Cymae fragrantæ ad apices ramorum, 40-50-floræ, dichotome divisæ, molliter villosæ; pedicelli 3-7 mm. longi; bracteæ circ. 2 mm. longæ lineares. Calyx circ. 2 mm. longus, apice 2 mm. latus, extus molliter villosulus, denticulis quinque minutis præditus. Corolla hypocrateriformis, aurantiaca; tubus cylindraceus circ. 1 cm. longus; lobi 6-7 mm. longi, ovati, obtusi. Fructus deest.

"Shrub of 3-6 ft. Flowers orange yellow, fragrant. Moist, open situations in the Sha-yang valley. Lat. 25° 20' N. Alt. 6000 ft. April 1910." G. Forrest. No. 5529.

"Shrub of 5-8 ft. Flowers bright yellow, fragrant. Moist, open situations in the Pu-piao valley. Lat. 25° 5' N. Alt. 4000 ft. April 1910." G. Forrest. No. 5502, pro parte.

ORCHIDEAE.

Listera Wardii, Rolfe. Sp. nov.

Terrestris, 12-18 cm. alta. Caulis subgracilis, glaber, 9-11 cm.

longus. Folia opposita, sessilia, latissime ovata, brevissime apiculata, basi truncata, glabra, multinervia, 3-4 cm. longa, 4-5 cm. lata. Scapus gracilis, puberulus, 5-9 cm. longus, 5-10-florus. Bracteae ovatae vel oblongo-ovatae, subacutae, 5-7 mm. longae. Pedicelli 6-7 mm. longi. Flores mediocres. Sepala patentia, oblonga, subobtusata, 5-7 mm. longa. Petala linearia, subobtusata, 5-7 mm. longa. Labellum cuneato-obcordatum, apice breviter bilobum, subcrenatum, basi subcordatum, 1.3-1.4 cm. longum, 9-10 mm. latum, radiato-venosum, medio obtuse carinato. Columna arcuata, subclavata, 4 mm. longa.

"China:—N.W. Yunnan. Among the undergrowth of the temperate rain forest, with Oxalis, Arums, and Liliaceae, where the forest is densest. One of the few plants with green flowers. Salwen-Mekong divide, E. slope, 10,000 ft. June 1911." F. Kingdon Ward. No. 149.

Allied to *L. grandiflora*, Rolfe, but readily distinguished by its narrower cuneate-obcordate lip. The flowers are also rather smaller, the leaves broader, and the stem shorter.

***Nervilia tibetensis*, Rolfe. Sp. nov.**

Tuber subglobosum, circiter 1.3 cm. latum. Folia non vidi. Scapi graciles, 15-20 cm. longi, vaginis spathaceis paucis obtecti. Bracteae lineari-lanceolatae, subobtusae, deflexae, 7-11 mm. longae. Pedicelli graciles, apice incrassati, 4-5 mm. longi. Ovarium ellipsoideum, 3 mm. longum. Sepala et petala subconniventia, lanceolata, breviter acuminata, 1.4-1.5 cm. longa. Labellum trilobum, 1.2 cm. longum, 1 cm. lati; lobi laterales semioblongi, truncati, prominente radiato-venosi; lobus intermedius obovato-quadratus, emarginatus, 4 mm. longus; discus trinervis. Columna clavata, 6 mm. longa.

"Tibet:—Chamutang, Salwen River, 6000 ft. June 1911." F. Kingdon Ward. No. 151.

Allied to *Nervilia Aragoana*, Gaud. (*Pogonia flabelliformis*, Lindl.), but with a fewer-flowered inflorescence, more truncate side-lobes to the lip, and the column only a third as long as the sepals and petals.

