AN EPITOME OF THE BRITISH INDIAN SPECIES OF IMPATIENS.

BY

SIR J. D. HOOKER, G.C.S.I., C.B., F.R.S.

PART I.


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IMPATIENS.

By J. D. Hooker.

INTRODUCTION.

The following classified list of Indian Balsams, followed by some synonymy and habitats, is offered to the "Records of the Botanical Survey of India" in the hope that it may induce the resident botanists and forest officers of that country to take up the collecting, if not the study, of this, which is the second largest genus* of Indian flowering plants and that which has hitherto been the most neglected by collectors.

The classification of species here attempted is a wide departure from that adopted in the Flora of British India. For this there are two principal reasons,—firstly, the number of new species discovered since the publication (in 1874) of that work † and the communication of better materials of others has demanded a re-examination of the old sections, resulting in the revision of some, the abandonment of others, and the construction of additional ones. Secondly, the restriction of the vast majority of the species of Impatiens each to its

* In number of Indian species (about 200) Impatiens is exceeded by dendrobium alone. It abounds most in countries a very few places in which have been explored; as the Eastern Himalaya, for about 300 miles of which the small district of Sikkim alone has been explored, yielding upward of 60 species; Nepal, 500 miles long, from which about 15 species, from the Khatmandu Valley, were brought by Wallich in 1822; and Burmā, which is said to swarm with species in its hilly districts, but has as yet yielded only 52, which is however double the number from that country recorded in the Flora of British India.

† The number of species described in the Flora of British India (1874) is only 124, whereas now, in 1894, about 200 are known, together with a large contingent of indeterminables. During the same interval the Western Himalayan species have risen from 15 to 24; the Eastern Himalayan from 26 to 63; and the Burmese from 22 to 52 (all above numbers approximate only).

own region of distribution, (Eastern Himalayan, Western Himalayan, Burmese, Malabar, Ceylonese and Malayan Peninsular) and the great difference between the species of any two of these regions, necessitates the adoption to a great extent of different sections in each area.

As evidence of this segregation (which has no parallel in the Indian Flora) it is sufficient to point out that only about 8 species are common to the Himalaya east and west of Nepal respectively; that of upwards of 100 species, only 7 are common to the East Himalaya and Burma, that of nearly 60 Malabar species only 2 are found in the Himalaya or Burma; and what is most remarkable is, that of the two primary sections or series under which all the Indian species are ranged, namely A, species with a short capsule turgid in the middle, and B, species with a slender linear or clavate capsule, only one species of A is found in the Western Himalaya, and not a single species of B in Malabar, Ceylon or the Malay Peninsula; in the Eastern Himalaya and Burma, both A and B are represented. I shall therefore in this communication treat the species primarily phytogeographically.

The points upon which most information, as not being obtainable from Herbarium specimens of *Impatiens*, is wanted, are the duration and habit of the species, annual, biennial or perennial, the number and position of the stipular glands, the presence or absence of raphides in the leaves and floral organs. The colours of the flowers, with drawings if procurable, the nature and function of a dilatation on the opposing margins of the wings which occurs nearly opposite the sinus between the lobes of the wings; this, which is often absent, may be produced into an ear-shaped lobule or into a thread descending into the spur; I have called it the dorsal auricle of the wings. The anther varies greatly in the genus and can rarely be described from Herbarium specimens. The fruits and seeds of many species are unknown, and, owing to the testa of the latter shrinking in drying, these should be described from fresh specimens. Pollination by insects is a very interesting process, which should be watched and described.

In forming Herbarium specimens these should be laid in the sheets of a portfolio in the field, with spare flowers and with separate floral organs laid beside them. It is not recommended to preserve flowers in alcohol, which renders them very brittle.

The flowers of *Impatiens* are so anomalous in structure that it may be useful to inform beginners of the real nature of their parts, and of the terms which, for the sake of brevity, I have adopted in de-
scribing them. There are 3 or 5 sepals, usually 3 only, of which 2 are lateral, one on each side of the flower, they are often very small and green, but sometimes coloured; the third, the lip, is always coloured, is very much the largest, almost uniformly saccate or funnel-shaped and spurred; when there are 5 sepals the 2 additional, always small and often slender, are inserted within and above the two lateral. There are 5 petals, 4 confluent in pairs, the wings; the fifth petal, the standard, is usually more or less orbicular and often spurred at the back. Viewing the flower in front, the standard is at the back of the flower, the lip in front, the wings appear to come out of the lip and the two or four lateral sepals are more or less out of sight. The term standard is adopted from that of the pea-flower, the dorsal petal of which it resembles or represents, as the wings do the lateral wing-petals of the same plants; the term lip is taken from its resemblance in position, and more or less in form and function, to that organ as it occurs amongst Orchids. I need not remind botanists that the flower of an Impatiens, as seen in front, is really upside-down (resupinate); in early bud the position of the parts is reversed.

I.—Species of the Western Himalaya from the Nepal Frontier to Chitral.

The chief materials from which the following list is drawn up were procured by Dr. Royle, Lady Dalhousie, Captain Strachey and Mr. Winterbottom, Dr. Thomson, Mr. M. P. Edgeworth, Dr. Fleming, Mr. C. B. Clarke, and Mr. J. F. Duthie. To the latter botanist I am especially indebted for having despatched from the Botanical Department, Saharanpore, a very able collector, Mr. Inayat, into Kumaon, Kashmir and Hazara to collect and preserve specimen of Balsams with dissevered floral organs, as well as leaves and inflorescences and fruit. The results have been of very great service.

In the following key I have introduced a section that does not appear in the Flora of British India; it is section 5, distinguished by the position of the bracts on the raceme. It will reappear in the keys of the East Himalayan and Burmese species. The European and North American species of Impatiens belong to it, as do many Chinese.

The salient character of the East Himalayan group of species is that series A is represented by a single one only, *J. Balsamina* L., which is the only one common to 6 Indian regions of the genus. It
is represented by 39 species in Burma, by 10 in the East Himalaya; and all those of Malabar, Ceylon and the Malayan Archipelago belong to it. Of the Western Himalayan species the most notable is *I. tingens* Edgew., the dorsal auricle of the wings of which is produced into a slender thread descending deep into the spur of the lip. The same structure appears in a few other in no way related Indian species. Its function is no doubt related to fertilization by insects, and should be studied in the living plant. *I. amplexicaulis* Edgew., is remarkable in its foliage; *I. Edgeworthii* Hk. f., is the only species of the genus in India with a remarkably protruded basal lobe of the wings. *I. glauca* H. f. & T. is the only Indian species that approaches the European *I. Nolitangere* L., which extends over North Asia into China. This it does in habit, in the broad shallow crenation of the leaf, in the inflorescence, and in the disposition of the bracts.

**Key to the species.**

**Series A.**—Capsule short, turgid in the middle, contracted at both ends.—Of this series there are many species in Sikkim and Burma, and all those of Malabar, Ceylon, and the Malay Peninsula belong to it.

§ 1. Inflorescence of solitary or fascicled pedicelled flowers in the axils of the leaves; pedicels rarely fascicled on a very short peduncle, minutely bracteate at the base.—There are many species of this section in all the other Indian regions of the genus.

Leaves alternate lanceolate serrate, capsule oblong tomentose. . . . *I. Balsamina* L.

