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XLIII.—INDIAN SPECIES OF IMPATIENS.

GENERIS IMPATIENS SPECIES INDICAE NOVAE ET MINUS RITE COGNITAE A CL. A. MEEBOLD DETECTAE.

J. D. HOOKER.

I. SPECIES HIMALAYAE BOREALI-OCCIDENTALIS INCOLAE.

1. *I. Meeboldii*, *Hk. f.*, sp. nov. ; *I. Flemingii*, *Hk. f.* affinis, differt foliis oppositis et floribus minoribus subumbellulatis.

Herba gracilis, erecta, micrantha, caule 2–3 dm. longo simplici stricto inferne longe nudo superne paucifoliato. *Folia* 3–5 cm. longa, opposita vel superiora fasciculata, suprema sessilia, inferiora petiolata, membranacea, ovata vel ovato-lanceolata, acuminata, minute spinuloso-serrulata, utrinque 6–10-nervia, inferiora in petiolum gracilem 2–3 cm. longum angustata ; glandulae infrapetiolares minutae, globosae. *Pedunculi* ex axillis supremis, erecti, foliis subaequilongi, imo apice 3–6-flori ; pedicelli breves, capillares, umbellati vel breviter racemosi ; bractee minutae, ovato-lanceolatae, subverticillatae, persistentes. *Flores* 6–8 mm. expansi, albi, apicibus sepalorum et labelli purpureis ; raphides 0. *Sepala* 2, ovata, obtusa, 2 mm. longa. *Vexillum* orbiculare, 5 mm. diametro, conchiforme, muticum, dorso rotundatum. *Alae* sessiles, angustae, 1–1.2 cm. longae ; lobus basalis parvus, oblongus, distalis duplo vel triplo longior, infra medium semilunaris, dein linearis, apice rotundatus ; auricula dorsalis obscura. *Labelli* limbus scaphiformis, ad 6 mm. longus, ascendens, cuspidatus ; calcar limbo aequilongum vel paullo longius, rectum. *Filamenta* anguste linearia ; antherae minutae, didymae. *Ovarium* ellipsoideum. *Capsulae* clavatae vel oblongae, acutae, 1.2–1.3 cm. longae, oligospermae. *Semina* oblongo-obovoidea, 3–5 mm. longa, laevia, castanea.

KASHMIR. Gurais, 2440 m., Aug. 1905, *A. Meebold*, 2467.

A very distinct little species, allied to the opposite-leaved variety of *I. brachycentra*, Kar. et Kir. in the serrulate leaves, but differing in these being opposite, in the minute sepals, the long spur of the lip and the capsule.

2. *I. pahalgamensis*, *Hk. f.*, sp. nov. ; *I. racemosae*, DC. affinis, differt caule robusto, foliis crassioribus, floribus roseis, capsula apice rotundata seminibusque tuberculatis.

Herba erecta, 3–4 dm. alta, glaberrima, minutiflora, caule subsimplici robusto inferne longe nudo. *Folia* 4–5 cm. longa, alterna, conferta, petiolata, crassiuscula, ovata, acuta, grosse crenata setulis nunc interjectis, basi acuta vel rotundata, petiolo 1–2 cm. longo, nervis utrinque 6–8 ; glandulae infrapetiolares pulvinatae vel 0. *Pedunculi* erecti, foliis subaequilongi, 3–6-flori ; pedicelli florentes breves, fructiferi 1–2 cm. longi ; bractee 2–4 mm. longae, lineares vel lineari-lanceolatae. *Flores* 3–4 mm. expansi, rosei ; raphides 0. *Sepala* 2, ovata vel ovato-rotundata, obtuse cuspidata, 4 mm. longa, inaequilatera. *Vexillum* orbiculare, cucullatum, 4 mm. latum, dorso carinatum, carina apice rostellata. *Alae* ? *Labelli* limbus late infundibularis vel cymbiformis, in calcar limbo brevius incurvum attenuatus, ore horizontali acuto vel cuspidato. *Filamenta* gracilia ;

antherae minimae, didymae, fere liberae. *Ovarium* ellipsoideum, acutum. *Capsulae* anguste ellipsoideae vel lineari-oblongae, 1.5–2 cm. longae, rectae vel incurvae, apice rotundatae, deflexae, oligospermae. *Semina* obovoideo-oblonga, 3–5.5 mm. longa, tuberculata, pallida.

KASHMIR. Pahalgam, 2440 m., June, 1905, *A. Meebold*, 2464.

The specimens are few and not in very good condition. The wings in bud are short, broad and sessile. The spur of the lip is sometimes subinflated. The capsules are sausage-shaped.

II. SPECIES PENINSULAE OCCIDENTALIS INCOLAE.

* *Herbae*; *folia opposita*; *inflorescentia simpliciter pedicellata*.

+ Sepala linearia, labelli limbum aequantia; semina laevia, nitida.

