Præcursores ad Floram Indicam.—Balsamineæ. By J. D. HOOKER, M.D., F.R.S., L.S. &c. and T. THOMSON, M.D., F.R.S., L.S. &c.

[Read June 16th, 1859.]

THIS Order, as is well known, attains its maximum development in India, and it there presents a vast assemblage of forms, all but one of which strictly belong to the genus *Impatiens*.

It is often the case that when a genus is in a striking degree local, its species are to a considerable extent well marked and easily defined: such, however, is not the case with *Impatiens*; for it would be difficult to indicate another genus in the vegetable kingdom, presenting amongst its species so many and such different modifications of structure, and of which the species are so universally and so excessively prone to vary.

We commenced the study of the genus several years ago, with nearly 100 species, fully 2000 good specimens, from all parts of India, and engravings or original coloured drawings, with analyses, of upwards of fifty. On surveying these materials for the first time, we were struck no less with the prominence of the natural groups into which most of the species appeared to arrange themselves, than with the marked contrasts in the form and colour of the floral organs of many of the species; and the accessibility and apparent feasibility of these characters were so obvious, that we congratulated ourselves on the prospect of making natural and well-defined groups of the majority of the species at any rate. A little further examination of these seemingly objective groups sufficed to dispel the illusion; and after three different earnest attempts to master the genus, at intervals of several years, and with the aid of many more specimens received since we commenced the task, we have now just risen from what must be for the present the final effort, with a feeling of great dissatisfaction with the results obtained, whether as to grouping or limiting the species.

There are only two obvious and well-limited divisions of *Impatiens*:—1. The *Scapigeræ*, with tuberous perennial rhizomes (apparent roots), from which all the leaves immediately spring, and long scapes with short terminal racemes of flowers; and 2. The *Cauliscentes*. Were both these divisions comprehensive, the facility of recognizing them would have materially aided the systematic study of the species; but it is not so: the acaulescent consists of five (or perhaps but three good) species, and is so singularly confined in geographical area (the western peninsular

mountains and Ceylon), that practically it is of little aid in assisting either the student or the systematist.

The caulescent group presents a number of inosculating subdivisions, of which we have adopted six, founded primarily on the habit and foliation of the species. This has often obliged us to separate plants that are very closely related indeed, and even more often to refer species of more dubious affinity to one or other group in an arbitrary manner. As it is, we have chosen what we take to be the lesser evil, and only after vainly attempting to group the species better by various combinations of the following important structural peculiarities:—

1. The seeds, which are numerous or few, with the testa polished, granulate, reticulate, pustulate, or almost villous. These afford excellent characters, but often not available in herbarium specimens; and similar seeds sometimes occur in plants of very different habit and floral structure.

2. The capsules, short, broadly elliptic, acute at both ends; or narrow, terete, or club-shaped, also afford excellent characters.

3. The form of the two combined lateral petals (called by Edgeworth and by us *alæ*), which an inspection of the garden Balsam, and of the Indian species in a living state, shows to be extremely variable. In some these are long and pendulous, in others they project horizontally and laterally; the length of the posticous lobes of each ala varies extremely, and even in the same species (*I. leptoceras* and others), it may itself vary from almost undivided to manifestly three-lobed. In *I. tingens*, Edgw., one lobe is developed in æstivation within the spur.

4. The anticous petal (*vexillum*, Edgw.) may be erect or projecting, flat or arched, entire or bilobed, keeled, cristate, or even spurred down the mesial line of the back, the spur sometimes terminating in a clavate gland (*I. racemosa*, var. *polyceras*). Great variation of this dorsal appendage in one species is exemplified by many.

5. The posticous or spurred sepal, called by us *labellum* (by Edgeworth *galea*), undergoes very many modifications in the genus, from a broad slightly concave lamina (*I. scabrida*, *tuberculata*, &c.) to a funnel-shaped organ with a very long spur (*I. leptoceras* and many others), a cornucopia (*I. longicornu*), a blunt straight sac (*I. Walkeræ*, *Jerdoniæ*, &c.), or a sac with a longer or shorter spur. This sepal is the most deceptive of all as affording characters: in *I. longicornu* it varies from a mere cone to a broad deep sac with an abrupt spur; in some of the section *Oppositi-*

foliæ we suspect that it is spurred or muticous in the same species, though, in the present condition of synonymy, we have often been obliged to accept such modifications as of specific value. The spur itself may be straight or curved or spiral, ascending or descending (according to the position of the flower), attenuate or inflated, or clavate or saccate, being sometimes variable in these respects in the same species.

6. The lateral sepals may be two or four, the two posticous alone (those next the labellum) being invariably present and tolerably constant in form; the two anticous, first observed by Edgeworth, may be present or absent in the same species, and are often reduced to papillæ or glands. The apices of the sepals (as of the dorsal spur of the vexillum) are often glandular. The relative size of the sepals and petals offers too often a very fallacious character, depending primarily on conditions of flowering.

7. The form of the flower may be flat—that is, with the laminæ of the vexillum, alæ, and even of the labellum, all in the same plane; or the whole flower may be concave, from the concavity and prominence of the vexillum and labellum especially, which (as in *I. macrophylla*) may greatly exceed the alæ, and, appearing to confine these, give them a vertical direction.

8. The colour of the flower is very variable in many of the species; yellow and purple are the prevailing colours, the former passing through ochreous, &c., into a dull red, and the latter through pink, &c., into white. In many, the flowers are spotted, the yellow with various shades of red or purple, and the purple with darker spots or blotches. In *I. racemosa* and its allies, the yellow and pale purple are mixed, and we find the same species with wholly yellow and with dirty purple flowers. For extreme variation of colour in one species, we would cite *I. longicornu* and *leptoceras*; for intensity of colour, *I. janthina* and *racemulosa*.

9. The inflorescence is always lateral, though apparently terminal in the *Scapigeræ* and in some of the *Racemosæ*. The peduncle is solitary in many, fascicled and axillary in most of the *Laterifloræ*. The peduncles are 1-flowered in some, 2- or many-flowered in others; solitary in some, and fascicled in others. The species with normally fascicled 1-flowered peduncles have sometimes the fascicles reduced to one peduncle; and the species with 2- or more-flowered fascicled peduncles present sometimes 1-flowered fascicled peduncles, or even solitary 1-flowered peduncles. This leads to great confusion and an inosculation of some species (or individuals) in all the groups with alternate leaves, which we have been

unable to avoid. The position of the bracts must in all cases be referred to in order to determine the real condition of the inflorescence, though not necessarily to find the place of the plant in our system; for we are obliged to place a species with two 1-flowered axillary peduncles, bracteate at the base, in a different section from another with a solitary 2-flowered peduncle, bracteate at the ramification, however closely allied they may be in every other respect. A more awkward fact still, is that both these modifications may occur in the same species, sometimes in the same specimen.

An equally perplexing combination of discordant characters is afforded by the ramification of the peduncle itself, the inflorescence being racemose, interruptedly so, whorled and corymbose, or even umbellate through the reduction of the racemose or verticillate inflorescence. Numerous examples of several of these modifications in one species, or even specimen, may be found in the groups *Subverticillatæ*, *Umbellatæ*, and *Racemosæ*.

10. The foliation may be wholly basal (radical), as in the *Scapigeræ*; wholly opposite, as in most of the *Oppositifoliæ*; wholly alternate, as in most of the *Racemosæ*; wholly (or almost) verticillate or ternate, as in *I. Griffithii* and *I. Gardneriana*; opposite below and alternate above, as in *I. amplexicaulis*, *I. latifolia*, and *I. Thomsoni*; opposite below and ternately verticillate above, as in *I. flavida*; verticillate in the middle and opposite or alternate above and below, as in *I. trilobata*, *I. salicifolia*, and sometimes in *I. latifolia*. *I. multiflora* and *I. trilobata* are very puzzling species, being sometimes opposite-leaved throughout the whole individual, at others as constantly alternate, and others having some of the leaves ternate. The base (in form—acute, rounded, or cordate) and petiolation of the leaf are extremely variable in individual species; of the former we may instance *I. repens* and *I. scapiflora*; of the latter, *I. insignis*, *I. leptoceras*, and many others.

For the most part the foliage is glabrous; it is sparsely hairy in a good many, pubescent in a few, tomentose or hirsute in still fewer, villous or glandular on the surface in none. The margin is often serrate or duplicate-serrate, with gland-tipped lobules, and is armed at the base and on the petiole with stipitate glands, which are always very variable in number, position, and form in each species. No species has stipules properly so called; but many have large glands, solitary or fascicled, sessile or stipitate, at the bases of the petioles on the stem.

11. The stems of Balsams are annual or perennial; or more often

they have perennial rhizomes and annual branches; a few are suffruticose, having woody stems and annual branches. The axis presents numerous modifications of habit, consistence, surface, and extension. Some of the largest suffruticose species (*I. Jurpia*, *fruticosa*, &c.) attain 5 feet in height—and perhaps much more—resembling acanthaceous bushes in their half-shrubby character and tumid nodes; the scapigerous section has been already mentioned; another equally remarkable set of species, as regards their stems, includes the succulent-jointed epiphytic peninsular species, *I. Jerdoniæ*, *viridiflora*, &c.

The morphology of the flower of *Impatiens* has occupied the attention of many observers, who have taken different views of the real nature of the pieces of the perianth; we coincide with the view taken by Roeper*, Edgeworth†, and Henfrey‡, and which we have ourselves confirmed from numerous observations on the living species. There are three independent methods of obtaining proof of this view; and they all appear to us to give the same result: they are the following:—

1. Seeking amongst the species for those with the fullest complement of organs, and ascertaining the position and value of the supernumerary ones.—The existence of species with four lateral sepals was first indicated by Edgeworth, who has pointed out that they are figured in the plate of *I. glanduligera* (*I. Roylei*, Walp.) in Royle's 'Illustrations,' who, moreover, detected them in other species, *I. amplexicaulis*, &c., and first discerned their significance. We may add *I. longipes*, *urticifolia*, *leptoceras*, var. *η*, *sulcata*, *sabrida*, and *arguta* as also having four sepals, but not constantly.

2. Comparison with a closely allied genus which presents a different modification of perianth,—as *Hydroceras*, which at once explains *Impatiens*.

3. Examination of the relative positions, &c., of the parts in single and double flowers, with one another and with the axis—the course pursued by Mr. Henfrey.

All these methods lead to the same result, and appear to us to prove that the flower of *Impatiens* consists of a calyx of three (or more rarely five) sepals, of which the two supernumerary are always smallest and next the axis; the two next always green, and small as compared with the petals and the odd one, or that away from the axis, which is usually coloured and spurred. The corolla consists of one erect, often bifid or emarginate petal next the axis,

* Linnæa, ix. 921.

† Linn. Trans. xx. 37.

‡ Linn. Journ. Bot.

and four others combined in pairs and irregular in form. To save verbiage and periphrasis, we have, in the descriptions, called the two small lateral sepals only the "sepals;" the spurred one we call "labellum," the petal next the axis "vexillum," and the combined lateral petals "alæ."

The geographical distribution of the Balsams is on the whole singularly circumscribed: with the exception of the very few Siberian and European species, none extend to the north or north-west much beyond Kashmir; one only is found in Affghanistan (*I. Lemanni*). The species gradually increase in number, proceeding south-eastwards from Kashmir to Khasia and the peninsula of India, in about the following proportion:—

Kashmir, Kishtwar, and countries west of Sutlej ...	10
Sutlej to Nepal frontier	13
Nepal, Sikkim, and Bhotan	25
Khasia Mountains.....	21
Malay peninsula	8
Western peninsula	41
Ceylon	18

Only three of the Indian species are found in other parts of the world.

The distribution of the extra-Indian species is:—

Europe and Siberia	3
North America	2
Malay Islands, Philippines, and China	8 ?
Tropical Africa and Madagascar	8 ?
Extra-tropical South Africa.....	1

Numerous species will yet be detected in Madagascar and tropical Africa, and probably others in Western China and Birma. With regard to the distribution of the groups, the *Scapigeræ* are wholly peninsular and Ceylonese; the *Oppositifoliæ* almost exclusively peninsular, the *Umbellatæ*, &c., chiefly so; the *Laterifloræ* and *Racemosæ* chiefly Himalayan and Khasian.

Again, of these countries the western peninsula presents the most peculiar species, only one-eighth of its species being found in other countries. The Himalaya ranks next in this point of view, two-fifths of its species being found in other countries. The Khasia mountain species, on the other hand, are chiefly Himalayan, with a few peninsular, two-thirds of its species being found in other countries. One-half the Malayan species are found in the western peninsula, and two-ninths of the Ceylon.

We add a key to the species, arranged under their countries, but have little confidence in its proving a certain guide to determining them systematically,—our object in this, as with the other Præcursores, being to bring together all the available matter regarding each genus, rather than to present it in a completely elaborated systematic form*.

CONSPECTUS SECTIONUM.

A. SCAPIGERÆ. *Rhizoma* breve, perenne. *Folia* omnia radicalia. *Scapus* gracilis, apice racemifer.—(*Bracteæ* patentès pedicellis multo breviores, carnosulæ. *Pedicelli* graciles. *Sepala* latiuscula. *Labellum* saccatum v. calcaratum. *Alæ* 2–3-lobæ. *Vexillum* fornicatum. *Capsula* late elliptico-oblonga v. lanceolata. *Semina* pustulata, minima.) (Sp. 1–5.)

A perfectly natural group, and readily recognized, confined to the western peninsula and Ceylon.

B. OPPOSITIFOLIÆ. Annuæ. *Folia* omnia opposita v. in paucis alia opposita, alia ternatim verticillata. *Pedicelli* solitarii v. fasciculati, uniflores, rarissime (in *I. salicifolia*) 2-flores.—(*Sepala* angusta, labello plerisque concavo calcarato v. mutico, rarissime saccato. *Vexillum* sæpius breve. *Alæ* non caudatæ. *Capsula* brevis, medio turgida, utrinque attenuata, in *I. Kleinii* solum subcylindrica et *I. salicifolia* clavata. *Semina* magna, testa lævissima.) (Sp. 6–20.)

For the most part a very natural group. *I. salicifolia* is the chief exception, its 2-flowered states being referable to D. Many of the species are very doubtful, and the synonymy is confused, the original specimens being in many cases bad, or badly named in Herbaria. The *I. pendula* and *Mysorensis*, though alternate-leaved, should naturally come into this group; and single-flowered, opposite-leaved specimens of *leptopoda*?, *radicans*, and others of C may be referred to it.

C. SUBVERTICILLATÆ. *Folia* omnia subopposita, v. inferiora alternata, superiora opposita v. verticillata. *Pedunculi* 1–∞-flores. (Sp. 21–33.)

A very artificial group, divisible into those with one-, and those with two- or more-flowered peduncles. Occasional specimens of

* Whilst these pages were passing through the press, a Number of the 'Madras Journal of Science' (Sept. 1858) has been announced, containing an important paper by Lieut. Beddome on the Peninsular species, to which I shall refer at the end of this monograph.—J. D. H., Kew, Nov. 10th, 1859.

several having all the leaves opposite may be referred to B, and others with them all alternate to D, E, F, and G. There are great difficulties attending the discrimination of the allies of *I. latifolia*, *Roylei*, and *sulcata*. *I. Goughii* may be referred to *Umbellatæ* or *Laterifloræ*, or even to *Racemosæ*.

D. UNIFLORE. *Folia omnia alterna. Pedunculi* 1-flori. (Sp. 34-47.)

Another rather artificial assemblage, of which I suspect only a few (*I. Balsamina*, *scabriuscula*) have invariably 1-flowered peduncles, and of which the others, when 2-flowered, may be referred to E. *I. leptopoda* is probably a state of *I. latifolia*. *I. capillipes* is a curious species, very unlike the others.

E. LATERIFLORE. *Folia omnia alterna, subdistantia, non omnia approximata v. subverticillata. Pedunculi solitarii v. fasciculati bracteolati, secus caulem elongatam plerumque axillares (non axillis supremis tantum siti), patentes, 2-6-flores. Flores racemosi, non umbellati.* (Sp. 48-64.)

A very natural group, if confined to those species which, like *I. macrophylla*, *glandulifera*, *serrata*, *scabrida*, &c., have elongated stems and peduncles from axils of many of the rather distant leaves; but with regard to the others, several of them present specimens which fall naturally into G, and others when 1-flowered would be sought for in D. The group is divisible into several sections.

F. UMBELLATÆ et CAPITATÆ. *Folia omnia alterna, versus apicem caulis conferta. Flores apices versus pedunculi elongati brevissime racemosi v. umbellati v. corymbosi.*—(Bractæe plerisque conspicuæ.) (Sp. 65-78.)

This group embraces certain closely allied peninsular species with simple stems and very short, many-flowered inflorescence, of which *I. linearis* and *umbellata* are types; but others are branched and few-flowered, as *I. grandis*, *campanulata*, &c., and may be referred to E.

G. RACEMOSÆ. *Folia omnia alterna. Pedunculi plures, elongati, multiflori, demum folio longiores. Flores racemosi, interdum verticillati, v. fasciculati.* (Sp. 80-95.)

A very natural group on the whole, the principal exceptions being *I. longicornu* and *I. urticifolia*, some forms of which may be referred to E; *I. Walkeri* is closely allied to *I. Jerdoniæ*; *I. cornigera* to certain species in F.

CONSPECTUS SPECIERUM. (* denotat species non endemicas.)

I. MALAYANÆ.

- § B 1. **I. chinensis* (no. 6). *Fol.* oppos. subsessil. *Fl.* majusculi longe calcarati.
2. **I. oppositifolia* (no. 7). *Fol.* oppos. brevi-petiol. angusta. *Fl.* parvi breve calcarati.
3. *I. circæoides* (no. 32). *Fol.* oppos. longe petiolata. *Fl.* parvi breve calcarati.
4. *I. Griffithii* (no. 8). *Fol.* terna. *Fl.* majusc.
- § D 5. **I. Balsamina* (no. 34). *Fol.* angusta, grosse serrata. *Fl.* longe calcarati.
6. **I. flaccida* (no. 45). *Fol.* lata. *Fl.* longe calcarati.
7. *I. capillipes* (no. 49). *Fol.* angusta, crenata. *Fl.* brevi-calcarati.
- § F 8. *I. Tavoyana* (no. 79). *Fol.* petiolata, ovata. *Fl.* parvi.

II. CEYLON.

- § A 1. **I. acaulis* (no. 3).
- § B 2. **I. oppositifolia* (no. 7).
- § C 3. **I. latifolia*, *L.* (no. 20).
- § D 4. **I. Balsamina* (no. 34). *Erecta.* *Fol.* angust. *Fl.* longe calcarati.
5. *I. repens* (no. 38). *Repens.* *Fol.* long. pet. *Fl.* flavi brevi-calcar.
6. *I. leptopoda* (no. 39). *Erecta.* *Fol.* ampla. *Fl.* majuscul. pall. *Calc.* gracile.
7. *I. truncata* (no. 40). *Erecta.* *Fol.* membranacea. *Fl.* parvi. *Calc.* breve.
8. *I. Hensloviana* (no. 47). *Erecta.* *Fol.* ampl. pubesc. *Fl.* maximi albi. *Calc.* longiss.
9. *I. macrophylla* (no. 37). *Erecta.* *Fol.* maxima. *Fl.* medioc. fasciculati, alis exsertis. *Calc.* breve.
10. *I. glandulifera* (no. 36). *Erecta.* *Fol.* maxima. *Fl.* medioc. fasciculati, alis minimis inclusis. *Calc.* breve.
- § F 11. *I. janthina* (no. 66). *Fol.* 1-2. *Fl.* violacei.
12. *I. linearis* (no. 68). *Fol.* angust. *Fl.* pallidi. *Calc.* breviss.
13. *I. appendiculata* (no. 69). *Simplex.* *Fol.* ovato-lanc. *Fl.* pallid. *Calc.* breve.
14. *I. leucantha*, *Thw.* (no. 67). *Simplex.* *Fol.* lanceol. *Fl.* alb. *Calc.* conicum rectum.
15. *I. subcordata* (no. 71). *Simplex.* *Fol.* ovato-lanc. *Fl.* alb. *Calc.* gracile.
16. *I. Hookeriana* (no. 75). *Fruticosa, ramosa.* *Fol.* oval. *Fl.* magni. *Calc.* magnum.
- § G 17. *I. Walkeri* (no. 84). *Fl.* rubri. *Labellum* longe saccatum.
18. *I. elongata* (no. 85). *Fl.* rubri. *Labellum* gracile, calcaratum.
19. *I. cornigera* (no. 86). *Fl.* flavi. *Labellum* calcari mediocri apice incurvo.