***Cypripedium Wardii*, Rolfe. Sp. nov.**

Rhizoma repens; radices numerosissimae. Caules erecti, 15-20 cm. longi, medio vel infra medium triphylli, basi vaginis spathaceis paucis obtecti. Folia alterna, subsessilia, elliptica vel lanceolato-elliptica, subacuta, 5-9 cm. longa, 1.5-3 cm. lata, venis numerosis, molliter pubescentibus. Scapi graciles, pubescens, 9-11 cm. longi, apice uniflori. Bracteae ovatae vel ovato-lanceolatae, pubescentes, 2-2.3 cm. longae. Pedicelli circiter 1 cm. longi, dense pubescentes. Flores mediocres.

Sepalum posticum elliptico-ovatum, acutum, 1.4 cm. longum 8 mm. latum, extus molliter pubescens; sepala lateralia connata, late ovato-elliptica, subobtusa, valde concava, 1.2 cm. longa, extus molliter pubescentia. Petala rhomboideo-oblonga, obtusa, 1.2 cm. longa, basi 5-6 mm. lata. Labellum ovoideo-globosum, 1.5 cm. longum, 8-9 mm. latum, lobi laterales late triangulares, subobtusiusculi, 2-2.5 mm. longi. Columna 5 mm. longa. Staminodium ellipticum, obtusum, apice breviter recurvum, 3.5 longum.

"Tibet:—Above Salwen River, Kun-a-tong, 10,000 ft. Growing on limestone cliffs in shade of dense forest—temperate rain forest. Extensive root system corresponding to situation. June 1911." F. Kingdon Ward. No. 145.

Allied to *C. guttatum*, Swartz, but differing in its softly pubescent stems and smaller pubescent leaves, the latter being three in number and not turning black in drying, as *C. guttatum* invariably does. The flowers are also different in shape and texture, the dorsal sepal being broader and less acute, and the petals rhomboidly dilated at the base. The colour is not recorded on the sheet, but the dried specimen shows large purple spots on the lip, while the rest of the flower is pale in colour.

PRIMULACEAE.

Androsace Wardii, W. W. Sm. Sp. nov.

Species ex affinitate *A. Bulleyanae*, G. Forrest sed minor; foliis et calyce distinguenda; ab *A. Chamaejasme*, Host. foliis diversis atque corollâ miniatâ inter alia recedit.

Planta plus minus caespitosa stolonifera, habitu *A. Chamaejasme*. Folia variabilia, omnia rosulata, nunc circ. 1 cm. longa, 3-4 mm. lata, obovata, apice fere rotundata, breviter petiolata, nunc circ. 3 cm. longa (cum petiolo), circ. 3 mm. lata, lineari-oblancheolata, apice subobtusa, basi in petiolum satis longum attenuata, omnia aequae et utrinque pilosula, vix (nisi primaria) margine pilis longis obsita. Scapi 3-7 cm. longi, 3-5-flori, ± sparse pilis brevibus praediti. Bracteae 2-3 mm. longae, quam pedicelli 2-4-plo breviores, oblancheolatae, subobtusae, albo-pilosulae; pedicelli 4-12 mm. longi, flexiles, ± dense pilosuli. Calyx campanulatus vix ad medium partitus, circ. 3 mm. longus, densius albo-pilosulus; lobi subtriangulares, subobtusiusculi. Corollae miniatae tubus calycem aequans; lobi obcordati; limbus 6-8 mm. diametens. Semina?

"N.W. Yunnan, at Atuntsi, at an elevation of 14,000 ft., growing among dwarf *Rhododendron* in rocky, open valleys." F. Kingdon Ward. No. 170.

This species recalls *A. Bulleyana*, but is not so robust, and the leaves are not mucronate. In many ways it approaches *A. Chamaejasme*, but the leaves do not have the characteristic fringe of long hairs, but are finely pilose all over.

RANUNCULACEAE.

Delphinium Beesianum, W. W. Sm. Sp. nov.

Species affinis *Delphinio likiangensi*, Franch.; habitu ramosiore, foliorum segmentis angustioribus, bracteis diversis, sepalis extus longiuscule albo-setosis inter alia recedit.