**Series B.**—Capsule elongate, linear or clavate.—Of this series there are no species in Malabar, Ceylon or the Malay Peninsula, but many in the Eastern Himalaya and Burma.

I. Pedicels bracteate at the base only; (never on the pedicel above the base) or ebracteate.

§ 2. Inflorescence of many long-peduncled erect subcorymbose disposed racemes from the axils of the upper often crowded leaves, usually many-flowered; pedicels often panicled or whorled; flowers large or medium-sized.—In small specimens the inflorescence is reduced to a single peduncled few-flowered raceme. After flowering the rachis of the raceme often elongates between the flowers.
**Wings 2-lobed, basal lobe not produced in front into a decurved lobule:**

† Basal lobe of wings acute, upper margin cuspidate or spurred, capsules deflexed:

Lip saccate:

Leaves serrate, capsule broadly clavate . . . . 2. *I. Roylei* Wall.
Leaves crenate, capsule elongate narrowly clavate . . . . 3. *I. sulcata* Wall.
Lip infundibular or subsaccate:

Leaves petioled, bracts very slender . . . . 4. *I. Thomsonii* Hk. f.
Leaves sessile amplexicaul, bracts lanceolate . . . . 5. *I. amplexicaulis* Edgew.

†† Basal lobe of wings rounded, the upper margin not spurred or cuspidate:

Leaves crenate crenulate or crenate-serrate:

Capsules erect, racemes elongate many-flowered interrupted:

Bracts and sepals broadly ovate . . . . 7. *I. bicolor* Royle.
Capsules deflexed, racemes short or umbelliform few-flowered:

Leaves ovate, bracts ovate or cordate:

Lip infundibular, narrowed into the spur . . . . 8. *I. Lemanni* Hk. f.
Lip cymbiform, spur 0. . . 9. *I. violoides* Edgew.
Leaves lanceolate, bracts very slender . . . . 10. *I. Aitchisonii* Hk. f.

Leaves serrate or serrulate, capsules erect:

Lip with spur 1-1½ in., capsule

1-1½ in. . . . . 11. *I. Balfourii* Hk. f.
Lip with spur ½ ¾ in., capsule

½ in. . . . . 12. *I. Flemingii* Hk. f.

**Basal lobe of wing produced upwards anteriorly into a decurved lobule, flowers golden yellow, capsules erect:**

§ 3. Inflorescence of § 2, but pedicels very rarely fascicled or whorled and flowers small, sometimes minute. Capsules erect, except in I. laxiflora.—There are many species of this section in the Eastern Himalaya and Burma, but none in Malabar, Ceylon or the Malay Peninsula.

Leaves crenate or crenate-serrate, or serrulate in I. brachycentra:—

Dorsal auricle of wings filiform descending into the spur, flowers white or pink . . . . 14. I. tingens Edgew.

Dorsal auricle of wings very short or 0:—

Flowers yellow, bracts very slender, sepals uniglandular on one margin, spur long short or 0 . 15. I. racemosa DC.

Flowers white and rose, bracts ovate, spur long . . . . 16. I. laxiflora Edgew.

Flower very minute white, spur 0 or very short . . . . 17. I. brachycentra

K. & K.

Leaves serrate or serrulate: see also I. brachycentra:—

Flowers pink or white, bracts ovate . . . . 18. I. parviflora DC.

§ 4. Inflorescence a very long-peduncled axillary spreading few-flowered raceme; pedicels sub-equidistant, bracteate at the base, bracts and sepals various: flowers large.—There are many species of this section in the East Himalaya and Burma, but none in Malabar, Ceylon or the Malay Peninsula.

Lip saccate with a stout short incurved spur, bracts large . . . . 19. I. Inayatii Hk. f.

II. § 5. Inflorescence lateral, of solitary axillary short simple or forked 1-5-flowered peduncles; branches (pedicels) bracteate above the middle, rarely at the fork, or ebracteate sometimes beneath the flower; flowers small or medium-sized; capsules usually long slender terete decurved or pendulous.—In the irregular forking or branching of the peduncle and disposition of the bracts, this section differs from all others. When the peduncle is 1-flowered, a minute bract often occurs at the middle. There are species of this section in the Eastern Himalaya and Burma, but none in Malabar, Ceylon or the Malay Peninsula.
Lip spurred, bracts narrow:—

Sepals orbicular, lip more or less saccate, spur \( \frac{1}{4} \) in. 20. *I. cristata* Wall.

Sepals ovate, lip infundibular, spur \( \frac{1}{4}-1\frac{1}{4} \) in. 21. *I. scabrida* DC.

Lip spurred, bracts ovate, stem and leaves glaucous. 22. *I. glauca* Hk. f. T.

Lip spurless:—

Leaves 2-3 in., deeply serrate or toothed. 23. *I. serrata* Benth.

Leaves 1-1\( \frac{1}{4} \) in., serrulate. 24. *I. serrulata* Hk. f.

**OBSERVATIONS AND LOCALITIES.**

§ 1.


Tropical Himalaya, alt. 1-5,000 ft., from Kumaon to Marri.—Also in Southern and Eastern India. Besides the garden form with large double flowers, three with marked characters occur in the Western Himalaya; they will be found to be united by intermediates.

1. Basal lobe of wings short, as broad as long, cuneiform with rounded angles, spur \( \frac{3}{4} \) in. long.—Murree.

2. Basal lobe of wings as broad as long, abruptly narrowed into a short stipel, spur very short. *I. rosea*, Lindl

3. Basal lobe of wings longer than broad, narrowed into a broad stipes, spur \( \frac{1}{4}-\frac{3}{4} \) in. long.

§ 2.


Kumaon to Kashmir and Hazara, alt. 4,000-11,000 ft.—Extends eastwards to Central Nepal?


Kumaon to Chamba, alt. 9,000-14,000 ft.—Extends eastwards to Sikkim.
VAR. minor, *Fl. Brit. Ind. l. c.*
Smaller in all its parts, leaves 2-3 in. long, lip more infundibular, capsule 3 in.
Kumaon, alt. 8,000 ft.

Kumaon to Kashmir and Hazara, alt. 5,000-12,000 ft.—Extends eastward to Sikkim.

VAR. ecalcarata.
Dhurmsala, Laka, alt. 11,000 ft.

Kumaon to Sirmore, alt. 6,000-12,000 ft.

Kumaon and Garhwal, alt. 9,000-10,000 ft.—Extends eastwards to Sikkim.

Kumaon to Kashmir and Hazara, alt. 4,000-60,000 ft.—Extends eastward to Central Nepal.

This and *I. Thomsoni* are perhaps the most common Balsams in the Western Himalaya. The lip varies greatly in form, from saccate with a short incurved spur, to infundibular with a very slender much longer spur.

Kurrum valley, margins of stoney streams, alt. 6,000-8,000 ft. First described from specimens collected by Griffith at Otipore in Afghanistan. The plant collected by Aitchison in the Kurrum valley is, I think, the same, but more and better specimens are wanted for comparison. Aitchison describes two species as inhabiting the Kurrum valley; one he refers to *I. Lemanni*, which ascends to the lower limit of the other, which he refers to *I. amorphata*, *Edgew.* (*I. bicolor* Royle): the latter however differs greatly from *I. amorphata*, and approaches very closely to *I. Thomsoni*; it is *my I. Aitchisoni*, see below. The trans-Indus species of *Impatiens* are very imperfectly known.