III. PENINSULÆ OCCIDENTALIS (MALABAR, &c.).

- § A 1. *I. scapiflora* (no. 1). *Fol.* glabra. *Calc.* mediocr. incurvum.
 2. *I. modesta* (no. 2). *Fol.* pilosa. *Calc.* mediocr. incurvum.
 3. **I. acaulis* (no. 3). *Fol.* orbicul. *Calc.* gracillimum.
 4. *I. rivalis* (no. 4). *Fol.* ovat.-oblong. *Calc.* gracillimum.
 5. *I. Stocksii* (no. 5). *Fol.* late ovat. *Calc.* 0.
 § B 6. *I. Gardneriana* (no. 9). *Fol.* terna.
 7. *I. inconspicua* (no. 14). *Fol.* opposita. *Fl.* minuti, ecalcarati.
 8. *I. Lawii* (no. 13). *Fl.* ampli, ecalcarati.
 9. **I. chinensis* (no. 6). *Fol.* stipulata, subsessilia. *Fl.* magni. *Calc.* filiforme.
 10. *I. diversifolia* (no. 12). *Fol.* exstipulata. *Fl.* mediocres. *Calc.* filiforme. *Caps.* brevis.
 11. *I. Kleinii* (no. 15). *Fl.* minimi. *Calc.* filiforme. *Caps.* linearis.
 12. *I. setosa* (no. 16). *Fl.* magni. *Calc.* filiforme. *Fol.* stipul. longe petiolata.
 13. *I. rufescens* (no. 10). *Calc.* breve. *Fl.* mediocres, rubri, pubescentes.
 14. *I. Dalzellii* (no. 18). *Calc.* breve. *Fl.* flavi, majusculi.
 15. *I. tenella* (no. 17). *Calc.* breve. *Fl.* minimi.
 16. *I. tomentosa* (no. 11). *Calc.* breve. *Fl.* mediocr. pubesc.
 17. **I. oppositifolia* (no. 7). *Calc.* breve. *Fl.* majusc. glabri. *Folia* stipulata.

Pedunculi 1-flores.

- § C 18. **I. latifolia* (no. 20). Herbacea. *Fol.* suboppos. et verticillat. *Fl.* ampli.
 19. *I. lucida* (no. 21). Herbacea. *Fol.* opposit. membran. *Fl.* minores.
 20. *I. Leschenaultii* (no. 22). Robusta. *Fol.* opposita, rigida.

Pedunculi 2-6-flores.

21. *I. verticillata* (no. 31). Herbacea. *Fol.* verticillat. *Fl.* majusc.
 22. *I. Goughii* (no. 33). Debilis. *Fol.* opposit. *Fl.* parvi.
 § D 23. **I. Balsamina* (no. 34). Glabrata. *Fol.* angusta. *Calc.* gracile.
 24. *I. scabriuscula* (no. 35). Puberula. *Fol.* angust. *Calc.* breviss.
 25. *I. pendula* (no. 41). Parvula, pilosula. *Fl.* minimi. *Calc.* 0.
 26. *I. Mysorensis* (no. 42). Parvula, glaberr. *Fl.* minim. *Calc.* breve.
 27. *I. Munronii* (no. 43). Pubescens. *Fl.* purpurei. *Sepala* magna. *Calc.* conicum, hamatum.
 28. *I. dasysperma* (no. 44). Glabra. *Sepala* parva. *Calc.* gracile.
 29. **I. flaccida* (no. 45). Glaberr. *Fl.* mediocr. *Sepala* parva. *Calc.* gracillimum.
 30. *I. pulcherrima* (no. 46). Glabra. *Fl.* maxim. *Sepala* minuta. *Calc.* longiss. gracillimum.
 31. *I. Hensloviana* (no. 47). Suffrutic. pubescens. *Sepala* ampla. *Fl.* magni. *Calc.* gracile.

- § E 32. *I. fruticosa* (no. 59). Elata, fruticosa. *Fl.* ampli. *Calc.* gracile.
 33. *I. Jerdoniæ* (no. 62). Humilis, crassa. *Sepala* parva. *Labell.*
 longe saccatum.
 34. *I. auriculata* (no. 63). Humilis, crassa. *Sepala* maxima. *Labell.*
 longe saccatum.
 35. *I. viridiflora* (no. 64). Humilis, crassa. *Sepala* parva. *Labell.*
 conicum, calare incurvo.
 § F 36. *I. umbellata* (no. 70). Simplex. *Fol.* subverticill., brevi-petiol.
Calc. gracile.
 37. *I. uncinata* (no. 72). Simplex. *Fol.* longe petiol. *Calc.* breve,
 incurvum.
 38. *I. viscida* (no. 73). Ramosa. *Fol.* longe petiol. *Pedunc.* viscid.
Calc. gracile.
 39. *I. grandis* (no. 76). Robusta. *Bract.* magn. *Fl.* maxim. *Calc.*
 elongat. gracile.
 40. *I. campanulata* (no. 77). Fruticosa. *Bract.* magn. *Fl.* margin.
Calc. perbreve, incurvum.
 § G 41. *I. maculata* (no. 83).

IV. MONT. KHASIA, SILHET, &c.

- § B 1. **I. chinensis* (no. 6). Simplex. *Fol.* opposita, brevi-petiol. *Calc.*
 gracile.
 2. *I. salicifolia* (no. 19). Ramosa. *Fol.* opposit. et tern. brevi-petiol.
Calc. breve.
 § C 3. **I. multiflora* (no. 23). Elata, ramosa. *Fol.* opp. tern. et alt. longe
 petiol. *Pedunc.* 1-flori.
 4. *I. radicans* (no. 24). Humilis, simplex. *Fol.* opp. brevi-petiol.
Pedunc. 1-3-flori. *Labell.* saccat. *Calc.* breve.
 5. **I. trilobata* (no. 25). Elata, ramosa. *Fol.* opp. tern. et alt. *Pedunc.*
 solitar. 2-5-flori.
 6. *I. flavida* (no. 26). Elata, ramosa. *Fol.* opp. et tern., longe petiol.
Fl. flavi. *Pedunc.* solit., 2-4-flor. *Labell.* saccat. *Calc.*
 tumidum.
 § D 7. **I. Balsamina* (no. 34).
 § E 8. **I. arguta* (no. 52). *Fol.* longe acuminat. *Bract.* subulatæ, tortæ.
Calc. breviusc.
 9. **I. discolor* (no. 53). *Fol.* ovato-acuminat. *Bract.* late ovatæ. *Calc.*
 breve, incurvum.
 10. *I. porrecta* (no. 54). *Fol.* acuta. *Bract.* setacæ. *Sep.* parva.
Calc. attenuatum, incurvum.
 11. *I. bella* (no. 55). *Fol.* acuta. *Bract.* setacæ. *Sep.* parva. *Calc.*
 gracile, tortum, puberulum.
 12. *I. racemulosa* (no. 56). *Fol.* acuminat. *Fl.* 6-8 intense violac.
Sep. majuscul. *Calc.* breve, incurvum.
 13. **I. latiflora* (no. 57). *Fol.* acuminat. *Fl.* ampl. *Sep.* ampla.
Calc. rectiusculum, elongatum.

- 14. *I. pulchra (no. 58). Humilis. *Fl.* ampli. *Sep.* magna. *Calc.* conicum, incurvum.
- 15. *I. Jurpia (no. 60). Fruticosa. *Fl.* ampli. *Sep.* parva. *Labell.* ventricosum. *Calc.* robusto incurvo.
- § F 16. I. bracteata (no. 65). *Bract.* pectinato-crinita.
- 17. *I. acuminata (no. 74). Humilis, simplex. *Calc.* elongatum.
- 18. *I. lævigata (no. 78). Fruticosa. *Labell.* ventricosum. *Calc.* breve.
- § G 19. *I. racemosa (no. 80). *Ped.* verticillati.
- 20. *I. tingens (no. 88). *Ped.* alterni. *Calc.* breviusculum.
- 21. *I. leptoceras (no. 91). *Ped.* alterni. *Calc.* elongatum.

V. MONT. HIMALAYA.

- § C 1. *I. multiflora (no. 23). Elata. *Fol.* opp. alt. et tern. *Pedunc.* 1-flores.
- 2. *I. trilobata (no. 25). Elata. *Fol.* opp. alt. et tern. *Pedunc.* 2-5-flores.
- 3. I. Roylei (no. 27). Elata, caule tereti. *Bract.* ovato-lanceol. *Pedicell.* umbell. *Capsula* brevis, clavata.
- 4. I. Thomsoni (no. 28). Elata, caule tereti, lævi. *Bract.* subulata. *Calc.* conicum.
- 5. I. amplexicaulis (no. 30). Elata, caule 4-gono. *Fol.* supern. altern. amplexicaulia. *Capsula* linearis.
- 6. I. sulcata (no. 29). Elata, caule tereti sulcato. *Capsula* nutans, linearis.
- § D 7. *I. Balsamina (no. 34). *Fol.* longe lanceolata. *Calc.* rectum v. curvum.
- 8. I. spirifer (no. 48). *Fol.* ovato-lanceol. *Calc.* breviusculum spiraliter involutum.
- § E 9. I. serrata (no. 50). Gracilis, glabra. *Bract.* subulat. rectæ. *Sep.* parva. *Calc.* gracile, abrupte incurvum.
- 10. I. scabrida (no. 51). Robusta, pubescens. *Bract.* subulat. rectæ. *Sep.* ampla. *Labell.* conicum. *Calc.* incurvum.
- 11. *I. arguta (no. 52). Gracilis, glabra. *Bract.* subulat. tortæ. *Sep.* majuscula. *Labell.* infundib. *Calc.* incurvum.
- 12. *I. discolor (no. 53). Erecta, subramosa. *Bract.* late ovatæ. *Sep.* parva. *Calc.* apice involutum.
- 13. *I. latiflora (no. 57). Humilis, robusta. *Bract.* lanceolat. *Sep.* ampla. *Calc.* gracile, elongatum.
- 14. *I. pulchra (no. 58). Humilis, gracilis. *Flor.* ampli. *Bract.* lanceolat. *Sep.* ampla. *Calc.* conicum, incurvum.
- 15. *I. Jurpia (no. 60). Fruticosa. *Fl.* magni. *Sep.* parva. *Labell.* ventricosum.
- 16. I. puberula (no. 61). Pubescens. *Fl.* medioer. violac. *Sep.* majusc. *Calc.* gracile, incurvum.

§ F 17. **I. lævigata* (no. 78). Fruticosa. *Fl.* magni. *Bract.* et *Sep.* amplæ.

a. *Pedicelli verticillati.*

§ G 18. **I. racemosa* (no. 80). *Fl.* parvi flavi.

19. *I. bicornuta* (no. 81). *Fl.* majusc. lilacini. *Labell.* inflatum.

20. *I. longicornu* (no. 82). *Fl.* majusc. *Labell.* conicum v. saccatum.

b. *Pedicelli alterni.*

21. *I. insignis* (no. 87). *Fol.* angusta. *Sep.* ampla. *Fl.* rosei. *Calc.* elongatum, gracile.

22. **I. tingens* (no. 88). *Fl.* parvi, flavi. *Calc.* breviusculum.

23. *I. longipes* (no. 89). *Pedicelli* gracillimi, patentes. *Fl.* medioc. flavi. *Sep.* parva. *Labell.* conicum. *Calc.* hamatum.

24. *I. urticifolia* (no. 90). *Fl.* majusc. lilacini. *Bract.* caducæ. *Sep.* ovata. *Labell.* saccatum. *Calc.* breve, incurvum.

25. **I. leptoceras* (no. 91). *Fl.* inter minores, flavi. *Sep.* ovata. *Labell.* infundibulif. *Calc.* gracile.

26. *I. laxiflora* (no. 92). *Fol.* longe petiol. ovat. *Fl.* majusc. *Sep.* parva. *Labell.* infundibulif. *Calc.* gracile.

27. *I. glauca* (no. 94). *Fol.* subtus glauca.

28. *I. tuberculatæ* (no. 95). *Fl.* mediocres v. parvi, lilacini. *Labell.* gibbum, ecalcaratum. *Capsula* clavata, tuberculata.

29. *I. brachycentra* (no. 96). *Fl.* parvi, flavi. *Labell.* conicum, ecalcaratum.

30. *I. Lemanni* (no. 93). *Fol.* longe petiolata, obtuse sinuato-dentata. *Fl.* rosei.

I. IMPATIENS, *L.*

A. SCAPIGERÆ (see p. 112).

1. *I. SCAPIFLORA* (*Heyne in Roxb. Fl. Ind. Ed. Wall.* ii. 464; *Wall. Cat.* 4758!). Glaberrima, foliis reniformi v. orbiculari-cordatis, bracteis late ovatis obtusis, sepalis oblique late ovatis, calcare flore brevior incurvo clavato obtuso, vexillo brevi cucullato latiore quam longo, alis 3-lobis.—*Wight*, p. 967, non *Hook. Bot. Mag.* t. 3587.

I. scapiflora, *Wight & Arn. Prodr.* 137 in part.; *Paxt. Mag. Bot.* v. p. 101 cum *ic.*

Hab. Montibus Malabar! *Heyne, Wight, &c.* (fl. Jun.—Octob.).

Herba pedalis. *Folia* 2–3" lata, integerrima v. remote denticulata, nervis radiantibus. *Flores* $\frac{1}{2}$ – $\frac{2}{3}$ " lati. *Capsula* oblongo-lanceolata.

2. *I. MODESTA* (*Wight in Madr. Journ. of Science*, v. p. 13, et *Icones*, t. 968). Foliis ovato-cordatis acutis crenato-serratis supra pilosis subtus glaucis, bracteis ovatis apice subulatis, sepalis ovato-oblongis parvis, calcare flore brevior obtuso, alis 3-lobis. An var. *I. scapifloræ*?

Hab. Mont. Malabar! *Wight* (fl. Jul.—Aug.).

Ab *I. scapiflora* differt foliis supra pilosis ovatis acutis, floribus minoribus, bracteis apice subulatis, sepalis minoribus et calcare brevioribus.

3. *I. ACAULIS* (*Arn. in Hook. Comp. Bot. Mag.* i. 325). Glabra, foliis orbiculatis oblongisve basi rotundatis cordatisve, bracteis ovatis acutis, pedicellis elongatis, sepalis parvis ovatis obtusis, calcare gracillimo elongato, alis 2-lobis?—*Thwaites, En. Pl. Ceylon.* 68.

I. scapiflora, *Hook. Bot. Mag.* t. 3587; *Wight, Ic. Descript.* t. 967; et *Wight & Arn. Prodr.* quoad varietat. calcare interdum elongato.—*I. bulbosa*, *Moon. Cat.*?

β. Foliis profunde cordatis grosse crenatis.

Hab. Mont. Ceyloniæ! *Moon, Walker, &c.*, et Malabariæ! *Nimmo, Lobb, &c.*, var. β, Concan?, *Herb. Stocks.*

Variat insigniter statura; 2–12" alta, et floribus $\frac{1}{3}$ " ad $1\frac{1}{2}$ " latis.—*Vexillum* breve, galeatum, latius quam longum, retusum.

Thwaites (En. Plant. Ceylon, 68) suspects that this cannot be Heyne's plant, because that is described by Wallich as having the spur several inches in length; but in some of our specimens it is $2\frac{1}{4}$ –3 inches in length.

4. *I. RIVALIS* (*Wight in Madr. Journ. Science*, v. p. 13, t. viii. et *Icones*, t. 751). Foliis oblongis ellipticis ovato-oblongisve basi obliquis superne pilosis glabratissive, bracteis ovatis subacutis, sepalis late ovatis obtusis, calcare gracillimo elongato, alis 3-lobis.—An var. *I. acaulis*?

Hab. Mont. Malabariæ! et Concan! *Wight, Dalzell, &c.* (fl. July, August). Statura variabilis 2–12" alt. *Folia* serrata v. integerrima, basi attenuata, obtusa v. subcordata. *Flores* $\frac{1}{4}$ – $1\frac{1}{4}$ " lati, vexillo fornicato brevi. *Semina* hispida.

In the dried state it is impossible to distinguish this from *I. acaulis*, of which I suspect it is a variety, as does *Thwaites*.

5. *I. STOCKSII* (*H. f. & T.*). Parvula, glaberrima, foliis late ovatis, membranaceis, bracteis ovatis acutis, sepalis late ovatis obtusis, labello basi saccato (calcare nullo), alis 3-lobis.

Hab. Mont. Peninsulæ (prov. Canara! et Maisor?), *Herb. Stocks. et I. aw.* Herba parvula, 2–4", tenerrima. *Petioles* graciles, foliis subæquilongi. *Folia* pollicaria, obscure crenato-dentata. *Flores* 6–8, sub $\frac{2}{3}$ " lati. *Sepala* vexillo orbiculato, subæquilonga. *Labellum* ovatum, concavum.

B. OPPOSITIFOLIÆ (vide p. 112).

6. *I. CHINENSIS* (*Linn. Sp. Pl.*). Glabra, caule erecto, angulato, foliis setaceo-stipulatis subsessilibus linearibus acutis remote serratis subtus glaucis, pedicellis solitariis fasciculatisve, sepalis linearibus, calcare gracili elongato incurvo, vexillo orbiculari acuminato, alis semi-obovatis basi auriculatis.

I. fasciculata, *Lamk. Enc. Méth.* i. 359, var. α; *Wight, Ic.* 748 et *Madr. Journ. Sc.* v. p. 14; *W. & Arn. Prodr.* 138; *Hook. Bot. Mag.* 4631. —*I. heterophylla*, *Wall. in Roxb. Fl. Ind.* ii. 458, *Cat.* 4748!—*Bal-*

samina fasciculata, *D.C. Prodr.* i. 686.—*I. setacea*, *Coleb. in Hook. Ex. Flor.* ii. 137; *Miq. Plant. Hoh.* 1139.

Var. β . Foliis late oblongis obovatisve.

Hab. Mont. utriusque Peninsulæ a Concan! ad Travancore! alt. 5–8000 ped., *Wight, &c.*, Birma! *Wallich!* Malacca, *Griffith!* montibus Khasiæ alt. 3000–5000 ped.! *de Silva, &c.* (fl. May–August). (v. v.)

Dist. Hong-Kong! *Hance.*

Planta valde variabilis. *Caules* simplices v. ramosi, basi repentes ad nodos setas stipulæformes crassas 2 v. plures gerentes v. omnino nudi. *Folia* plerumque basi cordata, 2–4", subcoriacea, superne glaberrima v. hispidula. *Pedicelli* patentes; flores læte rosei v. albi, interdum purpureo-variegati, 1–2" lati, locis humidioribus umbrosisque depauperati. *Capsula* elliptico-oblonga, utrinque attenuata, vix $\frac{1}{2}$ ". *Semina* orbicularia, atra, lævia, opaca v. subnitida.

In *Bot. Mag.* this plant is erroneously supposed to be a native of Ceylon and the whole Himalayan range. Its broad-leaved form is certainly the *I. chinensis*, L., as I have ascertained from the Linnæan Herbarium.

7. *I. OPPOSITIFOLIA* (*Linn. Sp. Pl.*). Flaccida, ramis gracilibus, foliis glanduloso-stipulatis linearibus oblongo-linearibusve integris serratisve, pedicellis solitariis fasciculatisque, sepalis linearibus, vexillo late ovato v. orbiculato acuminato, labello conico calcare brevi recto v. incurvo.—*Wight & Arn. Prodr.* 139; *Wight*, no. 883.

I. ros-marinifolia, *Retz. Obs.* v. 29; *D.C. Prodr.* i. 686; *Wight, Ic.* 750, in *Madras Journ. Sc.* v. p. 14, t. ix.—*I. Mysorensis*, *Wall. Cat.* 4743 A!

Hab. Mont. tropicis Malabar! Ceylon! et penins. Malay! frequens (fl. Aug.–Nov.).

Caulis 4–10" simplex v. ramosus. *Folia* insigniter varia, membranacea, sessilia v. breve petiolata. *Flores* $\frac{1}{2}$ – $\frac{3}{4}$ " lati, albi v. pallide rosei. *Labelllum* valde varians, calcare brevi. *Capsula* acuminato-rostrata, 2–6 sperma. *Semina* oblonga, paulo compressa, atro-brunnea, subnitida, funiculo substrophiolato.

Thwaites, *En. Pl. Ceylon* (errata) remarks that Mr. Ferguson, having examined Hermann's plant, considers the *I. rosmarinifolia* of Retz to be the true Linnean *I. oppositifolia*, and the fact is, that the two plants are one and the same. It is extremely common, and so variable, that no descriptions, plates, and specimens altogether agree: hence the confusion. *I. oppositifolia* of Wight and Arnott, as described from Wallich and Heyne's specimens, has the narrow capsule of *I. Kleinii*, with a short conical, nearly straight spur, but in Heyne's, Wallich's, and Wight's specimens, the ripe capsule is broadly elliptical, and the spur often incurved.

8. *I. GRIFFITHII* (*H. f. & T.*). Erecta, foliis superioribus ternis petiolatis anguste lanceolatis acuminatis marginibus remote serrulatis basi setosis subtus glaucis, pedicellis solitariis, sepalis ovato-oblongis acu-

minatis, calcare filiformi elongato, vexillo amplo obcordato dorso rostellato, alis late bilobis.

Hab. Peninsula Malayana; Monte Ophir! et Gerai! prope Malacca, alt. 3000 ped.! *Griffith, Lobb, Cumming.*

Species pulcherrima foliis ternis facile distinguenda, sparse puberula præcipue ad nodos petiolosque. *Folia* 2-3" superne puberula. *Pedicelli* graciles. *Flores* 1" diametr., rosei? *Calcar* pedicello longius.