3. *I. chinensis*, *Linn.*, forma caule gracili, foliis 3–5 cm. longis lineari-vel obovato-oblongis basi angustatis fere integerrimis subtus saepe asperulis, floribus 1.5–2 cm. expansis roseo-purpureis, calcare 3–5 cm. longo, capsulis 1 cm. longis oligospermis.

MYSORE. Aligalhatti, 1065 m., Feb., 1908, *A. Meebold*, 8258, et Chickenatti, 915 m., Nov. 1908, 10,703.

4. *I. rupicola*, *Hk. f.*, sp. nov.; *I. chinensi* affinis, foliis integerrimis, floribus capsulisque multo minoribus et labelli calcare minuto distincta.

Herba 3–4 dm. alta, erecta, fere glaberrima, parviflora, caule gracili simplici vel parce ramoso, internodiis elongatis. *Folia* opposita, sessilia vel brevissime petiolata, 3–8 cm. longa, submembranacea, oblonga, obovato-oblonga vel linearia, acuta, integerrima vel subserrata, basi rotundata, cordata vel acuta, nervis obscuris; glandulae infrapetiolares subulatae vel 0. *Inflorescentia* simpliciter pedicellata; pedicelli solitarii vel bini, gracillimi, 3–4 cm. longi, glabri vel puberuli, patuli vel fructiferi deflexi. *Flores* 1.5–2 cm. expansi, rosei vel roseo-purpurei; raphides 0. *Sepala* 2, linearia, acuminata, 7–10 mm. longa, 3-nervia, glabra, raro pilosa. *Vexillum* orbiculare, cucullatum, 8–10 mm. diametro, costa dorso carinata, carina mucronata ima basi gibba. *Alae* late stipitatae, 1.2–1.5 cm. longae; lobus basalis parvus, trigonus, erectus, distalis multo major, stipitatus, orbicularis vel obovatus; auricula dorsalis rotundata, porrecta vel decurva. *Labelli* limbus profunde cymbiformis, ore ascendente obtuso apiculato, calcare minimo incurvo. *Filamenta* subulata; antherae connatae, decurvae. *Ovarium* rectum, apice acutum, incurvum. *Capsulae* ellipsoideae, breviter stipitatae, longe acute rostratae, 12–15 cm. longae, polyspermae. *Semina* orbicularia, compressa, 2–2.5 mm. diametro, laevia, atra vel castanea, nitida.

BOMBAY. Belgaum: North Hills, *Dr. Ritchie*, 120; *I. H. Burkill*, Nov. 1902, 16,972; N. Kanara, Sept., 1891, *Talbot*, 2514; Castle Rock, 610 m., Oct. 1908, *A. Meebold*, 10,719; Mysore, Shimoga, 610–915 m., *A. Meebold*, 14,720; Poona distr., Kandala, 610 m., Sept. 1907, *A. Meebold*, 8813.

I. rupicola may prove to be a small flowered and fruited, almost spurless state of *I. chinensis*, which it seems to represent in the Western Ghats from the latitude of Goa to that of Poona.

5. *I. Kleinii*, Wight & Arn.

MYSORE. Western Ghats : Shukravarsanti, 1065 m., Nov. 1908, *A. Meebold*, 10,700 ; Kulhutti : mont. Bababuden, 1830 m., *A. Meebold*, 10,705 ; Talguppa, 610 m., Oct. 1908, *A. Meebold*, 10,711 ; Gersoppa Falls, 610 m., Oct. 1908, *A. Meebold*, 10,713.

KANARA BOR. Castle Rock, 610 m., Oct. 1908, *A. Meebold*, 10,714–10,717.

KONKAN BOR. Poona Distr. : Lonauli, 610 m., Sept. 1907, *A. Meebold*, 8910.

The eight numbered sheets of this species collected by Mr. Meebold present great variety of habit and foliage, but singular correspondence in floral organs and fruit. In small specimens the stems are 1·5–2 dm. long or high, erect or diffusely branched, in larger they exceed 3 dm. The leaves are sessile or very shortly petioled, quite glabrous, 2–8 cm. long, orbicular, ovate, elliptic, oblong or linear, nearly quite entire, acute or obtuse, base rounded or contracted, very rarely cordate, the upper ones biglandular at the base. The pedicels are 1–2 cm. long, always glabrous, solitary or binate, lengthening in fruit but rarely equalling the leaves. The minute flowers are white or pale pink or violet-purple, rarely pilose. The linear, acute or subacute sepals vary in breadth and are 1–3-nerved. The small, hooded, apiculate, green standard is dorsally keeled. The obovate or rounded distal lobe of the wings is stipitate for about its own length with no trace of a basal lobe or dorsal auricle on the stipes. The slender spur of the lip is usually about twice the length of the limb, and usually strongly incurved. The filaments are very slender, nearly equal in length, and the minute anthers nearly erect. The ripe capsules are 1–1·5 cm. long, linear or turgidly ovoid, straight, shortly stipitate, acutely beaked, few seeded ; seeds orbicular, compressed, 2·5 mm. diam., black, shining.

