

New Species of Primula from Tibet.

With an enumeration of the Primulas collected
by Captain Kingdon Ward and Lord Cawdor
in S.E. Tibet during 1924.

BY

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The species of Primula are recorded in the alphabetical sequence of the sections to which they belong.

AMETHYSTINA.

P. Valentiniana, Hand.-Mzt. in Sonderabd. aus Anzeig. Akad. Wien, No. 26-27 (1922), 5. Notes, R.B.G. Edin. xiv (1923), 53.

S.E. Tibet:—Doshong La. Alt. 13-14,000 ft. Flowers deep cherry red, nodding. On alpine turf slopes at the very summit of the pass. 25th June 1924. F.K.W. No. 5859.

"Glabrous herb. Rootstock woody with long thick fibrous roots. Dwarf plant of 1.5-2 in. Leaves shortly petiolate, oval acute, margin dentate, about 1 in. long and 0.5 in. wide. Inflorescence consisting of a single scape terminating in a solitary nodding flower, or with a second flower just below. Bracts acicular, $\frac{1}{8}$ in. long. Calyx, $\frac{1}{8}$ in. long cut half way, the teeth spreading, acute. Corolla deep cherry red, 0.5 in. long, 0.5 in. wide, lobes 0.25 in. rounded, margin finely wavy." "Field Notes."

AURICULATA.

? **P. carnosula**, Balf. f. et Forrest in Notes, R.B.G. Edin. xiii (1920), 6.

S.E. Tibet:—Atsa Tso. Alt. 15,000 ft. Flowers over. In boggy stony pastures and stream beds. 26th Aug. 1924. F.K.W. No. 6142. [Material insufficient for certain determination.]

P. pygmaeorum, Balf. f. et W. W. Sm. in Notes, R.B.G. Edin. xiii (1920), 17.

S. Tibet:—15 miles south of Gyantse. Alt. 13,500-15,500 ft. A minute plant with mauve flowers and tiny yellow eye. Fragrant. No meal. In boggy ground where water is trickling from melting snow or around springs. Also in dry sandy soil, starred over the dry brown turf (always in turf). Just opening. 1st April 1924. F.K.W. No. 5615.

[Notes, R.B.G. Edin., No. LXXII, Feb. 1926.]

P. tibetica, Watt in Journ. Linn. Soc. xx (1882), 6, t. XI A.

S.E. Tibet:—Temo La. Alt. 10–14,000 ft. Flowers deep rose, with yellow eye. In open bogs and damp pastures; at the higher altitudes it colours the bogs. 6th June 1924. F.K.W. No. 5739.

Öga, 10 miles north of the Tsangpo. Alt. 13,000 ft. Flowers deep rose purple with orange eye. 26th April 1924. F.K.W. No. 5626.

P. Walshii, Craib in Journ. Roy. Hort. Soc. Lond. xxxix (1913), 190.

S.E. Tibet:—Rong-chu (east range), Tumbatse. Alt. 15,000 ft. Dwarf plant. Flowers pink or rose with yellow eye. On steep alpine slopes, in turf. Nearly over. 18th June 1924. F.K.W. No. 5802.

CANDELABRA.

P. chungensis, Balf. f. et Ward in Notes, R.B.G. Edin. xiii (1920), 7.

S.E. Tibet:—Temo La. Alt. 10–12,000 ft. Flowers a fine deep orange, tube blood-orange. In shaded bogs and damp pastures, generally under bushes and trees. Scape mealy. Bears four-five whorls of bloom. 5th June 1924. F.K.W. No. 5740.

“Glabrous herb, 2½–3 ft. high. Leaves shortly petiolate, the blade decurrent almost to the base. Blade more or less oval spatulate, about 10 in. long and 3–3.5 in. wide, with margin wavy broadly dentate, the large teeth again finely and regularly dentate; under surface rugose. Scape simple, about 2½ ft. high, bearing at intervals whorls of 6–9 pedicellate flowers; the whole inflorescence more or less mealy. Bracts very small, almost acicular-acuminate, about 0.25 in. long. Pedicels 0.5 in. long. Calyx 0.25 in. long, with very short erect acute teeth; densely coated with meal inside. Corolla, tube 0.5 in. long, limb flat, with 5 oblong lobes, slightly oblique, 0.75 in. diameter; the tube blood-orange, this colour extending to the reverse of the corolla, irregularly; upper surface of limb bright orange.” “Field Notes.”

Lusha. Alt. 10,000 ft. In bud. Buds orange. 18th May. F.K.W. No. 5682.

Primula Morsheadiana, Ward. Sp. nov.

Species affinis *P. serratifoliae*, Franch. sed minor; scapo sub anthesin folia vix superante, calyce corollaque diversis ab ea specie recedit; affines autem sunt *P. brachystoma*, W. W. Sm., et *P. microloma*, Hand.-Mzt. et *P. prenantha*, Balf. f. et W. W. Sm. sectionis Candelabrae.

Planta alpicola radicibus multis robustis munita, foliorum emarcidorum vestigiis nunc basi cincta. Folia sub anthesin scapum fere aequantia; lamina 5–8 cm. longa, 1.5–2.5 cm. lata, oblanceolata, apice plus minusve rotundata, basi in petiolum brevem alatum nunc vix discretum sensim attenuata, margine denticulata, denticulis

Tsela Dzong. Alt. 10–11,000 ft. Duplicate of No. 5657. This is the plant at its best. Growing in masses on grassy banks by the stream, in the shade of *Rhododendron* bushes, birch, etc. 12th May. F. K. W. No. 5664.

***P. doshongensis*, W. W. Sm. Sp. nov.**

Species valde affinis *P. glabrae*, Klatt a qua floribus paucis laxè umbellatis præter alia signa removitur.

Planta pusilla ad 2.5 cm. alta. Folia glabra efarinosa similia eis *P. glabrae* quoad texturam, magnitudinem, formam. Scapus solitarius plerumque 2–3-florus efarinosus; bractee ovatae acutae basi vix gibbosae, textura tenues subpellucidae; pedicelli 3–4 mm. longi. Calyx 3–4 mm. longus campanulatus in lobos oblongos obtusos ad tertiam partem fissus. Corollae atro-violaceae tubus flavidus calycem vix excedens, ore exannulato, limbus circ. 1.25 cm. latus, lobis late obovatis emarginatis. Stamina in flore longistylis paulo supra medium tubum inserta, antheris magnis fere ad os tubi attingentibus. Stylus tubum aequans. Fructus deest.

S.E. Tibet:—Doshong La. Alt. 12–13,000 ft. On mossy ledges and on steep alpine slopes amongst dwarf *Rhododendrons*. 24th June 1924. F. Kingdon Ward. No. 5836.

"A minute glabrous annual 0.75 inches high. Leaves narrow spathulate, the margin irregularly dentate. Scape simple, ending in an umbel of 2–3 shortly pedicellate flowers. Bracts ovate acute. Pedicel $\frac{1}{8}$ in. long. Calyx $\frac{1}{8}$ in. long, the teeth very short, rounded, not spreading, enclosing the corolla tube. Corolla, tube yellow $\frac{1}{8}$ in. long, limb dark violet, flat, 0.5 in. wide, the lobes heart-shaped." "Field Notes."

