

Noviciæ Indicæ X. *Some additional Fumariaceæ.*—By D. PRAIN.

[Read 4th December, 1895.]

The remarks made at the commencement of the ninth contribution of species new to the Indian Flora apply to the present one also.

The *Fumariaceæ* form in reality only a suborder of *Papaveraceæ*. The limitation of genera here has given even greater trouble than in the case of *Papaveraceæ* proper, while of late years systematists have had to contend with a complicated synonymy due to a well-meant but, the writer believes, too rigid application of the rules regarding priority of nomenclature. As in the present paper the writer adheres both to the generic limits and the generic names of the *Flora of British India*, and as no new genera belonging to the group have been reported from India, no new generic key is required.

1. HYPECOUM TOURNEF.

Key to the Indian species.

- * Leaf segments linear; flowers yellow; fruits pendulous
 thickish 1. *H. parviflorum*.
 ** Leaf segments oblong; flowers pale purple or white with
 purple streaks, rarely yellow; fruits ascending narrow ... 2. *H. leptocarpum*.

1. HYPECOUM PARVIFLORUM Kar. & Kir. *Bull. Soc. Mosc.* xv. 141 (1842). *H. procumbens* H. f. & T. *Flor. Ind.* 275 (1855); *Flor. Brit. Ind.* i. 120 (1872) *nec* Linn. *H. pendulum* Boiss. *Flor. Or.* i. 125 (1867) *in parte, syn.* *H. caucasicum* Koch *exclus. vix* Linn.

Add to localities of F. B. I.:—N.-W. HIMALAYA; Gilgit, *Giles!*

Substitute for distrib. of F. B. I.:—Beluchistan, Afghanistan, Western Persia, Turkestan, Yarkand, Soongaria.

This species comes just within the western border of the Indian region. It is a plant with precisely the habit of *Hypecoum pendulum*, with which species M. Boissier has identified it but differs so markedly in certain respects that Sir J. D. Hooker and Dr. Thomson, in both their treatises on the Indian species, have preferred to include it in *H. procumbens*. It does not agree in habit with this latter species nearly so well, but its fruits, being more decidedly dehiscent into joints than those of true *H. pendulum* are, agree better with those of *H. procumbens*. It will be noted that Hooker and Thomson include the plant in a species that has 3-lobed outer petals, while Boissier includes it in one that has entire outer petals. Both courses are justifiable because in the Indian plant this character breaks down; some of the specimens have entire, others have 3-lobed petals. The original Soongarian specimens on which Karelin and Kirilow's species was founded have entire outer petals as in *H. pendulum*; the characters on which they have relied in distinguishing their plant are the greater tendency to dehiscence of capsule seg-

ments and the fact that the epidermis remains entire after the segments have fallen away. This is characteristic of the Indian specimens also, whether the outer petals be lobed or entire, and it is on this account that the writer makes the identification noted above. Thus considered the plant is seen to be a very distinct geographical form occupying the eastern portion of the Mediterranean and Central Asian region. The differences implied by their fruit-characters are however so decidedly only differences of degree, that in a monographic review of the genus it would probably be preferable to unite *H. parviflorum* with *H. pendulum* as M. Boissier has proposed. For the purposes of a local Flora it is obviously better to follow Sir J. D. Hooker and Dr. Thomson in separating them.

2. *HYPECOUM LEPTOCARPUM* *H. f. & T. Flor. Ind.* 276 (1855); *Flor. Brit. Ind.* i. 120 (1872); *Franchet, Bull. Soc. Bot. Fr.* xxxiii. 391 (1886); *Maxim., Flor. Tangut.* 37; *Enum. Mongol.* 36.

Add to localities of F. B. I.:—Badakshan, *Giles!* Pangi, *Heyde!* Kamaon, *Duthie!* Bootan, Chumbi and Phari, *Dr. King's Collectors!* *DISTRIB.* E. Tibet (*Thorold!*) S. E. Tibet (*King's Collectors!*) N. Tibet (*Przewalski!*) China; Kansu (*Potanin!*) Szechuen (*Pratt!*) Yunnan (*Delavay!*)

This very distinct species comes just within the northern border of the Indian region. Its area lies to the east of that occupied by the preceding but without overlapping it. Very nearly related to this and perhaps only varietally distinct is *H. chinense* Franchet, [*Pl. David.* i. 27 (1884)]. This differs somewhat from *H. leptocarpum* in foliage and differs moreover in having yellow petals. The colour noted for the petals of *H. leptocarpum* are "pale purple" (*Hooker*) and "pink," "rose," "slate-coloured," "bluish-white," "white with purple-streaks" (various collectors sent by Dr. King); in one gathering from Chumbi, the petals have been noted as "yellow." This gathering therefore, agrees with M. Franchet's plant, which comes from the neighbourhood of Pekin, as to flowers; at the same time it has the foliage of the other specimens and could not be separated, even as a variety, from *H. leptocarpum*. The existence of this form strongly supports M. Franchet's suspicion (*loc. cit.*) that *H. chinense* is merely a variety of *H. leptocarpum*. In Northern Tibet and Mongolia the flowers, Mr. Maximowicz says, are always pale-yellow, never blue.

DICENTRA BORKH.

Key to the Indian species.

* Bracts elongate, capsules narrow linear, coriaceous:—

† Bracts as long as pedicels; capsules torulose, seeds opaque ... 1. *D. torulosa.*

†† Bracts shorter than pedicels; capsules not torulose, seeds shining ... 2. *D. Roylei.*

** Bracts very small, capsules broad (seeds shining):—

† Capsule membranous, acute at both ends, early dehiscent ... 3. *D. Macrocarpos.*

†† Capsule fleshy, ovate-cordate, tardily or not dehiscent 4. *D. scandens.*

In habit, the Himalayan *Dicentras* differ widely from all the North Asian and North American forms; in this respect they agree with the American plant known as *Adlumia cirrhosa*, which, differing as it does from *Dicentra* only in having its 4 petals united, scarcely deserves generic rank.

1. *DICENTRA TORULOSA* H. f. & T., *Flor. Ind.* 272 (1855); *Flor. Brit. Ind.* i. 121 (1872). KHASIA; Griffith! Mann! Collett! BURMA; Mynela, Anderson! DISTRIB. Yunnan (*Delavay*!)

M. Franchet has shown the writer Chinese specimens of this species recently received at Herb. Paris.

2. *DICENTRA ROYLEI* H. f. & T., *Flor. Ind.* 273 (1855); *Flor. Brit. Ind.* i. 121 (1872). *Corydalis scandens* Franch. *Bull. Soc. Bot. Fr.* xxxiii. 391 (1886); *Pl. Delavay.* 44 (1889) *nec Spreng.*

KAMAON: Simla, Lady Dalhousie! Mussoorie Royle! Falconer! Dippi, 8,000 ft. Brandis 3272! BOOTAN: Griffith! KHASIA: Griffith! Robertson! DISTRIB. Yunnan (*Delavay*!)

This is the second of the scandent group of *Dicentras* characteristic of the Himalayan region that extends to South-west China. M. Franchet in referring the whole genus *Dicentra* to *Corydalis* adopts a course with which the writer is much inclined to agree, but which in a paper like the present it is not advisable to follow. The step is only a reversion to the view advocated by Sprengel. By a *lapsus calami* the specific name of another North-west Himalayan plant has been given in the *Plantae Delavayanae*; Delavay's specimens show that the Yunnan plant is *D. Roylei*.

3. *DICENTRA MACROCAPNOS* Prain. *Dicentra scandens* H. f. & T. *Flor. Ind.* 273 (1855); *Gen. Pl.* i. 55 (1862); *Flor. Brit. Ind.* i. 121 (1872) *nec Walp.* *Dactylicapnos thalictrifolia* Wall. *Cat. n.* 1426/2 *tantum* (1829) *nequaquam Tent.* *Flor. Nepal.* *Macrocapnos Royle ex Lindl. Nat. Syst.* ed. ii. 439 (1836); *Royle Ill.* 68 (1839).

GARHWAL: Edgeworth! above Kinoli, Duthie n. 3820! above Ghát, 7-8,000 ft. Duthie n. 3821! KAMAON: Dwarahat and Sebah, Saharanpur Collectors! near Kaladoongi, etc., Davidson! Blinkworth (*Wall. Cat. n.* 1426/2)! Royle!

Nepal is also given as a locality for this species both in *Flor. Ind.* and *Flor. Brit. Ind.* This is the result of Dr. Wallich having, in the distribution of the E. I. C. Herbarium, mixed specimens of this species sent him by Blinkworth, with his own *Dactylicapnos thalictrifolia* from Nepal. But though Wallich erred in his identification he did not issue Blinkworth's plant as a Nepalese one, the original tickets as well as the lithographed catalogue alike indicate carefully that Blinkworth's plant (which is Wallich's n. 1426/2) came from Kamaon. Wallich's n. 1426/1, which he himself collected in Nepal, is not a mixture of two species; it is his own *Dactylicapnos thalictrifolia* and is the only *Dicentra* that he obtained in Nepal. The Wallichian error was pointed out by Royle (*Ill.* 68) in 1839, but his remarks were unfortunately ignored by Walpers (*Repert.* i. 118) when in 1842 he revised the

genus. Indeed Walpers deliberately identifies the present plant, which is Royle's *Macrocapnos*, with *Dactylicapnos* of Wallich, although Royle is careful to point out that Wallich's plant is quite different from his. Sir J. D. Hooker and Dr. Thomson, unwilling to invent a new name for the Kamaon species, use Walpers' name for it, retaining Wallich's for the Nepal species seeing that it was the plant which Wallich originally described. Unfortunately, however, the use of Walper's name did not originate with himself but with Don, who employed it, without any of the blunders of Wallich or of Walpers, for the Nepal plant. This original description (*Prodr. Flor. Nep.* 198) is indeed so meagre that it might apply to either species but the fact remains that it can only apply to the Nepal one, since the Kamaon plant, named *D. scandens* in the *Flora of British India*, had not then been collected, and has not even yet been obtained in Nepal. And, as if this were not enough, we find that in the account of the Nepal plant in Sweet's *Brit. Fl. Garden*, Don's name *Diclytra scandens* of the *Prodr. Flor. Nep.* is expressly stated to be the same as Wallich's *Dactylicapnos thalictrifolia* of the *Tent. Flor. Nep.*; this account is written by Don himself. This being the case Walper's name must go to designate, as he intended that it should, the plant already named by Don *Diclytra scandens*. The best distinctive name for the Kamaon plant seems then to be that which Royle had proposed to use generically; it has accordingly been here adopted.

4. *DICENTRA SCANDENS* Walp. *Rep.* i. 118 (1842)—*syn.* *Macrocapnos Royle exclus.* *Diclytra scandens* D. Don, *Prodr. Fl. Nep.* 198 (1825). *Corydalis scandens* Spreng. *Syst. Veg.* iv. cur. post. 265 (1827). *Diclytra scandens* G. Don, *Gen. Syst.* i. 140 (1831). *Dactylicapnos thalictrifolia* Wall. *Tent. Fl. Nep.* 51. t. 39 (1826); *Cat.* n. 1426/1 *tantum* (1829); G. Don, *Gen. Syst.* i. 141 (1831); D. Don in Sweet, *Brit. Fl. Gard.* ser. ii. t. 127 (1832). *Dicentra thalictrifolia* H. f. & T. *Flor. Ind.* 273 (1855); *Flor. Brit. Ind.* i. 121 (1872).

NEPAL: Noakote, Wallich n. 1426/1! SIKKIM; very common. BOOTAN; Griffith! KHASIA; very common. MISHMI: Yeu, in woods, Griffith!

There is little doubt that this species is quite distinct from the preceding in spite of their having been considered identical by Wallich. The bibliographical confusion that has prevailed as the result of this identification has been discussed above under the Kamaon species.

3. CORYDALIS DC.

Key to the Indian species.

* Base of stem naked; rootstock short (unknown in *C. lathyroides*) capsules not inflated:—

+ Stem arising from apex of a solitary tuber; leaves 3-nately divided:—

+ Tuber globose; stem leaves opposite:—

§ Leaves long petioled, spur wide infundibuliform, (spur recurved, tip incurved) ...

§§ Leaves sessile or subsessile, spur cylindric:—

¶¶ Spur slightly recurved, tip straight ...

¶¶ Spur much recurved throughout its length, (flowers horse-shoe shaped, twice as large as ...

in the two preceding species) ...

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++ Stem arising from apex of a rootstock with fasciculate roots some at least of which are tuberous (doubtful in *C. lathyroides*):

+ Flowers subumbellate, blue:—

§ Cauline leaves subsessile, palmately divided, bracts laciniate ...

§§ Cauline leaf distinctly petioled, 3-foliolate, bracts entire ...