Between Pikha and Janglig (Kumaon?), October, 1834.
The only specimens which I have seen are very imperfect. One in the Bentham Herbarium has a ticket inscribed 'Impatiens candida, Lindl., near Junglung, alt. 8-9,000 ft.' I cannot find the localities named. I. candida, Lindl., is a very different plant, a white flowered state of I. Roylei, Walp. The caphiform lip and absence of spur render I. violoides easy of recognition.

   Kurram valley, alt. 8,000-9,000 ft.

   Kashmir, in the Jhelum valley, Garki, Inayat.

12. I. Flemingii, Hk. f. n. sp.
   Murree; Kashmir, alt. 6,500-8,000 ft.; and Hazara.

   Kulu; Beas valley, alt. 4,000-6,000 ft. Chamba. Kashmir, alt. 5,000-8,000 ft. Hazara; Kagan valley.

§ 3.

   Kumaon to Sirmore, alt. 5,000-10,000 ft.—Extends eastwards to Central Nepal.

15. I. racemosa, DC. I. laxiflora, var. khasiana, Fl. Brit. Ind. i. 480.
   Kumaon to Kashmir, alt. 4,000-8,000 ft.—Extends eastward to Sikkim.

VAR. ecalcarata; spur very short or 0.
   Kumaon to Garwhal, alt. 4,000-7,000 ft.

   Kumaon to Kashmir, alt. 6,000-11,000 ft.—Extends eastward to Sikkim. This species may be recognized by the two minute (black when dry) corpuscles, one on each side of the base of the standard; these are representatives of a second pair of sepals
Cleistogamous and spurless states occur at high elevations; these all have the black corpuscles.

   Kumaon to Kashmir and Chitral, alt. 6,12,400 ft.; Garhwal, to 13,000-14,000 ft.—The minute flowers are mostly cleistogamous. The leaves vary from serrulate to crenate.

   Kashmir, Kishtwar and Hazara, alt. 3,500 to 8,000 ft.—Extends northward to Siberia.

§ 4.

19. *I. Inayatii*, *Hk. f. n. sp.*
   Kumaon; Kali valley, Sosa forest, *Inayat.—A remarkable large-leaved and -flowered species, only once found.*

§ 5.

   Kumaon to Kunawur, alt. 6,000-10,000 ft.—Extends eastward to Bhotan.

   Kumaon, alt. 5,000-9,000 ft. Extends eastward to Central Nepal.—Difficult to distinguish by herbarium specimens from *I. cristata*, the flowers are smaller, the lip never saccate, the basal lobe of the wings rounded at the base, the spur very variable in length.

   Kumaon and Garhwal, alt. 7,000-10,000 ft.; Kangra valley Surram, alt. 9,500 ft.—The only Indian species allied to the European and Siberian *I. Nolitangere*, in habit and in the broad crenatures of the leaf-margins.

   Kumaon; Gori valley, at Ritkott.—The *I. serrata* of F. B. I. from Sikkim is *I. falcifer*, Hk. f.

24. *I. serrulata*, *Hk. f. n. sp.*
   Kumaon; Ralam valley, at Saba Udiyar.

*(To be continued.)*
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Part II.

Additional Western Himalayan Species.

Impatiens Duthiei, Hk. f. nov. sp.

This apparently distinct undescribed species from the Western Himalaya has been received by me from Mr. Duthie since the publication of Part I of the Epitome. It is closely allied to I. bicolor, Royle, but the raceme is not interrupted by the pedicels of the flowers being fascicled or umbellate, the bracts are larger and ovate-lanceolate, the sepals orbicular and aristate, and the leaves are of a remarkably membranous consistence.

II.—Species of the Eastern Himalaya, from the Valley of Kathmandu in Central Nepal to the Mishmi Hills in Upper Assam, including the Tibetan Valley of Chumbi (between Sikkim and Bhotan).

The chief materials procured from this region are, firstly, the collection made by Wallich in the Khatmandu Valley (Central Nepal) in 1826. It comprises about 15 species, of which 5 have not hitherto been collected elsewhere. Secondly, my own Sikkim collections, made in 1848 and 1849, followed by those of Mr. C. B. Clarke (with very valuable notes), Dr. Treutler, Dr. King's collections (for the Royal Botanical Gardens, Calcutta), Mr. Gamble and more recently those of Messrs. Pantling and G. A. Gammie, made with special care. Mr. Pantling's are accompanied with coloured drawings and analyses of about 20 species, made by himself, that have proved invaluable aids to me.

A very few species were collected in Bhotan by Dr. Griffith during Captain Bogle's mission to that country in 1837-38 which took place in the winter months; and a few in the Mishmi Hills, also by Dr. Griffith, during his adventurous journey in that region in 1836.
The Balsam Flora of Sikkim is far from exhausted. The Kew Herbarium contains specimens in too imperfect a condition to be determined, and the smaller species of the sub-alpine region, have never been well collected. I have little doubt that when the flora of the Western Himalaya becomes better known it will prove one of the richest in the world in Balsams.

**Key to the principal sections.**

**Series A.**—Capsule short, turgid in the middle.

I.—Inflorescence truly terminal, § 1.

II.—Inflorescence axillary, § 2, 3, 4.

**Series B.**—Capsule elongate, linear or clavate.

I.—Bracts at the base of the pedicels, or o.

Inflorescence racemose, § 5, 6, 7.

Inflorescence of solitary or fascicled axillary pedicelled flowers, § 8.

II.—Bracts in the pedicels of a short few-flowered raceme, rarely at the base or o, § 9.

**Key to the species.**

**Series A.**—Capsule short, turgid in the middle, contracted at both ends.

I.—Inflorescence truly terminal.

§ 1. *Raceme spiciform; bracts fimbriate persistent; seeds with basal spiral hairs*. . . . 1. *I. bracteata* Coleb.

II.—Inflorescence axillary.

§ 2. *Stem stout; leaves alternate; peduncles 1-5-fl.; flowers large; sepals broad, membranous; seeds with basal spiral hairs.*

**Separ 2, cuspidate—**

Lip infundibular, spur slender, tip annular . . . 2. *I. pulchra* Hk. f. & T.

**Lip scaphiform, spur very long, slender** . . . 3. *I. latiflora* Hk. f. & T.

**Sepals 4, two outer apiculate, two inner much longer.**

**Lip subsaccate, spur incurved** . . . 4. *I. mishmiensis* Hk. f.
§ 3. Leaves alternate; flowers solitary or fascicled, pedicelled in the axils of the leaves (peduncle o); seeds smooth glabrous.

Leaves linear-lanceolate, capsule tomentose . . . . 5. *Impatiens* Balsamina L.

§ 4. Leaves opposite alternate and pseudo-verticillate; inflorescence of long or short axillary peduncles bearing solitary binate or fascicled pedicelled flowers; capsule and seeds glabrous—Peduncle sometimes o in *I. exilis*.

Lip saccate, shortly abruptly spurred:—

Peduncle long, tips of sepals thickened . . . . 6. *I. trilobata* Coleb.