9. *I. GARDNERIANA* (*Wight, Icones*, 1050). Glabra, caule basi repente radicante dein erecto, foliis oppositis et ternatim verticillatis ovato-lanceolatis acuminatis argute serratis basi ciliatis, pedicellis solitariis gracilibus, sepalis oblongis longe acuminatis, labello cymbiformi calcare gracili elongato, vexillo dorso alato acuminato, alis bipartitis segmentis retusis horizontaliter patentibus.

Hab. Mont. tropicis Malabaræ locis udosis apertis infra Sispara! *Wight* (fl. Jan., Feb.).

Herba spithamæa et altior. *Folia* 1-2", supra sparse pilosula. *Pedicelli* suberecti, 2-3". *Flores* sub $\frac{3}{4}$ " lati. *Capsula* oblonga. *Semina* glabra.

I. Griffithii simillima; sed differt foliis ovatis, vexillo late obcordato, floribusque majoribus.

10. *I. RUFESCENS* (*Benth. in Wall. Cat.* 4747!). Foliis sessilibus oblongis ovato v. obovato-oblongis acutis serratis supra scaberulis subtus pallidis nervis rufo-tomentosis, pedicellis subsolitariis floribusque pubescentibus, sepalis lineari-lanceolatis setaceo-acuminatis, labello saccato calcare nullo, vexillo late oblongo acuminato, alis breviusculis bilobis lobo superiore auriculæformi.—*Wight & Arn. Prodr.* 138, *Icones*, t. 969. (An var. *I. tomentosa*?)

Hab. Mont. tropicis Malabaræ! et Maisor! *Wight, &c.*

Caules 6-12", superne sæpius tomentosi. *Folia* subcoriacea, *I. fasciculata* textura subsimilia. *Flores* $\frac{1}{2}$ - $\frac{3}{4}$ " lati, rosei? *Capsula* $\frac{1}{2}$ ", rostrato-acuminata. *Semina* ut in *I. oppositifolia*.

11. *I. TOMENTOSA* (*Heyne in Wall. Cat.* 4751! an *Wight*?). Foliis breve petiolatis oblongo-lanceolatis acutis serratis supra hispidulis, pedicellis solitariis binisve floribusque pubescentibus, sepalis lineari-lanceolatis acuminatis, labello sublonge saccato calcare brevi abrupte terminato, vexillo late oblongo acuminato, alis bilobis.

I. reticulata, *Wall. Cat.* 4750! *Wight & Arn. Prodr.* 139, ? *Wight*, p. 749 (var. *glabrata*).—*I. ramosissima*, *Dalzell in Hook. Kew Journ. Bot.* 1851, iii. 230.

Hab. Mont. Malabaræ! et Maisor! *Heyne, Wight, &c.*; Pegu! *Wallich* (ex *Exempl. manca*) (fl. Aug., Sept.).

Proxime affinis ut videtur *I. rufescenti* (ejus varietas?) a qua differt præcipue si non solum, labello breviter calcarato.

12. *I. DIVERSIFOLIA* (*Wall. Cat.* 4749!). Diffusa, foliis lineari- v. ovato-oblongis glaberrimis, basi subcordatis argute serratis, pedicellis soli-

tariis fasciculatisve, sepalis linearibus acuminatis, calcare filiformi elongato, vexillo parvo, alis late semiobovatis.—*Descript. ex Wight & Arn. Prodr.* 139.

1. heterophylla, *Wall. Cat.* 4748 b.—I. Arnottiana, *Miquel, Plant. Hoh.* 275.

Hab. Mont. temperatis Malabaræ! et Canaræ! *Klein, Wight, &c.* (fl. Oct.). Species parvula, 4-6", caulibus longe radicanlibus. *Folia* $\frac{3}{4}$ -1 $\frac{1}{2}$ ". *Flores* sub $\frac{1}{2}$ " lati. *Stigmata* (fid. *W. & A.*) distincta.

13. I. LAWII (*H. f. & T.*). Caulibus erectis ramosis foliisque subtus glaberrimis, foliis breviter oblongis basi obtusis sessilibus superioribus sensim minoribus cordato $\frac{3}{4}$ -amplexicaulibus remote serratis supra scaberulis, pedicellis breviusculis, floribus magnis, sepalis linearibus falcatis, vexillo orbiculari apice rostellato, labello parvo ecalcarato late concavo, alis maximis lobis lateralibus parvis.

Hab. Canara! et Malabar! *Law.*

Species pulcherrima, habitu ramoso *I. diversifoliae*, qua differt floribus magnis, labello ecalcarato, foliis brevioribus superioribus sensim minoribus pedicellisque brevioribus.—*Caules* pedales. *Folia* $\frac{1}{2}$ -1" longa, subacuta, subtus pallida. *Pedicelli* plerumque folio breviores linea puberula instructi, fructiferi deflexi. *Flores* $\frac{3}{4}$ " lati, pulchre violacei? *Capsulæ* immaturæ lanceolatæ vix $\frac{1}{2}$ " long.

A very beautiful species or form allied to *I. inconspicua* and *diversifolia*, but very different in stature and the size of the flower; it is much branched, and the leaves are smaller upwards.

14. I. INCONSPICUA (*Benth. in Wall. Cat.* 4741!). Parvula, ramosa, diffusa, glaberrima, foliis proteis anguste oblongis linearibus lanceolatisve serratis obtusis acutis acuminatisve, pedicellis puberulis, floribus minutis, sepalis lineari-subulatis, labello naviculari acuminato basi subsaccato ecalcarato, vexillo ovato acuminato, alis bilobis lobo superiore minore inferiore obovato.—*Wight & Arn. Prodr.* 139; *Wight*, p. 970.

- I. pusilla, *Heyne in Wall. Cat.* 4745, fid. *W. & Arn.* non *Herb. Hook.*—An *I. filiformis*, *Wight & Arn. Prodr.* 140? an *I. Mysorensis*, *Roth. Wall. Cat.* 4743 in part.?

Hab. Mont. temperatis Malabaræ! *Heyne, Wight, Foulkes, &c.*; et Concan? *Stocks, &c.* (fl. Nov.).

Planta valde inconspicua et variabilis. *Folia* in exemplare cl. Wallichii (no. 4741 in *Hook. Herb.*) anguste linearia, basi cordata, 2-pollicaria; in cæteris et in *Icone Wightii* breviora oblonga lanceolata. *Flores* pallidi, $\frac{1}{4}$ - $\frac{1}{2}$ " lati.—Exemplar *I. pusillæ*, *Heyne, Wall. Cat.* 4745 in *Herb. Hook.* diversa est species, calcare instructa.

15. I. KLEINII (*Wight & Arn. Prodr.* 140). Erecta, glabra, diffuse ramosa, foliis longe v. breve petiolatis membranaceis basi biglandulosius obovatis ovatis lanceolatisve acutis subserratis superne glabris v. pilosulis subtus glaucis, sepalis lineari-subulatis, labello ovato-acuminato

convexiusculo calcare elongato gracili, vexillo brevi glabro v. pilosulo orbiculato acuminato, alis longe unguiculatis late obovatis vix lobatis, capsula gracili.—*Wight. Ic.* 884; *Arn. in Hook. Comp. Bot. Mag.* ii. 325. *Balsamina minor*, *D. C. Prodr.* i. 686.

Hab. Mont. Malabar! Canara! and Concan! *Heyne, &c.*

The very long slender spur best distinguishes this species from its small-flowered, opposite-leaved allies, except *I. diversifolia*, which has sessile leaves, and the following.

16. *I. SETOSA* (*H. f. & T.*). Herbacea, ramosa, ramis oppositis, foliis petiolatis setoso-stipulatis ovato-lanceolatis acuminatis obscure serratis margine basin versus distanter longe setosis utrinque pilosulis, pedicellis gracilibus, sepalis majusculis oblique ovatis, calcare elongato filiformi gracillimo incurvo.

Hab. Mont. Malabar! *Herb. Wight.*

Herba 2-pedalis. *Folia* $1\frac{1}{2}$ – $2\frac{1}{4}$ ", submembranacea, subtus glauca, basin versus limbi et petioli pilis longis patulis flaccidis ciliata et stipulata. *Pedunculi* 1" et ultra. *Flores* violaceo-purpurei, $\frac{2}{3}$ " lati; calcare gracillimo, $1-1\frac{1}{2}$ ".

The long hairs towards the base of the leaves, at the margin, and at the position of the stipules, together with the rather large purple flower, and very long slender ascending spur, distinguish this from all others of the opposite-leaved 1-flowered section. I have seen but one specimen in Wight's Herbarium.

17. *I. TENELLA* (*Heyne in Wall. Cat.* 4746 A!). Parvula, erecta, subflaccida, foliis breve petiolatis lineari-oblongis lanceolatisve serratis subtus pallidis, floribus parvis glabris, sepalis linearibus acuminatis, labello naviculari v. conice saccato in calcar breve rectum v. incurvum attenuato, galea brevi, alis longe unguiculatis vix lobatis semi-obovatis falcatis.—*An I. Kleinii* var. *parviflora*?

I. pusilla, *Heyne, Wall. Cat.* 4745 in *Herb. Hook.*—*I. tenuicula*, *Steud.*

Hab. Mont. Malbariæ tropicis! *Heyne, Lobb, Jacquemont*, no. 1501.

Herba flaccida, ramosa, 3–6 pollicaris; ramis gracilibus. *Folia* varia, $1-2\frac{1}{2}$ pollicaria, petiolata v. subsessilia. *Flores* parvi, sub $\frac{1}{3}$ " lati, purpurei? *Capsula* tumidior quam in *I. Kleinii*. *Pedicelli* fructiferi horizontales (fid. *W. & Arn.*), erecti et deflexi in exempl. *Lobb.* lecto.

18. *I. DALZELLII* (*H. f. & T.*). Glaberrima, ramosa, foliis (2–3") omnibus breve petiolatis ovato- v. oblongo-lanceolatis basi cordatis acuminatis spinuloso-serrulatis supra puberulis subtus pallidis, floribus mediocribus flavis, sepalis majusculis lineari-lanceolatis acuminatis, labello saccato calcare brevi curvo terminato, vexillo late cucullato dorso alato.

Hab. Mont. tropicis Concan! *Dalzell, Hb. Stocks* (fl. Aug.).

Caules crassi, 8–14 pollicares. *Folia* $\frac{1}{2}$ – $1\frac{1}{4}$ " utrinque glabra v. superne puberula. *Pedicelli* solitarii v. pauci, glaberrimi. *Flores* glaberrimi, flavi (fid. *Dalzell*), sub $\frac{1}{2}$ " lati. *Capsula* $\frac{1}{2}$ unc. longa, medio turgida,

utrinque breviter attenuata. *Semina* 3-4, magna, oblonga, testa tenuiter crustacea, atra, nitida.—*Habitus* et *folia* fere *I. oppositifolii*; sed *flores* et *capsulae* majores. *Capsulae I. fasciculatae* sed *seminibus* paucis, magnis, oblongis, subsplendentibus.

19. *I. SALICIFOLIA* (*H. f. & T.*). Erecta, robusta, pubescens v. tomentosa, foliis (3-4") oppositis verticillatisque stipulatis breve petiolatis lanceolatis acuminatis setuloso-serratis, pedicellis fasciculatis brevibus, floribus pubescentibus glabratissimis, sepalis parvis lanceolato-subulatis, labello magno longe saccato basi calcare brevi uncinato terminato, vexillo obovato dorso carinato et cornuto, capsula clavata glaberrima.

Hab. Mont. Khasia tropicis, alt. 3000-4000 ped. ! *Lobb, &c.* (fl. Aug.-Oct.). (v.v.)

Caules 2-3 pedales, oppositi, ramosi. *Folia* 3½", submembranacea, serraturis simplicibus v. 1-setulosis, plerumque basin versus foliorum setulosus. *Stipulae* e fasciculis setarum carnosae ad basin petiolorum, interdum 0. *Pedicelli* graciles, pollicares, interdum pedunculo communi brevissimo fasciculati. *Flores* speciosi, 1" lati, purpurei. *Calcar* longitudine variabile.

C. SUBVERTICILLATAE (vide p. 112).

a. Pedunculi uniflores (in *I. multiflora* interdum 2-3 flores).

20. *I. LATIFOLIA* (*Linn. Sp. Pl.*). Glaberrima, foliis suboppositis subverticillatisque 2-4" longe petiolatis lanceolatis v. ovato-lanceolatis acuminatis margine crenato-serratis setulosisque, floribus amplis sepalis parvis ovato-cuspidatis, labello acuminato concavo calcare elongato gracili recto v. incurvo, vexillo obcuneato cornuto, alis bilobis, seminibus reticulatis.—*Wight, Ic.* t. 741.

I. cuspidata, *Wight et Arnott in Hook. Comp. Bot. Mag.* ii. 321.

Var. β *bipartita*, foliis omnibus alternis longioribus, *Thw. En.* 65.—*I. bipartita*, *Arn. in Comp. Bot. Mag.* i. 322.—*I. floribunda*, *Wight in Madr. Journ. Sc.* v. p. 7.

Hab. Mont. tropicis Malabaricae ! ; Nilgherries ! et Ceylon ! *Wight, Lobb, &c.* ; Concan v. Canara ! *Law, &c.* ; var. β sylvis subtropicis Ceylonicae alt. 5000-6000 ped. ! *Walker, &c.* (fl. Oct.).

- I. Leschenaultii* et *I. lucida* valde affinis (an illarum forma luxurians ?). A priore differt foliis saepius subverticillatis, longius petiolatis, majoribus, flaccidioribus, vexillo majore.—*Folia* subtus secus nervos sparse pubescentia. *Flores* 1" lati, calcare gracili plus minusve incurvo apice inflato, emarginato v. bifido. *Capsula I. Leschenaultii* et *latifoliae* sed *seminibus* (fid. *Wt.*) reticulatis.

According to Wight, this differs from *I. Leschenaultii* in the form of the flower, long straight spur, and reticulated seed, but all my specimens have incurved spurs (as in *I. Leschenaultii*), the seeds in all seem to have a spongy testa which is rugose when dry, and the difference in the form of the details is not so strong in my specimens as in Wight's figure. *I.*

Leschenaultii is probably a more robust, smaller leaved and flowered state of this plant. Thwaites (*Enum.* p. 65), who unites *bipartita*, Arn., with *cuspidata*, remarks that the anterior lobe of the petal varies a good deal. I have a specimen marked *I. cuspidata*, W. & A., by Gardner, and gathered by himself on the Nilgherries, in which the capsule is $\frac{3}{8}$ " long, and the leaves, almost all alternate, have long soft spines at the base and on the petiole.

I have no doubt of this being Linnæus's *I. latifolia*, having examined the plant so named in the Linnean Herbarium; it consists of only the top of the stem, with the upper alternate leaves and one very large flower, with a curved spur that is forked at the tip for a long way up. There is no authority for the specimen in Linnæus's Herbarium, but *I. bifida* is written on the paper; so this is probably the original *I. bifida*, Thunb., described by Thunberg as having a bifid spur, and erroneously supposed to have been a native of the Cape of Good Hope, where it has never since been found.

21. *I. LUCIDA* (Heyne in Wall. Cat. 4738!). Glabra, ramosa, foliis (2-4") longe petiolatis membranaceis inferioribus alternis, vel aliis oppositis aliis alternis lanceolatis ovato-lanceolatisve acuminatis crenatis basi setosis, pedicellis subsolitariis, sepalis parvis ovatis acuminatis, labello concavo calcare elongato gracili, vexillo obovato, alis bilobis, lobis obovatis.—An. var. *I. latifolia*, L., floribus minoribus?

I. latifolia, Wt. & Arn. Prodr. 138; Wall. Cat. 4737! non Linn.

Hab. Mont. tropicis Malabariæ! Heyne, Wight, Gardner.

Herba 1-2', caule basi crassiusculo. Petioli $\frac{1}{2}$ -1", graciles. Folia subnitida, utrinque angustata, flaccida. Flores pro planta parvi, $\frac{1}{4}$ - $\frac{3}{8}$ " lati, albi v. pallide rosei (Wight). Capsula $\frac{1}{2}$ unc. longa, elliptica, turgida, utrinque attenuata, glabra v. pilosa. Semina sub 4, magna, oblonga, compressa, opaca, grosse reticulata.

Wight and Arnott remark that this differs from *I. Leschenaultii* in the densely pubescent capsules, but I find that to be a very inconstant character.

22. *I. LESCHENAULTII* (D.C. Prodr. i. 686; Wall. Cat. 4739). Suffrutescens, glaberrima, ramosissima, foliis 1-1 $\frac{1}{2}$ pollicaribus plerisque oppositis petiolatis lanceolatis v. ovato-lanceolatis acuminatis serratis, pedicellis solitariis v. binis, sepalis parvis ovato-subulatis, labello saccato acuminato calcare elongato gracili curvo, vexillo late obovato rostellato, alis bilobis lobis obovatis.—Wight & Arn. Prodr. 136.

An var. *I. latifoliæ*, L.?; Wight, p. 970 bis.

Hab. Mont. Ceyloniæ, *Leschenault* (fid. D.C.) et Malabariæ! frequens, Wight, &c. (fl. tot. ann.).

Suffrutex 8-pedalis, ramosus, foliosus, caulibus ramisque suboppositis crassiusculis. Folia subcoriacea, petiolo $\frac{1}{4}$ - $\frac{1}{2}$ " longo. Flores fere 1" diametr., pallide rosei v. albi. Capsulæ et semina *I. latifoliæ* simillima sed minora.—Potius varietas *I. latifoliæ*, rigidior, densior, foliis minoribus, brevius petiolatis, magis serratis.

23. *I. MULTIFLORA* (Wall. Cat. 4742!). Elata, ramosa, foliis 3-5" oppositis ternis v. alternis stipulatis longe petiolatis membranaceis ovato-lanceolatis utrinque acuminatis crenato-serratis et basin versus setulosis utrinque sparse puberulis v. glaberrimis, pedicellis gracilibus breviusculis rarius in pedunculum brevem fasciculatis, floribus purpureis, sepalis parvis subulatis falcatis, labello saccato sacco basi obtuso calcare brevi v. elongato uncinato terminato, vexillo obovato galeato dorso cornuto, alis parvis.

Exemplar foliis omnibus oppositis pedicellis fasciculatis vix basi unitis.—Wall. Cat. 4742!

Exemplar foliis oppositis et ternis=*tripetala*, Roxb., Wall. Cat., *I. ternifolia*, Hb. Ham. 4752 B!

Hab. Himalaya orientali tropica; Sikkim, alt. 2000-5000 ped.! Mont. Khasia alt. 0-3000 ped.! *Lobb, &c.* (fl. Aug.-Oct.). (v.v.)

Planta variabilis, affinis *I. trilobata*, sed flores solitarii vel si bini pedunculo communi brevissimo inserti. Ab sectione discrepat foliis interdum omnibus alternis, pedicellisque interdum in pedunculum brevem fasciculatis.

Caulis 2-4 pedalis, laxè ramosus, glaberrimus v. uti folia superne puberulus. *Stipulae* e fasciculis setarum. *Folia* cum petiolo interdum spithamæa. *Pedicelli* pro planta breves, vix unciales. *Flores* $\frac{1}{3}$ -1' lati, longiores quam lati, læte purpurei v. violacei, calcare brevi v. elongato, $\frac{1}{3}$ - $\frac{2}{3}$ ". *Capsula* $\frac{1}{2}$ - $\frac{3}{4}$ " pollicaris, angusto-elliptica, utrinque attenuata. *Semina* 6-8, oblonga, compressa, opaca, rugulosa.

b. *Pedunculi* 2-multiflores (vide *I. multiflora* in § C, *I. bracteata* et *I. janthina* in § F).

24. *I. RADICANS* (Benth. in Wall. Cat. 4763). Glaberrima v. pubescens, caule simpliciusculo stricto robusto folioso, foliis stipulatis (2-4") breve petiolatis anguste lineari- v. oblongo-lanceolatis basi rotundatis acutis subserratis utrinque pubescentibus (raro glabris), pedunculis 1-3-floris, pedicellis gracilibus, floribus magnis, sepalis minimis, labello longe saccato basi calcare brevi uncinato terminato, vexillo galeato dorso gibboso subcornuto, alis parvis.

Hab. Mont. Khasia paludibus temperatis alt. 4000-6000 ped.! *Mack, Griffith, &c.* (fl. Jul.-Sept.). (v.v.)

Species formosa, habitu foliisque fere *I. fasciculata*, tota pubescenti-pilosa v. rarius glaberrima.—*Caules* 6-10", stricti, robusti, rarius ramosi. *Stipulae* e fasciculis setarum. *Folia* subcoriacea, subtus pallida. *Pedunculi* pollicares, apice bracteolis lanceolatis tot quot pedicellis muniti. *Flores* speciosi, violaceo-purpurei. *Labellum* saccatum, sæpe $\frac{3}{4}$ " longum et $\frac{1}{2}$ " latum. *Capsula* $\frac{3}{4}$ ", glaberrima, medio turgida, utrinque attenuata. *Semina* oblonga, compressa, testa pallida subrugosa membranacea.