§ Flowers in elongated racemes, yellow:—

§ Cauline leaves divided:—

¶¶ Stems slender branching; leaves simply pinnate, lobes ovate, obtuse ...

¶¶ Stems simple or only branched in the inflorescence; leaves primarily but unequally ...

ternately divided, lobes acute:—

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** Base of stem surrounded by old leaf sheaths:—

+ Stem arising from apex of short rootstock with fasciculate roots; leaves ternate, stems branched:—

† Capsules narrow linear, seeds 1-seriate (unknown in No. 13):—

§ Leaves unequally ternate, (i.e. lateral segments manifestly smaller than terminal); cauline sessile, (i.e. lateral segments arising at base of petiole) ...

§§ Leaves equally ternate, (i.e. lateral segments not manifestly smaller than terminal); cauline long petioled, petioles vaginate at base:—

¶¶ Leaves twice ternately divided ...

¶¶ Leaves three times ternately divided ...

¶¶ Capsules oval, seeds 2-seriate, leaves equally 2-3 times ternately cut, cauline petioles very long, with much expanded basal sheaths ...

¶ Stem arising from apex of elongated, cylindric, or fusiform rootstock:—

+ Capsules not inflated, leaves much divided:—

1. *C. diphylla*.

2. *C. persica*.

3. *C. cyrtocentra*.

4. *C. alpestris*.

5. *C. cachemiriana*.

6. *C. trifoliolata*.

7. *C. lathyroides*.

8. *C. graminea*.

9. *C. polygalina*.

10. *C. juncea*.

11. *C. flaccida*.

12. *C. leptocarpa*.

13. *C. triternata*.

14. *C. Laelia*.

§ Leaves primarily ternately divided, (*i.e.* only 1 pair of lateral segments or, if more than 1 pair, the lowest pair opposite, more subdivided and manifestly larger than any subsequent pair):—

¶ Stems simple:—

- × Cauline leaves 0, or casually 1; petals not winged ... 15. *C. crithmifolia*.
- × × Cauline leaves 2, opposite; petals winged ... 16. *C. Falconeri*.

¶¶ Stems branched:—

× Dwarf, very small, slightly branched plants with numerous close-set leaves, the leaf segments almost always mucronate, the petioles winged throughout their length, the flowers in dense corymbs partly, and the fruits completely, hidden amongst large foliaceous bracts:—

- || Petioles not so wide as leaf-segments, petiolules not expanded; leaves equally ternate; seeds few (2-4); spur shorter than lamina ... 17. *C. mucronifera*.
- |||| Petioles broader than the leaf-segments, petiolules also winged; spur longer than the lamina:—

⊙ Leaves equally ternate; seeds 8-9; flowers thrice the size of those in n. 17 and n. 19 ... 18. *C. Hendersonii*.

⊙⊙ Leaves unequally ternate, (*i.e.*, terminal lobe much larger and more subdivided than the lateral); seeds few (2-4); lobules of leaves and bracts with long setaceous tips ... 19. *C. Boweri*.

× × Elongated, diffusely branched plants with slender stems and scattered leaves with narrow petioles, the flowers in elongated racemes, the bracts very small:—

- || Leaves equally twice ternate, the terminal segment not sensibly larger than the lateral:—
- ⊙ Lower outer petal not saccate, spur of upper as long as lamina, slightly recurved; capsule linear, seeds 1-seriate; upper bracts very small, subentire ... 20. *C. Casimiriana*.

⊙⊙ Lower outer petal saccate, spur of upper shorter than lamina, straight; capsules oval, seeds 2-seriate; all bracts subequal incised ... 21. *C. longipes*.

|||| Leaves very unequally ternate; the terminal segment much exceeding and more subdivided than the lateral which may casually be only sub-opposite:—

- ⊙ Leaf-segments two to three times completely divided; ultimate segments distinct:—
- + Stems branched at base only; (a very slender plant with 1-2 cauline leaves, with minute rounded or oblong ultimate segments) ... 22. *C. flicina*.
- + + Stems branching throughout —
- a. Terminal leaf-segment again twice trisect:—

- ++ Petals winged:—
 a. Branches few, bracts all large leafy lanceolate:—
 a. Bracts entire; stem often unbranched ... 36. *C. Moorcroftiana*.
 b. Bracts incised ... 37. *C. Gortschakovii*.
 b. Branches numerous, lowest bracts large ovate leafy
 much incised, the rest all linear entire small; flowers
 and fruits smaller than in the 2 preceding species ... 38. *C. thyrsiflora*.
 ○○ Leaf segments 2-3-times pinnatisect lobes linear:—
 + Petals broadly winged; branches numerous; spur very short 39. *C. meifolia*.
 + Petals uncrested; branches few, spur nearly as long as
 lamina; lower leaves opposite ... 40. *C. dubia*.
 || Branching not confined to region of inflorescence; leaves much divided:—
 ○ Cauline leaves and branches opposite, flowers subumbellate; spur
 very short, wings of petals very broad ... 41. *C. latiflora*.
 ○ Cauline leaves and branches alternate, flowers in racemes:—
 + Stem branching near base only, racemes lax, bracts very
 large, foliaceous, laciniate to near their bases ... 42. *C. pulchella*.
 ++ Stem branching throughout:—
 a. Racemes lax, bracts small; long, diffusely branching
 plants ... 43. *C. Stracheyi*.
 b. Racemes dense, bracts large cuneate laciniate to their
 middle; usually dwarf plants with stems sometimes
 unbranched and cauline leaves often subopposite ... 44. *C. nana*.
 x x Spur of upper petal distinctly saccate:—
 || Stem branched in inflorescence only or casually simple ... 45. *C. stricta*.
 ||| Stems branched throughout:—
 ○ Capsule ovate, seeds 2-seriate, leaves 2-3-pinnatisect ... 46. *C. rupestris*.
 ○ Capsules linear, seeds 1-seriate:—
 + Capsules tortuous; leaves 2-3 pinnatisect ... 47. *C. ophiocarpa*.
 ++ Capsules straight:—
 a. Leaves 2-3-pinnatisect ... 48. *C. adunca*.
 b. Leaves simply pinnate:—
 a. Pinnæ flabellate, broad; pedicels very short:—
 1. Bracts small, shorter than the buds ... 49. *C. flabellata*.
 2. Bracts setaceous, exceeding the buds ... 50. *C. adiantifolia*.
 β. Pinnæ narrowly cuneate; pedicels conspicuous... 51. *C. Schelesnowi-
 ana*.
 †† Capsule inflated, leaves reniform, subentire or 3-5-lobed to partite; stems simple, or branched in
 region of inflorescence only ... 52. *C. crassifolia*.

Since 1872, when the account of this genus in the *Flora of British India* was published, the number of species reported from the Indian area has been doubled. For our acquaintance with eight of the newly reported species from the north-west Himalayan region, we are indebted to the exertions of Mr. Duthie of Saharanpur; ten more are due to the extensive exploration of the provinces of Sikkim and Chumbi conducted by Dr. King during the past twenty years. Four others from the north-west and north-east frontiers have been obtained by Dr. Aitchison, Mr. Ellis, Mr. Lace and Dr. Watt. The remaining species, recognised in this paper as separate, are plants known at the time of publication of the *Flora of British India*, but in that work referred to other species. In nearly every case they had already received the rank of varieties; in every instance not only their existence but the fact that they exhibit characters deviating from those of the species to which they have been tentatively referred, has been pointed out by Sir Joseph Hooker and Dr. Thomson; their present recognition as species apart is due to the communication since 1872 of more extensive material for study.

In the foregoing Key, which has been prepared principally with a view to the assistance of field botanists, pains has been taken to avoid as far as possible the use of floral characters. The characters derived from the flowers do not in the writers' experience assist one greatly in classification. The relative length of spur and lamina of the larger outer petal is not quite a reliable character; though in the majority of cases this relationship remains fairly uniform, there are some in which it does not, there being considerable variability in the absolute length of spur within the limits of some at least of the species here recognised, without any corresponding alteration of dimensions on the part of the lamina. The presence or absence of wings to the petals is another character that, taken by itself, appears to fail; at all events among Indian species it has been found necessary to include in at least two, *C. cachemiriana* and *C. tibetica*, that are widely divergent, forms which save for the complete absence of wings to the petals cannot be distinguished from their respective types. Nor is colour of material assistance. In the large majority of Indian species the flowers are some shade of yellow, in one instance (*C. ophiocarpa*) so faint that the flowers are almost white; in the remaining species the flowers are mauve or purple. But one species with usually purple flowers (*C. flaccida*) sometimes has yellow petals, and two species usually with yellow flowers (*C. meifolia* and *C. crispa*) sometimes have them mauve.

That good characters for purposes of classification are likely to be obtained from the fruit and seed is very probable. But in a considerable number of cases ripe fruits and seeds are still unknown; it is very difficult to obtain the fruits of autumn flowering species owing to the necessity that collectors are under of hurrying away, before their fruits are fully ripe, from the inclement altitudes that many of the species affect. In the meantime, therefore, it has been deemed advisable to use for purposes of arrangement and, as far as possible of specific diagnosis also, the more general characters derived from habit and foliage.

It may be mentioned that it has been found impossible in drawing up the Key to retain unbroken the section of species with fibrous roots and 1-seriate seeds proposed in the *Flora of British India*. One of the three species included in that section proves to be possessed of a fusiform rootstock and to be more nearly allied to *C. flabellata* and *C. adiantifolia*, two species with also 1-seriate seeds though already placed in the other section. On the other hand *C. Laelia*, a new species from Sikkim, has fasciated fibrous roots and oval capsules with 2-seriate seeds. The sec-

tions recognised in the most recent revision of the natural order* seem already to require reconsideration on account of the enormous accession during recent years of Chinese species; the writer therefore refrains for the present from giving names to, or even from attempting to define, the limits of the more or less natural groups that occur in the genus. It is however only just to those who may consult this Key, to explain that it has been made to adapt itself to as natural a serial arrangement of the Indian species as it has been possible to draw up; in no single instance has a species been *intentionally* removed from the vicinity of its nearest allies to suit the exigencies or to facilitate the construction of an artificial Key.

Of the species in the list the first three and the forty-sixth (*C. rupestris*) belong to the flora of the Orient, the remainder of the north-west Frontier and almost all the north-west Himalayan ones are species whose affinities are with the Altaian and Siberian flora; those of the Central and Eastern Himalaya, with very few exceptions, show on the other hand Chinese affinities.

The number exhibited within brackets after the serial number of each species in the list indicates to the student the serial number it bears in the *Flora of British India*.

1. (4.) *CORYDALIS DIPHYLLA* Wall. *Tent. Flor. Nep.* 54; leaves opposite long-petioled, twice ternately cut, primary petiolules not exceeding the petiole in length; spur widely infundibuliform rapidly tapering, obtuse slightly incurved at tip. Wall. *Cat.* 1430. *C. longipes* Don, *Prodr.* 198 (not of DC.) *C. Hamiltoniana* Don, *Syst. Gard.* i. 142. *Corydalis* sp. Griff. *Icon. Pl. Asiat.* t. 658, f. 3. *C. rutaefolia* H. f. & T. *Flor. Ind.* 262; *Flor. Brit. Ind.* i. 122 (not of Sibth.)

CENTRAL and WESTERN HIMALAYA: Nepal, Wallich n. 1430! n. 1433 in part! Kamaon; common. Kashmir; common. Hazara; Stewart! Kurram Valley, Duthie's Collectors! DISTRIB. Afghanistan.

This species has a globose tuber; the "long slender root" (*De Candolle*) or "slender rootstock" (*Hooker & Thomson*) ascribed to it is in reality that part of the stem between the deeply buried tuber and the surface of the soil.

The species is easily distinguished from its nearest allies, *C. rutaefolia*, *C. Ledebouriana*, *C. persica*, *C. cyrtocentra*, *C. darwasica*, *C. macrocentra* and *C. Sewerzovii* by its long-petioled leaves.

Dr. Aitchison, in reaffirming M. Boissier's contention that the Afghan plant united to this by Drs. Hooker and Thomson is different from *C. rutaefolia*, has not called attention to the fact that, while this is the case, the Afghan plant to which Boissier and he refer is even more distinct from the Himalayan one than it is from true *C. rutaefolia*. In any case Dr. Aitchison's synonymy is slightly at fault; granting *C. Griffithii* to be the same as *C. rutaefolia* H. f. & T. (not of Sibth.), which is what he claims (*Journ. Linn. Soc.* xix. 151), the name *C. diphylla* Wall., which is about 30 years prior to Boissier's, ought to have been used. Not only however are the two species quite distinct, they are not even representative forms growing in distinct areas; quite recently Mr. Duthie's collectors have obtained true *C. diphylla* as well as *C. persica* (*C. Griffithii*) in the Kurram Valley, while Genl. Gatacre on the other hand has collected *C. persica* in the Ziarat Valley.