I. Kleinii is the commonest species in the Western Ghats from Poona to Travancore ; it has not been recorded from any central or eastern district of the Peninsula.

6. *I. pusilla*, Heyne ex Wall. Cat. n. 4745 ; Hk. f. & T. in Journ. Linn. Soc. ser. iv. (1860), 122.

I. inconspicua, Benth. in Wall. Cat. n. 4741 ; Wight et Arn. Prodr., 139 ; Wight Ic. t. 970 ; Dalz. & Gibs. Bomb. Flora, 43 ; Hk. f. Fl. Brit. Ind. i. 447, et in Rec. Bot. Surv. Ind. iv. (1906) 41, 46 ; Woodr. in Journ. Bomb. Nat. Hist. Soc., xi. ii. (1897) 266 ; T. Cooke, Bomb. Flor. i. 171 ; Herb. Wight, Kew distrib. n. 313.

I. inconspicua, var. 2 *pusilla*, var. 3 *filiformis*, var. 4 *ramosissima*, Hk. f. Fl. Brit. Ind. i. 448 ; T. Cooke, Bomb. Flor. i. 172.

I. oppositifolia, Herb. Wight ex Wall. Cat. no. 4743B, non Linn.

I. filiformis, Wight & Arn., l.c. 140 ; Herb. Wight, Kew distrib. n. 315.

I. ramosissima, Dalz. in Hook. Kew Journ. Bot. iii (1851), 230.

I. rosmarinifolia ? Retz, Wight Ic. t. 750.

I. Perrottetii, Turz. in Bull. Soc. Nat. Mosc. xxxvi. (1863) 594 ; Hk. f. in Hook. Ic. Pl. t. 2909.

I. tenella, Herb. Wight, Kew distrib. n. 314, non Heyne.

WESTERN GHATS, from the Konkan to Travancore, 915–2440 m.

Var. *nematostachys*, *Hk. f.*; caule 2 dm. alto subsimplici vel ramoso ramisque filiformibus rigidis, internodiis elongatis, foliis coriaceis, vexilli costa dorso gracili basi vix gibbosa.

Herba gracillima, glaberrima, minimiflora, 2 dm. alta, caule erecto stricto vel flexuoso laxo ramoso ramisque fere filiformibus rigidis roseis purpureisve, internodiis elongatis. *Folia* 2-3 cm. longa, opposita, subsessilia, coriacea, superiora linearia vel lineari-oblonga, acuta, integerrima vel minute spinuloso-serrulata, basi rotundata, eglandulosa, inferiora latiora, basi angustata, nervis obscuris; glandulae infrapetiolares 0. *Pedicelli* breves, solitarii, uno latere puberuli, fructiferi foliis breviores, deflexi. *Flores* ad 5 mm. expansi, albi, intus basi punctis lineis 2 purpureis notati. *Sepala* 2, linearia, acuminata, 4 mm. longa, uninervia. *Vexillum* orbiculare, fornicatum, 3 mm. diametro, costa dorso carinata, carina apice cuspidata. *Alae* sessiles, 4.5 mm. longae; lobus basalis oblongo-rotundatus, distalis triplo major, dolabriformis, apice rotundatus; auricula dorsalis obscura. *Labellum* cymbiforme, 4 mm. longum, acuminatum, subtus rotundatum, ecalcaratum. *Filamenta* angusta; antherae minimae. *Ovarium* ovoideum, rostratum. *Capsulae* ellipsoideae, 6 mm. longae, medio turgidae, utrinque attenuatae, rectae, oligospermae. *Semina* late obovoidea vel rotundata, 1.5 mm. longa, laevia, nitida, atra, strophiole basi albo.

MYSORE OCCIDENT. Kulhutti: mont. Bababuden, 1830 m., Nov. 1908, *A. Meebold*, 10,707.

In its erect, rigid, filiform stems and coriaceous, remote pairs of leaves, var. *nematostachys* differs greatly from ordinary forms of *I. pusilla*, as it does further in wanting the gibbus at the base of the vexillum. Mr. Meebold notes that the flowers are white with two purple streaks or lines of spots in the throat.

I. pusilla has been a "non rite cognita" species, of which the only known specimens were imperfect ones in the Wallichian Herbarium, collected in the Bababuden Hills by Heyne. Wight & Arnott in the Prodrum Florae Penins. Ind. Or., cite it as a synonym of *I. inconspicua*, Benth., under which they note "These two synonyms appear at first sight to belong to very distinct species; but a more careful examination suggests that *I. inconspicua* is a luxuriant, and *I. pusilla* a starved form of the same plant; at least we can perceive no important mark by which to separate them." The fact is that *I. pusilla* is as variable and common a species in the Western Ghats as *I. oppositifolia* and *I. Kleinii*, from which it may be distinguished by the cymbiform spurless or almost spurless lip. Its complicated synonymy being now I hope satisfactorily cleared up, I am disposed to adopt the name given to it by its discoverers.