25. *I. TRILOBATA* (Coleb. in Hook. Exot. Flor. ii. t. 141). Elata, ramosa, glabra, foliis (2-4") oppositis alternis subverticillatisque stipu-

latis petiolatis supremis sessilibus ovatis v. ovato-lanceolatis acuminatis crenato-serratis sæpissime ciliolatisque membranaceis, pedunculis solitariis gracilibus elongatis 2-5-floris, pedicellis gracilibus, floribus amplis glaberrimis, sepalis minimis subsetaceis, labello longe saccato sacco conico abrupte v. sensim in calcar incurvum breve v. elongatum angustato, vexillo galeato late obcordato dorso cornuto, alis parvis bilobis.—*Wall. Cat.* 4762 A, et 4763 e Pundua, *Wall. Hb.*

Hab. Himalaya orientali tropica; Sikkim, alt. 2000-4000 ped.! *J. D. H.*; Mont. Khasia subtropicis frequentissime, alt. 3000-5000 ped.! (fl. Jul.-Oct.). (v.v.)

Planta variabilis, 3-4", pulcherrima, ramosa, *I. multiflora* affinis, sed differt pedunculis 2-5-floris, gracilibus, elongatis.—*Caules* v. rami graciles, elongati, pluries divisi. *Folia* vel omnia opposita, vel inferiora tantum opposita superiora alterna rarius terna v. verticillata, interdum cum petiolo spithamæa, textura, forma, stipulatione &c. omnino ut in *I. multiflora*. *Pedunculi* 1-3 pollicares, apice bracteolis setaceis tot quot pedicellis minuti. *Pedicelli* $\frac{1}{2}$ -1", graciles. *Flores* speciosi, violacei. *Labellum* $\frac{1}{2}$ - $\frac{2}{3}$ pollicare. *Capsula* et semina ut in *I. multiflora*.

26. *I. FLAVIDA* (*H. f. & T.*). Caule gracili erecto, foliis ($1\frac{1}{2}$ -2") oppositis ternisque longe petiolatis ovato-lanceolatis utrinque angustatis glaberrimis multinerviis subserratis, pedunculis axillaribus solitariis petiolo longioribus erectis 2-4-floris, floribus flavis subumbellatis, bracteis recurvis, sepalis parvis ovatis oblongisve acuminatis, labello saccato subcampanulato v. ventricoso calcare hamato terminato, vexillo dorso gibbo.—*An Wall. Cat.* 4763 A (sub *trilobata*)?

I. fruticosa, *Lesch. Wall. Cat.* 4762 (*sphalm.*).—Impatiens e Pundua fl. flavo, *Wall. Herb. in Linn. Soc.* sine numero.

Hab. Sylvis tropicis Bengalæ orientalis, Silhet! *Wallich*; Luckipore in Silchar! *J. D. H. & T. T.* (fl. Nov.). (v.v.)

Herba 2-3-pedalis, glaberrima. *Folia* inferiora opposita, superiora sæpius terna. *Pedunculi* sæpe oppositi, stricti, 1-2"; *pedicellis* $\frac{1}{2}$ -1". *Flores* $1\frac{1}{2}$ "; sepalis viridibus, labello flavo; alis flavidis apices versus purpurascentibus. *Capsula* $\frac{3}{4}$ ", sublanceolata, rostrata.

Some of Wallich's specimens of this in Herbs. Hooker, Lindley, and Henslow, have the ticket of *I. fruticosa* (e Nilgherry) attached to them; other specimens are, I think, catalogued under *I. trilobata* (4763 A).

27. *I. ROYLEI* (*Walpers, Repert.* i. 475). Elata, robusta, ramosa, glaberrima, foliis (2-4") petiolatis stipulatis oppositis verticillatisque rarius alternis ovato- v. oblongo-lanceolatis lineari-oblongisve grosse serratis basi glanduloso-setigeris, pedunculis versus apices ramulorum elongatis erectis robustis multifloris, pedicellis subumbellatis breviusculis, sepalis majusculis late oblique ovatis acuminatis, labello longe saccato ventricosolato basi obtuso rarius conico in calcar breve abrupte angustato, vexillo bilobo, alis amplis, capsula clavata.

I. glandulifera, Royle, *Ill.* 157. t. 28. f. 2, *Lindl. Bot. Reg.* 1840, t. 22; *Hook. Bot. Mag.* 4020.

Var. *a.* Foliis crenato-serratis glanduliferis.

Var. *β*, *moschata*. Foliis subverticillatis alternisque, grosse serratis minus glandulosis.—*I. moschata*, Edgw. in Linn. Trans. xx. 38.

Var. *γ*, *candida*. Foliis supremis oppositis verticillatisque, floribus albis roseo maculatis.—*I. candida*, Lindl. in Bot. Reg. n. s. xiii. Misc. 85. n. 204.

Var. *δ*, *macrochila*. Foliis supremis alternis, petalorum lateralium lobis posticis elongatis.—*I. macrochila*, Lindl. Bot. Reg. 18, t. 8.

Hab. In Himalaya temperata occidentali frequentissima, a Nepal?, *Wallich*; ad Marri! alt. 6000–8000 ped., *Fleming* (fl. Jul.–Sept.). (v.v.)

Species insignis, gigantea, 4–10-pedalis, ramosa, caulibus basi crassitie pollicis, fistulosis?. *Folia* valde varia, longe v. brevius petiolata, basi rotundata v. angustata, grosse serrata; caule ad basin petioli glandulis crassis pedicellatis aucto. *Pedunculi* robusti, stricti, erecti, 2–5", bracteis ovato-lanceolatis acuminatis. *Sepala* lateralialia 2–4½", viridia, subsistentia. *Flores* lacte rubro-purpurei, ⅔–1½ unc. lati; calcare brevi incurvo. *Capsula* ½–¾", clavata. *Semina* edulia, magna, late obovoidea, testa opaca subrugosa.

This fine species approaches very closely indeed to some states of *I. longicornu*, Wall., *I. sulcata*, Wall. (*gigantea*, Edgw.), *I. Thomsoni*, and other allied species or varieties of Section H, but may always be known by the shortly clavate capsule. This short clavate capsule is indeed the only character by which many dried specimens can be distinguished from *I. longicornu* and others of that section.

The *I. moschata* of Edgeworth may be a different species, as Mr. Edgeworth suggests, but I cannot distinguish it by herbarium specimens. It is said to differ from *I. Roylei* in its musky odour, in its habit, and in the leaves being more deeply serrate; the latter appears to be a very variable character, the upper leaves being more deeply cut than the lower in both forms.

28. *I. THOMSONI* (*H. f.*). Herbacea, glaberrima, foliis infimis oppositis superioribus alternis verticillatisque ovato-acuminatis petiolatis glanduloso-stipulatis grosse duplicato-serratis, pedunculis aggregatis elongatis erectis pedicellatis subumbellatis racemosive, bracteolis subulato-lanceolatis, floribus ½–¾" long. sordide lilacinis maculatis, sepalis parvis ovato-lanceolatis, labello conice saccato in calcar breve rectum attenuato, capsulis inclinatorum ¾" long. lineari clavatis.

Hab. Himalaya temperata subalpina, Sikkim, alt. 12,000 ped.! *J. D. H.*; Kumaon et Garwhal, 12,000! *St. & W.* (6, 7, 8); Piti! et Kunawur, 9000–10,000 ped.! *T. T.* (fl. temp. pluv.). (v.v.)

Herba robusta, pedalis et ultra, *I. sulcata* var. *β* simillima, sed omnibus partibus minor, calcare brevius recto conico, sepalis angustioribus capsulisque brevioribus.

This puzzling plant occurs throughout the Himalaya, on the edge of the Tibetan climate, and in subalpine districts. It differs from *I.*

tuberculata in the longer spur and even capsules, from small states of *I. Roylei* in the small size, narrower capsules, subulate bracts and conical spur; from *I. longicornu* and its allies by the capsules being shorter, and forming an angle with the pedicel.

29. *I. SULCATA* (Wall. Cat. 4764). Caulibus erectis crassis sulcatis, foliis inflorescentia et floribus fere *I. Roylei*, sed capsula nutante elongata subæquali et angustiore.

I. gigantea, Edgw. ! in Linn. Trans. xx. 38.

β , *minor*. Sepalo postico conico in calcar rectum sensim attenuato.

Hab. Himalaya temperata tota, alt. 7000–12,000 ped., Sikkim ! *J. H.* ; Nepal ! *Wallich* ; Kumaon ! *Strachey & Wint.* ; Simla ! *T. T.*, &c. ; Kunawur ! *Grant* ; Marri ! *Fleming* (fl. temp. pluv.) (v.v.) ; β , Kuna-wur ! *Grant*, *T. T.*

Herba gigantea ; in Himalaya occidentali altit. 15 ped. et caule 5-poll. diamet. *fid. Edgeworth* attingit !—in Sikkim 5–7 pedalis.—*Caulis* fistulosus.

A very tall, coarse-growing species with furrowed stems, in the dried state so like *I. Roylei*, that it is impossible to distinguish them, except by the long capsule of this. My Sikkim specimens have often four lateral sepals. This appears to pass by numerous insensible gradations into *I. longicornu* and others. *I. Thomsoni* may be only a serrate state of it, connected by the var. β *minor* of *I. sulcata*. The inclined shorter capsules, which form an angle with the pedicel, best distinguish this from *longicornu*, &c. The seeds are large and eatable, as in *I. Roylei*.

30. *I. AMPLEXICAULIS* (Edgew. Linn. Trans. xx. 37). Glaberrima, ramosa, foliis (2–4") inferioribus oppositis sessilibus oblongo-lanceolatis acuminatis crenato-serratis superioribus alternis amplexicaulibus ovato-lanceolatis, pedunculis axillaribus multifloris, sepalis ovatis acutis, labello late saccato calcare brevi, vexillo orbiculari bilobo, alis bilobis, capsula lineari.

Hab. Himalaya occidentali temperata, Kumaon, alt. 12,000 ped. ! *Str. & Wint.* ; Simla, 6000–8000 ped. ! *Comta. Dalhousie*, &c. ; Kulu ! *Edgeworth* (fl. Sept.–Oct.) (v.v.)

Affinis *I. Roylei*, sed facile distinguenda foliis breve petiolatis basi latis superioribus basi profunde cordato-amplexicaulibus, pedunculis brevioribus, floribus paucioribus et minoribus non confertis et capsula angusta non clavata.—*Caulis* 3–4 pedalis, 4-angularis, *Edgw.*

31. *I. VERTICILLATA* (*Wight in Madr. Journ. Sc. v. p. 15*). Glaberrima, foliis oppositis verticillatisque (rarissime alternis) breve petiolatis lanceolatis utrinque acuminatis argute serratis serraturis infimis setigeris stipulis subulatis, pedunculis elongatis erectis subumbellatim 3–5-floris, pedicellis gracilibus, sepalis majusculis oblongo-lanceolatis, vexillo concavo breviter cornuto, labello cymbiformi calcare elongato gracillimo.

Hab. Mont. Malabar ad Shevagerry et Bolimputa! *Wight*; *Cochin*!
Johnstone (fl. Aug.–Nov.).

Spithamæa ad 2-pedalem. *Caules* crassiusculi, simplices v. ramosi, ad nodos incrassati. *Stipulæ* porrectæ, spiniformes. *Folia* 2–4" long. $\frac{1}{3}$ – $\frac{1}{2}$ " lat., subcarnosula, subtus pallida. *Pedunculi* stricti, foliis breviores v. longiores, interdum validi et 3" long. *Bractæe* parvæ, subulatae v. late ovatae. *Pedicelli* $\frac{1}{2}$ –1", suberecti. *Flores* majusculi, $\frac{1}{4}$ – $\frac{3}{4}$ " diam.; calcar $\frac{3}{4}$ –1" long. recto v. lente curvo. *Capsula* immatura breviuscula, glabra.

32. *I. CIRCEOIDES* (*Wall. Cat.* 4772). *Parvula*, simplex, glabra, foliis paucis oppositis gracile petiolatis ovatis acutis subserratis basin versus ciliatis subtus glaucis, pedunculis solitariis gracilibus apices versus racemum brevem gerentibus, floribus parvis, sepalis orbiculatis acuminatis, vexillo parvo concavo, labello parvo concavo breviter conice calcarato, alis (pro flore) maximis.

Hab. Tavoy! *Wallich*; Pegu! *McLelland*.

Caulis simplex, spithamæus, gracilis. *Folia* 2", petiolo gracili, membranacea. *Pedunculi* axillares, 1–1 $\frac{1}{2}$ ". *Bractæe* parvæ, late ovatae, concavæ. *Pedicelli* $\frac{1}{4}$ ". *Flores* albi? *Sepala* viridia. *Alarum* lobus dependens $\frac{1}{3}$ " long., labello et vexillo multoties major. *Capsula* brevis?

Nearly allied to *I. Tavoyana*, Benth., but the spur is very short, and the leaves are mostly opposite.

33. *I. GOUGHII* (*Wight, Ill.* i. 160; *Icones*, t. 1603). *Pusilla*, caule debili gracili laxo ramoso, foliis plerumque oppositis pollicaribus petiolatis elliptico v. oblongo-ovatis obtusis grosse crenatis, pedunculis gracilibus foliis longioribus apice subumbellatim 4–6-floris, pedicellis capillaceis, bracteis caducis, floribus minimis, calcar flore æquilongo, capsulis ellipticis utrinque acuminatis.

Hab. Mont. Malabaræ prope Pycarra! *Gough*; Maisor! *Lobb*.

Caulis 6–18". *Folia* interdum omnia alterna, pallide viridia, basi cuneata, in petiolum non angustata. *Flores* rosei v. albi. *Vexillum* obcordatum acuminatum; labello cymbiformi, calcar brevi recto; alis bilobis, lobis retusis. *Capsula* $\frac{1}{2}$ unc. longa, oligosperma. *Semina* minima.

Wight remarks that this is a slender, diffuse-growing species, seeking support of adjacent plants, and then attaining 18 inches in length. The flowers are shortly racemose or subumbellate.

D. UNIFLORÆ (vide p. 113).

Vide *I. Leschenaultii*, *latifolia* (β *bipartita*) in § C.—In *I. spirifera* flores rarissime bini in eodem pedicello. Vide *I. puberula*, *arguta*, et aliæ in F.

34. *I. BALSAMINA* (*Linn. Sp. Pl.*). *Glabrata* v. *pubescens*, caule simpliciusculo, v. ramoso, foliis petiolatis anguste lanceolatis utrinque

acuminatis grosse serratis, petiolo glandulifero, sepalis minutis late ovatis, labello pubescenti cymbiformi calcare tenui elongato, vexillo alisque amplis roseis, capsula brevi dense tomentosa.

I. coccinea, Sims, *Bot. Mag.* 1256.—*I. cornuta*, Linn. *Sp. Pl.* 1328.—*I. longifolia*, Wight in Wall. *Cat.* 4734.—*I. arcuata*, Wall. *Cat.* 4735 ! *Balsamina Hortensis*, D.C., &c.

α, *vulgaris*. Elata, foliis late lanceolatis, floribus magnis, calcare breviusculo.

β, *longifolia*, Wt. & Arn. *Prodr.* i. 136. Foliis anguste lanceolatis, floribus mediocribus, calcare elongato gracili.

γ, *arcuata*. Diffuse ramosa, foliis parvis anguste lanceolatis, floribus parvis, calcare elongato.

δ, *macrantha*. Humilis, 4-pollicaris, foliis ovato-lanceolatis, floribus magnis, calcare brevi.

ε, *micrantha*. Humilis, caule simplici, foliis parvis ovato-lanceolatis, floribus parvis, calcare gracili elongato.

ζ, *rosea*. Caule simpliciusculo elongato, foliis lineari-lanceolatis, floribus inter minores, calcare brevi incurvo.—*I. rosea*, Lindl. *Bot. Reg. Misc.* 1841, p. 6. no. 22, et vol. xxvii. t. 27.

Hab. Var α et β per totam Indiam tropicam locis humidis a Ceylon ! et Malacca ! ad Punjab ! frequens ; var. γ, δ, ε in Malabar ! Kurg ! &c. (fl. Aug.). (v.v.)

Dist. Ins. Malayanae ! et China !

Planta vulgatissima, valde protea. Omnes varietates variant foliis floribusque glabratibus pubescenti-tomentosisve.

35. *I. SCABRIUSCULA* (Heyne in Roxb. *Flor. Ind.* ed. Wall. ii. 464).

Humilis, erecta, ramosa, pubescenti-tomentosa, foliis $\frac{1}{2}$ –1" paucis breve petiolatis lanceolatis acuminatis serratis, pedicellis brevibus, sepalis minimis, labello cymbiformi tomentoso, calcare 0.—Wall. *Cat.* 4729 ! ; Arn. in Hook. *Comp. Bot. Mag.* ii. 322.

Hab. Mont. tropicis Malabaricae ! Heyne, *Hb. Stocks*.

Dist. China (fid. Wt. & Arn.).

I. Balsamineæ proxima sed multo minor, foliis latioribus labelloque ecalcarato.

36. *I. GLANDULIFERA* (Arn. in Hook. *Comp. Bot. Mag.* ii. 322). Suffruticosa,

glabra, ramis crassis apices versus foliosis, foliis maximis (6–10") longe petiolatis amplis ovatis utrinque acuminatis setuloso-serrulatis, petiolo glandulifero, pedicellis numerosis axillaribus fasciculatis, sepalis minimis subulatis, labello piloso longe saccato sacco late conico calcare brevi incurvo apice incrassato, vexillo piloso late orbiculato bilobo dorso rostrato, alis exsertis bipartitis lobo laterali brevi rotundato terminali late semiobovato pendulo.

I. cornigera, Hook. *Bot. Mag.* 4623, non Arn.

Hab. Sylvis tropicis Ceylonicae ! Walker, &c.

Species insignis, *I. macrophyllæ* habitu foliisque simillima, sed plerumque glabra. Flores pallide roseo-purpurei, sacco stramineo.

37. *I. MACROPHYLLA* (*Gardner in Herb. Hook. and Bot. Mag.* 4662). Suffruticosa, glabra, ramis crassis apices versus foliosis, foliis *I. glandulifera* sed sæpissime pubescenti-pilosis, pedicellis brevibus fasciculatis, floribus glaberrimis, sepalis minimis, labello acuminato breviter saccato calcare brevi minimo, vexillo oblongo dorso alato apice acuminato rostrato, alis minimis bipartitis inclusis.

I. glandulifera, var. ?, *Arn. in Comp. Bot. Mag.* ii. 323.

Hab. Sylvis montosis subtropicis Ceyloniæ, alt. 5000–7000 ped. ! *Walker, &c.*

Frutex 10–12 pedalis (fid. *Walker*), foliis interdum 16". *I. glandulifera* affinis, sed differt floribus multo minoribus, glaberrimis, labello aurantiaco, vexillo angusto apice rostrato coccineo, alis minimis inclusis.

38. *I. REPENS* (*Moon Cat.*). Glaberrima, caulibus prostratis basi repentibus vage diffuse ramosis, foliis longe petiolatis ovato cordatis v. reniformi-rotundatis acutis, pedicellis foliis multo longioribus ebracteolatis, sepalis parvis oblongo-lanceolatis, labello late saccato subconico calcare brevi incurvo, vexillo latiore quam longo suborbiculato dorso corniculato, alis alte bilobis lobis brevibus latis.—*Wight, Ill.* 160. t. 61; *Hook. Bot. Mag.* 74. t. 4404.

Hab. Sylvis montosis tropicis Ceyloniæ, alt. 4000 ped. ! *Walker, &c.*

Caules crassi, carnosi, hic illie radicales. *Folia* $\frac{1}{2}$ –1" lata, petiolo breviora, interdum obscure subserrata. *Pedicelli* solitarii, pollicares. *Flores* aurei, speciosi, 1" longi; labello et vexillo pubescente. *Ovarium* hirsutum.

39. *I. LEPTOPODA* (*Arn. in Hook. Comp. Bot. Mag.* ii. 321). Erecta, ramosa, glaberrima, caulibus gracilibus, foliis longe petiolatis (1–3") lanceolatis ovato-lanceolatisve acuminatis crebre crenato-serratis petioloque interdum glanduloso setosis, pedicellis ebracteolatis axillaribus subsolitariis gracilibus strictis, floribus parvis, sepalis parvis oblongo-lanceolatis, labello cymbiformi calcare gracili elongato (v. abbreviato), vexillo obcordato dorso cornuto, alis horizontaliter patentibus (? *I. latifolia*, *Wall. Cat.* 4737, in *Herb. Henslow.*). An var. *I. latifolia*, L. ?
Var. β , *brevicornu*. Calcare abbreviato flore brevior.—*I. brevicornu*, *Arn. l. c.*

Var. γ , *gibbosa*. Sepalo postico cymbiformi subsaccato calcare nullo.—*Arn. l. c.*

Hab. Sylvis montosis subtropicis Ceyloniæ ! alt. 5000–8000 ped., *Walker &c.* (fl. Sept.–Nov.).

Herba 1–3-pedalis. *Caules* basi interdum suffruticulosi. *Folia* submembranacea, basi attenuata, in var. *brevicornu* interdum 4-pollicaria. *Flores* $\frac{1}{2}$ – $\frac{1}{2}$ " lati, latiores quam longi, ob petala lateralia horizontaliter patentia. *Capsula* $\frac{1}{3}$ ", glabra v. puberula.

Thwaites describes this as being very common and variable, and points out its close affinity with *I. Leschenaultii*, in all my specimens of which the leaves are more or less opposite.

