

Revision of the genus *Oxytropis* from W. Pakistan and N.W. Himalayas

By

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With 1 Figure

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The genus *Oxytropis* DC. (ὄξύς = sharp; ῥόπις = keel) consists of about 300 species. Most of the species are perennial herbs, a few are annuals. The genus is widely distributed in the north temperate zone of the New and the Old Worlds, the centre of distribution being Central Asia (ALI 1958).

After the classical work of BUNGE 1874 the genus has recently been revised from China (PETER-STIBAL 1938), Russia (FEDTSCHENKO & al. 1948) and the North America (BARNEBY 1952). For the area under consideration, there exists no work except that of BAKER 1876.

In the present paper an attempt has been made to revise the genus from W. Pakistan and N. W. Himalayas. In all 13 species have been recognised. Two of these species are new to science.

The area under consideration consists of W. Pakistan, Kashmir, E. Punjab (India) and Kumaun (India). The following subdivisions of the area have been recognised: Sind, Baluchistan, N.W.F. Province, Punjab (East and West), Kashmir and Kumaun (including Garhwal).

The information about the flowering period of the taxa given in each case is referable to the plants from the area under consideration and may not be referable elsewhere.

Oxytropis DC. 1802: 66, nomen conservandum.

Type species: *Oxytropis montana* (L.) DC.

Artificial Key to the Species

1. Leaflets verticillate 2
 Leaflets not verticillate 4
2. Leaf, bract and calyx glandular 3
 Leaf, bract and calyx eglandular (1) *O. chitralensis*
3. Pod glandular, glabrous to subglabrous (2) *O. microphylla*
 Pod eglandular, uniformly hairy (3) *O. chiliophylla*
4. Pod membraneous, inflated 5
 Pod neither membraneous nor inflated 6

5. Mucro of keel less than or equal to 1 mm (4) *O. tatarica*
 Mucro of keel more than 1 mm (up to c. 2 mm) (5) *O. cachemiriana*
6. Aerial stem elongated 7
 Aerial stem not elongated 8
7. Stipules united at the base, leaf opposed, inflorescence
 globose (at least when young) (6) *O. lapponica*
 Stipules free, lateral; inflorescence elongated,
 not globose (7) *O. glabra*
8. Pod stipitate 9
 Pod not stipitate 11
9. Longest calyx teeth c. 1—2 mm (8) *O. immersa*
 Longest calyx teeth more than 2 mm 10
10. Leaflets 7 mm or less long, c. 2 mm or less
 broad (9) *O. humifusa*
 Leaflets more than 7 mm long and more than
 2 mm broad (10) *O. mollis*
11. Pod 11 mm or less long (11) *O. densa*
 Pod more than 11 mm long 12
12. Pod 2—3 cm long, lanate, leaflets silky (12) *O. strachyana*
 Pod 3—4 cm long, not lanate (minutely hairy),
 leaflets not silky (13) *O. duthieana*

1. *Oxytropis chitralensis* ALL, sp. nov. (Fig. 1, A—G)

Descriptio: Herba perennis, radice lignosa; caule repente, vestustiori stipulis persistentibus obtecto; internodia valde abbreviata, fere nulla. Folia imparipinnata, stipulis lateralibus, 10—15 mm longis, extus pilosis, intus glabris, in parte basali rhachidem connatis, superne liberis (Fig. 1 G) acutis, integris provisa. Rhachis 6—15 cm longa, pilis albis hirsuta; petiolus 25—45 mm longus. Foliola 30—40, sessilia, verticillata vel subverticillata, interdum alterna vel opposita, 4—10 mm longa, c. 1—3 mm lata, lanceolata vel oblongi-lanceolata, utrinque aequaliter patenter albi-pilosa, margine integra, apice acuta. Inflorescentia racemosa pedunculo 7—15 mm longo, pilis albis nigrisque hirsuta. Flores bracteis c. 2—3 mm longis, acutis, albo nigroque pilosis suffulti, pedicellis hirsutis c. 1—2 mm longis. Calyx (Fig. 1 F) c. 8—10 mm longus, pilis atris albisque vestitus, quinque-dentatus, parte connata c. 3—4 mm longa, dentibus c. 5 mm longis. Corolla in sicco aurantiaca apicibus violascentibus; vexillo (Fig. 1 A) c. 10 mm longo, c. 6—7 mm lato; alis (Fig. 1 B) c. 9—10 mm longis, 2—3 mm latis, auricula c. 1—2 mm longa, ungui c. 4 mm longo; carina (Fig. 1 C) c. 8—10 mm longa (mucrone incluso), c. 2—3 mm lata, mucrone c. 1—2 mm longo, ungui c. 3—4 mm longo. Stamina (Fig. 1 D) diadelpia, (5 + 4) 1, filamentis c. 7 mm longis. Ovarium (Fig. 1 E) c. 5—6 mm longum (stipite incluso), pilosum, ovulis 7, stipite c. 1—3 mm longo, stylo c. 2—3 mm longo, stigmate capitato. Fructus ignotus.