Planta nana 15-30 cm. alta, basi reliquiis foliorum fibrosis induta. Caulis flexuosus, e basi ramosus, teres, plus minusve dense adpresse albo-pilosus. Folia et basalia et caulina longe petiolata, petiolo ad 12 cm. longo; lamina alte 5-fida, ambitu orbicularia, 5-6 cm. diametro, segmentis iterum ad mediam partem vel ultra in lobos 2-3 lineares 1-2 cm. longos acutos divis, supra breviuscule, infra dense longiuscule albo-pilosa; folia superiora minora sensim in bracteas trifidas 5-15 mm. longas transeuntia. Flores solitarii vel 2-3 in apice ramulorum; pedunculi 2-3 cm. longi, albo-pilosi. Perianthium ex collectore coeruleum venulis intensius coloratis, extus dense pilis longis albis obsitum. Sepalum posticum calcare 2-2.5 cm. longo albo-piloso, stricto vel apice paulo curvato, pedunculum aequante atque ei plerumque contiguo praeditum; lamina circ. 2.5 cm. longa, oblonga; lateralia 2.5-3 cm. longa, oblonga, apice rotundata. Petala superiora glabra cum calcare quam calcar sepalinum paulo breviora fere 3.5 cm. longa; lamina anguste oblonga, circ. 4 mm. lata, subcoriacea; petala inferiora oblique obovata, fere 1.5 cm. longa, glabra, apice erosa. Carpella 5; ovaria albo-pilosa.

"Plant of 6-12 inches. Flowers blue, with deeper veinings. Rare on ledges of limestone cliffs on the eastern flank of the Lichiang Range. Lat. 27° 30' N. Alt. 14,000 ft. September 1910." G. Forrest. No. 6694.

The species is closely akin to *D. likiangense*, Franch., collected also by Forrest in the Lichiang Range, but is at once distinguished by the bracts and sepals.

Delphinium calcicolum, W. W. Sm. Sp. nov.

Species affinis *Delphinio Beesiano*, W. W. Sm.; foliis glabrioribus, pedunculis longiusculis, bracteis diversis, floribus minoribus minute albo-pilosulis recedit.

Planta nana 7-20 cm. alta, basi reliquiis foliorum fibrosis induta. Caulis flexuosus, laxe ramosus, teres, plus minusve

sparse albo-pilosus. Folia et basalia et caulina longe petiolata, petiolo ad 12 cm. longo; lamina alte 3-5-fida, ambitu orbicularia, ad 8 cm. diametro, segmentis integris vel iterum ad mediam partem in lobos 2-3 lineares 1-3 cm. longos acutos divis, supra minute pilosula, infra sparse pilosa; folia superiora minora, sensim in bracteas integras vel 2-3-fidas ad 2 cm. longas transeuntia. Flores solitarii in apice ramulorum vel in scapo aphylo brevi; pedunculi 4-5 cm. longi, adpresse albo-pilosi. Perianthium coeruleum extus minute albo-pilosulum. Sepalum posticum calcare 2 cm. longo minute pilosulo, stricto vel apice paulo curvato, quam pedunculus circ. 2-plo brevior atque ab eo fere recto angulo abeunte praeditum; lamina circ. 2 cm. longa, oblonga; lateralia 2 cm. longa, oblonga, obtusa. Petala superiora glabra cum calcare fere 3.5 cm. longa; petala inferiora oblique obovata, circ. 1.5 cm. longa, glabra, apice bifida. Carpella 5; ovaria albo-pilosa.

"Plant of 3-8 inches. Flowers blue. On limestone drift on the western flank of the Lichiang Range. Lat. 27° 35' N. Alt. 12,000 ft. August 1910." G. Forrest. No. 6364.

Very closely allied in habit, leaves and flowers to *D. Beesianum*, W. W. Sm., from which I have separated it with some hesitation by the characters given above.

ROSACEAE.

Spiraea calcicola,* W. W. Sm. Sp. nov.