A very close ally of *Primula glabra*, Klatt but more delicate, with fewer flowers, longer pedicels and different bracts. These two species with *P. kongboensis* described below have been left in section *Denticulata* but form an undoubted link with the section *Auriculata*.

***P. erythrocarpa*, Craib in Notes, R.B.G. Edin. x (1918), 206.**

Eastern Bhutan:—Nyamjang Chu, Mönjul. Alt. 6–7000 ft. Flowers mauve, with greenish yellow eye, fragrant. On damp grassy slopes, in loamy silt. Scattered. Fairly common but not yet in full bloom. 14th Feb. 1925. F. K. W. No. 6419.

***Primula kongboensis*, Ward. Sp. nov.**

Species valde similis *P. glabrae*, Klatt a qua foliis minute pilosulis (pilis farinipotentibus), scapo similiter induto, bracteis plus minusve rotundatis pedicellos brevissimos celantibus, corollae segmentis diversis separatur; autem affinis est *P. subglabra*, Hand.-Mzt. ex provincia chinensi Szechuan.

Planta pusilla 3-4.5 cm. alta. Folia in petiolum brevem vix discretum attenuata, spathulata, ad 1.5 cm. longa, ad 5 mm. lata, in dimidio superiore obscure eroso-denticulata, membranacea, pilis farinipotentibus densissime induta. Scapus solitarius, capitulum 5-10-florum compactum gerens. Flores fere sessiles. Bracteae saepe rotundatae circ. 2 mm. diametro, nunc late ovatae, nunc obtuse trilobatae, basi gibbosae, apice purpureae, pilis farinipotentibus dense indutae. Calyx 3-4 mm. longus campanulatus minute pilosulus fere ad medium in lobos oblongos obtusos rarius acutatos apice purpureos fissus. Corollae roseae tubus calycem vix excedens, ore flavo exannulato, limbus circ. 6 mm. latus, lobis late obovatis emarginatis. Stamina in flore longistylis paulo super medium tubum inserta, antheris magnis fere ad os tubi pertinentibus. Stylus tubum aequans. Fructus deest.

S.E. Tibet:—Kongbo Peri, Tsela Dzong. Alt. 14-15,000 ft. Flowers rose, pink, lilac or mauve but often very pale. A minute plant of the alpine pastures growing in the moist loam and flowering in the wake of the melting snow, under dwarf Rhododendron bushes or in the open. 26th May. Abundant on the Nyima La, Temo La, etc. Flowers throughout June. 20th June 1924. F. Kingdon Ward. No. 5703.

"A minute herb 1.25-1.75 in. high. Leaves shortly petiolate, spathulate, dentate, the blade 0.5 in. long, 0.18 in. wide. Scape simple ending in a compact spherical head of 5-10 sessile flowers. Bracts ovate, or more or less trident-shaped, the lateral lobes obtuse, the centre one acute and longer; tipped with purple. Calyx $\frac{1}{2}$ in. long, cut to nearly half its length, the lobes narrow oblong, obtuse or acute, purple. Corolla rose, with minute yellow eye, tube $\frac{1}{2}$ in. long, limb $\frac{1}{2}$ in. wide, the lobes broadly obovate, with V-shaped cleft." "Field Notes."

DRYADIFOLIA.

P. Jonarduni, W. W. Sm. in Rec. Bot. Surv. Ind. iv (1911), 269.

S.E. Tibet:—Doshong La. Alt. 12-13,000 ft. Flowers rose crimson. Forms dense mats on rocks and steep slopes in the open, on the more exposed flank of the hill. 24th June 1924. F. K. W. No. 5838.

"Tufted perennial, the stems branching repeatedly and forming flat cushions as much as 6 in. across. Old leaves persistent, forming a close sponge-like mass. Leaves very small, crowded into close tufts at the ends of the stems, more or less erect. Petiole wing-like, 0.3 in. long; blade square, $\frac{1}{2}$ in. long, $\frac{1}{2}$ in. wide, with a notch on either side of the rounded apex; but the margin and apex are inrolled, so that the leaf comes to resemble the ace of spades; fleshy, under surface mealy, upper surface puberulous, with very short scattered hairs. Flowers solitary on very short pedicels at the ends of the shoots, nestling amongst the leaves. Bracts ovate acute $\frac{3}{8}$ in. long, slightly mealy,

margin finely ciliate, apex chocolate coloured. Pedicels $\frac{1}{16}$ in. long. Calyx angular, $\frac{1}{4}$ in. long, cut half way, lobes oval, chocolate, mealy inside and out, margin finely ciliate. Corolla, tube $\frac{5}{16}$ in. long, limb flat, $\frac{5}{8}$ in. wide, crimson; lobes $\frac{1}{4}$ in. long, obovate, with a deep V-shaped notch." "Field Notes."

P. philoresia, Balf. f. et Ward in Notes, R.B.G. Edin. ix (1915), 34.

S.E. Tibet:—Nyima La. Alt. 15–16,000 ft. Flowers in bud, crimson. On the sheltered side of gneiss cliffs where there is plenty of moisture; forming close mats. June 21st. F. K. W. No. 5813.

Doshong La. Alt. 12–13,000 ft. Flowers rose-crimson with darker crimson eye. In moss under dwarf or scrub Rhododendron, on the sheltered flank of the hill. Abundant at 15–16,000 ft. between Nyima La and Temo La. 24th June. F. K. W. No. 5837.

GERANIODES.

Primula latisecta, W. W. Sm. Sp. nov.

Species affinis *P. palmatae*, Hand.-Mzt. sectionis Geranioidis sed foliis multo minus divisis praedita; foliis ad medium incisus in lobos plerumque septem, sinibus ad basim latis inter alia distinguenda.

Planta habitu *P. geraniifoliae*, Hook. f., rhizomate gracili praedita. Folia sub anthesin plerumque 2–3; lamina in sicco membranacea vulgo 4.5–5.5 cm. longa, 5–6 cm. lata, late cordata, in lobos septem anguste obovatos ad medium divisa, sinibus inter lobos latis atque rotundatis, supra pilis albidis longiusculis bene conspersa, infra ad costam venasque pilis iisdem dense obsita, marginibus ciliolata; lobi sub-septem-lobulati, lobulis superioribus tribus majoribus apice rotundatis mucronatis; petiolus ad 10 cm. longus latiusculus pilis longis dense indutus. Scapus folia excedens ad 15 cm. longus gracilis ubique plus minusve pilosus umbellam paucifloram (vulgo 2–4-floram) gerens; bracteae 3–4, lineari-lanceolatae, 4–6 mm. longae, acuminatae, sparsim pilosae; pedicelli erecti, 10–13 mm. longi, pilosuli. Calyx 8–9 mm. longus, campanulatus, extra pilis perpaucis parvis conspersus, viridis venulosus, ad medium in lobos paulo patentes quinque lineari-lanceolatos acuminatos divisus; lobi venis ternis a tubo excurrentibus pererrati. Corollae roseae tubus circ. 13 mm. longus, in sicco complanatus circ. 3 mm. latus cylindricus glaber, annulo obsoleto, lobis 8–9 mm. longis, 6–8 mm. latis, late obcordatis, alte emarginatis. Stamina in flore longistylis ad medium tubi corollini inserta. Ovarium globosum circ. 2 mm. diametro; stylus 8 mm. longus glaber. Flores brevistylis atque fructus in spec. nostris desunt.