40. *I. TRUNCATA* (*Thw. En.* p. 66). Debilis, subramosa, caulibus superne foliis floribusque sparse puberulis glabratissive, foliis (1-1½") petiolatis ovatis ovato-lanceolatisve acuminatis setuloso-serratis membranaceis, petiolo sparse glanduloso, pedicellis 1-3 bracteolatis gracilibus, floribus parvis, sepalis minutis subulatis, labello saccato sacco conico, calcare breve cylindrico truncato, alis inæqualiter bilobis.

Hab. In sylvis subtropicis Ceyloniæ alt. 4000-6000 ped! *G. Thomson, Thwaites* (fl. Oct.).

Affinis *I. leptopodæ*, sed humilior et ut videtur habitu diversa, foliis junioribus petiolis pedunculisque hispidulis, floribusque pubescenti-pilosis.

Thwaites compares this with Wight's figure of *I. inconspicua*, Bth., which, however, differs much in the opposite leaves, form of the spurless flowers, and longer, more slender pedicels.

41. *I. PENDULA* (*Heyne in Wall. Cat.* 4744!). Erecta, ramosa, ramis lineæ pubescenti cum petiolis continua, foliis (¾-½") breve petiolatis ellipticis subcordatis v. ovato-ellipticis acutis remote serratis puberulis, pedicellis ebracteolatis solitariis pilosis fructiferis deflexis, floribus minutis glabris, sepalis labello concavo non calcarato, vexillo cornuto, capsula parva ventricosa.—*Wight & Arn. Prodr.* 137 (descr. secus *Wt. & Arn. Prodr.*).

Hab. Malabar vel Maisor, *Heyne*.

Affinis *I. scabriusculæ* fid. cl. *Wt. & Arn.* sed differt floribus minutis glabris.

42. *I. MYSORENSIS* (*Roth. Nov. Sp.* 164). Caule simplici gracili erecto, foliis alternis lanceolatis, utrinque acuminatis glabris, pedicellis binis axillaribus filiformibus folio ½ brevioribus, floribus parvis, calcare recto brevi, capsula dense pubescente.—*Roth. Nov. Sp.* 164; *Wall. Cat.* 4743; *Wight, Cat.* 979 (descript. ex *Wight & Arn.* p. 137).

Hab. Maisor, *Heyne, Wight*.

Of this species I know nothing, except from the specimens in the Linnean Society, and the description of Wight and Arnott rendered above. It would appear to be very near *I. pendula*, but differs in the spurred flowers and pubescent capsules.

43. *I. MUNRONII* (*Wight, l. c.* 1049). Erecta ramosa tota pubescenti-pilosa, caule lignoso, foliis (1-2") versus apices ramorum longe petiolatis ovatis ovato-lanceolatisve utrinque acuminatis subserratis, pedicellis ebracteolatis solitariis, sepalis hirsutis magnis late ovatis lanceolatisve acuminatis, labello in calcar conicum hamatum sensim attenuato, vexillo orbiculari dorso alato, alis brevibus obovatis bifidis.

Hab. Mont. tropicis Malabariæ, sylvis ad Sisparah! *Wight, Gardner, &c.* (fl. Jan.).

Suffruticulus pedalis, ramis patentibus, siccis cicatricibus ad basin foliorum delapsorum nodulosus. *Folia* utrinque pubescenti-pilosa. *Pedicelli* unciales. *Flores* pollicares, purpurei. *Ovarium* pilosum.

44. *I. DASYSPERMA* (*Wight in Madr. Journ. Sc. v. p. 7. f. 2, Ic. 742*).

Herbacea caule simpliciusculo, foliis (2-4") longe petiolatis ovato-lanceolatis utrinque acuminatis crenato-serratis supra pilosis subtus glaberrimis, pedicellis ebracteolatis subsolitariis, floribus inter minores, sepalis minutis ovatis acuminatis, labello cymbiformi calcare gracili incurvo, vexillo obcordato, alis profunde bifidis horizontaliter patentibus, capsula glaberrima, seminibus pilosis.

Hab. Mont. tropicis Malabarizæ sylvis prope Courtallam, *Wight* (fl. Aug., Sept.).

Glaberrima 1-2 pedalis, flaccida; ramis suboppositis. *Folia* petiolata, petiolo et basi folii interdum glandulis paucis stipitatis ornato, 2-3" longa. *Pedicelli* pollicares, graciles. *Flores* sub $\frac{1}{2}$ " lati. *Calcar* gracile interdum pilosum. *Capsula* oblique turgida, rostrata.

45. *I. FLACCIDA* (*Arn. in Hook. Comp. Bot. Mag. 322*). Herbacea, glaberrima, laxe ramosa, foliis (2-4") petiolatis ovatis ovato v. elliptico-lanceolatis crenulatis basin versus setoso-glandulosis utrinque acuminatis, pedicellis ebracteolatis solitariis binisve elongatis erectis, flore majusculo, sepalis minutis linearibus, labelli limbo parvo calcare gracillimo elongato, vexillo obcordato, alis bipartitis horizontaliter patentibus.

I. latifoliæ, L., var.? an I. latifolia, Wall. Cat. 4737 A? et I. lucida, 4738 in Herb. Henslow.

β . Foliis capsulaque pilosulis.

Hab. Mont. tropicis Ceylonizæ alt. 4000-6000 ped.! *Walker, &c.*; Malabarizæ! *Gardner, &c.* (fl. Oct.-Dec.). (v.v.)

Var. β . Peninsula Malayana ad Moulmein! *Lobb.*

Herbacea 1-2 pedalis, tota glaberrima, nisi var. β . *Folia* plerumque ampla, membranacea, petiolo setoso v. glanduloso v. nudo, *Pedicelli* graciles, 1-2". *Flores* magnitudine varii, $\frac{3}{4}$ -1 $\frac{1}{2}$ " lati, purpurei, violacei v. rosei, speciosi; alis profunde bilobis, lobis obovato-cordatis in var. β apice bilobis. *Capsula* 2 $\frac{1}{2}$ pollicaris, turgida, utrinque attenuate rostrata, polysperma. *Semina* pilosula.

46. *I. PULCHERRIMA* (*Dalzell in Hook. Journ. Bot. 1850, vol. ii. 37*).

Glabra, caule herbaceo simpliciusculo, foliis (3-5") longiuscule petiolatis membranaceis ovato-lanceolatis utrinque acuminatis supra pilosulis basin versus et petiolo setoso-glandulosis, pedicellis ebracteolatis 2-3-nis erectis, floribus maximis, sepalis minutis subulatis, labelli limbo parvo subcymbiforme in calcar elongatum gracile attenuato, vexillo orbiculari bifido dorso rostrato, alis amplis bipartitis lobis obovatis apice bilobis.—*Hook. Bot. Mag. 4615*.

Hab. Mont. Concan tropicis! *Dalzell* (fl. Aug.).

Species nobilis, *I. flaccidæ* affinis, sed omnibus partibus duplo major. *Flores* 2-2 $\frac{1}{2}$ " longi, pallide purpurei. *Pedicelli fructiferi* erecti. *Capsula* glaberrima, cernua; semina pauca, opaca, subrugosa v. tuberculata, glabra.

47. *I. HENSLOVIANA* (*Arn. in Hook. Comp. Bot. Mag.* ii. 322). Caule suffruticoso crasso noduloso, foliis hirsutis pubescentibus glabratissve lanceolatis ovato-lanceolatisque utrinque acuminatis serratis basi v. petiolo glanduloso, pedicellis ebracteolatis subsolitariis elongatis erectis, floribus magnis, sepalis amplis late ovatis acuminatis mucronatis, labelli limbo parvo calcare elongato gracili incurvo, vexillo obcuneato v. orbiculari bilobo, alis horizontaliter patentibus bipartitis segmentis obovatis bilobis.

I. albida, *Wight, Ic.* 743, et in *Madr. Journ. Science*, v. p. 7. f. 1.

Hab. Mont. tropicis Ceyloniæ! alt. 4000–6000 ped., *Walker, &c.*, et Malabariæ, alt. 2000–3000 ped. ! *Wight* (fl. Sept.–Oct.).

Species pulcherrima, sæpissime tota pubescenti-pilosa, sed interdum glabrata v. imo glaberrima, ob caules crassos, pedicellos elongatos, flores magnos et sepala lateraliter ampla facile dignoscenda. *Capsula* glaberrima v. pilosa.

48. *I. SPIRIFER* (*H. f. & T.*). Glaberrima v. pilosula, foliis longe petiolatis ovato-lanceolatis caudato-acuminatis grosse crenatis in petiolum angustatis supremis subverticillatis sessilibus basi glandulis stipulatis, pedicellis subterminalibus erectis solitariis v. rarius binis basi carinatis, floribus $1\frac{1}{2}$ poll. purpureis fauce flavis sepalis amplis oblique ovato-cordatis cuspidatis, labello saccato subcampanulato in calcar breviusculum spiralliter tortum sensim angustato, capsula lineari-lanceolata.

Hab. Sylvis temperatis subtropicisque Himalayæ orientalis Sikkim, alt. 4000–7000 ped. ! *J. D. H.* (fl. Oct.–Dec.). (v.v.)

Species insignis, 2–4-pedalis, inter hanc sectionem et § E media, ob pedicellos cum binis basi connatos. *Folia* 1–3'', interdum puberula. *Pedicelli* pollicares. *Labellum* pallide roseum, rubro-lineatum. *Vexillum* orbiculatum, apiculatum, dorso cornutum; alarum segmentis late purpureis, posticis lineari-oblongis pendulis. *Capsula* pollicaris. *Semina* parva, orbicularia, puberula.

A very beautiful species, readily distinguished by the large flowers, short, spirally-incurved spur, long, deeply-conical, posticous sepal, and long capsules. It is very closely allied to *I. arguta*, *H. f. & T.*, but differs in the almost invariably solitary flowers, and in the absence of the curious twisted bracteoles.

49. *I. CAPILLIPES* (*H. f. & T.*). Parvula, diffuse ramosa, glaberrima, caule gracillimo, foliis 1–2'' petiolatis lineari-lanceolatis lanceolatisve grosse crenatis nitidis flaccidis eglandulosis, pedicellis solitariis v. binis capillaribus 1-floris, floribus minutis, sepalis falcatis, labello saccato sacco ventricosso cylindraceo calcare minimo incurvo, vexillo lineari oblongo elongato, alarum lobis acuminatis.

Hab. Peninsula Malayana ad Moulmein ! *Lobb.*

Species valde singularis ob folia hyalina angusta, flaccida grosse crenata, pedicellos capillares, flores minutos vexillumque elongatum. *Caules*

4-6". *Petioles* gracillimi $\frac{1}{2}$ -1 pollicares. *Pedicelli* petiolos subæquantes. *Flores* albi? $\frac{1}{3}$ " lati. *Capsula* late elliptica, basi angustata, apice acuminata, similis *I. racemulifera*.

E. LATERIFLORE (vide p. 113).

§ a. *Capsula* anguste linearis elongata (vide *I. spirifer* in § D).

50. *I. SERRATA* (*Benth. in Wall. Cat.* 4771!). Glabra, caule erecto simpliciusculo v. basi ramoso, foliis (1-3 poll.) subsessilibus v. petiolo alato ovato-lanceolatis acuminatis argute serratis eglandulosis petiolo basi glandula globosa stipulata v. nuda, pedicellis gracillimis versus medium bifidis 2-floris, bracteis setaceis dissitis, floribus $\frac{3}{4}$ -1 $\frac{1}{2}$ " albidis flavisve rubro-maculatis, sepalis parvis falcatis, calcare abrupte incurvo flore longiore, capsula anguste lineari.

Hab. Umbrosis Himalayæ temperatæ centralis et orientalis, Nepal! *Wallich*; Sikkim 8000-10,000 ped.! *J. D. H.* (fl. Jul.-Sept.). (v.v.) *Caules* graciles, 1-3 pedales. *Folia* membranacea, glabra. *Flores* plani, labello oblique conice saccato, in calcar attenuato; vexillo oblongo subunguiculato, alis unguiculatis lobo postico falcato. *Capsula* 1-1 $\frac{1}{4}$ " angustissima. *Semina* numerosa, 1-seriata, lineari-obovata, grosse tuberculata.

A smaller, more delicate and graceful species than is *I. scabrida*, D.C., with very differently shaped spur and petals.

51. *I. SCABRIDA* (*D.C. Prodr.* i. 687, *Wall. Cat.* 4769 b; *Edgew. in Wight, l.c.* t. 323). Caule simpliciusculo robusto folisque pubescentipilosis glabrativis, foliis ovatis lanceolatis ovato-lanceolatisve acuminatis in petiolum angustatis grosse serratis eglandulosis petiolo basi glandulis 2 grossis stipulato, pedunculis foliis multo brevioribus 2-6-floris, bracteis setaceis dissitis, floribus aureis, sepalis amplis ovato-cordatis acuminatis, labello late conico calcare incurvo, vexillo dorso cornuto, capsulis lineari-elongatis.—*Wall. Cat.* 4769!

I. tricornis, *Lindl. Bot. Reg.* xxvi. 1840, t. 9; *Hook. Bot. Mag.* 4051.—*I. punctata*, *Wall. MSS.*—*I. cristata*, *Wall. in Roxb. Fl. Ind.* ii. 456.—*I. calycina*, *Wall. l.c.* p. 463.—*I. Hamiltoniana*, *Don, Prodr.* 204.

Hab. Umbrosis Himalayæ temperatæ, Bhotan! *Griffith*; Nepal! *Wallich*; Kumaon! *Str. & Wint.*; Simla! *Comta Dalhousie*, &c.; Kumaon! *Grant*; Sikkim, *fid. Icon. Cathcart* (fl. temp. pluv.). (v.v.)

Species 3-5 pedalis, plerumque robusta, plus minusve pubescens, sed interdum glabra v. glaberrima. *Folia* petiolata, v. subsessilia. *Pedunculi* interdum paniculati. *Flores* 1" longi, speciosi, aurei, punctis rubris consperse. *Capsula* 1-1 $\frac{3}{4}$ " longa, glabra v. puberula. *Semina* 1-seriata, oblonga, vix tuberculata.

The *I. calycina*, Wall., seems from specimens in Lindley's Herbarium to be the same as his *cristata*, and which is undoubtedly the *I. scabrida* of De Candolle. I have no Sikkim specimens, but a drawing from

Cathcart's collection of what appears to be a very pale-flowered variety of it, and which has four lateral sepals.

52. *I. ARGUTA* (*H. f. & T.*). Glaberrima, caule gracili ramoso, foliis 2-2½'' breve petiolatis v. petiolo alato elliptico-lanceolatis utrinque longe acuminatis argute serratis dentatisve basi setosis superioribus sæpe petiolo glanduligero sed basi glandulis non stipulato, pedunculo brevissimo 1-2-floro, bracteis setaceis elongatis tortis, pedicellis elongatis, floribus magnis cæruleis lilacinisve, sepalis oblique ovatis cuspidato-acuminatis majusculis, labello longe saccato late infundibuliformi v. campanulato calcare breviusculo hamato, vexillo dorso subrostrato. *Hab.* Umbrosis Himalayæ orientalis temperatæ et tropicæ; Sikkim, alt. 5000-7000 ped.! *J. D. H.*; Mont. Khasiæ, alt. 3000-6000 ped.! *Lobb, &c.* (fl. Jun.-Oct.). (v.v.)

Species insignis 1-4 pedalis, *I. spirifer* affinis et similis, sed caules robustiores, folia majora, argute dentata v. serrata, basi ciliata (rarius nuda), petiolus sæpissime glandulosus, pedunculis brevissimis, bifloris, bracteæ elongatæ tortæ, et calcar hamatum non circinatum.—*Capsula* linearis, pollicaris. *Semina* pauca, orbicularia, opaca, granulata. *Folia* inferiora sæpius non glandulosa.

The long, subulate, twisted bracteoles of this species are quite peculiar to it; in other respects it resembles *I. spirifer*, &c. It is very common in the Khasia mountains, and is probably distributed amongst Wallich's plants, though I have failed to recognize it amongst the Linnean Society's collections, Henslow's, Bentham's, or those of Kew. In some of my Sikkim specimens there are four lateral sepals, as there are also in that figured by Cathcart's artists; in others only two.

b. *Capsula* brevis v. ignota.

53. *I. DISCOLOR* (*De Prodr.* i. 687; *Wall. Cat.* 4767). Caule erecto subramoso, foliis petiolatis 1-2'' ovatis acuminatis eglandulosis grosse crenato-serratis supra pilosulis, pedicellis breviusculis 2-floris, bracteis parvis late ovatis dissitis, floribus magnis, sepalis parvis ovatis acuminatis labello longe saccato ventricosso calcare brevi incurvo v. circinato, vexillo dorso cornuto.

I. insignis, *Wall. Cat.* 4766, in part.

β. Glaberrima, foliis glaberrimis.

Hab. Himalaya centrali temperata, Nepal! *Wallich*; montibus Sikkim! et Khasia! umbrosis humidis (fl. Jul.-Sept.). (v.v.)

Caulis 3-5 pedalis. *Folia* membranacea, majora et latiora quam in *I. elegans* et *arguta*. *Pedunculi* gracillimi, foliis breviores, arcuati, iis *I. longipes* et *urticifolia* similes, sed breviores, pedicellis capillaceis. *Flores* 1½'' longi. *Capsulæ* lineari-clavatæ, immaturæ?

I. urticæfoliæ simillima et forsitan ejus varietas, sed bracteæ breviores et folia apice non caudato-acuminata; calcare involuto non abrupte inflexo.

A very common and variable species, probably not distinct from *I. urticaefolia*, but the inflorescence is more lateral on the plant, and the leaves more uniform, and less crowded upwards.

54. *I. PORRECTA* (Wall. Cat. 7275!). Humilis, pedalis, glaberrima, caule simplici basi repente radicante dein erecta, foliis pollicaribus longe petiolatis ovato-ellipticis acutis serrulatis basin versus biglandulosus, pedunculis paucis folio brevioribus 2–3-floris, bracteis setaceis, floribus eum calcare $1\frac{1}{2}$ pollicaribus flavis, sepalis parvis ovatis acuminatis, labello subconice saccato calcare sensim attenuato apice hamato terminato.

Hab. Paludibus temperatis montibus Khasiæ! Wallich, prope Kalapane, alt. 5000–6000 ped., *J. H. & T. T.* (fl. Aug.). (v.v.)

Species pulchra, *I. discolor* proxime affinis. *Caules* vix pedales, crassiusculi, ad basin petiolorum non glandulosi. *Folia* pauca, 6–8", petiolo $\frac{3}{8}$ –1". *Pedunculi* et pedicelli graciles. *Flores* pro planta magni, pallide aurei v. straminei, lineis rubris pulchre striati, vexillo dorso rostrato. *Capsula*?

In habit and structure of the flower this is very closely allied to *I. bella*, but has always several flowers on one peduncle, &c. (see notes under *I. bella*).

55. *I. BELLA* (H. f. & T.). Sparse puberula, uniflora rarius biflora, caulibus simpliciusculis 3–5" basi repentibus dein erectis, foliis 1–1 $\frac{1}{2}$ " paucis membranaceis longe petiolatis late ovatis subacutis crenulatis, pedicello erecto gracili pubescente medio bracteolato 1–2 flore, sepalis majusculis oblongo-lanceolatis acuminatis, labello conice saccato in calcare gracili torto puberulo producto, vexillo late obovato dorso cornuto alis bilobis lobo basali auriculæformi terminali obovato elongato.

Hab. Paludibus temperatis mont. Khasiæ! Griffith, Lobb; prope Kalapane alt. 5000 ped., *J. H. & T. T.* (fl. Aug.). (v.v.)

Planta pulcherrima, membranacea, sicca flaccida. *Caules* basi simplices v. ramosi. *Petioli* $\frac{1}{2}$ –1", pubescentes, nudi v. parce setosi. *Folia* subtus nitida, basi interdum glanduligera v. setosa. *Flores* tenerrimi, $\frac{2}{3}$ " longi, aurantiaci v. aurei, petalis labelloque intus purpureo-striolatis. *Ovarium* glaberrimum, $\frac{1}{3}$ ". *Capsula* elliptico-lanceolata, pubescens. *Semina* subrotunda, papilloso-pubescentia.

Closely allied to *I. porrecta*, Wall., which has always several flowers on each peduncle, but the bracts are narrower, the whole plant more membranous and pubescent, the lateral sepals are larger, and the long lobe of the alæ much longer.

56. *I. RACEMULOSA* (Wall. Cat. 7274!). Glaberrima, caule crassiusculo simplici v. basi ramoso foliis 1–2" petiolatis ovatis lanceolatisve acuminatis obtuse serratis eglandulosus, racemis folio brevioribus 6–8-floris, pedunculo flexuoso, bracteis oblongis, pedicellis gracilibus,

floribus $\frac{3}{4}$ " intense violaceis, sepalis majusculis oblique ovatis acutis, labello cymbiformi calcare breviusculo incurvo flore æquilongus, vexillo parvo orbiculari, alarum lobo postico maximo late semiorbiculari obtuso.

Hab. Locis udosis apertis temperatis et subtropicis montibus Khasiæ; alt. 4000–5000 ped.! *Gomez, Lobb, J. H. & T. T.* (fl. Jun.–Oct.) (v.v.)