* Prantl and Kundig, in Engler, *Natürlich. Pflanzenfam.*

2. (sub 4.) *CORYDALIS PERSICA* Cham. & Schlecht., *Linnæa* i. 567; leaves opposite sessile or short petioled twice ternately cut; spur not infundibuliform, obtuse recurved and slightly incurved at tip. *Boiss. Flor. Orient.* i. 127. *C. Griffithsii* Boiss. *Diagn. ser. 2. i.* 15. *C. Griffithii* Boiss. *Flor. Orient.* i. 127; Aitchison, *Journ. Linn. Soc.* xix. 151. *Corydalis* sp. *Griff. Ic. Pl. As.* t. 658, f. 2.

NORTH-WEST HIMALAYA: Ziarat Valley, 7,000 feet, *Gatacre!* Kurram Vally, *Aitchison!* *Duthie's Collectors!* **DISTRIB.** Afghanistan; Northern Persia.

Near the preceding species, but hardly, as Aitchison suggests, the same. Here the leaves as in *C. rutaefolia* may either be sessile or shortly petioled but even if petioled they are easily distinguished from the leaves of *C. diphylla* by having the primary petiolules longer than the petioles. The flowers too are quite different, the differences being not at all badly shown even in the indifferent reproductions of Griffith's drawing.

Mr. Boissier has himself expressed the belief that his own *C. Griffithii* does not differ sufficiently from *C. persica*. Dr. Regel has gone further and has identified *C. persica* with *C. verticillaris* DC.; had this been justifiable then M. de Candolle's, as being the older name, is the one that should have been used. But it seems better in the mean time to keep *C. verticillaris*, which has flowers with straight spurs, more like those of *C. rutaefolia* proper, apart from *C. persica*. The specimens from Turkestan referred to *C. persica* by Dr. Regel (*Act. Hort. Petrop.* viii. 694 t. 16) have flowers with broad explanate lips to the outer petals, in this way differing rather markedly from all the remaining opposite-leaved members of this section. Among the material of the genus kindly lent the writer for study by Dr. Batalion from the Imperial Herbarium, St. Petersburg, is one specimen which shows that originally Dr. Regel had thought of separating the broad-lipped plant under the name *C. darvasica* Regel; this name the writer proposes to sustain. The figure given by Dr. Regel does not show clearly the character of the lips.

3. (—.) *CORYDALIS CYRTOCENTRA* Prain; leaves opposite, sessile, twice ternately cut, petiolules very long; spur very long, not infundibuliform much recurved throughout, erect from the base and overarching the lamina of its lip; inner petals projecting beyond outer.

NORTH-WEST HIMALAYA: Chitral, *Younghusband!*

Habit of *C. Ledebouriana* and the other sessile-leaved members of this group. Flowers 1 in. long, twice as large as in the two preceding species, spur not incurved at tip. Bracts large ovate entire, longer than the pedicels.

This very closely approaches *C. macrocentra* Regel, from which however it differs in having smaller leaves, entire bracts, shorter pedicels, purple or pink, not yellow flowers, and ovules more numerous and in 2-rows. The spur of *C. macrocentra* is moreover at first straight and horizontal as in *C. Sewerzovii*, not erect from the base as in this species. As regards leaves and bracts it more resembles *C. Sewerzovii*; more closely still does it approach *C. Ledebouriana*, of which it may ultimately prove to be an extreme large-flowered form. The spur in *C. Ledebouriana* is however in most cases very different, having usually an incurved tip, and being generally somewhat inflated; there are however some specimens of *C. Ledebouriana* from Tur-

kestan with flowers that, though much smaller, a good deal resemble those of *C. macrocentra*.

That the species of the opposite leaved group do not essentially differ from the bulbous-rooted *Corydalis* with alternate leaves, is evident from the fact that occasionally the leaves (as already pointed out by M. de Candolle for *C. rutaefolia*) may be sub-opposite only. Moreover even when patently opposite not infrequently one of the leaves exceeds the other in size and then it is very usual to find, especially in *C. diphylla* and in *C. macrocentra*, in the axil of the larger leaf a branch that may be a leafy shoot only or may be an inflorescence. Sometimes branches occur in the axils of both leaves; this however is rare: more rare still is it to find that these two branches alone are present, the central axis remaining undeveloped.

4. (—.) *CORYDALIS ALPESTRIS* C. A. Mey. *Verzeichn. Pfl. Cauc.* 176 (1831); leaves alternate 3-sect segments all sessile deeply 3-sect, lobes oblong mucronulate entire or 2-3-toothed mucronulate; raceme few-fl'd., flowers close-set, bracts ovate-acute entire equalling the pedicels, outer petals shorter than the much-upturned obtuse slightly incurved spur. *Ledeb. Flor. Ross.* i. 98 (1842). *Corydalis pauciflora* var. *parviflora* Regel, *Bull. Soc. Mosc.* xxxiv. 136 (1861); *Boiss. Flor. Orient.* i. 131 (1867). *C. pauciflora* var. *latiloba* Maxim. *Flor. Tangut.* 38, t. 24 (1889).

KASHMIR: Musjid Valley, 13-14,000 feet, *Duthie* n. 13238! **DISTRIB.** Caucasus and (*fide* Regel) eastward to Kamtschatka and Alaska.

Rootstock a short solid conical scaly tuber dividing below; stems $1\frac{1}{2}$ -4 in., not or hardly longer than the 2-4 scattered cauline leaves in the axils of which arise small leafy shoots, and with 2-3 lanceolate scales between tuber and lowest leaf; petioles 2-3 in., blades $\frac{3}{4}$ in. diam., segments $\frac{1}{2}$ - $\frac{1}{2}$ in. lobules $\frac{1}{2}$ in. wide; radical leaves 1-2 similar to cauline but smaller; bracts $\frac{1}{4}$ in. long $\frac{1}{2}$ in. wide; flowers $\frac{5}{8}$ in. long.

A very interesting addition to the Indian Flora, one of the results of Mr. Duthie's journey of 1893. By Dr. Regel, M. Boissier, and Mr. Maximowicz, Dr. Meyer's species has been reduced to *C. pauciflora* Pers. [*Synops.* ii. 269 (1807)]. But there is little doubt that Dr. Meyer and Mr. Ledebour were justified in treating this as a species. There are tangible differences in the flowers and in the leaves—differences which both Regel and Boissier admit; even however if these possessed but the trivial value assigned them, there remains the character of axillary branches, which, though neglected by Ledebour and Regel, nevertheless exists in the Caucasus specimens of the plant presented to Herb. Calcutta by Dr. Radde, and is also figured and commented on by Mr. Maximowicz. Other alternate-leaved species of *Corydalis* (§ *Capnites*) have it is true the normally simple stems casually branched. But in the writer's experience not only is branching in these species a purely occasional feature, the branches when they occur appear not in the axils of the leaves as in *C. alpestris*, but in the axils of the leaf-scales below the lowest stem-leaf.

That *C. pauciflora* var. *latiloba* Maxim. and *C. pauciflora* var. *parviflora* Regel differ as varieties, the writer quite believes. He believes further that the present plant might perhaps to be considered varietally distinct from both. But while this is the case, he is convinced that all three are to be considered "varieties" of one species, *C. alpestris*, which it is much better to separate from *C. pauciflora*, and which is well characterised by the presence of leafy shoots in its axils.

The true *C. pauciflora* has been very excellently figured by Ledebour in *Ic. Pl.*

Fl. Alt. t. 450. The usually-quoted figure by Delessert in *Ic. Select. ii. t. 9, fig. A.* is either a very bad representation or has been drawn from another species; the drawing shows flowers with the spur much shorter than the petals. The citation of this plate as representing Persoon's plant should be abandoned by botanists.

5. (5.) *CORYDALIS CASHMERIANA* Royle (*errore* Kashmiriana *H. f. & T. Flor. Ind.*; Cachemiriana *H. f. & T. Flor. Brit. Ind.*); rootstock with scaly tip, emitting from its base a fascicle of fusiform fibrous roots.

VAR. typica: outer petals subequal, both crested; spur slightly curved, as long as lower lip, almost as long as lamina of upper lip; bracts rarely more than 3-fid.

NORTH-WEST HIMALAYA: Kashmir; Royle! Duthie! to Western Nepal, Duthie!

Stems 4–12 in. (in Mr. Duthie's most recently collected Kashmir specimens); spur 11 mm. long, lower petal 11 mm., lamina of upper petal 12 mm. long.

VAR. brevicornu Prain: outer petals subequal, both crested, spur straight, shorter than the lamina of upper lip; bracts often 4–6 fid.

EASTERN HIMALAYA: Sikkim, rare. Chumbi and Phari, very common.

Stems 4–10 in. (often 10 in. in Chumbi specimens); spur 5–6 mm. long; lower petal 11 mm., lamina of upper petal 12 mm. long.

VAR. ecristata Prain: outer petals devoid of crests, lower longer than upper; spur much curved, longer than lamina of upper lip; bracts much divided.

EASTERN HIMALAYA: Sikkim, in Jongri and on the Nepal Frontier, common.

Stems 2–4 in. always dwarf; flowers usually much larger than in the preceding varieties, the extreme measurements being—*minimum*, spur 10 mm., lower outer petal 10 mm., lamina of upper petal 8 mm.; *maximum*, spur 15 mm., lower outer petal 12 mm., lamina of upper petal 10 mm.

It is not improbable that this last very distinct variety may prove to be a species apart. Though reported as often as eight times it has unfortunately not yet been collected in fruit. The species most nearly related to the group of forms included under *C. cashmeriana* are the next described, which differs in the points noted in its diagnosis and *C. oxypetula* Franchet, from Yunnan, which differs in having all its bracts entire, in having more flowers arranged in an elongated not a subumbellate inflorescence, in having shorter and thicker pedicels, and in having longer and narrower capsules. It is also nearly related to *C. pachycentra* Franchet, from Yunnan and *C. curviflora* Maxim. from Kansu; along with these it helps to form a very natural group of closely allied forms.

6. (—.) *CORYDALIS TRIFOLIOLATA* Franch. *Bull. Soc. Bot. Fr.* xxxiii. 392 (1886); radical leaf solitary 3–5-sect, cauline solitary 3-folio-

ate long petioled, flowers subumbellate, bracts entire ovate longer than the short pedicels, spur straight shorter than the upper petal. *Plantæ Delavayanae* 46 t. 14 a. (1889).

SIKKIM: Natong, *Dr. King's Collectors!* Too-ko-la *Cummins!*
DISTRIB. Yunnan.

Rootstock small, emitting from base a fascicle of fusiform tubers. *Stems* solitary 6-10 in. *Radical leaves* long petioled early withering, petioles 1-2 in. blade $\frac{1}{4}$ in. across, *cauline* near top of stem, petiole $\frac{1}{2}$ in. long, lobes $\frac{3}{4}$ in. long, $\frac{1}{4}$ in. wide; flowers $\frac{3}{4}$ in. long, yellow and purple; racemes terminal 2-4 fld.; bracts $\frac{3}{4}$ in. long, $\frac{1}{4}$ in. across; sepals minute. *Capsule* linear-oblong.

Very nearly related to *C. oxypetala* and to *C. cashmeriana*; from the former it differs in having subumbellate flowers, from the latter in having entire bracts; from both it differs in having a solitary, petioled cauline leaf.

7. (—.) *CORYDALIS LATHYROIDES* *Prain*; erect very slender, radical leaves 0, stem-leaves two rather wide apart in upper half of stem, each with an axillary leafy branch; racemes at ends of stem and branches 3-5-fld., bracts very small ovate entire; flowers small yellow.

N.-W. HIMALAYA: Kumaon; Râlam Valley, 10-11,000 feet, on rocks, *Duthie* n. 2708!

Rootstock not collected, the stems rigid, with a subopposite pair of very small leaf scales at its base. *Stem* 4-8 in., branches 3-4 in. *Cauline leaves* $2\frac{1}{2}$ in. long, sessile, simply 3-jugate pinnate, the pinnæ ovate obtuse $\frac{1}{2}$ in. long by $\frac{1}{4}$ in. across, glaucous beneath entire or slightly 2-, rarely 3-lobed. *Bracts* very small, $\frac{1}{10}$ in., pedicels $\frac{1}{2}$ in., capsules $\frac{1}{4}$ in. narrowly oblong, style persistent, stigma 2-lobed; seeds very small black shining.