Tibet:—Nyima La. Alt. 11–12,000 ft. Flowers rose. Growing in the forest under heavy shade. Seen in one place only, growing in rich loam and leaf mould. Rare. 22nd June 1924. F. Kingdon Ward. No. 5819.

This new species belongs clearly to the section Geranioides. In the lobing of its leaves it approaches *P. palmata*, Hand.-Mzt. The wide rounded sinuses between the leaf-lobes serve as one mark of distinction from the species of its section.

MINUTISSIMA.

Primula rhodochroa, W. W. Sm. Sp. nov.

Species sectionis *Minutissimae*, affinis *P. spathulifoliae*, Craib; foliis pro magnitudine grossi-dentatis subtus albo-farinosis, calyce (pro flore) magno tubum corollinum aequante, floribus laete roseis in hac sectione conspicua.

Planta pusilla caespitosa sub anthesin flore incluso vix 2.5 cm. alta farinosa. Folia numerosa rosulam formantia 4–8 mm. longa, ad 3 mm. lata, oblanceolata vel anguste obovata, in petiolum laminam subaequantem vix discretum sensim attenuata, margine dentibus 7–9 satis magnis incisa, supra viridia sub lente minutissime scabridula, infra dense albo-farinosa venis lateralibus in dentes excurrentibus subconspicuis notata. Scapus brevissimus vix ad 2–3 mm. attingens inter folia immersus farinosus 1–2-florus; bractae 2–3 lineares 4–5 mm. longae farinosae ut pedicelli ad 4 mm. longi. Calyx anguste poculiformis 5–6 mm. longus 3 mm. latus extra farinosus intra sparsius ad medium vel ad trientem in lobos triangulares acutos vel subacutos fissus. Corollae laete roseae vel saturate roseae tubus 6 mm. longus cylindricus, ore annulatus, lobi obcordati 6 mm. longi 4 mm. lati emarginati. Stamina in flore longistylis sub medium tubi corollini posita. Stylus vix 3 mm. longus; ovarium 2 mm. diametro globosum; stigma capitatum. Capsula (anni praecedentis) calycem subaequans oblonga apice valvis dehiscens.

S.E. Tibet:—Doshong La. Alt. 12–13,000 ft. Flowers bright rose or deep rose. On mossy ledges of cliffs and on steep slopes amongst dwarf Rhododendrons. 24th June 1924. F. Kingdon Ward. No. 5835.

S.E. Tibet:—Nam La. Alt. 15,000 ft. Flowers rose. On mossy or grassy ledges of the gneiss cliffs above the screes. 26th July 1924. F. K. W. No. 6050.

The above is a very neat dwarf Primula of the Minutissima Section, the centre of which is the Himalaya with few outliers.

MUSCARIOIDES.

P. atricapilla, Balf. f. et Cooper in Notes, R.B.G. Edin. xiii (1920), 4.

S.E. Tibet:—Temo La. Alt. 12–13,000 ft. Abundant on the bank in shade, nearly in flower, 9th June. Abundant on both sides of the Nyima La up to 14,000 ft. Flowers a lovely shade of smoky periwinkle

blue, very fragrant. In flower June 20th 1924. F. K. W. No. 5760. [A single fruiting specimen under No. 6027 is probably the same.]

"Herb 12-15 in. high. Leaves petiolate, narrow-spathulate, or spathulate-oval, 4-5 in. long. Blade 3-4 in. long, 0.75 in. wide, irregularly crenate; upper surface softly pubescent, margin ciliate; hairs on the lower surface confined to the midrib and principal veins. Scape simple, slightly mealy, especially at the base and just below the capitulum; with minute scattered hairs, and bearing a terminal head of numerous flowers (more than 20). The whole inflorescence mealy. Bracts linear acuminate, 0.2 in. long, margin finely ciliate. Calyx bell-shaped, 0.25 in. long, cut half way, the lobes oblong-oval with finely ciliate margin, purple. Corolla lavender, mealy at the throat, 0.5 in. long, limb 0.25 in. wide, lobes obovate, slightly notched." "Field Notes."

P. bellidifolia, King ex Hook. f. in Fl. Brit. Ind. iii (1882), 486.

S.E. Tibet:—Nam La. Alt. 12,000 ft. Flowers lavender, scarcely scented, growing under a large boulder in the open meadow. 22nd July 1924. F. K. W. No. 5970.

P. micropetala, Balf. f. et Cooper in Notes, R.B.G. Edin. xiii (1920), 14.

S.E. Tibet:—Nam La. Alt. 15-16,000 ft. Flowers violet. Dwarf plant on damp turfy ledges of the gneiss cliffs. 26th July 1924. F. K. W. No. 6004.

NIVALIS.

Primula falcifolia, Ward. Sp. nov.

Species valde distincta sectionis Nivalis; quoad habitum affinis *P. Aglenianae*, Balf. f. et Forrest sed multo minor; in sectione Nivali foliis elongatis sublinearibus regulariter crenato-serratulis atque floribus flavis facile recognoscitur.

Planta glabra basi quasi-bulbosa squamis 2-3 cm. longis carnosulis glutinosis rubro-tinctis bene cincta. Folia plerumque 6-8, linearia, circ. 10 cm. longa, 5-6 mm. lata, apice acuta, basi in petiolum vix discretum attenuata, margine pulchre crenato-serratulata, supra laete viridia, infra multo pallidiora, textura in sicco firme chartacea, costa lata, nervis lateralibus obscuris. Scapus folia paulo superans, ad 12 cm. altus, 1-2-florus, bracteis 1-4 lineari-lanceolatis acutis rubris 7-9 mm. longis, pedicellis ad 1-5 cm. longis satis robustis. Calyx cupularis 6-10 mm. longus, in sicco 5-6 mm. latus, rubidus, intra sparsim farinosus, in lobos subquadratos apice truncatos vel rotundatos ad trientem fissus. Corollae crateriformis sulphureo-flavae tubus circ. 1.3 cm. longus cylindricus, lobi fere orbiculares 1 cm. diametro margine integri vel leviter undulati; flores expansi 2.5 cm. lati ad os dense

sulphureo-farinosi. Stamina in flore longistylis ad medium tubi corollini inserta. Stylus in fl. long. ad os pertinens, in fl. brevistylis brevissimus vix 1 mm. excedens; stigma magnum capitatum. Capsula deest.

Tibet:—Doshong La. Alt. 12–13,000 ft. Flowers daffodil yellow, very fragrant. In open bogs. Abundant on steep alpine turf slopes facing south. Flowers often tinged with red. 24th–25th June 1924. F. Kingdon Ward. No. 5839.

Tibet:—Doshong La. Alt. 10–11,000 ft. Equals No. 5839, flowering in the autumn. No scent. Numerous clumps are in full bloom along the meadow-clad mud-slides above the great snow drift, facing south. 22nd Oct. 1924. F. K. W. No. 6238.