I have seen no specimens from the central or eastern districts of the Peninsula, but a specimen in Herb. Hort. Bogor. received from the Calcutta Herbarium and ticketed "Assam, Col. Jenkins," suggests the possibility of its occurrence in the Eastern Ghats or West of the Peninsula.

7. *I. Nataliae*, *Hk. f.*, sp. nov.; *I. Lawii* affinis, floribus multo minoribus albis, vexilli costa ecarinata, labello infundibulari capsulae multo minoribus distincta.

Herba 2 dm. alta, e basi ramosa, glaberrima, parviflora, ramis gracilibus ascendentibus. *Folia* 2-3 cm. longa, opposita, sessilia,

oblonga vel lineari-oblonga, firma, inferiora obovata, acuta vel obtusa, spinuloso-serrata vel integerrima, enervia, costa subtus prominula; glandulae infrapetiolares 2, setaceae, deflexae vel 0. *Inflorescentia* simpliciter pedicellata; pedicelli foliis breviores, solitarii, capillares, fructiferi paullo elongati, deflexi. *Flores* vix 1 cm. expansi, exsiccati albi, labello reticulatim roseo picto; raphides 0. *Sepala* 2, linearia, acuminata, 4–5 mm. longa, uninervia. *Vexillum* amplum, orbiculare vel late ellipticum, paullo fornicatum, costa dorso gracili apice mucronata. *Alae* 9–10 mm. longae, anguste stipitatae; lobus basalis parvus, trigonus, truncatus, distalis multo major, obovatus vel dolabriformis; auricula dorsalis magna, protrusa vel decurva. *Labellum* infundibulare, ore elongato ascendente, in calcar breve uncinatum attenuatum. *Filamenta* brevia, filiformia; antherae minutae, didymae. *Ovarium* anguste ovoideum, rectum, acuminatum. *Capsulae* parvae, fere globosae, ad 1 cm. longae, brevissime stipitatae, acute rostratae, oligospermae. *Semina* globosa, ad 2 mm. diametro, laevia, atra, nitida.

MYSORE BOR. OCCIDENT. Shimoga: Kumsi, 610–915 m., Oct. 1908, *A. Meebold*, 10,718.

Mr. Meebold describes the flowers as white with a pink spur; at his request I have named it after his venerated mother.

+ + *Sepala* ovata; folia superiora verticillata.

8. *I. Gardneriana*, *Wight* Ic. t. 1050; *Hk. f.* Fl. Brit. Ind. i. 445, et in *Rec. Bot. Surv. Ind.* iv. (1906) 41, 46.

I. setosa, *Hk. f.* & *Thoms.* in *Journ Linn. Soc.* iv. 123; *Fl. Brit. Ind.* i. 445.

KANARA AUSTRAL. Sirade: confinibus Mysore, Nov. 1908, *A. Meebold*, 10,712.

The specimens are poor but I think identifiable with *I. Gardneriana*, which had not previously been collected north of Malabar.

** *Frutex*; folia inferiora opposita, superiora verticillata; inflorescentia simpliciter pedicellata; sepala ovata; semina tuberculata.

9. *I. bababudenensis*, *Hk. f.*, sp. nov.; *I. Leschenaultii*, *Wall.* affinis, differt foliis longe petiolatis longe acuminatis 6–7 nerviis, floribus multo majoribus, vexillo orbiculari et alarum lobo basali distali multo minore.

Frutex sexpedalis, valde ramosus, glaberrimus, caule inferne lignoso. *Folia* 5–10 cm. longa, inferiora opposita, superiora 3–4-natis verticillata, petiolata, firma, ovata vel ovato-lanceolata, caudatim acuminata, crenato-serrata setulis interjectis 0, basi in petiolum gracilem 1–4 cm. longum angustata, costa gracili, nervis utrinque 7–8; glandulae infrapetiolares 0. *Inflorescentia* simpliciter pedicellata; pedicelli ex axillis superioribus pauci, solitarii, graciles, florentes foliis breviores, fructiferi paullo elongati, erecti. *Flores* ad 3 cm. expansi, albi; raphides 0. *Sepala* 2, late ovata, longe cuspidata, 5–6 mm. longa, 5-nervia. *Vexillum* amplum, orbiculare, 1.2–1.5 dm. diametro, apice bilobum, costa dorso carinata apice in rostrum recurvum validum producta. *Alae* sessiles, 1.5–2 cm. longae; lobus basalis subrotundatus, distalis bis terve longior, obovatus vel dolabriformis, dorso infra apicem lente excisus; auricula dorsalis rotundata. *Labelli* coriacei limbus 1–1.5 cm. longus, alte cymbiformis, in calcar robustum incurvum 1.5–2 cm. longum attenuatus,

ore 1-1.5 cm. longo horizontali acuto. *Filamenta* brevissima, subulata; antherae majusculae. *Ovarium* fusiforme, rectum, acutum. *Capsulae* gibbosim ventricosae, sessiles, acute rostratae, 1-1.2 cm. longae, oligospermae. *Semina* orbicularia vel obovoidea, subcompressa, 4 mm. longa, rugosa, atro-brunnea.