This is such a very distinct plant that it is impossible to refrain from providing a description in spite of its having been incompletely collected. The flowers are reported by Mr. Duthie as yellow, they are unfortunately in so advanced a state that they do not admit of satisfactory examination; the length of spur relatively to lamina cannot be made out and the presence or absence of crests on the petals cannot be determined. But by their small size, not much exceeding that of the corolla in *C. claviculata*, the flowers differ much from those of all Asiatic species except the Chinese *C. racemosa* Pers., which in other respects this in no way resembles. The absence of rootstock makes it impossible to assign the species with certainty to its true section. Obviously however, in spite of its much smaller size, its nearest ally is *C. paeoniaefolia* Pers., concerning the sectional position of which also some dubiety still exists.

8. (—.) *CORYDALIS GRAMINEA* *Prain*; erect slender, radical leaves very long-petioled segments narrowly lanceolate 3 (terminal), or 5 (three terminal with a pair opposite lower down), stem-leaves two near the apex and close together the lower short petioled with 5 segments, the upper sessile with 3 segments, each with axillary racemes; racemes 5-10 fld. bracts all linear entire much shorter than pedicels, upper petal as long as the straight cylindric spur.

SIKKIM: Peykiongla, 13,000 feet, *King's Collectors!* near Pemberingo, *Cummins!*

Stem 6–8 in. *Radical* petioles 7–9 in. segments $1\frac{1}{2}$ –3 in. long, $\frac{1}{8}$ – $\frac{1}{6}$ in. wide, lower cauline petiole $\frac{1}{4}$ in., $\frac{1}{4}$ –1 in. below upper sessile leaf; cauline leaf-segments similar to radical but shorter and narrower; bracts $\frac{1}{4}$ in., pedicels $\frac{1}{2}$ in.; flowers yellow $\frac{1}{2}$ in. long, both outer petals winged.

Very near to *C. linearoides* Maxim. from Kansu and *C. Prattii* Franch. from Szechuen which resemble each other in racemes and bracts, but have different spurs and radical leaves. Of the present species the rootstock has not as yet been collected so that in this respect it cannot be compared with either. From both, however, it differs in having larger flowers and entire, not lacinate, bracts as well as in having secondary racemes in the axils of the two cauline leaves. Of Indian species it most closely approaches *C. polygalina*, of which it has much the flowers and which also sometimes has axillary racemes. In *C. polygalina* however the foliage is quite different, while the cauline leaves are numerous and scattered along the stem.

9. (6.) CORYDALIS POLYGALINA *H. f. & T.*

Add to description of F. B. I.:—

Stems simple or with axillary racemes, several from a stoutish rootstock with scaly tip, which emits numerous lateral and basal much elongated narrowly fusiform roots; radical leaves 2–4, long-petioled, 3-sect with always the terminal petiolulate, and occasionally the lateral sessile segments again trisect, lobules all oblong-lanceolate subequal.

Add to localities:—CHUMBI; Sham-chen *Dungboo!* Syam-chu-chen *King's Collectors!*

Nearly related to *C. graminea*, the characters of which species serve to indicate that this also, in spite of its numerous stem-leaves, is really a member of the same group as the various 2-foliate species referred to in the preceding note. Its most intimate ally is however *C. Delavayi* Franch. [*Bull. Soc. Bot. Fr.* xxxiii. 393 (1886); *Plant. Delavay.* 46, t 14 b. (1889)] from Yunnan, which differs from this species in having the radical leaves more divided, the crest on the upper petal smaller, and the rootstock smaller with the roots more slender. No single one of these characters would be sufficient to separate the two plants specifically; perhaps even their combination only entitles the Yunnan plant to varietal rank.

10. (7.) CORYDALIS JUNCEA *Wall.*

Add to description of F. B. I.:—

Radical leaves solitary very long petioled, 3-sect, segments long petioluled again 3 sect, lobes sessile 3-partite, ultimate divisions ovate acute to (rarely) linear-lanceolate. *Seeds* brown, arillate, very minutely pitted, occasionally 1-seriate.

Two very distinct forms of this species occur in Sikkim; one, exactly like the original plant from Nepal, with rather long slender pedicels much exceeding the bracts and with the petiole of the radical leaf shorter than the stem. This form extends eastward to Phari, Chumbi and Bootan. The other form, confined to Eastern Sikkim and East Nepal has flowers nearly twice as large, pedicels not exceeding the bracts and a radical leaf with petiole as long as the stem. But intermediate forms occur and it is not possible to treat the two forms even as distinct varieties.

11. (2.) *CORYDALIS FLACCIDA* H. f. & T.

In one gathering, from Cho-la in Sikkim, the Native Collector records the flowers as "yellow;" in all the others the flowers are said to be "purple," "dark-purple," or "reddish-blue."

12. (3.) *CORYDALIS LEPTOCARPA* H. f. & T.

Add to localities of F. B. I.:—ASSAM: Naga Hills, at Kohima and Jotsoma Prain! on Japvo, Colomb! MANIPUR: Khongwi Valley, Watt! UPPER BURMA: Mynela, Anderson!

13. (—.) *CORYDALIS TRITERNATA* Franch.?

Tall, leaves thrice ternate and ultimate segments again 3-partite to -sect, the lobules spatulate.

MANIPUR: Chingsow, at 7-8,000 feet, Watt n. 6314!

Stems 1-2 ft. roots tufted; radical petioles 8-10 in., cauline 3-4 in., primary petiolules 2 in., secondary $\frac{1}{2}$ - $\frac{3}{4}$ in., lobules glaucous beneath $\frac{3}{4}$ in. long, $\frac{1}{5}$ - $\frac{1}{4}$ in. across.

This plant, very distinct from any other Indian species, may possibly prove to be the same as M. Franchet's *C. triternata* of which it closely imitates the foliage. It also, however, resembles somewhat *C. Davidi* Franchet, from E. Tibet and *C. Balansæ* Prain,* from Tonkin; this latter, however, rather belongs to the group containing *C. ophiocarpa*. Till flowers and fruits are reported, the identity or non-identity of the present species with any of these cannot be vouched for. Its tufted roots indicate that its natural alliance is with *C. leptocarpa*, with which species it has in fact been by Dr. Watt tentatively placed.

14. (—.) *CORYDALIS LAELIA* Prain; erect, quite glabrous, leafy, leaves equally ternate, segments again ternate, lobes 2-jugately pinnatifid, ultimate lobules lanceolate 2-3-fid, radical petioles very long, all broadly vaginate in lower third; racemes in large wide-spreading panicles, lowest bract leafy incised the remainder linear as long as the pedicels.

EASTERN HIMALAYA: Sikkim; Lingtoo, Natoot, Patangla, King's Collectors! Chumbi; Lu-ma-poo, Kungboo, King's Collectors! Bootan; in Upper Dichu Valley, Cummins!

* *CORYDALIS BALANSÆ* Prain; tall, leaves glaucous beneath, 2-pinnatisect, the lobules ovate unequally 3-5-lobed; racemes lax many-fld terminal and axillary, flowers white, bracts small ovate-acute pedicels very short; outer petals spatulate apex obcordate mucronulate, dorsal wings very small, upper lamina 4 times as long as saccate incurved spur; inner petals with projecting apical wing; capsules narrow subfalcate apex acute; seeds 1-seriate compressed black, minutely punctulate and with large strophiole.

TONKIN: Langson, "à l'entrée des grottes," Balansa n. 1557!

Stems 12-18 in. petioles 3-4 in. long, pinnæ 8-jugate in subopposite pairs, petiolules 1 in., segments $\frac{3}{4}$ -1 in. by $\frac{1}{2}$ - $\frac{3}{4}$ in. lobes shallow. Flowers $\frac{3}{4}$ in. Capsules $1\frac{1}{2}$ in. long.

Perhaps nearest to *C. ophiocarpa* but with larger flowers and very different foliage and fruits.

Roots numerous tufted from sides and base of very short stock. *Stems* 2-3 feet high. *Radical petioles* 1-1½ feet, *cauline* 6 in., *petiolules* ½ in., *laminæ* 3 in. across. *Flowers* ¾-1 in. bright yellow, the upper petal equalling the straight spur, both outer petals broadly winged. *Capsules* ovate.

This very fine species much resembles *C. thyrsiflora* (*C. Gortschakovii* H. f. & T., *via* Schrenk); it has very similar flowers and fruits. But though in general habit these two agree so closely they are in reality extremely different; *C. thyrsiflora* has pinnate, not ternate leaves, and has a long fusiform rootstock, not a dense tuft of fibrous roots.

15. (8.) *CORYDALIS CRITHMIFOLIA* Royle.

16. (9.) *CORYDALIS FALCONERI* H. f. & T.

17. (—.) *CORYDALIS MUCRONIFERA* Maxim. *Flor. Tangut.* 51, t. 24 f. 19; stem short breaking into diffuse cæspitose branches from the base, leaves petioled 3-sect, segments shortly stalked 3-partite, ultimate lobes linear oblong obtuse; racemes few-fl., flowers hidden among the large rhomboid flabellate-multifid bracts.

EASTERN HIMALAYA: Phari, at Ting, *Dr. King's Collectors!* *DISTRIB.* Tibet.

Glaucous; rootstock cylindric $\frac{3}{16}$ in. diam. 2-3 in. long; stems 1½-2 in.; radical leaves numerous with flattened winged petioles $\frac{1}{2}$ -¾ in. long, narrower than the leaf-segments. *Flowers* yellow ¼ in., sepals small lacinate, spur slightly incurved shorter than the upper lip which is uncrested or has only a slight crest near middle; ovary oval 4-5-ovuled rather longer than style; fruit oblong usually 2-seeded twice as long as persistent style, sharply deflexed and buried amongst the bracts by an abrupt curvature of the apex of pedicel; seeds black, shining.

The only difference between the plant from Phari and that of North Tibet is that the leaf-segments and the tips of the laciniae of the bracts are not mucronate in the southern locality. However, as Mr. Maximowicz's figures and description explain, they are not always mucronate even in the original locality.

18. (—.) *CORYDALIS HENDERSONII* Hemsley, *Journ. Linn. Soc.* xxx. 109 (1894); small, stoutish, glabrous, slightly branched, leaves long petioled 3-fid, radical many withering, cauline numerous close-set, segments long stalked 3-sect, ultimate lobes also long stalked and twice tripartite lobules oblong obtuse very small with or without a very short terminal mucro; racemes congested few-fl., flowers almost hidden among the large foliaceous bracts. *C. tibetica* Henders. *Lahore to Yarkand*, p. 309 *nec* H. f. & T.

N.-W. HIMALAYA: Zo-gi-la, *Stewart!* Taglang Pass, *Heyde!* *DISTRIB.* Yarkand (*Henderson!*); Tibet (*Thorold!*).

Glaucous; rootstock cylindric $\frac{3}{16}$ in. diam. 2 to 3 in. or more long; stems 2-3 in.; all the leaves with flattened winged petioles 1 in. long $\frac{1}{5}$ in. across, their margins beset with very small glandular hairs, petiolules $\frac{1}{5}$ in. ultimate lobules narrowly spatulate mucronate or not. *Flowers* yellow $\frac{3}{4}$ in. long, sepals small obliquely triangular subentire, subpersistent; spur straight almost as long as upper lip which is boat-shaped with slightly reflexed margins and uncrested; ovary oval 10-ovuled

only $\frac{1}{3}$ as long as style; fruit oblong 8-9 seeded, twice as long as persistent style, sharply deflexed and buried amongst the bracts by a sharp curvature of the much elongated pedicel; seeds reniform-orbicular, minutely punctulate, strophiolate.

Resembles generally *C. mucronifera* Maxim. and *C. Boweri* Hemsl. but differs from the former in having petioles much broader than its leaf-segments, from the latter in having its leaves equally ternate. Like *C. mucronifera* it differs also from *C. Boweri* in not having its leaf-segments, even when mucronate, which they by no means always are, prolonged into a setaceous tip. From both species *C. Hendersonii* differs in having flowers three times as large and seeds three times as numerous.

19. (—) *CORYDALIS BOWERI* Hemsl. *Journ. Linn. Soc.* xxx, 108; stem short breaking into diffuse cæspitose branches from the base, leaves very long petioled primarily 3-sect, lateral segments short-stalked 3-partite, terminal long-stalked 2-jugate pinnate, ultimate lobes linear-lanceolate terminating in a very long setaceous tip; racemes congested few-fl., flowers almost hidden among the large rhomboid flabellate-multifid setaceo-mucronulate bracts.

N.-W. HIMALAYA: Kamaon, Nipchang Valley, 13-14,000 feet, Shibu in Dárma, 12-13,000 feet, and near Naibil, in Kutti Yangti Valley, Byans, at 11-12,000 feet, *Duthie* n. 2705! *DISTRIB.* Tibet (*Thorold*!).