Peduncle short, sepals acuminate . . . . 7. *I. tripetala* Roxb.


Lip scaphiform, spur very long, slender . . . . 10. *I. exilis* Hk. f.

*Series B.*—Capsule elongate linear or clavate, rarely oblong.

1. Bracts at the base of the pedicels or o. *Inflorescence racemose.*

§ 5. Leaves opposite alternate or pseudo-verticillate, upper often largest and crowded towards the ends of the stem or branches; inflorescence of erect long-peduncled racemes from the upper leaf-axils, subcorymbosely disposed; pedicels often fascicled or whorled, bracteate at the base; flowers usually large or medium-sized, rose-purple; seeds glabrous.—Differs from § 7 chiefly in the larger flowers.

Basal lobe of wings spurred or cuspidate on the upper outer margin:—


Basal lobe of wing rounded, muticous on the outer margin, lip saccate, shortly abruptly spurred or infundibular:

Distal lobes of wings caudate:


Distal lobe of wings dolabriform:


Leaves ovate serrulate 16. *I. nepalensis* Hk. f.

Leaves lanceolate serrate . . 17. *I. insignis* Wall.

§ 6. Leaves all alternate; inflorescence of spreading peduncled few-flowered racemes, from the upper or middle leaf-axils, not sub-corymbosely disposed, rachis often bracteate below or between the flowers; pedicels bracteate at the base; capsules linear-oblong or narrowly clavate; seeds glabrous.

Sepals entire, margins eglandular:

Distal lobes of wings dolabriform:

Anthers muticous:

Lip saccate:

Sepals small, ovate or oblong . 18. *I. Jurpia* Ham.

Sepals large, orbicular . . 19. *I. Cathcartii* Hk. f. & T.

Lip cymbiform, sepals broadly oblong . . . . 20. *I. cymbifera* Hk. f. & T.

Anthers cuspidate . . 21. *I. discolor* DC.

Distal lobe of wings loriform:

Leaves linear lanceolate, sepals 2 . 22. *I. Prainii* Hk. f.

Leaves ovate or orbicular, sepals 4:

Outer sepals oblong, winged on one margin . . . . . 23. *I. nummularifolia* Hk. f.

SEPALS glandular on one or both margins, usually dimidiate-ovate:—
Distal lobe of wings with a long loriciform tail:—
Leaves 3-8 in. long, mostly sessile. 25. *I. urticifolia* Wall.
Leaves 1-3 in. long, mostly petioled 26. *I. Gamblei* Hk. f.
Distal lobe of wings dolabriform:—
Leaves petioled, membranous, lip saccate. 27. *I. Wallichii* Hk. f.
Leaves sub sessile, thick, lip obconic. 28. *I. Hobsoni* Hk. f.

§7. Leaves alternate, rarely subverticillate at the top of the stem, crenate, rarely serrate; inflorescence of slender axillary spreading, rarely erect, long peduncled racemes, pedicels rarely binate or whorled, bracteate at the base; flowers small or minute, yellow, rarely rose-purple or white, filaments often contracted at the tip, with free didymous anthers.—The pedicels are whorled in *I. radiata* and *graciliflora*.

†Flower-buds, exclusive of the spur, globose or sub-globose, plane of mouth of lip horizontal:—
Bracts persistent:—
Lip spurred except in var. of *I. racemosa*.
Pedicels more or less fascicled or whorled:—
Lip with spur ¾-½ in. long. 29. *I. radiata* Hk. f. & T.
Lip with spur 1-1½ in. long. 30. *I. graciliflora* Hk. f.

Pedicels of flowers regularly seriate:—
Dorsal auricle of wings descending into the spur of the lip:—
Spur of lip broad, auricle linear. 32. *I. Scullyi* Hk. f.

Dorsal auricle of wings short or o:—
Sepals ¼ in. long, ovate 3-nerved. 33. *I. laxiflora* Edgew.
Sepals $\frac{1}{10}$ in. long, falcate aristate, margin uniglandular on one side. 34. *I. racemosa* DC.

Sepals minute, awn long stout erect. 35. *I. microsciadia* Hk. f.

Lip scaphiform, spurless, flowers very small:
- Stem 6 in. high, simple, peduncles capillary. 36. *I. minimiflora* Hk. f.

Bracts deciduous:
- Leaves ovate, lip scaphiform, spur a boss, capsule clavate:
  - Leaves 2-3 in., sepals $\frac{1}{2}$ in., ovate acuminate. 38. *I. tuberculata* Hk. f. & T.
  - Leaves 1-1$\frac{1}{2}$ in., sepals $\frac{1}{10}$ in., oblong aristate. 39. *I. aganantha* Hk. f.
- Leaves linear-lanceolate:
  - Leaves 3-5 in., lip with spur 1 in. 40. *I. leptoceras* DC.
  - Leaves 2-3 in., lip with spur $\frac{1}{2}$ in. 41. *I. odorata* D. Don.

†† Flower-buds, exclusive of the spur, ovoid or oblong, plane of mouth of expanded flower ascending at an acute angle:

Mouth of lip apiculate or muticous:
- Stem more or less hirsute, sepals 4, outer linear-oblong, inner very slender. 42. *I. trichoclodon* Hk. f.

Stem glabrous:
- Distal lobe of wings loriform:
  - Sepals $\frac{1}{4}$ in. ovate acuminate, base incurved. 43. *I. longipes* Hk. f. & T.
  - Sepals $\frac{1}{2}$ in. ovate aristate. 44. *I. Pantlingii* Hk. f.
  - Sepal $\frac{1}{10}$ in. ovate obtuse, base unilaterally lobulate. 45. *I. bivittata* Hk. f.
Distal lobe of wings linear oblong:
Sepals \( \frac{1}{4} \) in., falcate, with a stiff clubbed awn. 46. *I. leptocarpa* Hk. f.

Mouth of lip cuspidate or awned:
Capsule linear, distal lobe of wings loriform:
Sepals \( \frac{1}{4} \) in. sides complicate, base incurved. 47. *I. stenantha* Hk. f.

Capsule clavate:
Sepals \( \frac{1}{10} \) in., uncinate, long-awned.

** Inflorescence of solitary or fascicled pedicelled flowers in the axils of the leaves, peduncle o or very short; bracts at the base of the pedicel or o.**
§ 8 Leaves all alternate, flowers large or medium sized except *I. occultans*.

Stem erect, lip spurred:
Anthers cuspidate, sepals 2, orbicular membranous awned:
Leaves crenate:
Glabrous, tip of spur spirally coiled. 50. *I. spirifer* Hk. f. & T.
Pubescent, tip of spur incurved 51. *I. puberula* DC.
Leaves sub-entire or serrulate. 52. *I. acmanthera* Hk. f.

Anthers muticous:
Leaves serrate, sepals 4, outer dimidiate-ovate. 53. *I. arguta* Hk. f. & T.

Leaves crenate, sepals 2, orbicular aristate. 54. *I. decipiens* Hk. f.
Stem prostrate, leaves small, flowers minute, lip spurless. 55. *I. occultans* Hk. f.

II.—Inflorescence a peduncled 1-few flowered simple or forked raceme, bracts on the pedicels above their base, rarely at the forks, persistent.
§ 9. Leaves all alternate; inflorescence much shorter than the leaves; flowers yellow or white, rarely rose-coloured,
large or small; capsule slender often pendulous; seeds glabrous.