Species habitu *Spiraeae arcuatae*, Hook. f.; ramis longissime arcuatis rubris glabris, foliis minimis obovatis integris glabris conspicua.

Frutex 60-150 cm. altus, ramulis superioribus circ. 30 cm. longis patentibus arcuatis angulatis rubris glabris nitidis sparse foliatis prope basin subnudis. Folia (superiora juvenilia tantum visa tempore florendi) 5-7 mm. longa, circ. 3 mm. lata, 3-5-fasciculata in ramulo brevissimo, folio axillante delapso, e gemma squamis membranaceis ciliatis praedita orta, obovata vel elliptica, apice rotundata, basi cuneata, primo vix petiolata, chartacea, integerrima, glabra, supra viridia nervis obscuris, infra pallidiora subtrinervia. Inflorescentiae angustissimae circ. 12 cm. longae, in apice ramulorum, e fasciculis 12-15, circ. 6-8-floris compositae; flores arcte corymbosi pedicellis circ.

* A *Spiraea* corresponding to the above has been grown (May 1913) by Bees Limited from seeds sent by Mr. Forrest. The older leaves are sometimes entire, sometimes with one or two faint notches near the apex; a short petiole about 2 mm. long is developed and the lamina reaches 1 cm. long, with pellucid veins. The young shoots are at the first sparsely pilose, soon becoming glabrous and of a reddish hue.

5 mm. longis et basi foliis 3-5 minutis praediti. Calyx circ. 3 mm. longus, extus glaber, intus glaber vel sparse pilosulus, fere ad mediam partem in lobos triangulares obtusos partitus. Petala calycem superantia obovata, alba, extus saturate roseo-tincta. Stamina circ. 20. Carpella 5 glabra; discus albobilosulus. Fructus deest.

"Shrub of 2-5 ft. Flowers white, exterior deep rose. Crevices of dry limestone cliffs on the eastern flank of the Lichiang Range. Lat. 27° 20' N. Alt. 11,000-12,000 ft. June 1910." G. Forrest. No. 5730.

A species remarkable for its long, slender, curved branches, with small leaves. With the exception of the bud-scales and the disc, the plant is quite glabrous.

SAXIFRAGEAE.

Saxifraga atuntsiensis, W. W. Sm. Sp. nov.

Species minima, affinis *S. microphyllae*, Royle; petalis 2-3-plo sepalis longioribus inter alia distincta.

Planta perpusilla, glaberrima, dense caespitosa. Folia omnia basalia dense rosulatum conferta, vix 1 mm. longa, obovata, integerrima, glaberrima, nitentia, carnosula. Pedicelli circ. 1 cm. longi, gracillimi, uniflori, sparse glanduloso-puberuli, aphylli. Sepala 1-1.5 mm. longa, oblonga, glabra, obtusa, primo erecta, deinde patentia. Petala 3-4 mm. longa, vix 1 mm. lata, lineari-oblonga, subobtusula, trinervia, flava. Stamina pistillum primo superantia. Ovarium immaturum ovoideum.

"China:—N.W. Yunnan, at Atuntsi, an alpine grassland plant growing along the headwaters of the streams at an elevation of 15,000 ft. July 1911." F. Kingdon Ward. No 43.

Closely allied to the dwarf Himalayan Saxifrages, nearest to *S. microphylla*, but with very different flowers.

Saxifraga consanguinea, W. W. Sm. Sp. nov.

Species valde affinis *Saxifragae piliferae*, Hook. f. et Thoms. ex Himalaya orientali; habitu compactiore, foliis magis imbricatis et margine minute ciliatis, inflorescentiis plurifloris, inter alia signa recedit.