Glaucous; *rootstock* cylindric $\frac{3}{16}$ in. diam. 2 to 3 in. or more in length; *stems* 2-3 in.; radical leaves numerous, with flattened winged petioles 2 in. long $\frac{1}{5}$ in. across at length disappearing, petiolules $\frac{1}{3}$ in., ultimate lobules narrowly spatulate and ending in a long setaceous tip. *Flowers* yellow $\frac{1}{4}$ in., sepals small laciniate, persistent; spur slightly incurved rather longer than upper lip which is uncrested or has only a slight crest near middle; ovary oval 4-5-ovuled two-thirds length of style; fruit oblong usually 2-seeded, twice as long as persistent style, sharply deflexed and buried amongst the bracts by an abrupt curvature of the apex of the somewhat elongated pedicel; seeds strophiolate.

Except for the longer spur and the much longer style, this in flower much resembles, and in fruit almost repeats the characters of *C. mucronifera*. The foliage, however, is very different, more resembling that of *C. Hendersonii* though the leaves differ in not being equally ternate and in having long setaceous tips, while the flowers are one-third the size of the flowers of *C. Hendersonii*.

20. (sub 16.) *CORYDALIS CASIMIRIANA* *Duthie & Prain*; sub-glaucous, much branched slender, leaves long-petioled equally twice ternate, segments 3-5 oblong deeply cut, racemes lax few-fl. terminating long slender branches; bracts small, the lower cut into lobes, the upper entire; outer petals winged the lower not saccate the upper with long slender recurved spur; capsule linear, seeds 1-seriate. *C. longipes* *Wall. Tent. Flor. Nep.* 53 t. 42 fig., partly only in text; *Cat.* n. 1433 in part; *Maxim. Flor. Tangut.* 51 not of *DC.*

HIMALAYA: Kashmir, Kolahir above Liddarwat, on wet rocks, 11-12,000 feet *Duthie* n. 13521! Kamaon, frequent, *Duthie* nn. 2713! 5312! 5314! Nepal; *Wallich* n. 1433 (*mixed with C. diphylla and with C. longipes*)! *Scully* n. 290! Sikkim; Tongloo, and Sandakpho

10,000 ft. *Gamble* n. 22! *Jongri*, *Anderson* 366! 369! *Gammie*! *King's Collectors*! *Lachung*, *Hooker* (the Sikkim "*sibirica*" of *Herb. Ind. Or.*)! *Gammie* n. 372! *Kapoop* and *Cho-le-la*, *King's Collectors*! *Chumbi*; very common, *King's Collectors*! *Phari*; *Dungboo* n. 4544! **DISTRIB.** S. Tibet (*Lama Ujyen Gyatsko* n. 344).

Stems weak, much branched, leafy. *Leaves* membranous. *Flowers* yellow $\frac{1}{2}$ in. long; posticous petal shorter than the slender spur. *Capsule* varying from $\frac{1}{4}$ in. in *Chumbi*, *Sikkim* and *Nepal* specimens to $\frac{1}{2}$ in. in *Kashmir* and *Kamaon* ones; the style 2-lobed.

This and the next species, taken together, constitute the *Corydalis sibirica* of Indian authors. The only character which this plant has in common with *C. sibirica* is its 2-lobed stigma; it differs in habit, foliage, floral structure and fruit. The seeds though similar are a little smaller. In habit it almost exactly repeats the characters of the next species (*C. longipes*) which has flowers extremely like those of *C. sibirica*; the double confusion resulting from the union first of *C. Casimiriana* and *C. longipes* because they are identical in habit though totally different in flower and fruit, and again of *C. longipes* and *C. sibirica* because, while of different habit, their flowers and fruits are identical, has led to the belief that *C. sibirica* is a very variable species. The examination of specimens of *C. sibirica* collected by *Turczaninow* near Lake *Baikal* and elsewhere, and at the river *Kolyma* by *Augustinowicz*, leads me to doubt whether the genuine *C. sibirica* is a variable species. And the careful analysis of flowers and examination of fruits from 28 different gatherings of *C. Casimiriana* and from 31 different gatherings of *C. longipes* shows that neither of these is in the least degree variable, at all events in the direction of passing into each other. An apparent exception to this is a solitary gathering from *Chumbi* which, with flowers exceedingly like those of *C. Casimiriana*, has unripe capsules like those of *C. longipes*. But the evidence that we have in this plant an intermediate between *C. Casimiriana* and *C. longipes* is far from complete. Its flowers instead of being intermediate in form between those of the other two have a spur with an exaggerated curvature. The stigma too differs from that in either *C. Casimiriana* or *C. longipes* and resembles that of *C. tongolensis* *Franchet* from *Szechuen*, another nearly related but nevertheless quite distinct species.

21. (sub 16.) *CORYDALIS LONGIPES* DC. *Prodr.* i. 128; sub-glaucous, much branched, slender, leaves long-petioled equally twice ternate, segments 3–5, ovate deeply cut, racemes lax few-fl'd. terminating long slender branches, bracts small all cut into narrow lobes; outer petals crested, the lower pouched at base, the upper with stout or slender straight or slightly recurved spur; capsule oval, seeds 2-seriate. *Wall. Tent. Flor. Nep.* 53 in part and excluding fig.; *Cat.* n. 1433 in part. *C. sibirica* *Maxim. Flor. Tangut.* 51 as to spp. from *Kamaon* and *Khasia*. *C. filiformis* *Royle, Ill.* 68.

HIMALAYA: *Garhwal*, near *Mussoorie*, *Royle*! *King*! *Kamaon*, *Ralam*, *Strachey* and *Winterbottom*! *Nepal*: *Wallich* (mixed with preceding and with *C. diphylla*)! *Sikkim*: *Tongloo*, *Thomson*! *Anderson* n. 364! 365! *King*! *Gamble* n. 8426! *Sandakpho*, *Gamble* n. 3903! *King's Collectors*! *Jongri*, common, *King's Collectors*! *Singalelah*, *Kurz*!

Clarke nn. 12585! 12710! KHASIA; Shillong, etc., *Hooker and Thomson!*
 Clarke n. 7300! n. 44266! *Mann! Gallatly! Murdoch!*

Stems weak, much branched, leafy. Leaves membranous, flowers yellow $\frac{1}{2}$ in. long; posticous petal as long as its spur. Capsule $\frac{1}{4}$ in., style as in *C. Casimiriana*.

On Dr. Royle's original sheets of *C. filiformis* this is the plant distributed. And it would appear as if Dr. Royle had distinguished this from the preceding species for, though he does not mention *C. Casimiriana* under any name in *Ill. Him.* he has named it *C. longipes* in Herb. Saharanpur. Dr. Wallich's n. 1433 is a mixture of this, of *C. Casimiriana* and of his own *C. diphylla*; the latter fact probably explains the use of the name *C. longipes* by Don to designate *C. diphylla*. This is also the plant from Kamaon and Khasia referred by Mr. Maximowicz, doubtfully as to itself, and to the exclusion of *C. longipes* Maxim. not of DC. (*C. Casimiriana* Duthie & Prain), to *C. sibirica*. When preparing the present paper the writer came to the same conclusion as Mr. Maximowicz, viz:—that the species with capsules in which the seeds are 1-seriate must be *C. longipes* DC., since M. de Candolle has described *C. longipes* as having linear capsules. This view possessed the great advantage of enabling the use of Royle's name *C. filiformis*—regarding which, owing to the existence of authentic specimens, there was no dubiety possible—for the plant with ovate capsules. And when duplicates were distributed from Calcutta to the great European Herbaria, the species with linear capsules was issued as *C. longipes* and that with ovate capsules as *C. filiformis*. But before publishing this paper, the writer took the liberty of referring the matter for final decision to Mr. C. de Candolle. He and Mr. Buser have most kindly compared specimens of both plants with the type specimen of *C. longipes* in the *Prodromus* Herbarium. The result of their examination is that the original description of the capsules of *C. longipes* does not accord with their actual condition; the true *C. longipes* is in reality the same as *C. filiformis* Royle. In consequence of this the plant with linear capsules is still unnamed and Mr. Duthie and the writer have named it *C. Casimiriana* as a slight recognition of the obligation under which Mr. C. de Candolle's kindness has placed them. Students of the genus should therefore note that sheets issued from Calcutta as *C. longipes* are in reality *C. Casimiriana*; those issued as *C. filiformis* should be known as *C. longipes*, that being the oldest name.

These two species, along with *C. tongolensis* and *C. gracilis*, form a very natural group of species that perhaps only differ from each other as species of secondary rank.*

* This is not the only instance in *Corydalis* where two species repeat practically every vegetative character and only differ slightly in flower and more considerably in fruit. A good example of the same parallelism among Eastern Asiatic species is exhibited by the well-known Eastern Chinese and Japanese species *C. incisa* Pers. and a species from Central China which has been named in Herb. Paris and Herb. Calcutta by M. Franchet and the writer; the following is a brief diagnosis.

CORYDALIS HEMSLEYANA *Franchet & Prain*; rootstock rather slender dividing at apex, crowned with radical leaves and emitting numerous slender flexuous stems; leaves alternate long-petioled, twice ternate, segments ovate-oblong acutely incised; bracts oblong-cuneate incised shorter than the pedicels; sepals laciniate; outer petals both crested, and with explanate margins; fruit wide-ovate acute at both ends.

CENTRAL CHINA: Hupeh, *Henry* n. 3729!

Very near *C. incisa* Pers. from which it differs in its smaller size (stems 8 instead of 20 in.), larger flowers with spur rather longer than lamina, and shorter wider fruits.

22. (—.) *CORYDALIS FILICINA* Prain; glaucous, very slender, branched at the base only, leaves long petioled, 3-nate, the lateral segments again twice ternate the terminal 2-jugate pinnate its lobes ternate, ultimate lobules all very small widely oblong irregularly lobed, racemes rather dense few-fld., bracts incised shorter than pedicels, spur straight.

SIKKIM: Ney-go-lah, on the Singalelah range, *Dr. King's Collectors!*

Rootstock thin wiry, stems filiform 4-6 in. cauline leaf solitary, short-petioled, sometimes 0, radical petioles 2 in. secondary petiolules $\frac{1}{2}$ in., lobules $\frac{1}{5}$ in. across. *Flowers* yellow $\frac{3}{4}$ in. upper petal slightly ridged near middle but not truly winged, spur as long as lamina, attached to inner petals by a projecting marginal tooth.

A very distinct species. The capsules unfortunately are not yet ripe.

23. (—.) *CORYDALIS CRISPA* Prain; stems short rather slender, diffusely branching from the base and freely branching throughout, leaves all short petioled, radical withering, unequally ternate, the lateral lobes again ternate the central longer-stalked and twice ternate, the petioles expanded to the first division, segments irregularly 3-5-lobed, racemes dense many-fld. terminating stems and branches, lower pedicels very long exceeding the long linear bracts; upper outer petal winged, with a much recurved slender blunt spur as long as lamina; capsules oblong small, seeds shining.

EASTERN HIMALAYA: Chumbi; at Perm-la, near Chum-la-ri, and at Syam-po, *King's Collector!* Phari; Goop, etc., *Dungboo!* DISTRIB. S. Tibet (*Lama Ujyen Gyatsko* n. 325).

Rootstock rather slender 10-12 in. long, breaking at crown into many again diffusely branching heads, stems 6-8 in., leaves $1\frac{1}{2}$ -2 in. petioles $\frac{1}{2}$ in. ultimate segments $\frac{1}{4}$ - $\frac{1}{3}$ in. across. *Flowers* $\frac{1}{2}$ in., blue and white, or yellow with purple tips, the wing of upper petal extending half-way along the much recurved spur. *Capsule* $\frac{1}{4}$ in.

A very distinct species, of the same group as *C. longipes* which it resembles in its recurved spur and *C. ramosa* which it resembles in habit, but unlike any other Indian species in having the process from the upper staminal phalanx not free inside the spur but attached to its anterior wall for $\frac{2}{3}$ ths of its length.

24. (—.) *CORYDALIS KINGII* Prain; sub-glaucous, stems slender branching; cauline leaves 1-3 scattered, unequally ternately divided, lateral segments sub-opposite arising close to stem long-petioluled and again ternately divided, terminal very long-petioluled and again twice ternately divided with distinct secondary petiolules, ultimate segments all 3-fid to -sect, lobules obovate acute, radical leaves vanishing; racemes lax-flowered, terminating slender branches, bracts large obovate acute; pedicels long; sepals obliquely cordate acuminate subentire; outer petals shortly narrowly winged near tips, limb of upper broad; spur cylindric straight except at the obtuse slightly incurved tip, $\frac{1}{3}$ longer than lamina; young capsule long very slender; seeds 1-seriate.

PHARI; *Lama Ujyen Gyatsko*, n. 100!