Leaves crenate, or serrate in *I. cristata*:

Basal lobe of wing muticous:

- Sepals large orbicular or broadly ovate:
  - Leaves green on both surfaces 56 *I. cristata* Wall.
  - Leaves white beneath . 57 *I. tropaoliflora* Griff.

- Sepals small cymbiiform . 58 *I. lutea* Hk. f.

Basal lobe of wing spurred in the sinus . . . . . 59 *I. unciptala* C. B. Clarke

Leaves serrate or toothed:

Basal lobe of wings large rounded, distal longer than broad:

- Sepals orbicular membranous cuspidate . . . 60 *I. praetermissa* Hk. f.

- Sepals ovate acuminate.
  - Lip broadly infundibular, spur incurved . . . 61 *I. serratifolia* Hk. f.
  - Lip scaphiform, spur o. . 62 *I. serrata* Benth.

Basal lobe of wings very small, distal much broader than long, bilobulate, lobules divaricate . . . 63 *I. falcifer* Hk. f.

**OBSERVATIONS AND LOCALITIES.**

§ 1.

   Sikkim; Mungpoo, alt. 2,000-4,000 ft.; probably introduced by seed amongst orchids from the Khasia Hills.

§ 2.

   E. Nepal and Sikkim; alt. 2,500-5,000 ft.—Also a native of the Khasia Hills.
   Bhotan; the Duphla Hills.—Also a native of the Khasia Hills.
   Mishmi Hills, at Brahma Kund, Griffith, 1836.

§ 3.

   Sikkim Terai, alt. 1,000 ft.—Tropical and subtropical India. A short spurred form approaching var. *rosea* (*I. rosea* Lindl.) of the Western Himalaya.

§ 4.

   Sikkim, alt. 1,000-4,000 ft.—Also a native of Assam and Silhet.
   Sikkim and Bhotan, alt. 2,000-5,000 ft.—Also a native of Assam and Silhet.
   Sikkim, alt. 1,000-5,000 ft.
9. *I. infundibularis* Hk. f.; nov. sp.
   Sikkim, alt. 1,000-4,000 ft.
    Sikkim, alt. 2,000-5,000 ft.

§ 5.

    Nepal and Sikkim, alt. 9,000-13,000 ft.—Also a native of the Western Himalaya.
    Sikkim, alt. 12,000 ft.—Also a native of the Western Himalaya.
    Nepal and Sikkim, alt. 8,500-10,000 ft.—Also a native of the Western Himalaya.
14. *I. Kingii* Hk. f.; nov. sp.
    Sikkim, alt?
    Possibly referable to § 6. A very handsome species, but specimens in bad condition for analysis.
   Central Nepal.—Also a native of the Western Himalaya.

16. *I. nepalensi* Hk. f.; nov. sp.
   Central Nepal.

   Central Nepal.

§ 6.

   Central Nepal and Sikkim; alt. 2,000 to 6,000 ft.—Also a native of the Khasia Hills.

   Sikkim, alt. 2,000-5,000 ft.

   Sikkim; alt. 6,000-11,000 ft.

   Central Nepal and Sikkim, alt. 4,500-9,000 ft.

22. *I. Prainii* Hk. f.; nov. sp.
   Sikkim, alt. 10,000 ft.?

23. *I. nummularifolia* Hk. f.; nov. sp.
   Sikkim, alt. 10,000-12,000 ft.?

24. *I. scitula* Hk. f.; nov. sp.
   Chumbi; alt.?

   Central Nepal and Sikkim, alt. 10,000-11,000 ft.

26. *I. Gamblei* Hk. f.; nov. sp.
   Sikkim and Chumbi, alt. 8,000-12,000 ft.

27. *I. Wallichii* Hk. f.; nov. sp.
   Central Nepal and Sikkim, alt. 10,000-11,000 ft.

28. *I. Hobsoni* Hk. f.; nov. sp.
   Sikkim, Yatung, alt.?

§ 7.

   Sikkim, alt. 7,000-12,000 ft.—Also a native of the Khasia Hills.
30. I. graciliflora Hk. f.; nov. sp.
    Sikkim, alt. 6,000-7,000 ft.

31. I. tingens Edgew. I. racemosa; Fl. Brit. Ind. i. 479; non DC.
    Central Nepal.—Also a native of the Western Himalaya.

32. I. Scullyi Hk. f.; nov. sp.
    Central Nepal.

33. I. laxiflora Edgew.; Fl. Brit. Ind. i. 479 (excl. var. 2, 4).
    Sikkim, alt. 9,000-12,000 ft.—Also a native of the Western Himalaya.

34. I. racemosa DC., I. laxiflora, var. 4; Fl. Brit. Ind. i. 479.
    E. Nepal, Sikkim and Chumbi, alt. 7,000-10,000 ft.—Also a native
    of the Western Himalaya and the Khasia Hills.

35. I. microsciadia Hk. f.; nov. sp.
    Sikkim, alt. 6,000 ft.

36. I. minimiflora Hk. f.; nov. sp.
    Sikkim, alt. 10,000 ft.

37. I. Gammiei Hk. f.; nov. sp.
    Sikkim, alt. 10,000 ft.

    Sikkim, alt. 12,000 ft.

39. I. aganantha Hk. f.; nov. sp.
    Chumbi, alt. ?

    Central Nepal, alt. ?

41. I. odorata D. Don.
    Central Nepal, alt. ?

42. I. trichoclodon Hk. f.; nov. sp.
    Sikkim, alt. 10,000 ft.

43. I. longipes Hk. f. & Thomts.; Fl. Brit. Ind. i. 473.
    Sikkim, alt. 6,500-10,000 ft.

44. I. Pantlingii Hk. f.; nov. sp.
    Sikkim, alt. 10,000 ft.

45. I. bivittata Hk. f.; nov. sp.
    Sikkim, alt. 10,000 ft.
46. I. leptocarpa *Hk. f.*
   Sikkim, alt. ?

47. I. stenantha *Hk. f.; Fl. Brit. Ind. i. 478.*
   Central Nepal and Sikkim, alt. 6,000-11,000 ft.—Also a native
   of the Khasia and Manipur Hills and China.

48. I. drepanophora *Hk. f.; nov. sp.*
   E. Nepal and Sikkim.—Also a native of the Khasia and Manipur
   Hills.

49. I. citrina, *Hk. f.*
   Mishmi Hills.

§ 8

50. I. spirifer *Hk. f. & Thoms.; Fl. Brit. Ind. i. 471.*
   E. Nepal, Sikkim and Chumbi, alt. 4,000-7,000 ft.

51. I. puberula *DC.; Fl. Brit. Ind. i. 470.*
   Central Nepal and Sikkim, alt. 2,500-8,000 ft.

52. I. acamanthera *Hk. f.; nov. sp.*
   Sikkim, alt. 6,000 ft.

53. I. arguta *Hk. f. & Thoms.; Fl. Brit. Ind. i. 470.*
   Sikkim and Chumbi, alt. 5,000-7,000 ft.—Also in the Khasia Hills,
   Burma and China.