Species pulcherrima, nullæ arcte affinis. *Caulis* 6–8". *Folia* membranacea, petiolo basi glandulis non stipulato. *Racemi* pollicares, omnes laterales, horizontaliter patentes. *Calcar* $\frac{1}{2}$ – $\frac{3}{4}$ ", arcuatum ascendens, apice obtuso. *Capsula* $\frac{1}{3}$ ", brevis, obovato-lanceolata, basi breviter attenuata, apice acuta, oligosperma; dehiscens ab apice. *Semina* parva.

This has the fruit of many species in § B, and the racemose flower of the *Racemosæ*.

57. *I. LATIFLORA* (*H. f. & T.*). Caule humili robusto puberulo, foliis petiolatis lanceolatis elliptico-lanceolatisve acuminatis crenato-serratis basi sæpiissime glanduloso-setigeris subtus glaucis, pedunculis erectis crassis bis terve divisis simplicibusve, bracteis dissitis lanceolatis, floribus magnis roseis, sepalis amplis late ovatis acuminatis, labello cymbiformi in calcar rectum v. paulo curvum gracile elongatum abrupte contracto, vexillo dorso alato.

Hab. Umbrosis subtropicis montibus Khasia ad Nunklow, alt. 3000–4000 ped. *Lobb, J. H. & T. T.* et ? Himalaya orientali tropica Sikkim, alt. 2000–4000 ped., *J. H.* (fl. Oct.).

Statura habitu plerisque notis *I. pulchræ* proxima, sed differt floribus conspicuis, calcare gracili elongato, non cum sepalo conico sensim continuo. *Flos* $1\frac{1}{2}$ –2" latus, pallide roseus v. violaceus; calcare 1; petalis patentibus amplis; vexillo orbiculari bilobo, alis bipartitis lobis patentibus antico obovato retuso postico semiovato acuto. *Capsula* et semina immatura sed *I. pulchræ* ut videtur similia.

The Sikkim specimens look different; they have broader leaves and single smaller flowers on ebracteolate peduncles, but from drawings of both, taken on the spot, I am unable to point out any further differences between them.

58. *I. PULCHRA* (*H. f. & T.*). Humilis, glaberrima, caule simplici, foliis 2–3" crassiusculis petiolatis elliptico- v. anguste lanceolatis acuminatis serratis subtus pallidis, pedunculis erectis crassis bis terve divisis simplicibusve, bracteis dissitis lanceolatis, floribus magnis, sepalis amplis late ovatis acuminatis, labello magno late infundibuliformi in calcar conicum apice circinatum attenuato, alis amplis, vexillo dorso alato.

Var. β. Foliis latioribus ellipticis v. ovato-lanceolatis nervis numerosis.

Hab. Umbrosis montibus Khasia regione temperata et subtropica alt. 5000 ped.! *J. H. & T. T.*—*Var. β.* Nepalia maxime orientali, alt. 4000–5000 ped.! *J. H.* (fl. Sept.–Nov.) (v.v.)

Species pulcherrima, caule crassiusculo simplici v. diviso 4-8". *Folia* basi interdum setigera, nervis primariis in var. α paucis sub 8, margine parallelis, in var. β , 8-12, divergentibus. *Flos* $1\frac{1}{2}$ " longus, pallide roseus v. stramineus, rubro striatus. *Capsula* elliptico-oblonga, erecta, polysperma. *Semina* parva, lanata?—*Flores* interdum solitarii. *Capsulae* et *semina* *I. linearis*.

This is similar in some respects to *I. acuminata*, Benth., but differs in the flowers being considerably larger, not umbellate, and the leaves broader; the sepals and petals also are of a very different form.

59. *I. FRUTICOSA* (*D.C. Prodr.* i. 687; *Wall. Cat.* 4762!). *Caule* erecto robusto ramoso, foliis 3-5" longe petiolatis pubescentibus subsericeis glabrativse ovato lanceolatis acuminatis serratis crenativse, petiolis 1-2 glandulosis tomentosis, pedunculis glabris folio brevioribus 3-5-floris, bracteis linearibus, pedicellis valde elongatis gracilibus, floribus amplis, sepalis magnis ovatis cuspidatis, labelli limbo brevi cymbiformi, calcare elongato curvo ascendente, vexillo late orbiculari bilobo, alis bipartitis segmentis divaricatis.—*Wight & Arn. Prodr.* 137; *Wight, Ic.* 966.

Hab. Sylvis montosis tropicis Malabarïe ad Kottergherry et Coonoor! (non alibi), *Wight* (fl. Aug. et Mart.).

Planta insignis, 8-pedalis, floribunda. *Caulis* ad cicatrices nodosus. *Folia* interdum glabra, sæpissime appresse pubescentia, glandulis petioli sessilibus. *Flores* $1\frac{1}{2}$ " lati, calcare 2-unciali. *Pedunculi* plerumque in pedicellos 3, 2-4 unciales divisos, vel umbellam 2-4-florem gerens. *Capsula* magna, $\frac{3}{4}$ " longa, anguste elliptica, rostrata, polysperma. *Semina* glabra.

60. *I. JURPIA* (*Ham. Wall. Cat.* 4761!). *Fruticosa*, caule elato ramoso, foliis 3-5" petiolatis oblique ovatis ovato-lanceolativse longe acuminatis serratis nervis subtus puberulis basi petioloque glandulosis, pedunculis axillaribus subterminalibusque gracilibus 2-4-floris, sepalis parvis, vexillo dorso cornuto, labello subconice saccato ventricoso in calcar subelongatum validum curvum contracto, alis labello minoribus.

Var. β . Mutica, calcare et cornu vexilli brevioribus.

Hab. Sylvis umbris tropicis Himalayæ centralis et orientalis, Nepal! *Hamilton, &c.*; Sikkim, alt. 3000-5000 ped.! *Griffith, &c.* (fl. Sept.-Nov.). (v.v.)

Caulis 5-8 pedalis, ramosus, crassiusculus, basi sublignosus; ramulis pubescentibus glabrisve, plerumque flexuosis. *Folia* submembranacea, supra nitida, glaberrima v. pilosula, setis glanduligeris basin versus gracilibus. *Pedunculi* 3-5", glabri v. puberuli. *Bractee* caducae. *Pedicelli* pollicares et ultra. *Flos* sordide albidus v. flavus v. aurantiacus, cum calcare rubro 2-pollicaris. *Sepala* acuta obcuneata dorso longe rostrata v. erostrata. *Capsula* anguste lineari-oblonga, pollicaris, glaberrima. *Semina* pauca, 4-6 apicem versus capsulae, parva, opaca, suborbicularia, tuberculata.

61. I. PUBERULA (*De Prodr.* i. 687; *Wall. Pl. As. Rar.* ii. 193; *Cat.* 4767 A). Plus minusve pubescens v. glabrata, caule elongato simplici v. ramoso, foliis 1-5" in petiolum attenuatis elliptico- v. ovato-lanceolatis utrinque acuminatis crenatis eglandulosis, pedicellis bracteolatis 1-4-floris solitariis v. binis gracilibus erectis axillaribus subterminalibusque floribusque violaceis pubescentibus, sepalis majusculis ovatis acuminatis, labelli limbo cymbiformi, calcare longo gracili curvo, alis patentibus, capsula lineari.

I. mollis, *Wall. in Roxb. Fl. Ind.* ii. 461.—I. hispidula, *Bth. Wall. Cat.* 4740!—I. insignis (in part.), *Wall. Cat.* 4766.

β. Pedunculis 2-4-floris.

Hab. Sylvis subtropicis temperatisque Himalayæ orientalis et centralis; Nepal! *Wallich*; Sikkim, 3000-6000 ped.! *J. D. H.*—β. Mont. Khasia, alt. 5000-6000 ped.! *J. H. & T. T.* (fl. June-Dec.). (v.v.)

Species variabilis, erecta, 1-3-pedalis; caule simplici v. parce ramoso.

Folia basi non ciliata v. setigera. *Pedunculi* 1-3 pollicares, basi bracteati. *Flores* I. flaccidæ? subsimiles. *Calcar* gracile, $\frac{1}{2}$ ". *Capsula* glaberrima, pollicaris. *Semina* (immatura) parva?.

In all *Wallich's* Nepal and our Sikkim specimens the peduncles are 1-flowered, in our Khasia ones 2-4-flowered.

c. Perennes. Epiphyticæ. *Caules* breves, crassi. *Folia* versus apices ramorum conferta. *Pedunculi* 2-3-flores. *Capsula* breves, rostratæ.

62. I. JERDONIÆ (*Wight in Madr. Journ. Sc.* v., *Ic.* t. 1602). Epiphytica, glaberrima, caule brevi procumbente radicante, ramis floriferis ascendentibus, foliis gracile petiolatis ovatis acutis sinuato-subseratis sinubus et apice setulosis, pedicellis gracilibus pedunculo longioribus, sepalis lanceolatis, labello longe saccato ventricosso, calcare brevi incurvo.—*Hook. Bot. Mag.* 79, t. 4739.

Hab. Ramis truncisque arborum Mont. Anamallay et Nilghiri ad Sispara Ghat! *Wight*.

Rami cicatricati. *Folia* $1\frac{1}{2}$ - $2\frac{1}{2}$ " longa, petiolo $\frac{1}{2}$ - $\frac{3}{4}$ ", utrinque glaberrima. *Pedunculi* cum pedicellis folia æquilonga. *Flores* rubri, labellum magnum inflatum, fere pollicare, vexillum alæque parvæ. *Sepala* petalis æquilonga, alæ oblique bilobæ, lobis imbricatis rotundatis. *Vexillum* galeatum.

This, as *Wight* observes, is most nearly allied to *I. Walkeriæ*. The latter I have been obliged to put in the racemose group of the order, though, with the present and two following, it forms the most natural section of the genus.

63. I. AURICULATA (*Wight in Madr. Journ. Sc.* v. p. 8. t. iii.). Epiphytica, glaberrima, caule brevi crassissimo nodoso articulado, foliis petiolatis ovatis ellipticisve acutis subseratis, pedunculis brevibus 2-floris, pedicellis gracilibus, sepalis maximis dependentibus, vexillo brevi concavo profunde bifido, labello longe saccato apice breviter calcarato.

Hab. Peninsulæ montibus prope Courtallam ! *Wight*.

Species valde singularis, *I. Jerdoniæ* arcte affinis sed caulibus crassioribus sæpe nodosis, pedunculis brevioribus, sepalis labello æquilongis, et calcare brevioribus.

64. *I. VIRIDIFLORA* (*Wight in Madr. Journ. Sc.* v. p. 9). Glaberrima, caule brevi crassissimo ramisque nodulosis, foliis crasse petiolatis ovato-lanceolatis acutis serratis, pedunculis brevibus bifloris, pedicellis gracilibus, sepalis linearibus, vexillo alte bilobo dorso alte carinato, labello conice subsaccato in calcar incurvum angustato.

Hab. Malabar ad Mont. Shivagerry ! *Wight*.

I. auriculata et *I. Jerdoniæ* arcte affinis ; sed caule crassiore, foliis majoribus, 3" long, nervis validioribus, sepalis lanceolatis, labelloque vix saccato sed in conum incurvum apice uncinatim calcaratum sensim attenuatum.

F. UMBELLATÆ et CAPITATÆ (vide p. 113).

Vide *I. Goughii*, *trilobata*, *sulcata*, &c., in § C ; *I. longicornu*, *racemosa*, et *bicornuta* in § G.

65. *I. BRACTEATA* (*Coleb. MSS. in Roxb. Fl. Ind. Ed. Carey*, ii. 458 ; *Wall. Cat.* 4760 !). Glaberrima, caule erecto parce ramoso, foliis longe petiolatis ovato-lanceolatis utrinque acuminate subseratis basi ciliatis, pedunculo terminali apice densifloro, bracteis magnis recurvis crinitis, floribus purpureis.

I. fimbriata, *Hook. Exot. Flor.* ii. t. 146.

Hab. Mont. Khasia paludibus subtropicis temperatisque, alt. 4000-6000 ped. ! *De Silva, Griffith, &c.* (fl. Jun.-Aug.). (v.v.)

Planta pulcherrima, pedalis et ultra ob. bracteas crinitas distinctissima. Flores purpurei. Exemplaria depauperata ludunt floribus fere ebracteatis v. bracteis subulatis.

66. *I. JANTHINA* (*Thwaites, En.* p. 68). Herbacea, pusilla, simplex, glaberrima, foliis 1-4 membranaceis ovatis late oblongisve acuminatis denticulatis, petiolo eglanduloso, sepalis oblongis subacutis, vexillo rotundato, labello, infundibuliforme in calcar incurvum sensim productum.

Hab. Ceylon ! *Walker*, regione tropica, *Thwaites*.

Species parvula, 3-5-pollicaris. Folia sæpissime 2 opposita 1-4" long. $\frac{1}{4}$ -2 lat. Pedunculus 2-3". Pedicelli breviter racemosi, bracteis ovalibus persistentibus. Flores pulchre violacei, $\frac{1}{2}$ - $\frac{3}{4}$ " lat. Capsula polysperma.

67. *I. LEUCANTHA* (*Thw. En.* p. 67). Herbacea, pusilla, simplex, foliis approximatis lanceolatis acuminatis denticulatis parce pilosis basin versus petioloque subalato glanduloso-setigeris, labello in calcar æquilongum rectum conicum apice (siccum) subabrupte attenuatum productum, alarum lobo posteriore parvo lanceolato, anteriore multo majore inæqualiter 3-partito apicibus rotundatis.—*Descr. Ex. Cl. Thwaites*.

Hab. Hinidoon and Kittoot Gala in Ceylon, *Thwaites*.

“*Ab I. appendiculata*, quæ valde similis affinisque calcaris petalorumque forma præcipue differt. *Flores* albi, sepalò anteriore rufo-galeato.”—*Thw.*

I have not seen *Thwaites'* specimens, but fear I may have confounded this species with *I. appendiculata*.

68. *I. LINEARIS* (*Arn. in Hook. Comp. Bot. Mag.* ii. 323). Humilis, glaberrima, caule simplici robusto, foliis approximatis anguste lineari-lanceolatis acuminatis serratis subcoriaceis, bracteis ovatis acuminatis, pedicellis filiformibus, sepalis breviusculis ovatis acuminatis, labello concavo brevissime calcarato, vexillo brevi dorso cornuto, alis magnis bipartitis segmento laterali minore terminali magno obovato unguiculato.

Var. β . Foliis petiolatis elliptico-lanceolatis.

Hab. Sylvis montosis subtropicis Ceyloniæ, alt. 4000–6000 ped. ! *Walker, &c.*

Caules subcæspitiosi, 4–6". *Folia* 2–3" in petiolum brevem angustata. *Flores* $\frac{3}{4}$ " longi. *Capsulæ* ellipticæ, glaberrimæ.

69. *I. APPENDICULATA* (*Arn. in Hook. Comp. Bot. Mag.* ii. 323.). Herbacea, pusilla, glabra v. pilosula, foliis approximatis v. verticillatis petiolatis ovatis lanceolatisve utrinque acuminatis setuloso-serratis membranaceis, pedunculis elongatis, bracteis lanceolatis, pedicellis filiformibus, sepalis ovatis oblongisve, labello parvo saccato apice breviter calcarato, vexillo parvo gibbo, alis bipartitis.—*Thwaites, En.* 47.

α . Foliis oblongo-lanceolatis acuminatis, pedunculis folia superantibus.

β . Foliis ovatis, pedunculis foliis brevioribus.

γ . Foliis 3–5 ovatis verticillatis pubescentibus.

δ . Foliis verticillatis anguste elliptico-lanceolatis.

Hab. Sylvis montosis subtropicis Ceyloniæ ! *Walker, &c.*

Species parvula, variabilis, 4–8". *Folia* flaccida, 1–6". *Flores* valde membranacei, “albidi v. pallide rosei; vexillum transverse rubro-striatum, alis bilobis; lobo, antico parvo lanceolato longe caudato, posticis majore, semicordato acuminato.”—*Thw.*

70. *I. UMBELLATA* (*Heyne in Roxb. Fl. Ind. Ed. Wall.* ii. 464; *Wall. Cat.* 4759 !). Humilis, caule simplici longe nudo, foliis breve petiolatis subverticillatis ovatis obtusis acutisve crenato-serratis, pedunculis erectis foliis subæquilongis, bracteis oblongis obtusis, floribus amplis, sepalis late ovatis acutis, labelli lamina parva cymbiformi, calcare elongato gracili incurvo, vexillo orbiculari emarginato, alis subhorizontaliter patentibus bilobis lobis obtusis.—*Wight & Arn. Prodr.* 137; *Wight, Cat. N.* 745; et in *Madr. Journ. Sc.* v. p. 9. t. iv.

Hab. Sylvis tropicis montosis Malabariæ, prope Courtallum ! *Wight* (fl. Aug.–Sept.).

Herbacea, 4-12'', glabra. *Radix* tuberosa (ex *Wight*). *Folia* 1-4'', obtusa, crenata. *Flores* 5-6, sub $\frac{2}{3}$ lati. *Capsula* breviter elliptica, glabra. *Semina* echinata (*Wight*).

71. I. SUBCORDATA (*Arn. in Hook. Comp. Bot. Mag.* ii. 323). Caule simplici longe nudo v. basi repente ramoso, foliis longe petiolatis ovatis v. ovato-lanceolatis subacutis v. acuminatis basi cordatis rotundatisve grosse crenatis, pedunculis folio brevioribus, bracteis ovato-lanceolatis acuminatis, pedicellis gracilibus, sepalis oblongo-ovatis acuminatis majusculis, labelli lamina cymbiformi acuminata calcare elongato acuminato gracili incurvo, alis latis.—*Thw. En.* 67.

Hab. Sylvis montosis subtropicis Ceyloniæ, alt. 5000-6000 ped.! *Walker*, &c. (fl. Sept., Oct.).

Species variabilis. *Caules* 4-10''. *Folia* 1-3'', obtusa v. acuta, petiolo elongato. *Flores* albid, sepalis rufescentibus. *Capsula* parva, $\frac{1}{3}$ unc. longa.—*I. umbellatæ* valde affinis, differt bracteis acutioribus folisque basi cordatis v. rotundatis.

72. I. UNCINATA (*Wight in Madr. Journ. Science*, v. p. 11. t. vi., *Icones*, t. 747). Caule erecto, foliis 2-3'' longe petiolatis ovatis ovato-cordatisve acuminatis serratis supra nervis pubescentibus subtus glaberrimis, petiolo apice glanduloso, pedunculis axillaribus elongatis erectis, bracteis parvis, floribus 4-8 mediocribus approximatis, pedicellis brevibus, sepalis amplis oblique ovatis acuminatis, labello subhemispherico calcare brevi ventricoso basi constricto apice uncinato, vexillo oblongo, alis bipartitis.

Hab. Sylvis tropicis Malabariæ, ad Courtallam! *Wight* (fl. Aug., Sept.). *Caules* graciles. *Petioli* 1-2''. *Pedunculi* foliis breviores, 3-4''. *Pedicelli* $\frac{1}{3}$ '' . *Flores* sub 1'' longi. *Alæ* lobo antico minore horizontaliter patente, postico semiovato obtuso. *Capsula* brevis, rostrata, oligosperma.

73. I. VISCIDA (*Wight in Madr. Journ. of Science*, v. p. 12, *Icones*, t. 746). Caule gracili erecto basi repente radicante angustato, foliis 2-3'' longe petiolatis ovatis acuminatis serratis nervis utrinque hispidulis, pedunculis axillaribus erectis filiformibus viscidis 2-4-floris, bracteis majusculis ovatis acuminatis, pedicellis breviusculis approximatis, floribus majusculis, sepalis amplis late ovatis longe acuminatis, labello brevi cymbiformi calcare longo gracili incurvo, vexillo oblongo acuminato, alis bipartitis lobis, semiovatis.

? An *I. cordata*, *Wight in Madr. Journ. Sc.* v. p. 10.

Hab. Montibus subtropicis Pulney Malabariæ, alt. 5500 ped.! *Wight*. *Caulis* ut videtur flexuosus. *Petioli* 1-3''. *Pedunculi* 4-5'', graciles. *Bractææ* $\frac{1}{4}$ '' longæ. *Flores* rosei v. purpurascetes. *Capsula* elliptica, acuta, polysperma. *Semina* orbiculata, pilosa.

The *I. cordata*, *Wight*, from Dr. *Wight's* specimens, collected in the Shevagherry Hills, appears to differ from *I. viscida* only in the subcordate base of the leaves.

74. *I. ACUMINATA* (*Benth. in Wall. Cat.* 4754 !). Humilis, glaberrima, caule crasso simplici, foliis approximatis longe lanceolatis in petiolum angustatis acuminatis sinuato-crenatis subcoriaceis subtus glaucis nervis margine subparallelis, pedunculis axillaribus crassiusculis, bracteis magnis late ovatis obtusis, floribus magnis, sepalis majusculis oblique ovato-cordatis obtusis acuminatisve, labello limbo cymbiformi acuminato, calcare elongato sensim angustato incurvo, vexillo orbiculato, alis bipartitis.

Var. *α*. Foliis lanceolatis longius petiolatis apice elongatis.

Var. *β*. Foliis angustioribus interdum 6-pollicaribus.