Holotype: Medial moraine of South Barum Glacier; Chitral ca. 12,136',
12. 7. 1950, Per WENDELBO (K).

Representative Specimens: Chitral, 9,000—11,000', 3. 6. 1895,
S. A. HARRISS 16062 (K).

Distribution: Chitral.

Flowering period: June—July.

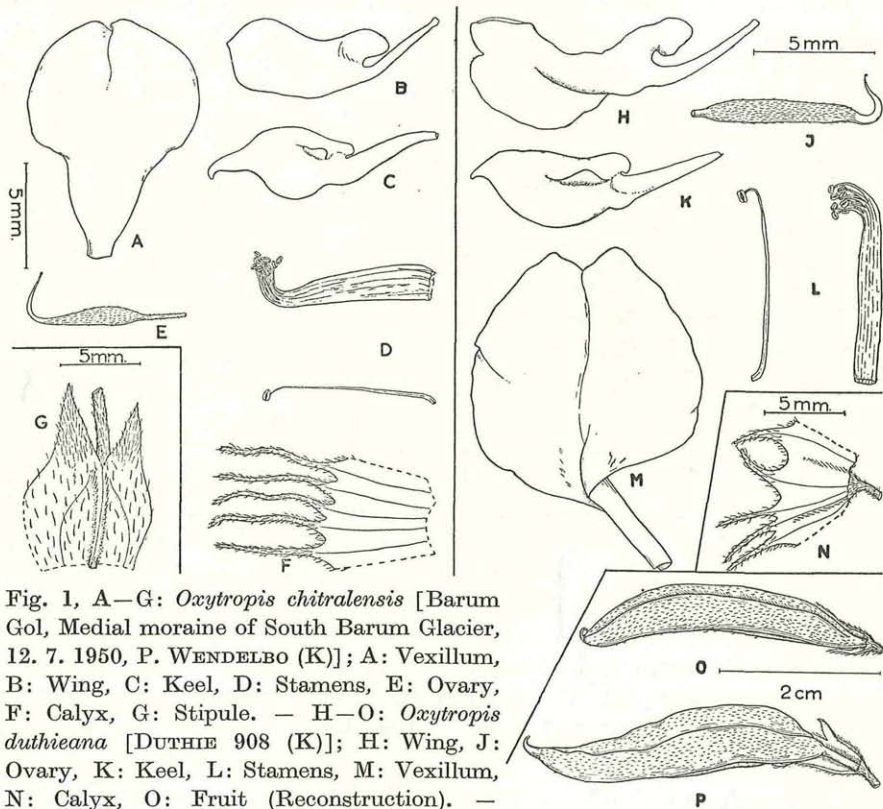


Fig. 1, A—G: *Oxytropis chitralensis* [Barum Gol, Medial moraine of South Barum Glacier, 12. 7. 1950, P. WENDELBO (K)]; A: Vexillum, B: Wing, C: Keel, D: Stamens, E: Ovary, F: Calyx, G: Stipule. — H—O: *Oxytropis duthicana* [DUTHIE 908 (K)]; H: Wing, J: Ovary, K: Keel, L: Stamens, M: Vexillum, N: Calyx, O: Fruit (Reconstruction). — P: *Oxytropis yunnanensis* [SCHNEIDER 2130 (K)]; Fruit (Reconstruction).