MYSORE OCCIDENT. Kulhutti; mont. Bababuden, 1830 m., Nov. 1908, *A. Meebold*, 10,706.

A near ally of *I. Leschenaultii*, DC., differing in the larger, long-petioled, caudately acuminate leaves, long pedicels, and the basal lobe of the wings much shorter than the distal.

III. SPECIES MANIPURENSES.

* *Sepala lateralialia* 2.

+ Inflorescentia pedunculata.

10. *I. spissiflora*, *Hk. f.*, sp. nov.; herba elata ramosa *I. tripetalae*, Roxb., affinis, differt habitu, caule ramisque rigidis foliosis, foliis omnibus oppositis breviter petiolatis oblongis acutis, glandulis infrapetiolariibus raris vel 0, pedunculo elongato seminibusque minoribus laevibus glabris.

Herba 6-8 dm. alta, glaberrima vel foliis novellis puberulis, parviflora, caule ramisque rigidis. *Folia* 8-12 cm. longa, opposita, patula, breviter petiolata, firma, oblonga, acuta vel acuminata, integerrima vel minute serrulata, basi in petiolum 1-2 cm. longum angustata, nervis utrinque 12-16 gracillimis; glandulae infrapetiolares paucae, subulatae vel 0. *Inflorescentia* pedunculata; pedunculi 4-7 cm. longi, stricti, graciles vel robusti, patuli, imo apice 2-6-flori; pedicelli florentes 0.5-1.5 cm. longi, fructiferi 2-3 cm. longi; bractae minutae, ovatae, acutae. *Flores* ad 2-3 cm. expansi, plus minusve carnosii. *Sepala* 2, ovata, 4-6 mm. longa, recta vel subfalcata, obtusa vel acuta, 5-nervia. *Vexillum* orbiculare vel oblatum, 1-1.4 cm. diametro, muticum, costa dorso in gibbum magnum late conicum obtusum tumescente. *Alae* 2.5-3 cm. longae, sessiles vel late breviter stipitatae; lobus basalis rotundatus, distalis vix longior, late dolabriformis; auricula dorsalis magna, reniformis, inflexa. *Labelli* limbus saccatim infundibularis, incurvus, 1.4-1.6 cm. longus, antice paullo supra basin rotundatus, repente in calcar limbo dimidio brevius incurvum attenuatus, ore horizontali 1.2-1.5 cm. longo subacuto. *Filamenta* gracilia; antherae parvae, obtusae. *Ovarium* subfalcatum, acuminatum. *Capsulae* anguste fusiformes, 1.8-2 cm. longae, utrinque attenuatae, fere rectae, acuminatae, oligospermae. *Semina* orbicularia, compressa, 2-2.5 mm. diametro, glabra, castanea.

MANIPUR. Kowpon, 1525 m., Nov. 1907, *A. Meebold*, 5879; Barak, 915-1220 m., *A. Meebold*, 6073, 6285, 6367.

11. *I. teneriflora*, *Hk. f.*, sp. nov.; herba foliis alternis longe petiolatis lineari-oblongis 0.5-1.5 dm. longis, floribus inter majoribus longe calcaratis.

Herba? elata, ramosa, fere glaberrima, longifolia, floribus majusculis, ramis ramulisque firmis. *Folia* 0.5-1.5 dm. longa, alterna, longe petiolata, membranacea, juniora sparsim setulosa, oblongo-lanceolata vel lineari-oblonga, longe acuminata, crenata setulis

interjectis 0, basi nuda vel pilis raris ciliata, in petiolum gracilem 3-8 cm. longum sensim angustata, costa subtus prominula, nervis utrinque in foliis parvis 5-6, in foliis maximis 10-14; glandulae infrapetiolares 0. *Pedunculi* foliis multo breviores, 3-5 cm. longi, 1-6-flori; pedicelli filiformes, 2-3 cm. longi; bracteae 3-6 mm. longae, lanceolatae, longe acuminatae, deciduae. *Flores* ad 4 cm. expansi, tenerrimi; raphides 0. *Sepala* 2, late ovata vel oblonga, 8-10 mm. longa, acuta vel acuminata, membranacea, 3-5-nervia. *Vexillum* oblongo-ovatum, obtusum, fornicatum, muticum, dorso rotundatum, costa dorso carinata. *Alae* 2.5-2.7 cm. longae, sessiles, basi cuneatae vel paullo constrictae; lobus basalis amplus, rotundatus, distalis paullo longior, late dolabriformis, obtusus; auricula dorsalis magna, reniformis, inflexa. *Labellum* late infundibulare, sensim in calcar elongatum gracile apice involutum vel annulare attenuatum, totum incurvum 3-3.5 cm. longum, ore elongato ad 2 cm. longo acuminato horizontali. *Filamenta* gracilia, 6 mm. longa; antherae in capitulum incurvum connatae, obtusae. *Ovarium* gracile, lente curvatum, acuminatum. *Capsulae* erectae, ad 2 cm. longae, fere lineares, strictae, compressae, basi attenuatae, apice acuminatae, polyspermae. *Semina* minuta, 1.5 mm. longa, oblonga, castanea, villis arillata.