54. I. decipiens *Hk. f.; nov. sp.*
   Sikkim and Chumbi, alt. 5,000-9,000 ft ?

§ 55. I. occultans *Hk. f.; nov. sp.*
   Sikkim, alt. 12,000-13,000 ft.
   A diminutive species of doubtful affinity.

§ 9

56. I. cristata Wall., *vide supra*, pp. 7, 10.
   Central Nepal, Sikkim, Bhotan.—Also in the Western Himalaya.

57. I. tropæoliflora *Griff.; Fl. Brit. Ind. i. 472 (tropæolifolia).*
   Mishmi Hills.

58. I. lutea *Hk. f.; nov. sp.*
   Sikkim, alt. 5,000 ft.

59. I. unciptetala C. B. Clarke *Mss., I. scabrida, partim; Fl.*
   *Brit. Ind. i. 472.*
   Sikkim, alt. 6,500-8,500 ft.
60. **I. praetermissa** *Hk. f.*; nov. sp.
   Central Nepal.


62. **I. serrata** *Benth; non Fl. Brit. Ind.*
   Central Nepal.—Also in Western Himalaya.

   Sikkim, alt. 7,000-10,000 ft.

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**III.—Species of the Burmese Region, from Assam to Tenasserim.**

The Balsams of this region are very imperfectly known. Except in the Khasia and adjacent Hills no satisfactory collections have been made over the vast area limited as above. Sixteen species were obtained by Wallich and his collectors between 1820 and 1830 from various localities between Assam and Tenasserim, to which a considerable number were added by Griffith in the Khasia Hills in 1835 and 1837. Twenty species were collected by Dr. Thomson and myself also in the Khasia and neighbouring hills in 1850; since which period Mr. C. B. Clarke going over the same ground, and extending his travels to the Naga and Manipur Hills, has added considerably to this number. Other contributors have been the Revd. C. Parish in the Maulmain mountains, and collectors employed by the Royal Botanic Gardens of Calcutta in the Shan and other Hills east of the Irawaddi, but discoveries of the latter have been for the most part units. Mr. C. B. Clarke is the only one who has made notes of many species on the spot where found, and these are of great value.

Judging from the reports of Forest Officers and travellers and having regard to the nature of the hill and mountain ranges of Burma it cannot be doubted that this country is exceedingly rich in Balsams, and when it is considered how few species have been obtained from the 1,500 miles of complicated lofty ranges on the east of the Salwin river, and that not a single species has as yet been obtained from the 500 miles of lofty coast range extending from Chittagong to Cape Negrais, it seems to be impossible to regard the 52 species here enumerated below as giving even a remote idea of the richness of the Balsam Flora of Burma, which is further emphasised by the heterogeneous character of its components. In evidence of the truth of this last observation it is sufficient to point out, that in my attempt to group the species under natural sections I have had to adopt 16 of these; which is 7 more than were required for the 63
East Himalayan species and 8 more than for the 57 Western Peninsular. It cannot well be doubted that ampler materials will increase or reduce or abolish some of these.

Of the 52 Burmese species, 39 are endemic. Of the remainder one, I. Balsamina, is not confined to any of the Indian regions: I. bracteata, pulchra, latiflora, trilobata, tripetala, arguta, Jurpia, radiata, drepanophora and racemosa are Himalayan, of which I. arguta is also Chinese; I. oppositifolia and I. chinensis are Western Peninsular. None are Malayan Peninsular, but one, I. Parishii which has no Burmese ally, is nearly related, both in geographical position and character, to one of that region. A small group § 10, and a few species of other groups inhabit the sea level in Arracan, Lower Burma and Tenasserim. They are inconspicuous and small flowered, and have been for the most part very carelessly collected.

Hitherto the only link that has been discovered between the Impatiens of Eastern Burma and those of the coterminous provinces of Western China, is the presence in both of I. arguta, and what is more surprising is that the Chinese species belong for the most part to sections of the genus of which there are few or no Indian representatives.

**Key to the sections.**

**Series A.**—Capsule turgid in the middle, narrowed at both ends.

1. Inflorescence truly terminal. Seeds arillate with spiral hairs.

2. Inflorescence axillary.

3. Seeds arillate with spiral hairs.


5. Annuals.

6. Perennials.

**Series B.**—Capsule elongated, linear or clavate.

* Bracts at the base of the pedicels:

7. Inflorescence of axillary pedicelled flowers.

8. Inflorescence racemose.

9. * Bracts on the pedicels or 0, rarely at the base.

**Key to the species.**

**Series A.**—Capsule turgid in the middle, narrowed at both ends.

1. Inflorescence truly terminal racemose.

§1. Bracts fimbriate, seeds arillate with spiral hairs.

1. I. bracteata Coleb.
II.—Inflorescence axillary.

* Seeds arillate with spiral hairs:—

§ 2. Glabrous herbs; leaves alternate narrow; stipulary glands o; peduncle 1-6-fld.; flowers large; sepals 2, broad; dorsal auricle of wings large.

Bracts lanceolate, spur of lip short incurved.

2. *I. pulchra* Hk. f. & T.

Bracts linear and lanceolate, spur of lip very long straight.

3. *I. latiflora* Hf. & T.

Bracts large orbicular, spur of lip short incurved.


§ 3. A glabrous annual; leaves alternate; stipulary glands o; racemes 3-8-fld.; sepals 2, ovate; dorsal auricle of wings o . . .

5. *I. racemulosa* Wall

** Seeds ex-arillate, naked or papilllose, very rarely slightly hairy:—

§ 4. Annual; leaves alternate lanceolate; flowers solitary or fascicled, pedicelled in the leaf-axils; sepals 2, very small; dorsal auricle of wings large; capsule tomentose . . 6. *I. Balsamina* L.

§ 5. Annuals; leaves alternate, mostly crowded towards the top of the stem or branches; stipulary glands minute or o; flowers small, pedicelled in the upper leaf-axils; sepals 2; standard winged; spur very slender:—

Sepals ovate-lanceolate, fruiting pedicels spreading, capsule glabrous . 7. *I. florulenta* Hk. f.

Sepals very minute, fruiting pedicels decurved from the middle, capsules hairy pendulous . . . 8. *I. curvipes* Hk. f.
§ 6. Annuals; leaves alternate, stipulary glands o; flowers solitary on axillary pedicels, rotate; sepals 2; standard and distal lobes of wings subequal obcordate; spur of lip very slender:—

Flowers 1-1½ in. diam.,
sepals ovate lanceolate  .  9. I. violæflora
Hk. f. & T.

Flowers ½ in. diam.,
sepals minute  .  10. I. Mokimi. Hk. f.

7. Very slender flaccid diffusely branched annuals; leaves alternate; stipular glands 0; flowers very small on axillary pedicels; sepals 2 or 4; standard oblong. The two species of this section are not allied:—

Leaves lanceolate, sepals 2,
 wings bicuspidate, lip
tubiform, spur very short 11. I. capillipes
Hk. f. & T.

Leaves ovate, sepals 4, outer
 ovate, basal wing-lobe very
 small, lip infundibular,
 spur slender .  .  .  12. I. micromeris
Hk. f.

§ 8. Glabrous or hairy annuals; leaves alternate, ovate or oblong; inflorescence of 1-4-fld. axillary peduncles, if 1-fl., bracteate about the middle, if 2-4-fl., bracts at the base of or on the pedicels; flowers large or medium sized; sepals 2, rather large, dorsal auricle of wings usually large; lip broadly infundibular, narrowed into an incurved or involute slender spur; filaments slender.—A natural group of which the species are rather difficult of diagnosis.