Planta caespitosa, erecta, 3-4.5 cm. alta, radicibus fibrosis, turionibus sarmentosis filiformibus ad 15 cm. longis vel ultra, apice gemmiferis praedita; habitu ei *S. piliferae* similis. Caulis simplex puberulus, inflorescentia corymbosa densa 5-8-flora terminatus. Folia infima dense rosulatum conferta, 6-9 mm. longa, 2 mm. lata, lineari-oblonga, basi subamplexicaulia, apice

subacuta mucronulata, margine minute ciliato-spinulosa, cetera glabra; superiora laxius imbricata, 5-10 mm. longa, 1-1.5 mm. lata, linearia, acuta vel subacuta, margine minute ciliata, rugosula, in bracteis simillimas sed minores abeuntia. Pedicelli circ. 5 mm. longi, sparse fusco-villosi. Flores eis *S. piliferae* similes, paulo majores. Sepala circ. 3 mm. longa, oblongo-ovata, obtusissima, carnosula, extus sparse pilosula, intus glabra. Petala in sicco rubro-purpurascentia, circ. 3 mm. longa, obovata, trinervia. Ovarium (immaturum) disciforme stylis brevissimis erectis coronatum.

"China:—At Atuntsi, N.W. Yunnan, near the Tibetan frontier, at an elevation of 16,000 ft. July 1911." F. Kingdon Ward. No. 44.

This species of the Chinese Western Ranges corresponds to the Himalayan *S. pilifera*, from which it differs in minor points. It is more compact with more imbricate leaves which are much less puberulous, the inflorescence is many flowered, the sepals fleshy and more obtuse, the petals more rounded at the apex. It is very closely allied, however, and in structure of leaf, sepal, petal, and especially ovary, it is scarcely different from its Himalayan congener.

Saxifraga finitima, W. W. Sm. Sp. nov.

Species affinis *Saxifragae Stella-aureae*, Hook. f. et Thoms. sed pedicellis saepius unifoliatis, et floribus majoribus inter alia distincta.

Planta dense caespitosa caudiculis lignosis, dense foliosis, caulibus floriferis undique glanduloso-puberulis unifloris. Folia densissime rosulatum conferta, sessilia, circ. 3 mm. longa, circ. 1 mm. lata, oblonga, obtusa, carnosula, nitentia, margine glanduloso-ciliata, nervis obscuris. Pedicelli circ. 3 cm. longi, glanduloso-puberuli, folio mediano circ. 3 mm. longo lineari glanduloso-ciliato praediti. Sepala 3-4 mm. longa, circ. 1.5 mm. lata, reflexa, oblonga, obtusa, parce margine glanduloso-ciliata, cetera glabra, viridia. Petala erecto-patentia, 5-6 mm. longa, circ. 3 mm. lata, late elliptica, brevissime unguiculata, obtusa, 5-nervia, flava. Stamina filiformia sepalis paulo longiora. Capsula immatura, circ. 3 mm. longa, ovato-globosa, stylis brevissimis erectis coronata.

"China:—N.W. Yunnan, at Atuntsi, at an elevation of 16,000 ft. on boulders and screes. July 1911." F. Kingdon Ward. No. 47.

A near relative of the Himalayan *S. Stella-aurea*, Hook. f. et Thoms., but easily distinguished by the larger flowers and the linear bracts (sometimes absent) placed at, or a little below, the middle of the pedicel.

Saxifraga flexilis, W. W. Sm. Sp. nov.

Species ex affinitate *Saxifragae drabaeformis*, Franch.; caulibus flexuosis, foliis pedunculisque eglandulosis, inter alia signa conspicua.