MANIPUR. Laimatak, 1525 m., Nov. 1907, *A. Meebold*, 6500.

I. teneriflora is I think nearly allied to *I. Forrestii*, Hk. f., of Upper Burma and Western Yunnan at lat. 25°50' N., in which the leaves are broader and serrate. It is named in reference to the remarkable delicacy of the floral organs.

++ Inflorescentia saepissime simpliciter pedicellata.

12. *I. longirama*, Hk. f., sp. nov.; *I. tripetalae*, Roxb., affinis, differt caule elato robusto vage ramoso, ramis valde elongatis divaricatis foliosis, ramorum ramulorumque nodis glandulis subulatis densissime confertis infra petiolos circumdatis.

Herba? metralis vel ultra, vage ramosa, puberula vel fere glaberrima, parviflora, caule ramisque teretibus rigidis, ramulis 4-6 dm. longis divaricatis. *Folia* 8-12 cm. longa, opposita et ternatim verticillata, firma, petiolata, elliptico-lanceolata, utrinque acuminata, crenulata vel serrulata, basin versus nunc ciliata, costa nervisque utrinque 10-12 gracillimis, petiolo gracili 2-3 cm. longo; glandulae infrapetiolares subulatae, densissime confertae. *Inflorescentia* simpliciter pedicellata; pedicelli 1-2 cm. longi, graciles. *Flores* ad 2 cm. expansi, rosei? *Sepala* 2, ovata vel ovato-lanceolata, 2 mm. longa, uninervia. *Vexillum* oblate orbiculare, fornicatum, ad 1.5 cm. latum, costa dorso medio alte rostrata apice mutica. *Alae* 2.3 cm. longae, stipitatae; lobus basalis rotundatus, distalis paullo longior, dolabriformis; auricula dorsalis magna, protrusa vel inflexa, decurva. *Labelli* limbus saccatus, 2 cm. longus, basi rotundatus et antice calcare breve erecto limbo dimidio breviori instructus, ore horizontali acuto. *Filamenta* brevissima, filiformia; antherae obtusae. *Ovarium* subsigmoideo-falcatum, apice incurvo acuto. *Capsulae* 1-1.5 cm. longae, fusiformes, teretes, rectae vel falcatae, apice acutae, incurvae, oligospermae. *Semina* obovoidea, 2-3.3 mm. longa, rugulosa.

MANIPUR. Irang, 1220 m., Nov. 1907, *A. Meebold*, 5867.

I. longirama has the flowers, fruit and seeds of *I. tripetala*, a species which, under many forms, abounds in the Assam Valley and extends westwards in Northern Bengal to Dacca and perhaps further, but nowhere assuming the characters of *I. longirama*.

13. *I. tripetala*, Roxb., var. *microscypha*, Hk. f.; caule gracili, foliis oppositis et alternis, inflorescentia breviter pedunculata vel simpliciter pedicellata, floribus parvis, capsulis 1 cm. longis oligospermis.

Herba gracilis, fere glaberrima, 3-4 dm. alta, parviflora, caule inferne nudo saepe lignoso simplici vel parce ramoso. *Folia* 5-12 cm. longa, opposita vel alterna, petiolata, membranacea, ovata vel ovato-lanceolata, acuminata, subintegerrima vel minute serrulata, basin versus nuda vel ciliata, in petiolum gracilem 1.7 cm. longum angustata, costa gracili, utrinque 8-14-nervia; glandulae infrapetiolares breves, paucae, plurimae vel 0, saepe confertae. *Inflorescentia* nunc simpliciter pedicellata, nunc breviter pedunculata, pedunculo 0.5-1 cm. longo 3-5-floro; pedicelli capillares, 1-2 cm. longi; bractae minutae, ovato-lanceolatae. *Flores* ad 1.5-2 cm. longi, rosei, calcare albo; raphides 0. *Sepala* 2, ovata vel ovato-lanceolata, acuminata, 0.5-3 mm. longa. *Vexillum* orbiculare, muticum, fornicatum, costa dorso medio gibbo conico instructa. *Alae* late breviter stipitatae, 1.5-2 cm. longae; lobus basalis amplus, rotundatus, distalis paullo longior, inflexus, obovatus; auricula dorsalis magna, reniformis, inflexa. *Labelli* limbus late infundibularis, incurvus, 1.5-1.8 cm. longus, deorsum ad basin rotundatum sensim attenuatus, antice supra basin in calcar breve incurvum obtusum repente constrictus, ore amplo 1.5 cm. longo obtuso apiculato horizontali. *Filamenta* gracilia; antherae obtusae. *Ovarium* subclavatum, acuminatum. *Capsulae* erectae, 0.9-1.1 cm. longae, medio tumidae, ellipsoideae, utrinque attenuatae, acutae, oligospermae. *Semina* 2-3 mm. longa, pyriformia vel obovoidea, compressa, laevia, minute papillosa, castanea.