“Glabrous herb of 5–6 in. Leaves petiolate, linear, margin finely serrate, 4 in. long, 0.25 in. wide, fleshy, upper surface dark green, lower surface paler. Petiole 1.5 in. long. At the base of the scape are several scale leaves forming a bulbous and very glutinous collar. Scape about 4½ in. long bearing one or twin terminal flowers horizontally. Bracts bright red, narrow triangular acute. Calyx bowl shaped, 0.25 in. high, reddish; the lobes short oblong, not projecting. Corolla salver-shaped, tube about 0.5 in. long, limb 1 in. across, sulphur yellow, throat regularly mealy, fragrant.” “Field Notes.”

This is one of the most distinct among the many species of the *Nivalis* section, easily distinguished by its remarkable leaves and by the large sulphur-yellow flowers.

[The fruit of this species is so distinct, being more like that of *P. Morsheadiana*, that I am not satisfied the plant belongs to the section *Nivalis* at all. Unfortunately there is no specimen of a fruit included in my dried collection.—F. K. W.]

***Primula ninguida*, W. W. Sm. Sp. nov.**

Ex affinitate *P. leucochnoeae*, Hand.-Mzt., et *P. russeolae*, Balf. f. et Forrest et *P. sino-plantagineae*, Balf. f.; calyce fere ad imum fisso, lobis linearibus, inter alia distinguitur.

Planta subrobusta, foliis emarcidis atque squamis longis carnosulis dense albido-farinosi cincta. Folia sub anthesi vix matura; lamina ad 9 cm. longa, 1–1.5 cm. lata, oblanceolata, subacuta, basi in petiolum vix discretum attenuata, margine crenulata, firme papyracea, primum sub albido-farinoso mox viridis sed glandulis crebris farinipotentibus praedita. Scapus ad 15 cm. altus robustus ad apicem sparsim farinosus umbellam simplicem 3–15-floram gerens; bractae circ. 1 cm. longae, lineari-lanceolatae acuminatae, glandulis farinipotentibus conspersae ut pedicelli 5–10 mm. longi. Calyx anguste tubulosus circ. 11 mm. longus glandulis farinosi dense conspersus in lobos lineares acutos fere ad imum fissus. Corollae purpureae tubus 12 mm. longus, cylindricus, supra staminum insertionem paulo ampliatus, minute

glandulosus, ore aurantiaco annulatus, lobi 1-1.2 mm. longi, sub-elliptici, circ. 5 mm. lati, obtusiusculi, integri. Stamina floris longistyli ad medium tubum inserta. Stylus calycem aequans. Capsula (ex reliquiis) oblonga, calycem superans, valvis typicis sectionis Nivalis dehiscens.

S.E. Tibet:—Temo La. Alt. 14-15,000 ft. Flowers rich uniform purple, with small dull orange eye. Scattered over the Rhododendron moorland, sheltering under shrubs. Extremely abundant on the east side of the Rong-chu where it forms great drifts in the high glaciated valleys. 6th-18th June 1924. F. Kingdon Ward. No. 5745.

This represents another *Primula* of the *Nivalis* Aggregate and is distinguished from its nearest allies by its peculiar calyx with elongate linear lobes reaching almost to the base.

P. pulchella, Franch. in Bull. Soc. Bot. Fr. xxxv (1888), 429.

S.E. Tibet:—Tongkyuk. Alt. 10-11,000 ft. Flowers mauve, eye pale yellow. On shaded rubble banks under bushes. 12th Aug. 1924. F. K. W. No. 6080.

P. pulchelloides, F. K. Ward in Notes, R.B.G. Edin. ix (1915), 38.

S.E. Tibet:—Kongbo Peri. Alt. 11,000 ft. Flowers mauve with small yellow eye, just coming into bloom. Whole plant more or less mealy. On sandy banks under shade of oak scrub, on the south flank of the mountain. 28th May. F. K. W. No. 5705.

S.E. Tibet:—Nyima La. Alt. 11-12,000 ft. Flowers mauve with yellow eye. Under bushes on dry oak scrub clad slopes facing south. 1st Aug. 1924. F. K. W. No. 5887.

P. rigida, Balf. f. et Forrest in Notes, R.B.G. Edin. xiii (1920), 17.

S.E. Tibet:—Rong-chu (east range), Tumbatse. Alt. 15-16,000 ft. Flowers mauve or purple with white eye, delightfully fragrant. Growing in clumps, on the open ridge in alpine turf, with the two Nivalid species No. 5731 [*sino-purpurea*] and No. 5745 [*ninguida*]; also with No. 5701 [*Roylei*]. 18th June 1924. F. K. W. No. 5801.

" Dwarf herb. Rootstock perennial, covered by the bases of old leaves. Roots fibrous, numerous. Leaves slightly fleshy, shortly petiolate, narrow-lanceolate, margin slightly inrolled, crenate; about 1.5 in. long, 0.25 in. wide, the blade passing gradually into the sheathing petiole. Under surface mealy. Scape simple ending in an umbel of 2-5 nodding flowers. Bracts 0.25 in. long, purple, mealy. Pedicels short, about 0.25 in. long, purple, mealy. Calyx ribbed, somewhat rugose, about 0.4 in. long, cut $\frac{1}{2}$ of its length, the lobes rounded with mucronate apex, purple, mealy. Corolla purple, or mauve, fragrant, with tube 0.5 in. long, limb flat spreading, 0.6 in. wide, the lobes obovate." "Field Notes."

P. sino-purpurea, Balf. f. in Notes, R.B.G. Edin. xiii (1920), 20, **forma.**

S.E. Tibet :—Tsela Dzong (Pab Ri). Alt. 14–15,000 ft. Flowers often purest violet, of uniform shade throughout. Whole plant except the corolla heavily powdered with pale greenish-yellow meal. Calyx and bracts purple. Plant practically without scent, objectionable or otherwise. The flowering stems grow 20 inches high bearing two whorls of flowers. Growing on the open wind-swept flank of the hill, among dwarf Rhododendrons, or under boulders with Meconopsis. Just flowering. By far the most lovely Nivalid I have ever seen. 3rd June. Also abundant in old glacier valleys above the Rong-chu. 18th June 1924. F. K. W. No. 5731.

[The Chinese plant is stated to have deep rose lavender flowers and to be fragrant.]

P. sp.

S.E. Tibet :—Atsa (Pass above the monastery). Alt. 16–17,000 ft. In fruit. On slate screes. 27th Aug. F. K. W. No. 6148.

[Possibly *P. nivalis*, Pallas, var. *macrocarpa* (Watt), Pax in Engl. Bot. Jahrb. X (1889), 208.]

P. sp.

S.E. Tibet :—Nam La. Alt. 12–13,000 ft. In fruit. Scattered in the Picea-Rhododendron forest. Also in the alpine region, amongst scrub and dwarf Rhododendron. 23rd July. F. K. W. No. 5973.

[A single example resembling a very large *P. pulchella*, Franch.]

NIVALIS—MAXIMOWICZII.

P. Maximowiczii, Regel in Act. Hort. Petrop. iii (1874), 139, var. *euprepes*, W. W. Sm. Var. nov.

A typo squamis basalibus albo-farinosus foliis textura tenuioribus altius denticulatis calyce longiore fere ad medium fissio divergit ; cum *P. tangutica* (Maxim.) Duthie non quadrat.

S.E. Tibet :—Nyima La. Alt. 12–13,000 ft. Flowers dark chocolate, very fragrant. Plant of 12–15 inches, growing on steep shrub-clad slopes in open places in the forest. Just coming into flower. 22nd June. F. K. W. No. 5817.