Radix ad 10 cm. longa, fibrosa, cujus e collo caules numerosi oriuntur. Caules alii longiores suberecti vel procumbentes, 6-7 cm. longi, flexuosi, sparsius foliis eciliatis praediti; alii brevissimi (juniores) 1-1.5 cm. longi, dense foliis ciliatis rosulatis obsiti; hi steriles, illi divaricato-ramosi, 2-3-floriferi, glabri, eglandulosi rubescentes. Folia caulium breviorum 3-4 mm. longa, dense conferta, lanceolata vel oblanceolata, mucronata, sparse albo-setoso-ciliat; folia caulium longiorum 6-8 mm. longa, vix. 2 mm. lata, laxa, lineari-lanceolata, subacuta, glabra, nervis obscuris. Pedicelli 2-3 ad 4 cm. longi, late divaricati, flexuosi, glabri. Sepala sub anthesin reflexa, oblonga, obtusa, 2-5 mm. longa, glabra, nervis obscuris. Petala oblonga vel oblongo-ovata, circ. 6 mm. longa, circ. 2-5 mm. lata, trinervia, flava. Stamina ovarium primo superantia filamentis circ. 2-5 mm. longis. Ovarium ovoideum in stylos breves paulo divaricatos exiens. Capsula matura . . .

"China:—N.W. Yunnan, near Atuntsi, at an elevation of 15,000 ft. September 1911." F. Kingdon Ward. No. 45.

Saxifraga Wardii, W. W. Sm. Sp. nov.

Species valde affinis *Saxifragae brachypodae*, Don, sed foliis lanceolatis, floribus fere duplo majoribus, calyce densius glanduloso-ciliato, petalis glandulo-marginatis recedit.

Planta laxe caespitosa; caules suberecti vel adscendentes, 5-7 cm. longi, simplices, dense foliosi, infra glabri, supra dense glandulosi, apice uniflori. Folia lanceolata, 9-11 mm. longa, 3-5 mm. lata, apice acuta mucronata, basi subrotundata, vix cordatula, semi-amplexicaulia, suberecta nec patentia, rigidula, spinulosa, albo-marginata, nitida, subtus pallidiora; gemmae desunt. Pedunculus 2-10 mm. longus, saepe foliis tectus, glandulosus. Calycis laciniae 5-6 mm. longae, 2-3 mm. latae, subacutae nec mucronatae, dense glanduloso-ciliatae, in sicco atro-purpureae. Petala obovata 9-10 mm. longa, ad 7 mm. lata, 5-7-nervia, flava. Stamina pistillum paullum superantia filamentis circ. 3 mm. longis. Ovarium (immaturum) circ. 2-5 mm. longum, oblongo-ovoidum, in stylos 1 mm. longos, vix divaricatos exiens. Capsula . . .

"China:—N.W. Yunnan, near Atuntsi, at an altitude of 14,000 ft. September 1911." Coll. F. Kingdon Ward. No. 46.

A near ally of *Saxifraga brachypoda*, Don, but at once distinguished by the very large flower.

SCROPHULARINEAE.

Pedicularis atuntsiensis, Bonati. Sp. nov.

Sectio Pectinatae.

Perennis; pluricaulis. Caules 10–20 cm. alti, erecti, flexuosi, simplices, glabri. Folia inferiora perennia, longe petiolata; petiolis 40–45 mm. longis, basi dilatatis; limbo 15–25 mm. longo, ovato-oblongo, pinnatisecto; foliolis 9–13 breviter petiolatis, ovato-obtusis, bipinnatilobulatis. Folia caulinarum verticillata vel aliquando opposita petiolis 25 mm. longis; limbo ovato-obtusum, circiter 20 mm. longo. Folia superiora 4-verticillata, subsessilia, bipinnatifida, lobis acutis. Bractae inferiores foliaceae; superiores dilatatae ac basi membranaceae. Flores 4-verticillati, breviter pedunculati; pedunculis circiter 2 mm. longis. Calyx vesiculosus, membranaceus, perlucidus, 5-angulosus; nervis 15 eminentibus plus minusve reticulatis; tubo 2–2.5 mm. longo; dentibus quinque, 1 mm. longis; summo integro, lateralibus lanceolatis, acutis, incis. Corolla purpurea; tubo calyce duplo longiore; galea in parte erecta 5 mm. longa, ad dorsum rotunda ac in apicem falcatum, 10 mm. longum, lente attenuata, labio inferiore sessile, 10 mm. longo; lobis rotundis, medio lateralibus paulo latiore, haud proeminente, margine ciliato. Stamina filamenta medio tubi inserta, omnia glabra. Capsula ac semina?