MANIPUR. Jhirighat, 450 m., Nov. 1907, *A. Meebold*, 5687; Bishenpur, *A. Meebold*, 6725.

A very frequent form, extending westwards to Bengal.

* * *Sepala* lateralibus 4; *folia* alterna; *inflorescentia* pedunculata.

+ *Herba* gracilis, parviflora.

14. *I. gibbisepala*, Hk. f., sp. nov.; herba foliis ovato-lanceolatis crenatis, alarum lobo distali loriformi.

Herba gracilis, erecta, glaberrima, parviflora, caule ramoso, ramis erectis. *Folia* 6-10 cm. longa, alterna, longe petiolata, firma, ovata vel ovato-lanceolata, caudatim acuminata, crenata setulis interjectis, basi in petiolum gracilem 3-5 cm. longum angustata, nervis utrinque 8-10; glandulae infrapetiolares 0. *Inflorescentia* pedunculata; pedunculi foliis breviores, gracillimi, erecti, pauciflori; pedicelli 2-3 cm. longi; bractae ovato-lanceolatae, 2-3 mm. longae. *Flores* aurei. *Sepala* 4, 2 exteriora oblonga, acuta vel cuspidata, plana, 6-7 mm. longa, ima basi uno latere in lobulum obtusum patulum vel decurvum producta, 2 interiora subulata, hyalina. *Vexillum* ovatum vel oblongum, acutum, ad 7 mm. longum, costa tenui. *Alae* sessiles; lobus basalis oblongus vel rotundatus, distalis triplo longior, 1.5 cm.

longus, loratus; auricula dorsalis 0. *Labelli* limbus brevis, cymbiformis vel scaphiformis, in calcar gracile ad 3 cm. longum sensim attenuatus, ore ascendente mucronato. *Filamenta* brevissima, late linearia; antherae in capitulum connatae.

MANIPUR. Kapon, 2440 m., *A. Meebold*, 9231.

I. gibbispala is closely allied to the Himalayan and Khasian *I. drepanophylla*, Hk. f., also a Manipur species (Bishenpur, alt. 900 m., *Meebold*, 5986) from which it differs in the longer, oblong, acute sepals which are remarkable for being produced at the base on one side into a prominent lobule. The specimens are scanty and indifferent and are devoid of capsules which, it may be presumed, are linear, very slender and many-seeded. The labellum is in some flowers almost tubiform with an erect mouth.

+ + Herbae vel fruticuli robusti, floribus majusculis vel amplis carnosius, alarum lobo distali oblongo vel dolabriformi.

15. *I. laevigata*, Wall., Cat. no. 4753, var. *grandifolia*, Hk. f.; frutex foliis 1–2 dm. longis crenato-serratis setulis interjectis 0, bracteis oblongis, floribus albis flavo-tinctis.

Frutex ramosus, glaberrimus, grandiflorus, ramulis robustis teretibus. *Folia* 1–2 dm. longa, apices versus ramulorum conferta, alterna, petiolata, papyracea, exsiccata fusco-brunnea, nitida, oblonga, acuminata, grosse crenato-serrata, subtus pallidiora, basi in petiolum validum 3–5 cm. longum angustata, nervis utrinque 7–8; glandulae infrapetiolares 0. *Pedunculi* 4–5 cm. longi, medio 1–2-bracteati, 1–3 (?) -flori; bractee oblongae, 1–1.5 cm. longae. *Flores* ad 4 cm. expansi, carnosius, albi, flavo tincti, raphidibus instructi. *Sepala* 4, 2 exteriora orbicularia, 1.8–2 cm. diam., crasse carnosius, mutica vel apiculata, 2 interiora 2 cm. longa, falciformia, acuta, uno latere costata et incrassata. *Vexillum* amplum, reniformi-rotundatum, fornicatum, 2.5 cm. latum, dorso rotundatum, ecostatum, muticum. *Alae* sessiles, 2.5 cm. longae; lobus basalis amplus, rotundatus, enervis, distalis paullo longior, angustior, panduriformis, apice bilobus; auricula dorsalis rotundata. *Labellum* late infundibulare, in calcar robustum obtusum incurvum limbo subaequilongum sensim attenuatum, totum ad 2.5 cm. longum, crassum, ore horizontali ad 2 cm. longo. *Filamenta* 6–7 mm. longa, gracilia, superne incrassata et connata; antherae obtusae. *Ovarium* falcatum, acuminatum.