“Glabrous herb, as much as 18 in. high. Leaves spatulate-lanceolate, 8 in. long, 1.5 in. wide, irregularly dentate, upper surface dark green, the principal veins showing white, lower surface silvery. Scape simple, bearing one or two whorls of vinous purple or chocolate coloured fragrant flowers. Bracts linear, 0.5 in. long. Pedicels of unequal length, the longest as much as 1.25 in. Calyx 0.5 in. long, cut

half way, the teeth acute, not spreading. Corolla, tube 0.5 in. long, petals cut right down to the tube, 0.4 in. long, 0.2 in. wide, but the margins of each curled under, and the whole more or less reflexed." "Field Notes."

This is a very distinct variety and as divergent from typical *P. Maximowiczii* as *P. tangutica* to which has been accorded specific rank.

P. szechuanica, Pax in Engl. Pflanzenr. Primul. (1905), 106, **forma**.

S.E. Tibet:—Nam La. (Namcha Barwa.) Alt. 12–14,000 ft. Flowers pale yellow, fragrant. Tall plant of 3 ft. scattered in the forest and in the scrub-Rhododendron region, amongst boulders. The petals are completely reflexed against the tube as in *P. szechuanica* but are not spirally twisted as in No. 5817 [*P. Maximowiczii*]. There are usually two and sometimes three whorls of flowers. Easily distinguished in fruit from No. 5817 [*P. Maximowiczii*]. In the latter the papery capsules are tinged with purple; in this species they are colourless. 23rd July. F. K. W. No. 5972.

"Rootstock perennial, sending up annual glabrous flowering shoots. Leaves spatulate-lanceolate, 5–6 in. long 1–1½ in. wide, margin finely dentate, apex acute, or obtuse with mucro; upper surface dark green with white veins showing through, lower surface paler glistening, with a purple flush; somewhat fleshy. Scape 18–24 in. high bearing a terminal umbel of 4–6 drooping flowers; often with one or two whorls of flowers below that, but then the scape is taller, up to 3 ft. high. Bracts acicular ¾ in. long. Pedicels subequal, 1–1½ in. long. Calyx angular ¾ in. long, cut half way, the teeth acute, not spreading. Corolla primrose yellow, fragrant, the tube ¾ in. long, ¼ in. across, the lobes oblong, ⅞ in. long, half as wide, and completely reflexed against the tube." "Field Notes."

This Tibetan plant differs from Pratt No. 849—the type of *P. szechuanica*—chiefly in the calyx which is about 8 mm. long and about equal to half the corolla tube. It is not far from the type.

PETIOLARIS.

P. Boothii, Craib in Notes, R.B.G. Edin. vi (1917), 249.

Bhutan Himalaya:—Nyamjang Chu, Mönyul. Alt. 7–8,000 ft. Flowers darker or paler purple with greenish yellow eye. Under surface of corolla, at least in bud, coarsely powdered with meal; upper leaf surface similarly powdered when young but the mature foliage loses this. On a cliff in spongy moss within splash of a cascade, on the shaded side of the valley. Seen nowhere else. 11th Feb. 1925. F. K. W. No. 6418.

Primula chionota, W. W. Sm. Sp. nov.

Species sectionis Petiolaris ex affinitate *P. Whitei*, W. W. Sm. atque *P. sonchifoliae*, Franch. a quibus scapo fere nullo, calycis lobis, floris colore inter alia divergit.

Planta nana, basi squamis circ. 1.5 cm. longis carnosulis rubidis bene cincta, radicibus multis valde robustis munita. Folia sub anthesin vix evoluta; lamina eo tempore vix 2.5 cm. longa, ambitu oblonga, circ. 1 cm. lata, ad medium vel ad trientem lacerata, lobulis plerumque obtusulis, utrinque glabra, efarinosa, infra in petiolum latissimum membranaceum squamiformem expansa; folia nunc lamina carentia atque in squamas exteriores sensim transeuntia. Scapus sub anthesin nullus vel fere nullus; flores 2-3, quasi e basi enati, satis magni; bracteae elongatae lineares membranaceae, nunc pedicello adnatae, foliis squamisque celatae; pedicelli circ. 1.5 cm. longi glabri in foliorum rosula immersi. Calyx tubulosus 12-13 mm. longus glaber ad medium in lobos ovatos acuminatos integros nervis conspicuis subflabellatim dispositis munitos fissus. Corollae pallide flavae tubus calycem subaequans, infra angustus, supra sensim ampliatus, ore aurantiaco distincte annulatus, lobi suborbiculares circ. 1 cm. diametro, anguste emarginati. Stamina floris longistyli ad medium tubi corollini inserta, antheris minute apiculatis 2 mm. longis, filamentis 0.5 mm. longis. Stylus ad os corollae pertinens stigmatate capitatus; ovarium subglobosum. Fructus deest.

S.E. Tibet:—Doshong La. Alt. 12-14,000 ft. Flowers pale yellow with large orange eye. On grassy alpine slopes saturated with water, or in bogs or amongst boulders where snow is melting. 29th June 1924. F. Kingdon Ward. No. 5868.

A very distinct *Primula* of the *Petiolaris* section. The dwarf habit, the precocious flowers of large size and of a yellow colour, the much lacerated leaves mark it out very readily from the members of its section. There are unfortunately no mature leaves and no fruiting specimens.

P. irregularis, Craib in Notes, R.B.G. Edin. vi (1917), 253.

Sikkim Himalaya:—Nathu La. Alt. 9-14,000 ft. Specimens from the forest and from the alpine region. They vary in size, habit, flower colour, mealiness of leaves, etc. Nearly in full bloom from below Karponang (9,000 ft.) to about Yatung (11,000 ft.) and almost to summit of Nathu La. March 22nd 1924. F. K. W. No. 5613.

P. vernicosa, F. K. Ward in Notes, R.B.G. Edin. ix (1916), 203.

S.E. Tibet:—Doshong La. Alt. 12-13,000 ft. Flowers white, opening before the leaves develop. On muddy alpine turf slopes where melting snow keeps the ground sodden. 25th June. F. K. W. No. 5857.

P. Whitei, W. W. Sm. in Rec. Bot. Surv. Ind. iv (1911), 268.

S.E. Tibet:—Doshong La. Alt. 10,000 ft. In fruit. A single patch met with on a bank in the Picea-Rhododendron forest; also seen higher up lining the path. 23rd June. F. K. W. No. 5831.

Also a fragment in foliage only from the Tra La seems referable to the same species. 2nd August. F. K. W. No. 6045.

ROTUNDIFOLIA.

Primula Baileyana, Ward. Sp. nov.

Species sectionis *Rotundifoliae* ex affinitate *P. cardiophyllae*, Balf. f. et W. W. Sm. et *P. Littledalei*, Balf. f. et Watt; a priore habitu minore, calyce atque corollae tubo longioribus praeter alia signa differt; ab altero et foliorum et calycis forma recedit.