“China:—N.W. Yunnan, at Atuntsi. Alt. 14,000 ft. July 1911.” F. Kingdon Ward. No. 115.

This new species comes nearest to *P. ramosissima*, Bonati, but is distinguished at once by the simple stems, by the small size, by the more elongated corolla tube, by the longer beak and longer lower lip, etc.

Pedicularis pseudo-ingens, Bonati. Sp. nov.

Sectio Tristes.

Caulis circiter 45 cm. altus, angulosus, erectus, flexuosus, pilis albis crispis paucis sparsus. Folia sessilia, auriculata, glabra, vel paulo villosa, lineato-lanceolata, acuta, 6–8 cm. longa, 6–7 mm. lata, pennatilobata; lobis plurimis, obtusis, 2–3 mm. longis, 2 mm. latis, acutidentatis. Bractae inferiores foliaceae, superiores prope integrae, basi ac margine lanatae, summo glabrae, flores longe superantes. Flores sessiles, in uva elongata densa lanata. Calyx 11 mm. longus, dentibus lineato-lanceolatis, acutis, 5 mm. longis, basi 1.5–2 mm. latis. Corolla sicut in *P. ingens*, Maxim. et aequaliter longa (22 mm.) sed tubo brevior 9.5–10 mm.; galea 12–13 mm. longa; labio 8–9 mm. longo. Stamina filamenta ad tertium inferius tubi inserta, omnia glabra.

"China:—N.W. Yunnan, at Atuntsi. Alt. 14,000 ft. July 1911." F. Kingdon Ward. No. 130.

A plant very near to *Pedicularis ingens*, Maxim, of which it is possibly a dwarf southern form. It differs from it by—

- (1) Its small size;
- (2) Its smaller leaves with lobes not mucronate;
- (3) Its more elongated, linear-lanceolate pointed calyx lobes;
- (4) Its shorter corolla tube, longer hood, and smaller lip;
- (5) Its glabrous stamens inserted lower down.

THYMELAEACEAE.

Wikstroemia lichiangensis, W. W. Sm. Sp. nov.

Species affinis *Wikstroemiae angustifoliae*, Hemsl.; foliis approximatis, floribus tomentosis recedit.

Frutex 1.5–3 m. altus, ramosus, bene foliatus, ramulis novellis teretibus gracilibus dense incano-tomentosis, senioribus glabris cortice griseo ruguloso praeditis. Folia 1.5–3 cm. longa, .5–1 cm. lata, alterna, oblanceolata vel oblonga, apice rotundata vel obtusa, basi late cuneata, chartacea, integra, margine paulo revoluta, supra viridia rugosula sparsius incano-pilosula nervis obscuris, infra pallidiora sparse pilosula nervis eminentibus pilosioribus. Inflorescentiae numerosae vel ramulos terminantes vel prope apices exaxillares (in medio internodio) orientes, 5–15-florae, pedunculis 5–10 mm. longis incano-tomentosis, floribus fere capitatis, pedicellis vix 1 mm. longis, bracteis nullis. Calycis tubus circ. 1 cm. longus, 1 mm. latus, extus dense incano-tomentosus; lobi 4, circ. 2 mm. longi, subrotundati, extus tomentosi, intus glabri viridi-lutei. Stamina 8, biseriata. Ovarium villosum stylo brevi, stigmatibus capitato magno. Fructus deest.

"Shrub of 5–9 ft. Flowers greenish yellow. Dry, open situations amongst scrub on the eastern flank of the Lichiang Range. Lat. 27° 20' N. Alt. 11,000 ft. May 1910." G. Forrest. No. 5664.

"Shrub of 4–8 ft. Flowers dull rose. Dry situations on the margins of pine forests on the eastern flank of the Lichiang Range. Lat. 27° 25' N. Alt. 9000–10,000 ft. October 1910." G. Forrest.