Rhizome very slender, $\frac{1}{10}$ in. diam. clothed toward apex with numerous lanceolate scales, and emitting from tip slender stems much attenuated at point of origin from axils of scales; *stems* 6–12 in.; *leaves* 3 in. long, 2 in. across; *petiole* $\frac{1}{5}$ in.; *primary lateral petiolules* 1 in.; *central petiolule* 1.5 in., its *secondary petiolule* $\frac{1}{3}$ – $\frac{1}{2}$ in.; *lower bracts* $\frac{1}{4}$ in. long, $\frac{1}{8}$ in. across, entire, upper smaller; *pedicels* $\frac{1}{3}$ – $\frac{1}{2}$ in. *Flowers* purple $\frac{5}{8}$ in. long, spur $\frac{3}{8}$ in.

A very distinct species in habit recalling the *C. juncea* group but with very different rootstock and flowers, and in foliage somewhat resembling *C. flaccida* but again with very different flowers and rhizome. As regards flowers it most closely resembles *C. decumbens* Pers. from Japan, but it has a relatively longer spur and its lip-margins are not explanate; its rootstock too is altogether different, that of *C. decumbens* being tuberous. *C. Kingii* is not very nearly related to any Indian species.

25. (17.) CORYDALIS CORNUTA Royle.

Add to synonyms of F. B. I.:—*Corydalis ramosa* var.—*Aitch. Journ. Linn. Soc.* xix. 152 (not of Wallich). *DISTRIB.* Afghanistan; (Kuram Valley, *Aitchison* n. 298! 324)!*

26. (15/2.) CORYDALIS RAMOSA Wall. *Cat.* 1434; stem erect or procumbent branched, leaves twice ternately divided, ultimate segments ovate lanceolate, racemes terminal lax many-fld., bracts leafy incised.

VAR. *typica*; stems erect; habit and foliage of *C. sibirica* Pers., from which the plant is only distinguishable by its different flowers. Wall. *Cat.* 1434, partly. *C. chaerophylla* Royle in *Herb. N. W. Ind.* not of Wall. *C. erecta* Falc. MSS. in *Herb. Saharanpur*.

NORTH-WEST HIMALAYA: Kamaon, *Blinkworth* in *Herb. Wall.* (n. 1434 partly)! Royle! *Strachey and Winterbottom* n. 11! Reid! Garhwal; *Falconer*! *Duthie* n. 944! *Gamble* n. 24300! Simla; *Thomson*! *Brandis*! *Gamble* n. 4299! n. 6201! *Duthie* n. 7247! n. 7248! n. 8754! Bashahr; *Lace* n. 905! Pangi; *Stoliczka*! *Ellis* n. 382! n. 1276! n. 1516! *Brandis* n. 3271! n. 3610! Dalhousie; *Clarke* n. 22514!

* Nearly related to this species and to the next is a species from Szechuen of which, as it has not yet been described, an account is now given.

CORYDALIS DRAKEANA Prain; stems erect branching, leaves twice ternately-divided ultimate segments ovate incised racemes terminal lax, flowers very few distant, bracts large leafy spatulate entire.

CHINA: Szechuen, near Tachien-lu, *Pratt* n. 464!

Habit of *C. ramosa* and *C. cornuta*, foliage most resembling that of the latter. *Flowers* $\frac{1}{2}$ in. yellow, racemes 6–8 in. but only 4–5 fld. Bracts large $\frac{1}{4}$ in. to 1 in. much exceeding the short pedicels. *Capsules* linear to narrow oblong $\frac{3}{4}$ in. to 1 in. long, seeds 1- or irregularly 2-seriate shining

Very near to *C. cornuta* but with shining seeds. Easily distinguished from *C. ramosa* by its different foliage, its longer narrower capsules and its very large entire bracts.

n. 22517! Kashmir; at Gund in Sind Valley *Gammie!* near Shishna Nág, at 12,000 feet, in Liddar Valley, *Duthie* n. 14131! Nowbeg, at 6,500 feet, *Clarke* n. 31249 (issued as *C. sibirica*)!

VAR. *vaginans* *H. f. & T. Flor. Ind.* i. 267; stems weaker procumbent; habit and foliage of *C. sibirica* VAR. *intermedia* Regel. *C. vaginans* *Royle, Ill. Him.* 68. *C. ramosa* VAR. *vaginans* *H. f. & T. Flor. Brit. Ind.* i. 125.

NORTH-WEST HIMALAYA: Kunawar, at Kanum, *Royle!* Lahul, *Jaeschke* n. 255! *Thomson!* Pangi; *Stoliczka!* Bashahr; *Lace* n. 408! Garhwal; *Duthie* n. 946! n. 5320! Simla; *Gamble* n. 1402! Kashmir; near Sonamurg, *Falconer!* *Clarke* n. 30879! *Duthie*, n. 13593! Kumaon; *Blinkworth* in *Herb. Wall.* (n. 1434 partly)!

A good deal of confusion has taken place regarding this species, probably owing to the fact that the Wallichian types were collected by Blinkworth and, not being numerous, are therefore not well represented in Herbaria. In the type Herbarium at the Linnean Society, however, both the erect and the lax plants, which do not differ except in habit, are represented. The species happens to be a very easily recognised and distinct one; the only Indian species that can be confounded with it is *C. cornuta* and a diagnosis is at once effected by the seeds. To help in removing the confusion, all the localities and all the numbered sheets present in Herb. Calcutta and in Herb. Saharanpur are cited for the convenience of students elsewhere.

The plant described as *C. vaginans* by Royle is the one of *lax* habit; the original specimens described in *Ill. Him.* (from Kanum in Kanawar) are at Saharanpur and have been examined by the writer. Both in Herb. Saharanpur and in his distributed herbarium Dr. Royle consistently named the *erect* one *C. chaerophylla*, he having mistaken it for Dr. Wallich's plant of that name; Dr. Falconer having discovered Dr. Royle's mistake, but not having ascertained that the *erect* plant was included in Dr. Wallich's *C. ramosa* named it at Saharanpur *C. erecta*, but has noted his doubt as to its being different specifically from Dr. Royle's *C. vaginans*. In the *Flora Indica* and the *Flora of British India*, *C. ramosa* VAR. *vaginans* is exactly equivalent to *C. ramosa* Wall. (*Cat.* 1434), i.e., it includes both *C. vaginans* Royle and *C. erecta* Falc. The species does not occur in Sikkim or in Nepal. The Sikkim plant included in *C. ramosa* in the *Flora of British India*, as var. 1. *glauca*, and which forms VAR. *a* of *C. ramosa* in the *Flora Indica*, has pinnate-leaves and is *C. Stracheyi*, a form very considerably removed from the present species. The small species included as VAR. *nana* is *C. nana* Royle; it also has pinnate leaves and is equally far removed.

C. ramosa is much more nearly related to *C. sibirica* Pers. than is the *C. sibirica* of Indian authors. It has exactly its habit and foliage (even imitating *C. sibirica* in its variations), has the same inflorescence and the same fruits and seeds. The solitary difference is in the flower; in *C. sibirica* the spur is slightly recurved, in this species it is distinctly incurved and longer.

27. (18.) CORYDALIS CHAEROPHYLLA, DC.

Add to localities of F. B. I.:—NAGA HILLS: Japvo, *Watt!* Pulinabadza, *Prain!*

28. (sub 18.) *CORYDALIS GERANIIFOLIA* H. f. & T. *Flor. Ind.* 269 (1855); stem sub-erect leafy branched, leaves deltoid decomposed, racemes terminal simple or sparingly branched, bracts all large leafy ovate-acute laciniate or only 3-fid rarely entire, spur very slender longer than the lamina, incurved at the tip. *C. chaerophylla* H. f. & T. *Flor. Brit. Ind.* i. 126 (1872) *nec DC.*

SIKKIM HIMALAYA, frequent, 8-9,000 feet *Hooker! Thomson! Clarke! etc.*

Very near *C. chaerophylla*, with which it is associated in the *Flora of British India*, but with very different bracts and flowers; the bracts of *C. chaerophylla* being all (including the lowest) small while those of this species are all large. The spur is here much longer and is incurved at the end in place of being, as it is in *C. chaerophylla*, straight or recurved from the middle. No intermediates occur.

29. (11.) *CORYDALIS GOVANIANA* Wall.

30. (10.) *CORYDALIS ELEGANS* Wall.

Recent collections of this species are:—Near the Nipchang glacier, Dárma, 15-16,000 feet, *Duthie n. 2710!* Ralam Valley, 14-15,000 feet, *Duthie n. 2711!* Kutti Yangti Valley, 15,000 feet and Lebung Pass, 16-17,000 feet, *Duthie n. 5322!*

The species seems strictly confined to Kamaon. The plant from Deotsu added to the species in the *Flor. Brit. Ind.*, but not included in the earlier account of the *Flora Indica*, belongs to a very distinct species.

31. (12.) *CORYDALIS TIBETICA* H. f. & T.

Mr. Duthie's n. 11,933 from Shingo Valley, Baltistan, on rocks at 10-11,000 feet may be only a lax state of this species but may equally well prove specifically distinct. The same indefatigable collector's n. 11,848 from Marpu Nullah, Baltistan, at 11-12,000 feet has somewhat different foliage from the types of *C. tibetica*; it also has uncrested outer petals. But this is the case with Dr. Thomson's specimens of *C. tibetica* issued in *Herb. Ind. Or H. f. & T. T.* and with Mr. Duthie's n. 12005 from Satpur Nullah, Baltistan at 12-13,000 feet. Our other Calcutta and Saharanpur examples are crested as described in *Flora of British India*.

32. (—.) *CORYDALIS DUTHIEI* Maxim. *Flor. Tangut.* 49, t. 25. fig. 12-17; medium, tufted, diffuse, green, glabrous; radical leaves oblong 4-5-jugately pinnate, ultimate lobules numerous, small, ovate-acute; stems simple leafy; racemes ovoid dense many-fld.; flowers yellow subvertical, outer petals winged, the wing of upper extending as far as tip of the straight conical spur slightly shorter than lamina.

VAR. *typica*; lobes of leaves imbricately overlapping; bracts broad, entire except the lowest; stem leaves 1-2.

NORTH-WEST HIMALAYA; Sanch Pass, 14,000 feet, *Ellis n. 1682!*

VAR. *sikkimensis*; lobes of leaves discrete; bracts all incised; stem leaves 3-4.

SIKKIM; Tholoong, "very high, near the snow," *Dr. King's Collector!*

Stems 4-6 in. not exceeding radical leaves. Flowers $\frac{3}{4}$ in., winged very like those of *C. meifolia* but with a much larger spur, which is more like that of *C. dubia*. In foliage this much resembles *C. conspersa* Maxim. which has however very different flowers.

Mr. Maximowicz quotes Dr. Watt as the original collector of the species. This is a mistake arising from Mr. Ellis the actual collector, having used field tickets supplied him by Dr. Watt, with Dr. Watt's name left unobliterated. The matter is not of much moment, but is mentioned in case the citation should lead to dubiety on the part of any one unacquainted with the actual circumstances.

33. (sub 10.) *CORYDALIS CLARKEI* Prain; medium, tufted, diffuse, glaucescent, glabrous; radical leaves oblong 4-5-jugately pinnate, ultimate lobules few large decurrent acute; stem simple, cauline leaves 4 in 2 subopposite pairs; racemes oblong dense many-fld., flowers light yellow subvertical, outer petals winged the wing of the upper extending half way down the straight obtuse spur; capsule very broadly ovate, obtuse.

KASHMIR: Alimalikimat and Deotsu, *Falconer!* Barjila, 12,000 feet, *Clarke!* above Tilail, 13-14,000 feet, *Duthie* n. 13922!

Stems 10 in. Radical leaves 6-8 in. petioles 3 in. vaginate, cauline leaves 2-3 in. Flowers $\frac{5}{8}$ in. long. Capsules $\frac{1}{2}$ in. long nearly $\frac{1}{4}$ in. across.

The foliage of this species recalls that of *C. Moorcroftiana* which it also resembles in having at times branches in the region of the inflorescence; one of Dr. Falconer's Alimalikimat specimens is so branched. But it differs in having its stem leaves, in all the specimens, subopposed in 2 pairs; its fruits moreover are very different, being much shorter and broader and being obtuse instead of acute. Its very broad flowers are almost identical with those of *C. elegans* with which, in the *Flora of British India*, though not in the *Flora Indica*, it has been associated. Its altogether dissimilar leaves, very differently disposed, make it however impossible to treat it as a variety of that species.

34. (—.) *CORYDALIS FRANCHETIANA* Prain; radical leaves numerous 2-pinnatisect, segments lanceolate, cauline leaves alternate numerous passing into bracts; raceme terminal many-fld.; bracts broad lower 3-5-fld., hardly equalling the very long pedicels.