Hab. Rupibus madidis Mont. Khasia regione subtropica, alt. 4000-5000 ped. ! *De Silva*, &c. (fl. Aug., Sept.). (v.v.)

Habitu *I. lineari* proxime affinis, sed major floribusque diversissimis.

Caules cæspitosi, 5-14", stricti, erecti. *Folia* $\frac{1}{2}$ -1" lata, subtus pallida.

Flores speciosi, pallide rubri, pollicares. *Capsulae* breves, erectæ, $\frac{1}{3}$ ", oblongæ, subacutæ. *Semina* minima, lana fusca immersa !

75. *I. HOOKERIANA* (*Arn. in Hook. Comp. Bot. Mag.* ii. 324). Fruticosa, perennis, ramis crassis, foliis petiolatis carnosulis 3-6" ovalibus acutis acuminatisve crenato-serratis, petiolis apice biglandulosis, pedunculis robustis erectis elongatis, floribus maximis 4-6 longe pedicellatis umbellatis, sepalis majusculis oblongo-lanceolatis, labelli limbo parvo cymbiformi abrupte in calcar crassum elongatum attenuatum contracto, petalis amplis, vexillo orbiculari.—*Bot. Mag.* 79, t. 4704.

? *I. biglandulosa*, *Moon, Cat.* 18.

Hab. Montibus tropicis Ceyloniæ, alt. 3000-5000 ped., *Walker*, &c.

Species magnifica, elata, glaberrima. *Rami* crassitie digiti. *Petiol* 2-5", apicem versus glandulis 2-stipitatis. *Folia* multinervia. *Pedunculi* crassi, 4-6". *Bractea* decidua. *Pedicelli* 1-2". *Flores* speciosi, 2" lati, calcare interdum 2" curvo; petalis lateralibus et vexillo subæqualibus, margine crispatis, albis? rubro-striatis. *Capsula* pro planta parva, $\frac{3}{4}$ " elliptico-lanceolata gibba, glabra.

76. *I. grandis* (*Heyne in Wall. Cat.* 4759 !).—*Arn. in Hook. Comp. Bot. Mag.* 324, *Madr. Journ. of Science*, v. t. iv.

Hab. Mont. tropicis Malabaræ! *Heyne*, et? Ceyloniæ, *Walker*.

Omnia *I. Hookerianæ*, sed labello conico-infundibuliformi in calcar 2-pollicare sensim attenuatum, et petalo postico minore.

Thwaites suspects that this does not differ specifically from *I. Hookeriana*, and I have no doubt that he is right.

77. *I. CAMPANULATA* (*Wight in Madr. Journ. of Sc.* v. 11. t. vii., *Icones*, t. 744). Erecta, caule robusto, foliis 4-6" petiolatis late ovato-v. elliptico-lanceolatis acuminatis setuloso-serratis subtus glaucis, pedunculis axillaribus crassiusculis suberectis 3-4-floris foliis brevioribus, floribus umbellatis, bracteis magnis ovato-lanceolatis, floribus magnis, sepalis

amplis oblique ovatis rostrato-acuminatis, labello parvo cymbiformi calcare perbrevis incurvo, vexillo orbiculari mucronato, alis bipartitis.

Hab. Montibus subtropicis Pulney Malabariæ, alt. 5500 ped., *Wight*.

Caulis subramosus, herbaceus. *Folia* eglandulosa. *Pedunculi* 3".

Bractea $\frac{1}{2}$ – $\frac{3}{4}$ ". *Flores* $1\frac{1}{2}$ " longi, subcampanulati, pallide purpureo-maculati. *Capsula* elliptica, utrinque attenuata, glaberrima. *Semina* plurima, creberrime echinata.

Very similar in many points to *I. lævigata*, but the common peduncles of the flowers are much longer, and the habit is very different.

78. *I. LÆVIGATA* (*Wall. Cat.* 4753!). *Caule* elato robusto fruticoso, foliis 4–6" breve v. longe petiolatis oblongo- v. obovato-lanceolatis longe acuminatis late crenato-serratis basi petiolove glandulosis, pedunculis axillaribus terminalibusque brevibus 2–3-floris, floribus flavis, bracteis oppositis sepalisque amplis late ovatis rotundatisve acuminatis, labello conice saccato ventricoso calcare breviusculo uncinato terminato.

Hab. Sylvis umbrosis subtropicis tropicisve Himalayæ orientalis ad Sikkim, alt. 2000–4000 ped. ! Montibus Khasia, alt. 3000–5000 ped. !

De Silva, &c. (fl. Jul.–Oct.). (v.v.)

Caulis 4–6-pedalis, lignosus, ramosus; ramis nodosis, glabris puberulisve.

Folia basi sæpius obliqua, luride viridia. *Pedunculi* $\frac{1}{2}$ –1", robusti.

Flores subcampanulati, flavi v. sordide straminei, rubro-striati, 1– $1\frac{1}{4}$ " longi. *Capsula* ignota.

Species ob staturam, ramos lignosos, pedunculos breves 2–3-flores, bracteas magnas, flores flavidos, sepala ampla facile recognita.

A tall branched suffruticose species, with much of the habit of *I. Jurpia*, but readily distinguished by the large orbicular outer sepals.

79. *I. TAVOYANA* (*Benth. Wall. Cat.* 4773!). *Humilis*, caule crassiusculo basi nudo, foliis 3–3" petiolatis ovatis acutis v. longe acuminatis integerrimis v. remotiuscule setoso-serrulatis basi longe setosis, pedunculis gracillimis foliis longioribus 8–14-floris, bracteis setaceis, pedicellis gracilibus; floribus parvis, sepalis subulatis, labello cymbiformi purpureo striato calcare recto subulato æquilongo, alis longe unguiculatis, capsula parva angusta lanceolata utrinque attenuato-acuminata oligosperma.

I. Tavagua, *Benth. sphalm. in Steud. Nomen*.

Hab. Peninsula Malayana ad Tavoy Gomez, Moulmein ! *Lobb*.

Species elegans, parviflora, *Circeæ* habitu, glaberrima. *Caules* simplices v. ramosi, 3–6". *Folia* pallide viridia, nitida, ut videtur flaccide membranacea; nervis paucis tenuibus. *Pedunculi* 3–4". *Pedicelli* capillares, pollicares. *Flores* pallide straminei vix $\frac{1}{2}$ " longi, vexillo ut videtur dorso breviter rostrato; alarum lobo terminali semiobovato, apice uncinato. *Capsula* sub $\frac{1}{3}$ " longa, torulosa, 2–3-sperma. *Semina* oblonga, compressa, opaca.

G. RACEMOSÆ (vide p. 113).

§ a. *Racemi* multiflores, pedicellis interrupte verticillatis, v. fasciculatis.

80. I. RACEMOSA (*Wall. Cat.* 4730! in part., non *Don, Prodr.*). Glaberrima, caule gracili simpliciusculo erecto, foliis 3-5" petiolatis lanceolatis v. elliptico-lanceolatis utrinque acuminatis apice caudatis grosse crenatis, pedunculis elongatis strictis gracilibus multifloris pedicellis verticillatis gracilibus bracteis parvis ovato-subulatis, sepalis minimis labello longe conice saccato in calcar curvum attenuato, vexillo orbiculato, alarum lobo terminali brevi v. elongato ligulato v. caudato; capsula lineari.—? *Edgeworth in Linn. Trans.* xx. 41.

I. micrantha, *Don, Prodr.* 205?

β?. Floribus majoribus, lobo terminali petalorum ligulato porrecto.

γ, *polyceras*. Bracteis majoribus sepalis apice labelli et dorso vexilli in cornu glanduloso-incrassatum productis.

Hab. Sylvis Himalayæ temperatæ, alt. 7000-10,000 ped., Nepal! *Wallich*; Sikkim! *J. D. H.*; β, Sikkim! alt. 7000-10,000 ped., et in Montibus Khasia, alt. 5000-7000 ped.! *J. H. & T. T.* (fl. Jul.-Sept.). (v.v.)

Herba 2-4-pedalis. *Folia* 4-6", grosse crenata, sinubus setigeris, petiolis basi sæpe glanduligeris. *Racemi* 3-6", stricti, pedicellis 1", verticillatis. *Bracteæ* basi ovatæ, apice sæpius elongato glanduloso-incrassato. *Flores* sub $\frac{1}{2}$ - $\frac{3}{8}$ " longi, pallide flavi v. pallide sordide lilacini. *Calcar* rectum v. paulo curvum, interdum apice bifidum. *Capsula* $\frac{3}{4}$ -1", apiculata, æqualis, teretiuscula. *Semina* opaca.—Variat ut videtur lobo inferiore alarum brevi v. elongato et porrecto.

Under *I. racemosa* in Wallich's Herbarium there are at least three plants, viz., the *I. leptoceras* and two others, which appear to differ chiefly in the racemes of one being interruptedly whorled, and of the other continuous: as Mr. Edgeworth has described the latter under the name of *I. tingens*, I have retained Wallich's name for the former.

The *I. tingens*, Edgeworth, appears to differ in no respect from this and from specimens marked *I. racemosa* in *Wall. Herb.*, except in the flowers not being verticillate, and in the remarkable character of the posticous lobes of the lateral petals (alæ) being included in the spur, which I cannot but regard as an anomalous character. The whorled pedicels, numerous long erect racemes, small flowers and straight spur best distinguish *racemosa*. The var. γ approaches very closely *I. leptoceras*, var. θ; γ is distinguished only by the whorled inflorescence.

81. I. BICORNUTA (*Wall. in Roxb. Flor. Ind.* 11. 461, *Cat.* 4729 & 4765 in *Herb. Henslow*). Erecta, ramosa, foliis amplis approximatis ovato-acuminatis grosse crenato-serratis, racemis confertis erectis elongatis interruptis, pedicellis fasciculatis verticillatisque, floribus 1", lilacinis, sepalis late ovatis, labello inflato incurvo ascendente ore apicem versus in cornu producto, calcare brevi recurvo, capsula cylindrica.

I. longicornu, *Str. & Wint. Herb.* no. 4.

Hab. Himalaya centrali et occidentali Garwhal! *Strachey & Winterbottom*; Nepal! *Wallich* (fl. temp. pluv.).

A large-leaved, membranous, flaccid, very much branched species, but distinguished by the inflated saccate incurved labellum, rather suddenly terminating in a short recurved spur, as also by the long, erect, slender racemes, with whorled peduncles, slender capsules, and large pale lilac flowers. The petals terminate in long slender tails.

82. *I. LONGICORNU* (*Wall. Cat.* 4729, non *Flor. Ind.*). Erecta, ramosa, glabra, foliis alternis ovatis ovato-lanceolatisve glanduloso-stipulatis grosse crenato-serratis dentibus setigeris, pedunculis lateralibus et versus apices ramulorum fasciculatis erectis strictis elongatis multifloris, floribus versus apices pedunculi corymbosis racemosive 1" long. bracteis ovato-subulatis, sepalis parvulis oblique ovatis, labello longe saccato obtuso v. conico v. abrupte cornuto, capsula lineari-elongata recta stricta cum pedunculo directione continua.

a. Labello conice saccato, in calcar gracile incurvo attenuato.—*I. longicornu*, *Wall. Cat.* 4729, *Herb. Henslow et Lindley*.

β, *umbrosa*. Labello subcylindrico saccato in calcar breve tenue incurvum abrupte desinente.—*I. umbrosa* et *I. amphorata*, *Edgew. in Linn. Trans.* xx. 39; *I. picta*, *Floral Cabinet*, t. 128, fid. *Herb. Lindley*: ad *I. sulcatam* tendit.

γ, *cristigera*. Labello ut in *a*, floribus luteis aureisve rubro-venosis.—*I. cristigera*, *Edgw. MSS.* an sp. distincta?

δ, *bicolor*. Labello inter *a* et *β* media, petalisque aureis, petalo antico roseo.—*I. bicolor*, *Royle, Ill.* p. 151. t. 28.

ε, *pallens*. Floribus minoribus pallidis, labello ut in *a*.—*I. pallens*, *Edgw. in Linn. Trans.* xx. 39.

Hab. In Himalaya temperata media et occidentali, alt. 5000–10,000 ped., ad Nepal! *Wallich*, ad Marri! *Fleming*.—Var. *α*, Nepal! ad Marri! *β*, in Himalaya boreali occidentali tota; var. *γ*, in Kulu! *Edgeworth*, et Kashmir! *T. T.*; var. *δ*, Simla et Mussooree, *Royle*; var. *ε*, Garwhal, 4000–8000 ped.! *Edgeworth* (fl. temp. pluv.). (v.v.)

The *I. longicornu* of Wallich in Roxburgh's 'Flora Indica,' is not the plant of his Herbarium, no. 4729 in *Herb. Lindley et Henslow*, which latter differs from his description in the leaves being broader, not crowded towards the ends of the branches, nor linear-lanceolate; nor does it agree with Wallich's description in being a fleshy species with approximate ventricose joints, a leafy subfastigate panicle, and an exceedingly long filiform spur thrice the length of the pedicel, all which characters agree much better with *I. insignis*, Wall. The yellow fragrant flowers of the *I. longicornu*, described in 'Flora Indica,' are, however, unlike *I. insignis*, and suggest its being the *I. odorata*, Ham. (in *Don, Prodr.* 203), in the *I. leptoceras*, Wall., of which one Nepal specimen in *Herb. Henslow* (4760) well agrees with Wallich's character of *I. longicornu*. It is evident, I think, that three species have become mixed up

in Wallich's published description, 'Catalogue,' and original Nepalese MSS., and that these three include that to which we now confine the name of *longicornu* together with *I. leptoceras* and *I. insignis*.

The best characters for this species are the erect branching habit, alternate leaves, long erect peduncles, with subumbellate or shortly racemose large flowers, small lateral sepals, and the labellum well developed into a long sac, which is either conical or broadly cylindric and blunt, ending in a slender spur, and especially by the narrow capsule, which forms a straight line with the peduncle, and is neither inclined nor nodding. The flowers vary greatly in number, dimensions, and colour. Small states are difficult to distinguish from various congeners, according as their habit and the colour of the flowers inclines to one or another, as to *I. laxiflora*, *bicornuta*, *sulcata*, and *Roylei*. When the flowers are simply racemose, it is not easy to distinguish this from *I. laxiflora*.

b. *Racemi* continui (non interrupti v. verticillati) pedicellis plerumque alternis. *Calcar* elongatum.

* *Malabar et Ceylon.*

83. *I. MACULATA* (*Wight in Madr. Journ. Sc.* vii. 12). *Caule* ramoso sicco profunde sulcato piloso, foliis alternis longe petiolatis estipulatis ovato-lanceolatis serratis utrinque pilosis junioribus subtomentosis, pedunculis robustis rigidis elongatis multifloris, pedicellis horizontalibus, sepalis magnis late ovato-oblongis, vexillo parvo, labello conico in calcar gracile elongatum desinente, capsula brevi.

Hab. Malabar ad Mont. Shevagherry! *Wight* (fl. Aug.).

Species pulchra, *I. elongatæ* et *cornigeræ* affinis, caulibus foliisque longe albo-pilosis racemisque validis elongatis multifloris facile distinguenda. *Caules* 2-3-pedales? sicco rigiduli, flavi, profunde sulcati. *Folia* cum petiolo 1-2-pollicari, 4-6" long., 1½-2" lat., membranacea, subobtusè serrata, basi nuda v. secus petiolum glandulis magnis sessilibus stipitatisve ornatis. *Racemi* interdum spithamæi, pedunculo stricto simplici v. diviso, bracteis brevibus late ovatis, pedicellis gracilibus, ¾-1". *Flores* cum calcare subpollicares. *Capsula* ½" long., medio turgida, acuminata, glabra. *Semina* pilis brevibus pustulata.

84. *I. WALKERI* (*Hook. Comp. Bot. Mag.* ii. 324. t. xviii.). *Erecta*, subramosa, foliis 2-3" ovato-lanceolatis utrinque acuminatis setosè serrulatis, pedunculis folio sublongioribus 6-8-floris, bracteis late ovatis acutis, pedicellis gracilibus elongatis erectis, floribus pollicaribus coccineis, sepalis parvis ovato-cordatis, labello longe late ventricosò incurvo brevissime calcarato, alis parvis bipartitis.

Hab. Sylvis subtropicis montosis Ceyloniæ, alt. 5000-6000 ped. ! *Walker, &c.*

Species distinctissima ob sepalum posticum longe ventricosum saccatum incurvum petalæque parva coccinea. *I. Jerdoniæ* proxime affinis.—
Caules 1-2-pedales.

85. *I. ELONGATA* (*Arn. in Hook. Comp. Bot. Mag.* ii. 324). Caule robusto, foliis 2-3" approximatis petiolatis lineari- v. ovato- v. obovato-lanceolatis ellipticisve acuminatis argute serratis coriaceis, pedunculo longissimo robusto, racemo elongato, bracteis ovatis oblongisve subacutis, sepalis ovato-oblongis acuminatis, labello cymbiformi calcare gracili elongato incurvo, vexillo parvo, alis bilobis, capsula brevi elliptica.—*Thwaites, En.* p. 67.

Hab. Sylvis montosis subtropicis Ceyloniæ! alt. 3000-4000 ped., *Walker, &c.*

Species distinctissima, pedalis et ultra. *Folia* subcarnosa, subtus pallida, minute punctulata, nervis validis. *Pedunculus* 6". *Racemus* 3". *Flores* 1", rubri. *Alarum* lobus anticus parvus, sepalis æquilongus, postico "multo majore oblique rotundato."—*Thw.*

86. *I. CORNIGERA* (*Arn. in Comp. Bot. Mag.* i. 323). Glaberrima, caule simpliciusculo longe nudo, foliis 3-6" ellipticis lanceolatisve obtusis longe acuminatisve in petiolum brevem angustatis crenatis sinubus setuligeris subtus pallidis, pedunculis elongatis multifloris, bracteis late ovatis acutis, pedicellis gracilibus, floribus flavis (cum calcare $\frac{3}{4}$ " long.), sepalis parvis ovato-cordatis acuminatis, labello infundibuliformi in calcar mediocri apice circinato attenuato, vexillo obovato acuto.—*Thw. En.* p. 67.

Hab. Sylvis montosis subtropicis Ceyloniæ; alt. 2000-4000 ped.! *Walker, Gardner, &c.*

Species primo intuitu calcare apice circinato, et capsula brevi oligosperma valde distincta, sed foliis variabilis. *Caulis* pedalis. *Folia* interdum late elliptica grosse crenata subtus subglabra, petiolo $\frac{1}{4}$ -1". *Pedunculi* foliis longiores. *Racemus* regularis, floribus nempe subæquidistantibus, bracteisque omnibus consimilibus. *Pedicelli* vix 1", patuli. *Flores* membranacei. *Capsula* brevis, $\frac{1}{3}$ " longa, compressa, elliptica, utrinque acuminata, oligosperma. *Semina* 2, orbicularia, compressa, nitida.

The habit of this is that of *I. uncinata*, *subcordata*, and others of the unbellate section, but the inflorescence is decidedly racemose.

**** *Mont. Himalaya et Khasia.*

87. *I. INSIGNIS* (*DC. Prodr.* 1688; *Wall. Plant. As. Rar.* ii. p. 83. t. 194, *Cat.* 4760! bis!). Caule simpliciusculo robusto erecto, foliis (6-poll.) subcoriaceis lineari v. oblongo-lanceolatis basi attenuatis apice acuminatis grosse serratis dentibus apice setigeris, pedunculis 6-8 terminalibus robustis erectis elongatis 10-15-floris, bracteis caducis, sepalis amplis oblique ovatis aristato-acuminatis, labello conice saccato in calcar elongatum gracile attenuato.

I. racemosa, *Don!* *Prodr.* 203—*I. insignis!* *Wall. Cat.* 4766 e *Nepal. in Hb. Linn. Soc.*

Hab. Montes Sylhet, *Wall. in Herb. Linn. Soc.!* Himalaya centrali *Nepal, Wallich. fid. Plant. As. Rar.*

Species robusta, 2-3-pedalis, insignis. *Folia* angusta. *Flores* rosei. Cf. notulæ sub *I. longicornu*.

88. *I. TINGENS* (Edgw. in *Linn. Trans.* xx. 41!). Caule erecto gracili ramoso, foliis 2-4" membranaceis ovatis lanceolatisve utrinque acuminatis apice caudatis crenatis dentibus basi setigeris, pedunculis numerosis lateralibus et subterminalibus gracillimis erectis multifloris, bracteis subulatis, pedicellis capillaribus, floribus parvis ($\frac{1}{4}$ - $\frac{1}{2}$ ") flavis, sepalis parvis ovatis obtusis, labelli sacco conico in calcar mediocriterectum v. curvum sensim attenuato, vexillo orbiculari dorso mutico, alarum lobo terminali caudato.

I. micrantha, Don, *Prodr.* fid. Arn. in *Hb. Hook.*—*I. racemosa*, Wall. *Cat.* 4730 in part.

Hab. In Himalaya temperata tota, alt. 5000-12,000 ped. a Simla! Comta. *Dalhousie*; ad Sikkim! *J. D. H.*; Montibus Khasia, alt. 5000-7000 ped.! *Lobb*, &c. (fl. temp. pluv.). (v.v.)