Basal lobe of wings rounded in front (not cuspidate or spurred); leaves crenate-serrate:—

Stem petioles and peduncles more or less hairy:—

Leaves 1-3 in.
membranous crenate, sparsely pubescent; sepals
½ in. long, ovate-lanceolate .  .  .  13. I. porrecta Wall,

Stem thick stout, tomentose, leaves 2-4 in. broad, sepals ½ in. ovate lanceolate aristate. 15. *I. Marianæ* Reich. f.

Stem very short creeping below, tomentose, sepals ½ in. broadly oblong cuspidate hairy. 16. *I. Mannii* C.B.C.

Stem petioles and peduncles glabrous or nearly so:

Stem much branched, sepals ½ in. orbicular or broadly ovate, tip of spur annular. 17. *I. annulifer* Hk. f.

Stem sub-simple stout, leaves 3-5 in. long, sepals orbicular mucronate, spur simply incurved. 18. *I. burmanica* Hk. f.

Stem short simple leaves 1½-2 in. long, sepals ½ in. ovate falcate, spur simply incurved. 19. *I. Andersoni* Hk. f.

Basal lobe of wings spurred or cuspidate on the upper outer margin; leaves serrulate:

Glabrous, creeping, sepals ½ in. long, basal wing-lobes spurred. 20. *I. cuspidifera* Hk. f.
Glabrous, erect,
sepals \( \frac{1}{2} \) in. long,
basal wing-lobes

Stem tomentose
above, leaves black
when dry, basal
wing-lobes cuspi-
date . . 22. *I. nigrescens* Hk. f.

§ 9. *Annuals; leaves opposite alternate rarely subverti-
cillate, stipular glands often many, subulate clavate
or digitiform; infl. of 1-few-fld. peduncles or solitary
or fasciied pedicilled flowers; sepals 2; dorsal
auricle of wings large; spur of lip long or short,
filaments usually slender:—

Seeds tubercled or granulate:—

Leaves opposite alternate or whorled:—

Peduncle long, 3-5-fld.
Leaves all petioled,
standard muticous or
dorsally gibbous . 23. *I. trilobata* Coleb.

Leaves upper or all ses-
sile, standard dorsally
Peduncle very short
or o . . . 25. *I. tripetala* Roxb.

Leaves all opposite or
whorled, sessile or
subsessile, peduncle
long or short, stem stout 26. *I. radicans* Benth.

Leaves all alternate
petioled, ovate lanceo-
late, peduncle short or o,
stem very slender . 27. *I. stricta* C. B.

Clarke.

Seeds globose, smooth black shining, leaves all
opposite:—

Leaves sessile or subsessile linear coriaceous:—

Leaf-base truncate or cordate, sepals long
linear:—

Flower large . 28. *I. chinensis* L.
Flower small . 29. *I. Helferi* Hk. f.
IMPATIENS.

Leaf-base narrow, flowers large:—
Sepals ovate ... 29. *I. Masoni* Hk. f.
Sepals lanceolate ... 30. *I. Craddockii* Hk. f.

Leaves ovate or oblong, upper sessile lower petioled membranous:—
Flowers small, sepals linear ... 32. *I. oppositifolia* Linn.

§ 10. Small glabrous annuals; leaves opposite or alternate, stipulary glands o; infl. of long-peduncled many-fld. racemes; flowers very small; dorsal auricle of wings o; capsule very small.—Of most of the species of this group the specimens are in a very unsatisfactory state. A careful collector in Burma would probably add to their number. All are low-country weedy plants. *I. racemulosa* is the only other conspicuously racemose species of Series A.

Leaves alternate:—
Sepals ovate, wings long-stipitate, basal lobe o, spur of lip inflated ... 33. *I. tavoyana* Wall.
Sepals linear, wings long-stipitate, basal lobe ?, spur of lip short incurved ... 34. *I. circaeoides* Wall.

Leaves opposite or subopposite and alternate:—
Sepals orbicular, wings stipitate, basal lobe minute, spur of lip o, leaves glaucous beneath ... 35. *I. panguana* Hk. f.
Sepals oblong, wings stipitate, basal lobe ?, spur of lip short strict acute, pedicels short, leaves glaucous beneath ... 36. *I. rangoonensis*
Hk. f.

Sepals linear, wings ?, spur of lip short incurved tubiform, pedicels long capillary, leaves concolorous ... 37. *I. Brandisii*
Hk. f.
§ 11. A glabrous shrub; leaves opposite and alternate; infl. a short few fld. peduncle; flowers large shortly pedicelled; bracts large herbaceous; sepals 4, outer orbicular, inner linear; seeds large, broad, smooth, glabrous.

38. I. lavaigata Wall.

§ 12. A stout fleshy biennial or perennial; leaves few, large, alternate, long-petioled serrulate; flowers solitary, long-pedicelled; sepals 2, large, orbicular; lip scaphiform with a very short bicuspid spur, adnate to the middle of the base.—A remarkable species allied to I. macrochila of the Malay Peninsula.

39. I. Parishii
Hk. f. & T.

Series B.—Capsule narrow, linear or clavate. Seeds glabrous.

*Bracts at the base of the pedicels:

§ 13. Glabrous annuals; leaves alternate; flowers large, pedicels solitary or fascicled to the axils of the leaves, rarely on a very short peduncle; sepals 2 or 4; dorsal auricle of wings large. A considerable section in the Himalaya, unknown in the Western and Malaya Peninsulas.

Sepals 4, outer dimidiate-ovate:
Leaves ovate or ovate-lanceolate
40. I. arguta
Hk. f. & T.

Leaves linear-lanceolate
41. I. Wattii Hk. f.

Sepals 2 suborbicular, leaves ovate
42. I. psittacina
Hk. f.

§ 14. Leaves alternate; infl. a long peduncled axillary raceme of large flowers; sepals 2; standard dorsally spurred; dorsal auricle of wings large.—A large section in the Himalaya, absent in the Eastern and Western Peninsulas:

Perennial?, leaves large, glabrous or puberulous
43. I. Jurpia Ham.

§ 15. Annual glabrous herbs; leaves alternate, often crowd towards the tips of the stem and branches; infl. of long-peduncled racemes of small flowers; sepals 2, small or
minute; lip scaphiform, infundibular or tubiform; often long-spurred.—This section which abounds in the Himalaya is absent in the Western and Malayan Peninsulas.

† Flower-buds, excluding the spurs, globose, mouth of lip of expanded flowers horizontal or nearly so:—

Pedicels and bracts mostly whorled or fascicled. . 44. I. radiata

Hk. f. & T.

Pedicels seriate:—

Leaves crenate, sepals ovate falcate . . 45. I. racemosa DC.

Leaves crenate-serrate, sepals broadly ovate . 46. I. paludosa

Hk. f. & T.

†† Flower-buds, excluding the spur, ovoid or ellipsoid, mouth of lip of expanded flowers ascending at an acute angle:—

Bracts persistent, sepals obliquely ovate:—

Stem stout, leaves lanceolate . . . 47. I. angustiflora

Hk. f.