EASTERN HIMALAYA; Chumbi; at Sham Chen, *Dunghoo!*

Stem 10-16 in. rather stout, flexuous, 5-10-leaved; radical leaves 6-8 in. long petiole 4 in. long, lamina 1-1 $\frac{1}{2}$ in. across, pinnae 2-4-paired sub-orbicular $\frac{3}{4}$ in. across lobes 2-3-jugate, ultimate segments oblong-lanceolate acute; radical leaves pinnatifid, petioles short, winged. Flowers $\frac{3}{4}$ in. long, yellow with purple tips; racemes lax, 4 in. long; in one specimen axillary racemes occur in the axils of the 3 uppermost stem leaves; bracts 1 in., pedicels 1 $\frac{1}{4}$ in. long. Posticous petal vaulted, acute, nearly as long as the slender spur. Pedicels recurved in fruit, capsules immature.

Very near the preceding species, but distinguished by its numerous scattered stem-leaves and its flowers with uncrested petals.

35. (sub 14.) *CORYDALIS HOOKERI* Prain; medium, diffusely branching, stems numerous ascending; radical leaves numerous 2-pin-

natisect, segments narrowly ovate 2-3-fid, cauline leaves alternate 3-5-jugate; racemes numerous terminal and in axils of the upper stem-leaves, many-fld.; bracts all narrow the lowest incised the rest all linear longer than the pedicels; petals without crests, spur of upper rather shorter than the lip; ovary ovate obtuse.

NEPALESE TIBET; *Hooker!* S.-E. TIBET; Tsang, *Lama Ujyen Gyatsko*, n. 162!

Stems 3-8 in. rather slender, flexuous; radical leaves 3-4 in. long, including petiole $1\frac{1}{2}$ -2 in. narrowly vaginate, cauline 3-5 short-petioled $1\frac{1}{2}$ -2 $\frac{1}{2}$ in., segments $\frac{3}{4}$ in. by $\frac{1}{2}$ in., lobules $\frac{1}{8}$ in.; pedicels short, flowers yellow $\frac{5}{8}$ in. Spur slender conical very slightly incurved; capsules $\frac{1}{4}$ in. long, $\frac{1}{5}$ in. diam.

This is the plant from Nepalese Tibet referred to under *C. Gortschakovii* in *Flor. Ind.* 267 and *Flor. Brit. Ind.* i. 123. The inflorescences and bracts do much resemble those of *C. thyrsiflora*, to which the descriptions of *C. Gortschakovii* cited apply. But the outer petals are entirely without crests and in this respect resemble those of *C. Franchetiana*. A fine suite of specimens of the same plant from South-East Tibet shows however that this plant is quite distinct from any other Indian species and that it approaches most nearly to *C. straminea* Maxim., from which it differs in having a longer more slender spur; it has been named in honour of its distinguished discoverer.

36. (13.) *CORYDALIS MOORCROFTIANA* Wall.; *H. f. & T., Flor. Ind.* and *Flor. Brit. Ind.*

37. (—.) *CORYDALIS GORTSCHAKOVII* Schrenk.

An examination of the many Yarkand, Hindu Khush and Kashmir specimens in Herb. Calcutta, and of over two hundred specimens from Turkestan, Soongaria and Altai, kindly lent to the writer for study from Herb. St. Petersburg by Dr. Batalin, shows that this is undoubtedly the plant described as *C. Moorcroftiana* by Boissier [*Flor. Orient.* i. 131] and indicates that probably this is the original *C. Moorcroftiana* of Wallich. Should this prove to be the case, Schrenk's name must give place to Wallich's. Whether a new name must be given to designate the species with entire bracts—the *C. Moorcroftiana* of the *Flora of British India*—is somewhat doubtful; its flowers are exactly those of *C. Gortschakovii* and, in the writer's opinion, the differences between the two plants are hardly specific. *C. Gortschakovii* H. f. & T., as described, is not Schrenk's plant but the next species.

38. (14.) *CORYDALIS THYRSIFLORA* Prain. *C. Gortschakovii* H. f. & T. *Flor. Ind.* 266.; *Flor. Brit. Ind.* i. 125, not of Schrenk.

Distinguished from the preceding by its thyrsoid panicles, its bracts all linear except the lowest, not progressively diminishing in size upwards, its smaller flowers and its smaller obtuse, not acute, capsules.

NORTH-WEST HIMALAYA: Laka, *Edgeworth* n. 55! *Clarke* n. 24635! Kamaon, *Strachey and Winterbottom* n. 12! *Duthie* n. 3826! Ladak, *Hay!* *Stoliczka!* Kashmir: *Zircotal, Falconer* (Kew Dist. n. 126)! *Sonamurg Gammie!* *Levinge* (*Clarke* n. 27217)! *Kamri valley, Duthie* n. 12532! *Giles* n. 659! *Liddar Valley Duthie* n. 13347! 13421! *Baltistan; Duthie* n. 13856!

This species imitates the appearance and habit of, and has almost identical flowers and fruits with, *Corydalis Laelia* which, however, differs in having ternate leaves and tufted roots. It has also the habit and leaves of *Corydalis Semenovii* Regel and *Corydalis straminea* Maxim., but has very different flowers from either of these; its inflorescence is very like that of *C. Hookeri*.

39. (21.) *CORYDALIS MEIFOLIA* Wall.

Exclude from synonyms of *F. B. I.*, *C. Hoffmeisteri* Klotzsch Reis. Pr. Waldem, 129 t. 35.

VAR. *typica*; stems erect, ultimate leaf-segments linear; posticous petal with lamina usually three times as long as spur; flowers usually yellow (*Wallich*), deep yellow (*Duthie*), or lemon-coloured (*Duthie*); occasionally reddish-yellow (*Duthie*); stems 6-18 in.

CENTRAL HIMALAYA: Nepal, *Wallich*! *Scully*! NORTH-WEST HIMALAYA: Lahul, *Hay*! Bashahr, *Lace* n. 557! Kunawar, *Vicary*! Kamaon, *Duthie* n. 2704! n. 2706! EAST HIMALAYA: Sikkim, *Hooker*! *Gammie*!

VAR. *violacea*; stems erect, ultimate leaf-segments linear; posticous petal with lamina usually only twice as long as spur; flowers deep mauve (*Duthie*) or a "beautiful purple" (*Vicary*); stems 12-18 in. *C. violacea* *Vicary* MSS. in Herb. Calcutta.

NORTH-WEST HIMALAYA: Garhwal; *Vicary* n. 50! *Duthie* n. 956! Rotang Pass, *Edgeworth*! *Brandis* n. 3270! Lahul, *Jaeschke*!

VAR. *sikkimensis*; stems flexuous, ultimate leaf-segments usually narrow lanceolate (one half broader and much shorter than in the two preceding varieties); posticous petal with lamina usually three times as long as spur; flowers yellow with purple tips (*Hooker*); yellow and brown (*Gammie*); orange yellow, red and yellow, greenish yellow, or outside yellow and inside red, (*various native collectors*); stems 4-6 in.

EASTERN HIMALAYA: Sikkim, Chumbi, Phari and South-East Tibet; very common.

Corydalis violacea *Vicary*, at first sight seems very distinct. It must however be recollected as regards the colour-character that the flowers are variously purple or yellow in several other species. Among Indian species *Corydalis flaccida*, usually purple but at times yellow; *Corydalis crispa*, usually yellow but at times blue, may be cited as parallel examples. Then *Duthie* n. 2704 with reddish-yellow flowers forms a connecting link in the North-West Himalaya; all stages of "intermediates," though no specimens with uniformly purple flowers have been reported from Sikkim and Chumbi. Again, as regards the character derived from length of spur, *Lace* n. 557 with yellow flowers has this organ as long as it is in VAR. *violacea*; and while all the Sikkim and Chumbi specimens have a short spur as in VAR. *typica* those from South Tibet (*Lama Ujyen Gyatsko* n. 231) have spurs nearly, though not quite, as long as in VAR. *violacea*. VAR. *sikkimensis* is not a very good variety, the differences in habit mentioned are differences of degree only, not differences of kind.

40. (—) *CORYDALIS DUBIA* Prain; stems short flexuous simple, or branched in the inflorescence, leaves 4-5-jugately pinnate, radical

numerous longer than stems, cauline lowest pair opposite, upper scattered passing into bracts; flowers few racemose, bracts leafy incised; outer petals without crests, the upper with a long incurved spur two-thirds the length of lamina.

EASTERN HIMALAYA: Phari; Tern-la, *Dungboo!* South Tibet, *King's Collector!*

Rootstock very slender, 8 in. long, scaly; *stem* 4-6 in., radical leaves 8 in. (petioles 5 in. long); pinnæ imbricately overlapping ultimate pinnules oblong or linear very small numerous; *flowers* whitish-yellow, 1 in. long.

The rootstock is like that of *C. latiflora* which it also resembles in having its lowest pair of stem leaves opposite. But its leaf-segments are many times more numerous and smaller, its stems are stouter and, instead of giving off two leafless lateral branches in the axils of a solitary pair of opposite cauline leaves each stem is prolonged beyond the pair as a leafy sometimes branching stem with alternate leaves; it has, too, incised in place of linear bracts and racemose in place of subumbellate flowers; these yellow, not blue, are without crests and have a long spur.

41. (19.) *CORYDALIS LATIFLORA* *H. f. & T.*

42. (—.) *CORYDALIS PULCHELLA* *Aitch. & Hemsl. Journ. Linn. Soc. xix. 151, t. 4.*; stems rather short, erect, branching only at the base, leaves glaucous, 4-6-jugately 3-pinnatisect, ultimate lobules narrowly lanceolate, radical numerous almost as long as stems, cauline few scattered; flowers in lax racemes, pedicels shorter than the ovate large pinnatisect bracts; outer petals without crests, the upper with a slender slightly incurved spur rather longer than the lip; capsules linear-oblong, fruiting pedicels sharply decurved, seeds 2-seriate, black, shining. *C. meifolia* *Aitch. Journ. Linn. Soc. xviii. 32 not of Wall.*

AFGHANISTAN: Safed Koh range, 9-11,000 feet, *Aitchison n. 201!* 289! 789! *Duthie's Collector!*

Rootstock of several pliant fibrous bundles; *stems* 10 in. rather slender; *leaves* 6-9 in. long (petioles 4-5 in.); segments $\frac{1}{2}$ in. across, ultimate lobules very narrow; *bracts* $\frac{1}{2}$ - $\frac{3}{4}$ in., *pedicels* $\frac{1}{2}$ in.; *flowers* yellow, narrow, $\frac{2}{3}$ in. long; *capsule* $\frac{3}{8}$ in. long.

A very distinct species, hitherto only obtained in the Kurram Valley.

It may be noted that the name of this species dates from 1882 and is therefore much anterior to the name *C. pulchella* Franch. [*Pl. Delavay. 45. t. 13 b* (1889)] applied to a species from Yunnan with leaves and flowers resembling those of *C. nana* Royle but with a leafless stem and a very different rootstock. A new name has therefore to be provided for the Yunnan plant; as there is already a *C. Franchetiana*, it might be known as *C. Adrieni*.

43. (15/1.) *CORYDALIS STRACHEYI* *Duthie*; glaucous, stems procumbent weak branched, leaves 5-6-jugately pinnatisect, segments 2-4-jugately pinnatipartite, lobes 3-5-fid ultimate lobules linear to narrowly ovate; racemes terminal lax many-fld., lowest bracts large incised, the rest 3-fid or entire, small. *C. ramosa* *H. f. & T. Flor. Ind. 267; Flor. Brit. Ind. i. 125 not of Wall.*

VAR. *typica*; outer petals crested.

NORTH-WEST HIMALAYA: Kamaon: Pindari, 12,000 feet, *Strachey and Winterbottom* n. 9! Ralam Valley, *Duthie* n. 2712! near Lebung glacier, 15–16,000 feet, *Duthie* n. 5317! Garhwal, in Damdar Valley, 11–12,000, feet, etc. *Duthie* n. 949a! and n. 949d! Kuari Pass, 11–12,000 feet *Duthie* n. 3822! and n. 3824! CENTRAL HIMALAYA: Nepal, *Scully*, n. 158! EASTERN HIMALAYA: Sikkim; Singlalah range 13,000 *Thomson*! *Anderson* n. 370! *Kurz*! Jongri, about 15,000 feet, common; *Dr. King's collectors*! Lachoong, *Dunghoo*! Tankra, 13,000 feet, *Gammie*! Tangkala, *King's collector*! Chumbi; Ko-poop *King's collector*!

VAR. *ecristata*; outer petals without wings.

EASTERN HIMALAYA: South Tibet, *Lama Ujyen Gyatsko*, n. 256!