MANIPUR. Barak, 1220 m., Nov. 1907, *A. Meebold*, 6272.

The fleshy texture of the flowers renders them impossible of accurate analysis after being dried. They are described by Mr. Meebold as yellowish-white. In typical *I. laevigata* of the Khasia Hills they are straw-coloured streaked with red.

16. *I. odontosepala*, Hk. f., sp. nov.; frutex? foliis 1–1.5 cm. longis fere integerrimis graciliter petiolatis, bracteis lanceolatis, sepalis 2 exterioribus ovato-oblongis cuspidatis.

Frutex? glaberrimus, floribus mediocribus, ramis ramulisque teretibus laevibus lignosis fistulosis. *Folia* apices versus ramorum conferta, 1–1.5 dm. longa, alterna, petiolata, firma, exsiccata atro-fusca, obtusa, oblanceolata vel oblongo-lanceolata, acuminata, integerrima vel obscure crenulata setulis interjectis, subtus concoloria, basi in petiolum gracilem 3–5 cm. longum angustata, costa

gracili, nervis utrinque 6–10 ; glandulae infrapetiolares 0. *Pedunculi* breves, 3·5 cm. longi, 1–4-flori ; pedicelli 1–2 cm. longi ; bracteeae 1–1·5 cm. longae, lanceolatae, acuminatae. *Flores* ad 3–4 cm. expansi, flavi, rubro-striati, carnosuli, raphidibus instructi. *Sepala* 4, 2 exteriora 1·5–1·7 cm. longa, oblique ovato-oblonga, cuspidatim acuminata, basi rotundata, hilo laterali, 5–7-nervia, marginibus plus minusve dentatis, 2 interiora anguste lineari-elongata, acuminata, 1·5–2 cm. longa, membranacea, medio costata. *Vexillum* carnosum, orbiculare, 2·5 cm. latum, muticum, fornicatum, dorso carina crassa apice rotundata auctum. *Alae* sessiles, 2–2·5 cm. longae ; lobus basalis 1·5–1·8 cm. longus, oblongus, decurvus, apice rotundatus, distalis paullo longior, erectus, dolabriformis ; auricula dorsalis rotundata. *Labellum* cymbiforme, crasse carnosum, basi in calcar breve valde robustum incurvum obtusum attenuatum, ore horizontali, 2–2·5 cm. longo acuminato. *Filamenta* filiformia, 5 mm. longa ; antherae obtusae.

MANIPUR. Kapon, 2135 m., Nov. 1907, *A. Meebold*, 6491.

I have seen only two flowering peduncles, one with perfect flowers described above, the other with a much smaller flower in which the two wings are represented by four free spathulate organs much smaller than the sepals, and of which two are shorter and broader than the others. There are no stamens and the ovary is deformed.

17. *I. rubrolineata*, *Hk. f.*, sp. nov. ; herba foliis ovato-oblongis serrulatis, bracteis ovatis vel ovato-lanceolatis, sepalis 2 exterioribus oblique ovato-oblongis acuminatis.

Herba erecta, glaberrima, grandiflora, caule 5–6 dm. alto simpliciter rigido apice tantum folioso. *Folia* 6–10 cm. longa, alterna, petiolata, firma, ovato-oblonga, acuminata, serrulata, basi acuta, in petiolum gracilem 2–3 cm. longum angustata, nervis utrinque 6–8 ; glandulae infrapetiolares 0. *Pedunculi* 2–4-flori, petiolos subaequantibus ; bracteeae ovatae vel ovato-lanceolatae, acuminatae, 1–1·2 cm. longae. *Flores* ad 4 cm. expansi, flavi, rubro-striati, carnosuli, raphidibus instructi. *Sepala* 4, 2 exteriora ovato-oblonga, acuminata, 1·5–2 cm. longa, concava, 5–7-nervia, 2 interiora longiora, tenuissima, flaccida. *Vexillum* amplum, orbiculare vel oblatum, 3 cm. latum ; costa dorso supra medium breviter cristata. *Alae* 3–3·5 cm. longae, basi cuneatae ; lobus basalis amplus, late oblongus vel rotundatus, distalis longior et angustior, obovato-oblongus, apice dilatatus et emarginatus ; auricula dorsalis rotundata. *Labelli* limbus crassus, late infundibularis vel cymbiformis, 2·5–3 cm. longus, horizontalis vel ascendens, ore acuminato ; calcar limbo multo brevius, robustum. *Filamenta* 0·8–1·2 cm. longa, gracilia ; antherae majusculae, connatae. *Ovarium* fere rectum, acutum.

MANIPUR. Laimatak, 1525 m., Nov. 1907, *A. Meebold*, 6275.

The solitary specimen described above is in very poor condition in respect of foliage.

I. laevigata, *I. odontosepala*, and the above all require to be studied in the living condition.