Planta elegans caespitosa epilosa foliorum vestigiis siccis basi munita ut saepe in sectione *Rotundifolia*. Folia numerosa longe petiolata; lamina 1-2 cm. diametro vulgo suborbicularis nunc reniformis apice rotundata basi plerumque subtruncata nunc cordatula, margine nisi ad basim regulariter serrata, textura in sicco chartacea, supra viridis sub lente farina tenui conspersa, subtus albo-farinosa, costa atque venis in farina conspicuis in dentes excurrentibus; petiolus 2-7 cm. longus farinosus. Scapus 5-18 cm. altus solitarius (nunc in planta robusta 2-3) leviter farinosus umbellam 1-7-floram gerens; bractae 5-10 mm. longae lineares acutae vel subobtusae extra virides intra farina farctae; pedicelli 1-1.5 cm. longi erecti farinosi. Calyx tubulosus 8-9 mm. longus 4 mm. latus, ultra medium vel ad tres partes vel fere ad basim in lobos lineares vel anguste triangulares acutos vel subobtusos fissus, extra viridis vel atratus vel albo-farinosus intra dense farinosus. Corollae violaceae intus farina nivea conspersae tubus 1.2-1.5 cm. longus cylindricus, ore albo-oculatus, ut videtur exannulatus, limbus circ. 1.6 cm. latus planus, lobi obcordati circ. 6-7 mm. longi et lati, late emarginati. Stamina in flore brevistylo ad fauces pertinentia; stylus ad apicem calycis pertinens stigmatibus capitato; ovarium initio globosum. Capsula crustacea suboblonga calyce subinclusa apice valvis dehiscens.

S.E. Tibet:—Nambu La. Alt. 14-15,000 ft. Flowers violet, slightly powdered with snow-white meal inside; nearly over. Leaves snow-white beneath. Under a large boulder on the edge of the alpine region; a clump of plants seen. 15th Aug. 1924. F. Kingdon Ward. No. 6093.

S.E. Tibet:—Nam La. Alt. 14-15,000 ft. Flowers pure violet with small white eye, the inside of the corolla powdered with scattered white meal. Under leaf-surface covered with snow-white meal. On cliffs and grassy slopes amongst dwarf Rhododendron, etc., in sheltered gullies; rooted in very sandy soil. A lovely little plant. 24th July 1924. F. K. W. No. 5985.

Glabrous perennial herb. Leaves on long petioles, blade orbicular ; the base straightened, slightly decurrent, 1 in. diameter ; margin dentate ; under surface powdered with white meal. Petiole 3 in. long, rounded on the outside, flattened on the inside, slightly channelled where it joins the blade, slightly mealy. Inflorescence a terminal umbel of 4-6 pedicellate flowers. Scape simple 4-6 in. long, slightly mealy. Bracts linear acute, $\frac{7}{16}$ in. long ; pedicels erect, $\frac{5}{8}$ in. long. Calyx angular, $\frac{5}{16}$ in. long, cut to the base, the teeth linear, acute. Corolla tube, $\frac{5}{8}$ in. long, the limb flattened, $\frac{5}{8}$ in. wide, violet, lobes spreading, obcordate, notched, $\frac{1}{4}$ in. long, $\frac{1}{4}$ in. wide ; the whole inflorescence more or less powdered with snow-white meal." "Field Notes."

A neater and slenderer plant than the Himalayan *P. cardiophylla* but showing close affinity to that species and to *P. Littledalei*. The specimens under No. 6093 are larger—collected a month later—than those of No. 5985, but the two collections are evidently conspecific in spite of the difference in size.

This delightful little rock Primula is named in honour of my friend Major F. M. Bailey, the distinguished Tibetan explorer and a keen student of nature.

Primula Littledalei, Balf. f. et Watt in Notes, R.B.G. Edin. ix (1916), 179.

S.E. Tibet :—Nam La. Alt. 15-16,000 ft. Flowers mauve with white eye, very fragrant. Only in the darkest dampest crevices and nooks of the gneiss cliffs. Sometimes seen in company with No. 5985 but much less common than that species and at a higher average level. Few plants seen and most of them out of reach on the crags. July 26th 1924. F. K. W. No. 6003.

Gokar La, Tibet. Alt. 13,000 ft. 17th Aug. 1924. Major F. Bailey.

These two gatherings represent the same species and are referable I believe to *P. Littledalei*. The latter was described from imperfect material and the colour of the flower recorded as yellow. See Notes, R.B.G., Edin. ix, p. 180. In so far as Littledale and Walton's collections are concerned, these agree to my eye with the two above. It may be that the "good specimen in flower collected in Central Tibet" and shown by Prof. Lipsky to Sir George Watt had yellow flowers. But that plant did not form the basis of the description of *P. Littledalei*. The details of the flower of No. 6003 as regards annulus, insertion of stamens, length of style, etc., are in conformity with description of *P. Littledalei* apart from the colour. Sir Isaac Balfour saw flower only on Capt. Walton's plant where the colour is not stated ; from its appearance it seems to have been purple rather than yellow. W. W. S.

ROYLEI.

P. Roylei, Balf. f. et W. W. Sm. in Notes, R.B.G. Edin. ix (1916), 198.

S.E. Tibet :—Kongbo Peri, Tsela Dzong. Alt. 12–13,000 ft. Flowers dusky cerise, with a purplish black ring round the yellow tube ; under side mealy purple. Slight unpleasant scent. Upper part of scape, bracts, pedicels, calyx and under surface of corolla dusted with pale greenish meal. A handsome plant found in open grassy patches or under bushes in the Rhododendron forest. It grows with No. 5664 [*atrodentata*]. 25th May. Found also in the alpine pastures up to 15,000 ft., more or less dwarfed. Young foliage at least dusted with meal. 26th May. Abundant in alpine pastures at Temo La. Varies greatly in colour and stature. Sometimes flowers of so dark a purple as to look almost black. Flowers throughout June. Found one albino plant, with cream flowers and curious pallid eye. June 6th 1924. F. K. W. No. 5701.

"Herb, sometimes as much as 15 in. high, but much smaller in alpine forms. Leaves thin petiolate obovate to oval, acute, with irregular finely serrate margin, glabrous ; blade 6 in. long, 2.25 in. wide ; petiole 1–2 in. long, sheathing. Scape simple, glabrous, 12–15 in. high, ending in a drooping or compact umbel of about 20 flowers ; mealy, at least on the upper half. Bracts very short, triangular with acuminate apex, about 0.25 in. long, purple, mealy. Pedicels 1–1.25 in. long, purple, mealy. Calyx cup shaped, 0.4 in. long, with short broadly oval spreading teeth. Corolla dark wine purple, centre almost black ; tube 0.5 in. long, limb flat, spreading 0.7 in. wide." "Field Notes."

SIKKIMENSIS.

Primula Florindae, Ward. Sp. nov.

Species sectionis Sikkimensis atque affinis *P. microdontae* (Franch.), Petitm. et *P. sikkimensi*, Hook. a quibus foliis praelatis (laminæ latitudine fere longitudinem æquante), basi cordatis facile distinguitur.