Rootstock dividing below, 3–6 in. long. *Stems* 8–15 in. leafy, very flexuous. *Radical leaves* very few long petioled. *Flowers* $\frac{1}{2}$ in. long, yellow, or yellow with brown or purple tips; racemes 1–2 in; upper lamina rather longer than the straight spur. *Capsules* obovate-oblong obtuse, pedicels deflexed.

A very distinct species, most nearly related to *C. meifolia*; not very nearly allied to *C. ramosa*. The uncrested "variety" is not improbably a quite distinct species.

44. (15/3.) *CORYDALIS NANA* *Royle, Ill.* 68 (1839); small, often dwarf, stems ascending, cauline leaves usually 3, with or without short axillary branches, leaves 4–5-jugately pinnatisect segments 2–3-jugately pinnatipartite, lobes multifid; racemes terminal congested many-fl., flowers partially hidden among the large cuneate flabellate multipartite bracts. *C. ramosa* VAR. *nana* *H. f. & T. Flor. Ind.* 267; *Flor. Brit. Ind.* i. 125. *C. Hoffmeisteri Klotzsch, Reis. Pr. Wald. Bot.* 129 t. 35 (1862).

NORTH-WEST HIMALAYA: Kamaon; *Strachey and Winterbottom* n. 13! 14! 17! *Duthie* n. 2701! 2702! 2703! 5316! 5318! Garhwal; *Duthie* n. 949 b.! 949 c.! 951! 951 a.!

Rootstock rather stout, dividing below, 3–6 in. long. *Stems* 1–4 in. leafy, usually the lowest 2 leaves subopposite the third close under the inflorescence; radical few, long-petioled, cauline subsessile. *Flower* $\frac{1}{2}$ in. long, blueish-grey tipped with green; racemes $\frac{1}{2}$ in. or less; upper lamina rather longer than straight spur, outer petals with short crests. *Capsules* obovate-obtuse, partially buried among the bracts, pedicels very abruptly recurved.

Also a very distinct species, though nearest to the preceding. The writer has been able to ascertain the identity of this species with *C. Hoffmeisteri* owing to the great kindness of Prof. Engler and Dr. Urban, who very generously sent an example of Dr. Hoffmeister's original plant to the Calcutta Herb. from the Royal Herb., Berlin.

45. (20.) *CORYDALIS STRICTA* *Steph.*

46. (—.) *CORYDALIS RUPESTRIS* *Kotschy, Boiss. Diagn. ser.* 1, vi. 8; glaucous, stem flexuous branched, leaves all long-petioled 2-pin-

natisect, lobes 4-5-jugate, ultimate segments 1-3-jugately 3-partite, lobules subacute, radical rather few not larger than scattered cauline; racemes simple laxly 12-20-fld., bracts linear-lanceolate entire half as long as pedicels; capsules widely elliptic compressed; seeds 2-seriate. *Boiss. Flor. Orient.* i. 131.

BRITISH BELUCHISTAN: Ziarat, *Lace* n. 3768! *A. V. Monro*!
DISTRIB. Persia.

Rootstock stout woody, crowned with withered sheaths. *Stems* 4-12 in. branched from base. *Leaves* 6-8 in. (petioles 4 in.), lobes remote. *Flowers* $\frac{1}{2}$ - $\frac{3}{4}$ in. long, lower pedicels $\frac{1}{2}$ in.; sepals ovate acuminate; petals without wings, yellow, upper three times as long as obtuse spur, lower distinctly saccate at base. *Capsule* $\frac{1}{2}$ in. long $\frac{1}{3}$ in. wide.

Nearest among Indian species to *C. adunca* with which it agrees in habit and foliage, but differing from the other Indian members of the group by its wide capsule. M. Boissier has inadvertently described the outer petals as broadly winged. Through the kindness of M. Barbey the writer has been able to examine flowers of the type specimens in Herb. Boissier; in all of them the outer petals are without wings precisely as in the Beluchistan plant.

47. (1.) CORYDALIS OPHIOCARPA *H. f. & T. C. streptocarpa* *Maxim. Mel. Biol.* x. 48; *Bull. Ac. Imp. Petersb* xxiv. 30; *Flor. Tangut.* 50, t. 11, fig. 9-20.

DISTRIB. China.

This species has a saccate spur; as, moreover, recent specimens collected by Mr. Pantling have an elongated rootstock, it seems to be more naturally located alongside of *C. adunca*, *C. flabellata* and *C. adiantifolia* which, like itself, have 1-seriate seeds. Mr. Pantling reports the flowers as white. Mr. Maximowicz's species the writer cannot differentiate from this.

48. (—) CORYDALIS ADUNCA *Maxim. Bull. Ac. Imp. Petersb.* xxiv. 29; glaucous, stems branched, leaves all long-petioled 2-pinnatisect lobes 4-5-jugate, ultimate segments 1-2-jugate 3-partite, lobules ovate-oblong obtuse, radical rather few not larger than scattered cauline; racemes simple laxly 12-20 fld., bracts linear-lanceolate, entire, almost as long as pedicels; capsules linear, seeds 1-seriate. *Maxim. Mel. Biol.* x. 47; *Flor. Tangut.* 46 t. 6; *Flor. Mongol.* 38, *syn. C. Scheleznowiana Rgl. & Schmalh. exclus.*

N.-W. HIMALAYA: Kamaon; exposed dry rocks near Nabhi in Kutti Valley, 12,000 feet, *Duthie* n. 2707! DISTRIB. Kansu, Mongolia, Tangut, Turkestan.

Rootstock stout woody, crowned with withered sheaths. *Stems* 6-18 in. branched from base. *Leaves* 5-6 in. (petioles $2\frac{1}{2}$ -3 in.) lobes remote. *Flowers* $\frac{3}{4}$ in., lower pedicels $\frac{1}{2}$ in.; sepals ovate-acuminate; petals yellow, upper three times as long as obtuse spur. *Capsule* $\frac{1}{2}$ - $\frac{3}{4}$ in. long $\frac{1}{3}$ in. wide.

Of Indian species this is nearest to *C. flabellata* and *C. adiantifolia* but differs from both in its foliage, which more resembles that of *C. rupestris*. *C. albicaulis* Franch.

[*Pl. David.* i. 30 t. 8] is, Mr. Maximowicz thinks, only a variety of this species; the two plants certainly are very closely allied.

Mr. Maximowicz has also reduced to his *C. adunca* the form named *C. Schelesnowiana* by Dr. Regel. So far as the rather meagre examples in London and Paris went, the writer was prepared to accept the reduction. But Dr. Batalin having kindly lent him for study many excellent specimens of Dr. Regel's species, the writer has been able to ascertain that Mr. Maximowicz's reduction cannot be sustained and has found on the contrary that the true *C. Schelesnowiana* is identical with a plant collected in Gilgit by Dr. Giles that has been issued, erroneously, from Herb. Calcutta, as *C. adiantifolia*.

49. (22.) *CORYDALIS FLABELLATA* *Edgeworth.*

The true *C. flabellata*, i.e., the species of this group with flabellate leaves and very minute bracts, extends to Kashgar, where it was collected by Bellew. The only recent gathering the writer has seen is one made by Heyde in Pangi in 1879.

50. (23.) *CORYDALIS ADIANTIFOLIA* *H. f. & T. C. flabellata Maxim. Flor. Tangut. 47, via Edgew.*

It is now considered doubtful whether this form, which resembles in foliage the preceding and only differs in having subulate bracts exceeding the buds, can be separated as a species from *C. flabellata*. Mr. Clarke has collected in the Karakoram (*Clarke n.* 30115!) specimens that are exactly identical with the Zanskar specimens of Dr. Thomson on which *C. adiantifolia* was founded; these specimens have been issued by Mr. Clarke as *C. flabellata* and Mr. Maximowicz (*loc. cit.*) has expressed his agreement with Mr. Clarke's identification. In Herb. Calcutta, too, Mr. Kurz, Mr. Brace and others have always identified *C. adiantifolia* with *C. flabellata* with the result that when *C. Schelesnowiana* was first reported it was assumed to be *C. adiantifolia* and issued under that name. Recently Capt. Hunter-Weston, R. E., has again obtained the long-bracted plant of Zanskar and the Karakoram at Chorbat in Baltistan and there is, in Herb., Saharanpur, a note by Dr. Stapf on one. These Baltistan sheets indicating the very close affinity of the plant to *C. flabellata*.

Near as the two species are, however, and advisable as their reduction may be from a monographer's point of view, the writer cannot agree with Mr. Clarke, Mr. Maximowicz and Dr. Stapf. The two plants differ very markedly in the points indicated by Sir Joseph Hooker and Dr. Thomson; if intermediates exist they have not yet been reported, and till they come to hand he prefers to regard *C. adiantifolia* *H. f. & T.* as a distinct species.

51. (—.) *CORYDALIS SCHELESNOWIANA* *Regel & Schmalh., Pl. Fedtsch. 4*; glabrous, very glaucous, stems stoutish erect rigid much branched; radical and lower cauline leaves very long petioled 2-pinnatisect, lobes 3-4-jugate, ultimate segments 2-3-fid cuneate at base, lobules obovate-obtuse; racemes simple, or slightly branched near base, terminating stem and branches, laxly many-flid.; bracts subulate rather shorter than the rigid pedicels; capsules linear, seeds 1-seriate.

NORTH-WEST HIMALAYA: Gilgit; Mastuj, 8,000 feet, in damp soil, *Giles n.* 99! **DISTRIB.** Turkestan.

Rootstock stout; stems 18-24 in.; leaves thick, lower petioles 4-6 in. segments 1 in. long. $\frac{3}{4}$ in. across; central raceme 6-8 in. lateral 3-6 in.; bracts flaccid, pedicels

$\frac{1}{4}$ in.; flowers orange-yellow, $\frac{1}{2}$ in. long, spur slightly saccate at base scarcely half as long as lips; capsules flattened, $\frac{3}{4}$ in. long.

This species is very nearly related to *C. flabellata* and *C. adiantifolia* but has different leaf-segments and rather smaller flowers. Its nearest ally is *C. paniculigera* Regel and Schmalh., which has similar habit and foliage and very similar flowers and fruits, but which differs in having a paniculate inflorescence.

52. (24.) CORYDALIS CRASSIFOLIA Royle.

The writer finds from the St. Petersburg Herbm. specimens lent for study by Dr. Batalin, that *C. Fedtschenkoana* Regel [*Pl. Fedtsch.* 3], of which its author did not know the fruit and which he compared with the very different *C. stricta*, has capsules indistinguishable from those of *C. crassifolia*. The two species then form together an exceedingly distinct natural group. A South African species, *Corydalis vesicaria* (*Cysticapnos africana*), has very similar capsules; they are not however, as Bentham and Hooker contend (*Gen. Plant.* i. 56) "exactly as in *C. crassifolia*;" in *C. vesicaria* the placentas, in place of being nerviform, are diffused; the seeds, in place of having an appendage, are, as in the other South African species, naked.*

* Among the specimens collected by Mr. Pratt in Szechuen there is a very fine species of *Corydalis* that does not appear to have been yet described; it represents a group with a rootstock unlike that of any of the Indian species and resembling the rootstocks met with in the species of *Dicentra* (§ *Cucullaria*). The species may be diagnosed as follows.

CORYDALIS BALSAMIFLORA Prain; rootstock bulbiferous, crown with solitary long-petioled radical leaf and emitting a slender flexuous leafless stem; leaf ternate, circumference ovate, the lobes pinnatipartite, ultimate segments narrowly oblong or spathulate obtuse entire or 2-fid; bracts large leafy sessile pinnatisect; raceme few-fl., pedicels very long and flowers very large, purple, the spur long slightly infundibuliform somewhat incurved and obtuse at apex as long as wingless lamina; ovary narrow ovules 1-seriate extending from end to end of placentas.

SZECHUEN: near Tachienlu, Pratt n. 781.

Rootstock with thick fleshy bulbiferous scales; petiole 4 in. long, lamina 1.25 in. diam.; stem 10–12 in.; lower bracts 1.5 in. long, 1 in. across; lower pedicels 1.5 in. long. Flowers 1.25 in. long.

The flowers here are as large as in *C. temulifolia* Franch. from Central China which has however a very different rootstock and has a narrower shorter straight conical spur. Very like this species as regards rootstock is another from Szechuen (Pratt. n. 822) of which the flowers are as yet unknown but which differs from *C. balsamiflora* in having two scattered stem-leaves and obovate fruits with seeds in 2-rows confined to the upper part of the capsule.



Prair, David. 1896. "Noviciæ Indica X. Some additional Fumariaceæ." *The journal of the Asiatic Society of Bengal* 65(I), 10–41.

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