Species distinctissima, etsi characteribus a sequenti ægre distinguenda. *Caules* 2-4-pedales. *Folia* basi glandulis crassis sæpissime stipulata. *Pedunculi* 2-4", valde graciles (ut in *I. brachycentra*). *Pedicelli* $\frac{1}{4}$ ", gracillimi. *Flores* inter minimos. *Calcar* forma et longitudine varium. *Capsula* lineari-clavata, lævis, $\frac{3}{4}$ ", acuminata. *Semina* pauca, minuta, atra, pyriformia, rugosa.

In some of the specimens I find the posticous lobes of the lateral petals (which are extremely variable in form and shape) included in the spur, as described by Edgeworth; in others they are free, and I am disposed to regard the former arrangement as owing to an anomalous form of the petals, which are normally simply and shortly 2-lobed, as in *I. racemosa* and others.

89. *I. LONGIPES* (*H. f. & T.*). Glaberrima, caule gracili elato ramoso, foliis (3-4") alternis breve petiolatis ovato-lanceolatis longe acuminatis grosse crenatis sinubus setigeris, pedunculis subterminalibus axillaribusque longissimis gracillimis arcuato-patentibus apice racemosis 5-8-floris, bracteis lanceolatis caducis, pedicellis brevibus gracilibus, floribus flavis cum calcare pollicaribus, sepalis 2-4 parvis ovato-oblongis acutis, labello infundibuliformi in calcar subelongatum hamatum attenuato, alis in caudam tortam elongatis, capsula lineari.—An *I. urticifolia*, Wall. var.?

Hab. Sylvis temperatis Himalayæ, alt. 8000-10,000 ped.; Kumaon! *Str. & Wint.* (5); Sikkim! *J. D. H.* (fl. Jul.). (v.v.).

A tall branched delicate species, with alternate leaves and axillary, very long patent filiform arched peduncles, bearing at the very extremity three to six pale-yellow, narrow flowers, about $1\frac{1}{4}$ inch long, a good deal like some states of *I. leptoceras*. The labellum is of the form of a cornucopia, being a long slender cone or funnel, with an incurved slender spur. The lateral petals are linear, twisted, and as long as the spurred sepal. It differs from *I. urticifolia*, Wall. (of which I expect it is a variety), in the longer peduncles, smaller, more slender flowers, and form

of the spurred sepal and spur. Strachey and Winterbottom's specimen has much shorter peduncles than the Sikkim ones.

90. *I. URTICIFOLIA* (Wall. in Roxb. *Fl. Ind.* ii. 457, *Cat.* 4768). Glaberrima, caule elato gracili ramoso, ramis flexuosis, foliis sessilibus petiolatisque petiolo alato anguste ovato- v. oblongo-lanceolatis apice acuminatis vel caudatis crenato-serratis membranaceis, pedunculis lateralibus et terminalibus gracilibus patentibus folio brevioribus longioribusve 2-5-floris, pedicellis breviusculis bracteis, majusculis caducis, sepalis late ovatis acuminatis, labello saccato oblique conico ecalcarato vel calcare brevi incurvo subæquilongo terminato, alis caudatis, capsula lineari acuminata torulosa.

Var. *a*. Foliis ovatis, pedunculis lateralibus, floribus flavis, Wall. *Cat.* 4768 (*Herb. Henslow.*).

Var. *β*. Foliis ovato-lanceolatis longe caudato-acuminatis, pedunculis numerosis lateralibus terminalibusque 2-4-floris foliis brevioribus, floribus pallide cæruleis. (An una cum var. *γ* species distincta?)

Var. *γ*. Foliis ovato-lanceolatis grossius crenatis, pedunculis validioribus, bracteis elongatis, floribus albis v. pallide rubro-purpureis.

Hab. Sylvis umbrosis temperatis Himalayæ; *a*, Nepal! Wallich; *β*, Sikkim, alt. 8000-10,000 ped.! *γ*, Sikkim, 10,000-12,000 ped.! J. D. H. (fl. Aug.). (v.v.)

Species pulchra, 3-4-pedalis, vage ramosa. *Folia* longe caudato-acuminata et basi longe angustata; ob pedunculos sæpe 1-floros vel laterales et terminales inter hanc sectionem et § E osculat. *Petiolii* non glanduligeri, nec basi stipulati. *Pedunculi* gracillimi, 1-3'', patentés. *Flores* mediocres, pallide cærulei. *Capsula* pollicaris, seminibus 1-seriatis. *Semina* magna, oblonga, fusca, testa lævi.

This is a very puzzling plant: Wallich's characters do not well agree with those of his no. 4768 in *Herb. Henslow* as to the leaves, which are shorter and broader than the description indicates. The flowers of the Nepal plant are yellow, but in the Sikkim varieties lilac, white, or purple. The leaves vary in size from 2-6 inches, and the peduncles, which are axillary and terminal, vary quite as much; generally they are very slender, patent, and filiform, but in var. *γ* often stout and erect, with large persistent subulate bracts. I find four lateral sepals in var. *γ*, of which the two accessory are often reduced to hairs. The spur is sometimes wholly absent in Sikkim specimens. The much greater size of the flowers, and their broad spurred labellum, sepal, and broad petals distinguish this from *I. longipes*, which is its nearest ally.

91. *I. LEPTOCERAS* (DC. *Prodr.* 1, 688, Wall. *Cat.* 4770). Glaberrima, caule erecto simplici v. ramoso folioso, foliis 2-5'' ovatis lanceolatisve utrinque attenuatis breve petiolatis setuloso-serratis, pedunculis axillaribus subterminalibusque erectis gracilibus, bracteis ovato-lanceolatis acuminatis, floribus (cum calcare) $\frac{3}{4}$ -1'' longis, sepalis mediocribus late ovatis subulato-acuminatis, labello infundibuliformi in calcar gracillimum incurvum v. rectum attenuato, capsula gracili lineari-clavata.

- I. longicornu*, Wall. MSS. non Cat., et *Flor. Ind. Ed. Carey*, ii. 462.—
I. racemosa, Wall. Cat. in parte.
 Var. α . Caule crasso nodoso, foliis anguste lanceolatis 2-5'', alarum lobo inferiore pendulo ter longiore quam lato latere gibbo.—*I. leptoceras*, Wall. Cat. 4770.—*I. longicornu*, Wall. in Roeb. *Flor. Ind.* ii. 462.—*I. odorata*, Don, *Prodr.* 213.
 Var. β . Foliis ovatis 1-2'', alarum lobo inferiore lineari elongato obtuso.
 Var. γ . Floribus flavis purpureo-maculatis.
 Var. δ . Foliis lineari-lanceolatis floribus stramineis, alarum lobis rotundatis v. inferiore acuminato apices versus violaceis.
 Var. ϵ . Foliis amplis flaccidis, floribus albis v. purpureo notatis, alarum lobo postico obtuse bilobo breviusculo.
 Var. ζ . Foliis ovato-lanceolatis coriaceis, floribus aurantiacis, alis 3-lobis lobis brevibus.
 Var. η . Foliis amplis pedunculum excedentibus, bracteis caducis, floribus sordide luteis rubro maculatis, alis bilobis lobo laterali breviter ovato acuto, inferiore longe subulato, sepalis 4.
 Var. θ . Foliis amplis ovatis acuminatis, pedunculis numerosis folio longioribus, floribus pallide stramineis aurantiacisve, alis ut in η .
Hab. In Himalaya temperata tota a Sikkim, alt. 5000-10,000 ped.! *J. D. H.*; ad Simla! *T. T.* et in Mont. Khasia! alt. 5000-6000 ped., *Griffith*, &c.—Var. α , Nepal et Khasia; var. β , paludibus Mont. Khasia; var. γ , Sikkim; var. δ , Khasia; var. ϵ , Sikkim, Khasia, et Kumaon; var. ζ , Khasia; var. η , Sikkim; var. θ , Sikkim et Khasia (fl. temp. pluv.). (v.v.)

A very variable and common plant, of whose varieties we have had great difficulty in disposing, being at first inclined to divide our extensive series of specimens into six very local species; but when these became the subjects of comparative study along with our own and Cathcart's drawings, and with the suites of specimens from Wallich, Lobb, Strachey and Winterbottom, and especially of Edgeworth, it became at once apparent that to our six we must add as many other local species, not so much because they were distinct, as because they were intermediate in habit and characters (though not in geographical distribution) from our own. Under these circumstances we have thought it best to unite them all.

With regard to the name, we have adopted that applied by Wallich to good specimens in his own Herbarium, though under the same number we find also *I. racemosa*, *I. tingens*, and others. The *I. micranthemum*, Edgew., according to Edgeworth's specimens in Herb. Benth., is hardly different from *I. luxiflorum*, and differs from his description in *Linn. Trans.* in the flowers being fully $\frac{1}{4}$ inch long, including the spur, and not "minimi." Some of the varieties appear in the dry state to approach very closely some forms of *I. longicornu*, from which it is very difficult to distinguish them. The flowers greatly vary in size, from $\frac{1}{2}$ -1 inch long, including the spur, and in colour from a deep golden yellow to

white, or even pale purple, and they are often speckled with rose-colour or purple spots. Edgeworth describes a variety of his *I. micranthemum* as having the spur reduced to a small sac, from which, as well as from the size of the flowers of some of his specimens, I am inclined to suspect that his plant, or some of it, may be referable to *I. brachycentra*, K. & K. The *I. candida*, Lindl., doubtfully referred here by Edgeworth, is certainly a very different plant, having very large flowers, and being undoubtedly a variety of *I. Roylei*. Edgeworth's *I. elata* appears from his specimens to be a form of *I. leptoceras*, but the specimens are not sufficient for satisfactory determination.

This species is on the whole most nearly allied to *I. tingens*, but distinguished by its much larger flowers and longer spur; some specimens are, however, with difficulty distinguishable. There are sometimes pedicellate glands on the basal margins of the leaves.

92. *I. LAXIFLORA* (Edgew. in *Linn. Trans.* xx. 39). Caule elato erecto, foliis 3–6" longe petiolatis petiolo alato ovato-lanceolatis utrinque acuminate grosse crenatis sinibus setigeris, pedunculis numerosis gracilibus subterminalibus, racemis breviusculis, bracteis parvis ovato-subulatis, floribus aureis v. pallide purpureis cum calcare $\frac{3}{4}$ ", sepalis parvis ovato-subulatis, labello infundibuliformi in calcar rectum conicum flore longiore sensim attenuato, vexillo orbiculari concavo non cornuto, alis majusculis purpureis rotundatis v. inferiore longe caudato, capsula angusta lineari.

I. micranthemum? Edgew. in *Linn. Trans.* xx. 39.

Hab. Himalaya temperata, Sikkim, alt. 9000–11,000 ped. ! *J. D. H.* ; Garwhal et Kumaon ! *St. & W., Madden* ; Simla, 6000–8000 ped. ! *T. T.* (fl. temp. pluv.). (v.v.)

Herba 3-pedalis. *Folia* membranacea, alterna, basi interdum glanduloso-setigera, petiolo basi glandulis magnis non stipulata, sed interdum caulibus infra petiolum linea glandularum nigrarum instructa est. *Pedunculi* 3–5", 6–14-flori. *Pedicelli* graciles, $\frac{3}{4}$ ". *Flores* pallide purpurei v. violacei, interdum sordidi ? *Capsula* linearis, gracilis, $\frac{3}{4}$ ", oligosperma.

Very similar indeed to *I. leptoceras*, and probably only a form of that plant; but distinguished by its shorter spur and usually lilac lateral petals. Most of my specimens have rounded lobes to the petals, but in one of Strachey and Winterbottom's the lower lobe terminates in a long subulate tail.

93. *I. LEMANNI* (*H. f. & T.*). Erecta, glabra, caule ramoso, ramis suboppositis, foliis longe petiolatis late ovatis obtusis obtuse dentatis, pedunculis elongatis apice flores 3–5 gerentibus, bracteis parvis late ovatis, floribus majusculis, sepalis late ovato-cordatis, vexillo hemispherico, labello late infundibuliformi in calcar elongatum gracile incurvum abrupte attenuato, alis amplis.

Hab. Afghanistan solo arenoso prope Otipore ! *Griffith*, 1251, *It. Not.* p. 346 (Herb. Lemann, et Bentham).

Species valde distincta, ob folia longe petiolata late ovata obtusa et obtuse sinuato-dentata (ut in *I. noli-tangere*) facile distinguenda. Exemplar solitarium annuum, spithamæum, ramosum. *Petiol* $\frac{1}{2}$ –1", lamina 1". *Pedunculi* graciles, foliis æquilongi. *Flores* rosei, conferti v. racemosi, pedicellis $\frac{1}{2}$ ", cum calcare 1–1 $\frac{1}{2}$ " longi.—"Calcar fusco-rubrum, alis basin versus albis, limbo aurantiaco-maculatis."—*Griffith*.

This species belongs in habit and foliage to the group with *I. noli-tangere* and *fulva*, and has no very near ally in India.

94. *I. GLAUCA* (*H. f. & T.*). Elata, tota glauca, foliis longe petiolatis oblongo-cordatis grosse crenatis, pedunculis terminalibus lateralibusque fructiferis robustis elongatis 8–12-floris, pedicellis fructiferis robustis patulis, capsula lineari-clavata acuminata oligosperma.

Hab. Himalaya occidentali temperata; Kumaon ad Dwali, alt. 9500 ped. ! *Strachey et Winterbottom*.

Species singularis (sed exemplar mancum) ubique pallide pruinoso-glauca. *Caulis* 3-pedalis, ramosus, crassitie digiti minoris. *Folia* 1–4-pollicaria membranacea, supra pallide viridia. *Pedunculi* fructiferi 6–10". *Flores* ignoti. *Capsula* 1 $\frac{1}{2}$ ". *Semina* magna.

95. *I. TUBERCULATA* (*H. f. & T.*). Caule erecto ramoso, foliis 1–2" breviuscule petiolatis elliptico-ovatis lanceolatisve utrinque acuminatis in petiolum angustatis grosse crenatis dentibus basi glandulosis, pedunculis brevibus terminalibus lateralibusque 4–8-floris, pedicellis brevibus, floribus sordide purpureis, sepalis falcatis, labello conico gibbo non calcarato, capsula brevi clavata verruculosa.

Hab. Himalaya orientali temperata et subalpina, Sikkim, alt. 10,000–13,000 ped. ! *J. D. H.* (fl. Aug.–Sept.). (v.v.)

Herba robusta, 2–3-pedalis. *Folia* glandulis dentium versus apices interdum setigeris, nervis tenuibus valde divergentibus; glandulis nullis, v. interdum ad basin foliorum v. petiolo v. caule ad basin petiolo sessilibus v. stipitatis. *Flores* $\frac{1}{2}$ – $\frac{3}{4}$ " longi. *Capsula* papillis magnis subseriatis verruculosa, crassiuscula, $\frac{1}{2}$ " longa.

96. *I. BRACHYCENTRA* (*Kar. & Kîr.*). Caule elato ramoso gracili, foliis 3–5" petiolatis membranaceis elliptico-lanceolatis utrinque acuminatis crenatis serratisve dentibus apice setuligeris, pedunculis numerosis terminalibus gracillimis multifloris, bracteis subulatis, pedicellis gracillimis, floribus pallidis minimis, sepalis parvis oblongo-lanceolatis, labelli sacco conico acuto, capsula lineari glaberrima acuminata oligosperma.

? *I. elata*, *Edgew. in Linn. Trans.* xx. 41.

Hab. Himalaya occidentali temperata, alt. 5000–9000 ped. a Kunawur ! *Jacquemont T. T.*; ad Marri ! *Fleming* (fl. Jun.). (v.v.).

Dist. Soongaria.

Herba 2-4-pedalis. *Folia* pallide viridia, nervis divergentibus tenuissimis, basi setoso-glandulosa v. nuda, petiolo interdum basi utrinque glandula cylindrica v. depressa instructa. *Pedunculi* 3-5'', stricti. *Pedicelli* 1''. *Flores* $\frac{1}{4}$ '' longi. *Capsula* $\frac{3}{4}$ ''. *Semina* 3-6, oblonga, opaca, striata, sub lente lineis crebre rugulosis notata.

Very nearly allied to *I. parviflora*, DC., of Siberia, and perhaps only a short-spurred form of that plant. Edgeworth's specimens of *I. elata* in Herb. Benth. are imperfect, wanting the flower, but in habit, foliage, fruit, &c., they entirely accord with the *I. brachycentra*.

H. HYDROCERAS, *Blume*.

1. *Hydroceras triflora*, *W. & A. Prodr.* i. 140.

Impatiens angustifolia, *Blume*.—*I. triflora*. *L.*—*I. natans*, *Willd.*

Hab. Ubique in uliginosis, Bengalæ! utriusque Peninsulæ! Ceyloniæ! et Birmanæ! (fl. temp. pluv.). (v.v.)

Dist. Java!

POSTSCRIPT.—Lieut. R. H. Beddome, in his paper alluded to in the foot-note at p. 112, has described twelve additional Peninsular species from the Anamallay Hills, and given a synoptical table of all the Peninsular species, in which two more species, *I. phœnicea* and *I. Pulneyensis*, are briefly diagnosed. Lieut. Beddome's paper seems to be a very good one, and I have little difficulty in referring all his new species to the sections I have established; they are the following:—

§ A *I. verrucosa*. *Alæ* bilobæ, verrucosæ. *Calcar* elongatum.

Hab. Mont. Anamallay, alt. 5000-7000 ped.

I. crenata. *Alæ* bilobæ, cum fasciculo pilorum. *Vexillum* crenatum. *Calcar* breve.

Hab. Mont. Anamallay, alt. 5000 ped.

1. *Akka*. *Flores* magni. *Alæ* bilobæ, cum fasciculo pilorum. *Vexillum* integerrimum. *Calcar* breve.

Hab. Mont. Anamallay, alt. 7000-8000 ped.

I. tenuis. *Flores* parvi. *Alæ* bilobæ, pilosæ. *Vexillum* integerrimum. *Calcar* breve.

Hab. Mont. Anamallay, alt. 5000-7000 ped.

I. gracilis. *Alæ* integræ. *Calcar* elongatum.

§ B *I. ligulata*. *Alarum* lobus interior ligulatus. *Calcar* absconditum!

Hab. Sylvis, alt. 2000-3000 ped.

§ C *I. viscosa*. Erecta, ramosa. *Pedunculi* viscidii, 6-12-flores. *Calcar* curvum gibbum. *Semina* echinata.

Hab. Mont. Anamallay, alt. 3000-5000 ped.

I. Anamallayensis. *Folia* opposita, ramorum alterna. *Pedunculi* 6-8-flores. *Calcar* breve, rectum. *Semina* villosa.

Hab. Mont. Anamallay, alt. 5000-7000 ped.

- I. *Pulneyensis*. *Bracteæ* glandula terminatæ. *Calcar* non gibbosum.
Hab. Mont. Pulney, alt. 8000 ped.
- § D I. *parvifolia*. *Folia* minuta, cuneata. *Pedunculi* axillares, solitarii, elongati.
Hab. Mont. Akka, alt. 8000 ped. (aff. *I. pendulæ*).
- § E I. *parasitica*. *Omnia* ut videtur *I. viridifloræ*, sed alarum lobus superior sub vexillo reconditus.
Hab. Mont. Anamallay, alt. 5000–6000 ped.
- I. *elegans*. *Erecta*. *Calcar* 0. *Semina* pilosa.
- § F I. *Tangachee*. *Pedunculi* folia longe superantes, apice 4–8-flores.
Flores minimi. *Calcar* gracile.
- § G I. *Wightiana*. *Suffruticosa*. *Folia* anguste lanceolata. *Pedunculi* solitarii, petiolum paullo excedentes, per totam longitudinem floriferi. *Calcar* breve, incurvum.
Hab. Mont. Anamallay, alt. 4500 ped.
- I. *phoenicea*. *Calcar* apice inflatum.
Hab. Mont. Pulney, alt. 7000 ped.

Lieut. Beddome's paper supplies the following additional habitats and elevations to Peninsular species:—*I. scapiflora* attains 7000–8000 feet; *I. rivalis*, 3000 feet; *I. viscida* and *I. campanulata* ascend to 7000 feet; *I. maculata* grows on the Anamallays at 4500 feet.

I. filiformis is, according to Beddome, distinguished from *I. inconspicua* by the glabrous pedicels, and *I. cordata* from *I. viscida* by the peduncles not being viscid.

On the *Fumaria capreolata* of Britain.

By CHARLES C. BABINGTON, Esq., M.A., F.R.S., F.L.S.

[Read November 17, 1859.]

It is several years since there was considerable discussion amongst those botanists who take an especial interest in the accurate determination of British plants, concerning a *Fumaria* which grows plentifully in the Channel Islands, Western Cornwall, and near to the coast of Wales. It was then determined by Mr. Mitten (Lond. Journ. of Botany, vii. 556) to be the *F. agraria* (Lag.), and I, confidently believing that that identification was correct, gave a tolerably full description of it (Bot. Gaz. i. 62) under that name. At the same time I referred some Azorean specimens, received from Mr. H. C. Watson, severally to the *F. agraria* (Lag.), *F. muralis* (Sond.), and *F. capreolata* var. *media* of Webb. Concerning this, Mr. Watson remarked that, "to his eyes, after examining scores of the Azorean *Fumarias*, living and dried, they