Planta glabra ad 120 cm. alta ; specimina in scheda 60 cm. Folia numerosa petiolata ; lamina late ovata, ad 20 cm. longa, ad 15 cm. lata, in scheda ad 10 cm. longa et lata, apice obtusa vel subrotundata, basi cordata, margine denticulis apiculatis subregulariter notata ; in sicco papyracea, nervis lateralibus fere angulo recto abeuntibus ; petiolus ad 30 cm. longus a lamina bene discretus sulcatus rubidus. Scapus solitarius, umbellam 30–40-floram gerens ; bracteae numerosae 1–1.5 cm. longae, lanceolatae vel sublineares, acuminatae vel acutae, basi gibboso-expansae, subvirides, plus minusve farinosae ; pedicelli 2–10 cm. longi ; flores nutantes laete sulphureo-flavi, fragrantés, eis *P. sikkimensis*, Hook. subsimiles. Calyx 8–9 mm. longus campanulatus

dentibus triangularibus acutis patentibus circ. 3 mm. longis. Corolla infundibuliformis 2-2.5 cm. longa, lobis 4-5 mm. longis rotundatis, intus farina albida bene conspersa, extra sparsius, ore exannulatus. Stamina in flore brevistylis ad os pertinentia; stylus 1 mm. paulo excedens; ovarium subglobosum. Fructus maturus deest.

S.E. Tibet:—Rong chu, Tumbatse. Alt. 12,000 ft. Flowers bright sulphur yellow, with fragrance of cowslip. Petals pointed; truss nodding, mealy. Plant of 3-4 ft., in shady bogs, but generally by running water or in streams. The flowers of the truss are very numerous (more than 20) and they droop in all directions. Just coming into flower. Flowers throughout July. 15th June 1924. F. Kingdon Ward. No. 5781.

"Glabrous herb of 3-4 ft. Leaves numerous, petiolate; blade large ovate cordate, obtuse, about 8 in. long, and 6 in. wide, margin dentate. Petiole about 12 in. long, reddish, grooved. (Plants much larger than this are commonly met with in boggy thickets by running water). Scape simple, about 3½ ft. high, bearing a terminal umbel of numerous (30-40) drooping flowers, the whole inflorescence enveloped in meal. Bracts linear, acute, 0.6 in. long; thickened and expanded at the base. Pedicels 3-4 in. long. Calyx angular with acute spreading teeth, 0.4 in. long. Corolla funnel shaped bright sulphur yellow, 1 in. long, 0.5 in. wide, the lobes short and broad, rounded, about ⅜ in. long; the whole interior of the limb powdered with white meal, and the outside of the tube likewise." "Field Notes."

P. Florindae is a striking member of the section *Sikkimensis* and should prove a very desirable garden plant. It is distinguished by the distinctly petiolate leaf, the lamina having a cordate base and being usually as broad as long. I have named it in honour of my wife.

P. microdonta, Franch. et Petitm. in Bull. Herb. Boiss. Sér. 2, vii (1907), 526.

S.E. Tibet:—Drukla Gompa. Alt. 11-12,000 ft. Flowers nodding, white, sometimes tinged violet or sulphur yellow, powdered with white meal in the throat; very fragrant. Plant of 1-3 ft. with 2 usually 3 or even 4 whorls of flowers. In shady bogs, sometimes growing with the large "cowslip" *Primula* No. 5781 [*P. Florindae*]. 22nd Aug. 1924. F. K. W. No. 6117.

This comes very near the typical plant which comes from the Mekong valley.

Closely allied is the following which may be reckoned as a variety occupying alpine pastures at a slightly higher elevation:—

var. ***alpicola***, W. W. Sm. Var. nov.

Temo La. Alt. 13-14,000 ft. Flowers nodding, pale primrose-yellow, dusted with meal inside. Fragrant. Just opening. In damp alpine pastures. 6th June. Now in full bloom in alpine pastures of the Rong

chu valley. Here a plant of 12-18 inches with less than 20 flowers in the truss; all the flowers hanging to one side. Extends into the high alpine region where it is a smaller plant. Extremely fragrant with an exotic fragrance. 15th June. F. K. W. No. 5746. ("Moonlight Primula.")

"Glabrous herb, 15-18 in. high. Leaves petiolate, oval, 4 in. long, 2 in. wide, with dentate margin; slightly rugose. Petiole 3-4 in. long. Scape simple, about 15 in. long, bearing a terminal umbel of about 20 flowers, which all droop to one side. Bracts linear or oval acute, as much as 0.75 in. long and 0.4 in. wide. Pedicels 1.25 in. long. Calyx angular, ribbed, 0.4 in. long with short acute teeth. Corolla pale sulphur, mealy inside, fragrant; tube about 0.5 in. long, with open spreading limb, 0.75 in. wide; lobes rounded broadly obovate, notched. Calyx, pedicels, and scape just below the umbel, mealy. (Note, the alpine forms of this species are smaller in all their parts.)" "Field Notes."

S.E. Tibet:—Nambu La. Alt. 13-14,000 ft. Flowers lemon yellow, slightly powdered inside with meal; fragrant. In open pastures growing amongst scrub. 15th Aug. F. K. W. No. 6095.

A violet form of the variety *alpicola* was also obtained:—

S.E. Tibet:—Nyima La. Alt. 12-14,000 ft. Flowers violet, purple or wine-coloured; the corolla often more or less cream coloured within, owing to a thick powdering of meal. In open meadows and pastures within the forest belt where the ground is not boggy. 22nd June. Abundant at Doshong La; flowers often lemon yellow or snow-white, always with a regular band of meal round the throat. This gives to the violet and purple forms a curious crushed strawberry tinge. Very fragrant. 23rd June. F. K. W. No. 5818.

"Plant of 20-24 in. Leaves oval, 6.5 in. long, 2.25 in. wide, margin finely dentate, the teeth mucronate; upper surface glabrous, lower surface rugose, puberulous. Petiole 3.25 in. long, the upper surface flat, winged, the lower surface convex. Scape glabrous, mealy, bearing a terminal umbel of nodding flowers, white, cream, purple, crimson, or violet. Bracts ovate acuminate, 0.6 in. long, mealy. Pedicels 1 in. long, mealy. Calyx 0.5 in. long, angular, cut nearly half-way down, teeth acute, not spreading. Corolla, tube 0.6 in. long, limb 1 in. wide, with a regular band of white meal surrounding the throat; lobes obovate, 0.4 in. long." "Field Notes."

An extreme alpine form may be distinguished as:—

forma *micromeres*, W. W. Sm. Forma nov.

S.E. Tibet:—Sang La. Alt. 14-15,000 ft. Flowers sulphur yellow, fragrant. In pastures. Alpine form of No. 5746 (var. *alpicola*). cf. No. 5906 [*pudibunda*]. 7th July. F. K. W. Nos. 5939, 5921.

Closely allied to this last is the following which comes also very near to *P. pudibunda*, W. W. Sm. The latter bears to *P. sikkimensis* somewhat the same relation as forma *micromeres* does to *P. microdonta*. Both are high alpiners connected with their larger allies by intermediates.

P. pudibunda, W. W. Sm. in Rec. Bot. Surv. Ind. vi (1913), 38, **forma**.

S.E. Tibet :—Temo La. Alt. 15,000 ft. Flowers very pale yellow, fragrant. By streams in the high alpine valleys, just coming into flower; also in alpine pastures. To be carefully distinguished from No. 5939 [*microdonta* forma *micromeres*] which is the alpine form of No. 5746 [*microdonta* var. *alpicola*]. 7th July. F. K. W. No. 5906.

Typical *P. sikkimensis*, Hook. is apparently absent from the region occupied by the above allied species and varieties.