Stem slender, leaves ovate . . . 48. I. bracteolata

Hk. f.

Bracts caducous:—

Lip spurred:—

Stem erect, sepals uncinate long-awned . . 49. I. drepentophora

Hk. f.

Stem prostrate creeping, sepals obtuse . . 50. I. prostrata

Hk. f.

Lip spurless, flowers minute 51. I. depauperata

Hk. f.

**Bracts on the pedicels of a few-fld. raceme, rarely at the forks or o.

§ 16. Glabrous or pubescent annuals; leaves alternate, stipular glands o; sepals 2 or 4; dorsal auricle of wings large; capsule slender:—

Sepals 4, outer orbicular, inner shorter . 52. I. manipurensis

Hk. f.
OBSERVATIONS AND LOCALITIES.

§ 1.
1. I. bracteata Coleb., vide ante, p. 18.
   Khasia Hills alt. 2,500-5,000 ft.—Also in Sikkim, naturalized?

§ 2.
2. I. pulchra Hk. f. & T., vide ante, p. 18.
   Khasia Hills, alt. 4,000-5,000 ft.—Also in Sikkim.
3. I. latiflora Hk. f. & T., vide ante, p. 19.
   Khasia and Naga Hills, alt. 2,500-4,000 ft.—Also in the Eastern Himalaya.
   Khasia and Jyntea Hills, alt. 3,500-5,000 ft.

§ 3.
5. I. racemulosa Wall.; Fl. Brit. Ind. i. 468.
   Khasia Hills, alt. 4,000-5,000 ft.

§ 4.
   Silhet, Cachar, Upper and Lower Burma, at low elevations.—
   Also most parts of warm Asia.

§ 5.
7. I. florulenta Hk. f.; nov. sp.
   Southern Shan States.
8. I. curvipes Hk. f.; nov. sp.
   Southern Shan States, all 4,000 ft.

§ 6.
   Tenasserim; Maulmain Hills.
10. I. Mokimi Hk. f.; nov. sp.
    Upper Burma; Kachin Hills.

§ 7.
11. I. capillipes Hk. f. & T.
    Tenasserim; Maulmain Hills.
12. I. micromeris Hk. f.; nov. sp.
    Tenasserim.


§ 8.


Khasia, Naga and Manipur Hills, alt. 2,000-5,000 ft.


Khasia Hills, alt. 5,000-6,000 ft.

15. *I. Marianæ* *Reichb. f.*; nov. sp.

Assam.

16. *I. Manuïi* *C. B. Clarke*; nov. sp.

Assam.

17. *I. aunulifer* *Hk. f.*; nov. sp.

Naga and Manipur Hills, alt. 3,000-5,500 ft.

18. *I. burmanica* *Hk. f.*; nov. sp.

Upper Burma, Bhamo and Kachin Hills.

19. *I. Andersoni* *Hk. f.*; nov. sp.

Shan States; Hœtone.

20. *I. cuspidifera* *Hk. f.*; nov. sp.

Naga Hills, alt. 6,000 ft.

21. *I. striolata* *Hk. f.*; nov. sp.

Khasia Hills, alt. 4,000-5,000 ft.

22. *I. nigrescens* *Hk. f.*; nov. sp.

Assam.

§ 9.

23. *I. trilobata* *Coleb.*, see ante, p. 19.

Assam, Silhet and Cachar, at low elevations.—Also in Sikkim.


Khasia Hills, alt. 4,000-5,500 ft.

25. *I. tripetala* *Roxb.*, see ante, p. 19.

Assam, Silhet and Cachar, at low elevations.—Also in Sikkim and N. E. Bengal.


Khasia, Jyntea and Manipur Hills, alt. 2,000-5,000 ft.
27. I. stricta C. B. Clarke; nov. sp.  
Khasia and Manipur? Hills, alt. 750-2,500 ft.

Assam, Silhet, Khasia and Manipur, Mandalay and Shan Hills, alt. 3,000-5,500 ft.—Also in the Malabar Ghats.

29. I. Helferti Hk. f.; nov. sp.  
Tenasserim.

30. I. Masoni Hk. f.; nov. sp.  
Upper Burma, Mandalay district.

31. I. Craddockii Hk. f.; nov. sp.  
Upper Burma; Nahi.

32. I. oppositifolia Linn.; Fl. Brit. Ind. i. 448.  
Rangoon and Maulmain.—Also in the Western Peninsula and Ceylon.

§ 10.

33. I. tavoyana Benth.; Fl. Brit. Ind. i. 468.  
Tavoy.

34. I. circäöoides Wall.; Fl. Brit. Ind. i. 453.  
Pegu and Maulmain.

35. I. penguana Hk. f.; nov. sp. I. circäöoides, in part, Fl. Brit. 
Ind. i. c.  
Pegu.

36. I. rangoonensis Hk. f.; nov. sp.  
Pegu; Rangoon.

37. I. Brandisii Hk. f.; nov. sp.  
Tenasserim; at Thoungyeen.

§ 11.

38. I. lëvigata Wall.; Fl. Brit. Ind. i. 473.  
Khasia, Naga and Manipur Hills, alt. 2,000-5,000 ft.

§ 12.

Maulmain.

§ 13.

40. I. arguta Hk. f. &\* T.; vide ante, p. 22.  
Khasia, Naga and Shan Hills.—Also in Sikkim and China.
41. I. Wattii *Hk. f.*; nov. sp.
   Manipur Hills, alt. 3,000-5,000 ft.

42. I. psittacina *Hk. f.*; *Bot. Mag.* t. 7809.
   Shan States.

§ 14.

43. I. Jurpia *Ham.*, see ante, p. 20.
   Khasia Hills, alt. 4,000-5,000 ft.—Also in Nepal and Sikkim.

§ 15.

44. I. radiata *Hk. f.* & *T.*, vide ante, p. 20.
   Khasia Hills, alt. 4,000-5,000 ft.—Also in Sikkim.

45. I. racemosa *DC.*, vide ante, p. 21.
   Khasia Hills, alt. 4,000-5,000 ft.—Also in the Eastern and Western Himalaya.

   Khasia Hills, alt. 4,000-6,000 ft.

47. I. angustiflora *Hk. f.*; *Fl. Brit. Ind.* i. 481 in part.
   Khasia Hills, alt. 5,000 ft.

   Khasia Hills, alt. 5,000 ft.

49. I. drepanophora *Hk. f.*, vide ante, p. 22.
   Khasia, Jyntea, Naga and Kachin Hills, alt. 5,000-5,500 ft.—
   Also in Sikkim.

50. I. prostrata *Hk. f.*; nov. sp.
   Manipur, alt. 5,500 ft.

51. I. depauperata *Hk. f.*; nov. sp.
   Khasia Hills, alt. 4,000-5,000 ft.

§ 16.

52. I. manipurensis *Hk. f.*; nov. sp.
   Manipur,
   Undeterminable species *I. assamensis, Griff. Notul.* iv, 459; *Le. Pl. Asiat* t. 529.—Assam, on sandy banks of the Brahmaputra, near Dibong Mooka, *Griffith,* 1836. The description and plate are at variance and irreconcilable.

G. I. C. P. O.—No. 673 D. B. S. I.—20-5-1905.—450—P. M. M.