P. Waltoni, Watt in Notes, R.B.G. Edin. ix (1915), 57.

S.E. Tibet :—Nambu La. Alt. 13–14,000 ft. Flowers of a wonderful deep glossy port wine colour, powdered inside with white meal; very fragrant. In alpine meadows and bordering small streams. Fairly abundant on both sides of the pass. 15th Aug. F. K. W. No. 6094.

In the specimens of the type of *P. Waltoni* the flowers are rather past, but the identity of No. 6094 with *Waltoni* is fairly certain.

The confusing variations in size and colour of the members of the Sikkimenses Series in this part of Tibet has been commented on in the narrative (p. 96). As the members of the group do well in cultivation, it should be possible later to bring out the relationships more clearly than in the above account which is admittedly tentative. See article in "The Garden," Aug. 8th 1925, pp. 445–447.

SOLDANELLOIDES.

Primula Cawdoriana, Ward. Sp. nov.

Species in sectione *Soldanelloides* affinis *P. Buryanae*, Balf. f. a qua scapo fere glabro haud lanato, floribus violaceis, corollae lobis anguste oblongis, inter signa alia divergit.

Planta pulchra circ. 15 cm. alta. Folia numerosa breviter petiolata; lamina 2–3 cm. longa, 1–1.5 cm. lata, oblanceolata vel obovata, apice ambitu rotundata, basi in petiolum 5–10 mm. longum latiusculum membranaceum sensim angustata, margine irregulariter atque grosse serrata, in sicco tenuiter membranacea, utrinque sub anthesin viridis nec farinosa sed pilis glandulosis farinipotentibus minutissime scabridula. Scapus ad 15 cm. longus, apice excepto efarinosus sed ubique pilis minimis farinipotentibus conspersus, flores deflexos 5–6 evolutos atque paucos steriles in capitulo terminali gerens; bractae parvae lanceolatae vel subrotundatae atratae intus farinosae capitulum coronantes. Calyx cupularis 6–7 mm. longus ad trientem vel ad medium in lobos 5–6 late lanceolatos obtusos vel subacutos divisus, extra nigro-purpureus ibique pilis farinipotentibus vestitus, latere (in capitulo) interiore nunc albofarinosus, intus dense farinosus;

lobi nunc inaequales, exterior maximus apice denticulatus. Corolla elongata circ. 2.2 cm. longa violacea ubique pilis minimis farinipotentibus conspersa; tubi pars inferior cylindrica tantum 3 mm. longa, pars superior sub-cylindrico-inflata lobata; lobii anguste oblongi 5-6 mm. longi haud reflexi apice in lobulos lineari-triangles 2 mm. longos divisi; os in flore brevistylo (ad apicem tubi inferioris) exannulatum. Stamina in flore brevistylo ad os tubi corollini inserta, a basi corollae tantum 3 mm. remota, filamentis brevissimis. Stylus in flore brevistylo 1-1.5 mm. longus, stigmatibus capitato; ovarium subglobosum. Capsula deest.

S.E. Tibet:—Temo La. Alt. 12-14,000 ft. Abundant on steep rocky earth slopes on the sheltered side of the cliff. In bud. June 5th 1924. In bloom. 6th July. F. Kingdon Ward. No. 5741.

Nyima La. 14-15,000 ft. In bloom. Flowers violet. Corolla very long with jagged edge. On alpine slopes amongst dwarf Rhododendron, Cassiope, etc. 21st June. [Under same number.]

"Plant of 6 in. Leaves shortly petiolate, oval acute, 1.75 in. long, 0.75 in. wide, broadly serrate, the teeth jagged, margin finely ciliate, both surfaces pubescent. Scape simple, puberulous, mealy towards the summit under the head of flowers. Flowers few (5-7), all bent to one side, violet. Bracts small, $\frac{1}{8}$ in. long. Calyx 0.3 in. long, the lobes oval acute, puberulous, the upper ones chocolate, the lower pale green, mealy. Corolla tubular, tapering at the base, 1.25 in. long; teeth $\frac{3}{8}$ in. long, $\frac{1}{8}$ in. wide, tapering to the deeply bifid apex. (near P. Buryana)." "Field Notes."

I have much pleasure in naming this beautiful species in honour of Lord Cawdor, who took a keen interest in botany throughout the expedition and himself found several fine plants to add to the collection.

Section doubtful.

P. Dickieana, Watt, var. **Pantlingii** (King) in As. Soc. Beng. lv (1886), 228, pro specie.

S.E. Tibet:—Doshong La. Alt. 11-12,000 ft.

Flowers either

- (1) Cream with large orange centre.
- (2) Mauve-grey with large yellow brown centre.
- (3) Violet or purple with either yellow or brown centre.

All three forms may be found growing together in bogs or on steep soaking muddy slopes amongst scrub Rhododendron, etc. A wonderful plant in its range of colour and a fine sight, growing in masses. 29th June. F. K. W. No. 5867.

"Glabrous herb, 6 in. high. Leaves spathulate-lanceolate acute, the upper half of the margin dentate; blade 1.5 in. long, 0.5 in. wide, upper surface polished; petiole about 1 in. long. Scape simple, 1-3-flowered, polished; bracts thread-like, 0.6 in. long, or sometimes leafy. Calyx angular, 0.4 in. long, polished, teeth 0.2 in. long, acute, not spreading. Corolla white, grey-mauve, violet, or purple, with large orange or chocolate centre; tube 0.5 in. long, limb 1.25 in. wide, the lobes obcordate, 0.6 in. long, 0.5 in. wide; pubescent within the throat." "Field Notes."

[I have collected this plant in one locality in Sikkim where it showed the same remarkable range of colour. W. W. S.]

It varies also to orange:—

Doshong La. Alt. 12-13,000 ft. Flowers orange, more or less fragrant. On mud slides and in bogs in the alpine region. A beautiful plant. 29th June. F. K. W. No. 5869.

"Glabrous herb, 1.75 in. high. Leaves lanceolate; blade 0.75 in. long, 0.25 in. wide, upper surface polished; petiole 0.5 in. long. Scape simple, 1-flowered, 1.5 in. long, polished. Bracts minute 0.1 in. long. Calyx 0.4 in. long, angular, polished, teeth acute, 0.1 in. long, not diverging. Corolla orange, tube 0.6 in. long, puberulous on the outside; limb 0.75 in. wide, the lobes spreading, obcordate, 0.4 in. long, 0.4 in. wide; inside of throat and tube puberulous." "Field Notes."

Narrative and Observations on Distribution.

BY

F. KINGDON WARD.

In 1924, through the kindness of the Indian and Tibetan governments, I obtained permission for myself and one white companion to visit Tibet in order to collect plants. I laid my plans before the Government Grant Committee of the Royal Society and the Trustees of the Percy Sladen Memorial Fund, who thereupon financed me; Lord Cawdor volunteered to accompany me, and together we left Darjeeling on March 16.

Our objective was the country round the knee-bend of the Tsangpo, at the entrance to the great gorge, lat. 29° 30' N. long. 95° 0' E. Of the flora of this region, which lies almost midway between the Sikkim Himalaya and the mountains of Yunnan-Szechuan, practically nothing was known. In 1913, Majors Bailey and Morshead, travelling with very light equipment, had marched from Assam round the bend of the Tsangpo into Tibet, explored part of the gorge, and followed the