Affinity: Because of the verticillate leaflets and eglandular condition *O. chitralensis* ALI belongs to the section *Baicalia* (STELL.) BUNGE (subgenus *Oxytropis* = subgenus *Euoxytropis* BUNGE). It is quite unique and distinct from other species of the section, in having slender calyx teeth (Fig. 1 F) which are longer than the cup.

2. *Oxytropis microphylla* (PALLAS) DC. 1802: 83

Description: BUNGE 1874: 154. This description should be amended as follows: Fruit with glandular tubercles, glabrous or scantily hairy.

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Holotype: Sandy island in Lake Baikal and River Selenga, PALLAS (BM).

Synonymy: *Phaca microphylla* PALLAS 1776: 744. — *Astragalus microphyllus* (PALLAS) PALLAS 1800: 92, non LINNÉ 1753. — *Oxytropis tibetica* BUNGE 1874: 155.

According to BAKER 1876 *O. microphylla* (PALLAS) DC. and *O. chiliophylla* ROYLE ex BENTHAM are conspecific. BUNGE 1874 however regards them as quite distinct species. The glandular nature and the glabrous to subglabrous condition of the pod in *O. microphylla* (PALLAS) DC. is quite distinct from the eglandular, uniformly pubescent condition of the pod met with in *O. chiliophylla* ROYLE ex BENTHAM. BUNGE 1874 however recognises *O. tibetica* BUNGE, to be a distinct species, which according to him differs in the shape of the pod and the pubescence of the pedicel from *O. microphylla* (PALLAS) DC. The observation of the available material at Kew Herbarium and British Museum (Natural History) along with the isotype of the former and the holotype of the latter, reveals that the characters mentioned above are not constant enough to be taxonomically significant, hence the two species are conspecific. SCHISCHKIN 1948 also does not recognise *O. tibetica* BUNGE, to be a distinct species, but he treats it as a synonym of *O. chiliophylla* ROYLE ex BENTHAM, which is obviously a mistake.

Figure References: PALLAS 1776: t. 10, f. 1; PALLAS 1800: t. 76.

Representative Specimens: Kashmir: Kiangchu, Rupshu, on dry plains, 15,500', W. KOELZ 2126 (K, E); 2207 (K, E); Zanskar, 12,000', 28. 6. 1848, THOMSON (K); Khardang La, Ladhak, 15,500', LUDLOW & SHERRIFF 8422 (BM); Ban hill slopes, Sassir pass, Karakorum, 15,000', F. LUDLOW 425 (BM); Gogra, Ladakh, 15,500', F. LUDLOW 824 (BM); Sulle to Padam, Zanskar, June 22—24. 1856, SCHLAGINTWEIT (BM); Ladakh, BEDDOME 1951 (BM); Mashoo nullah, 15,500', Ladakh, LUDLOW & SHERRIFF 8458 (BM, E); Imit, 2900 m, 2.—3. 8. 1954, SCHMID 2070 (G). — Punjab: Kyelang, Lahul, 15,000', BOR 15080 (K, E); Lingti, Lahul, BOR 15023 (K, E).

Distribution: Kashmir; India, N. Punjab; Russia, Dauria; Mongolia; Tibet; China, Shensi (PETER-STIBAL 1938).

Flowering period: June—September.

3. *Oxytropis chiliophylla* ROYLE ex BENTHAM in ROYLE 1835: 198.

Description: Bunge 1874: 155.

Holotype: Shalkur, ROYLE (untraceable). — Isotype: N. W. India, ROYLE (K).

Synonymy: *Oxytropis ingrata* FREYN 1906: 197. — *O. polyadenia* Freyn 1906: 199. — It has not been possible to verify the above mentioned synonyms. They have been listed here following SCHISCHKIN 1948.

Figure Reference: CAMBESSÉDES 1844: t. 45.

Representative Specimens: Kashmir: Ashkoley, 10,050', Karakorum, CLARKE 30312 E (K), 30312 A (K), 30312 C (BM); Zaskar, 12,000', WATT 2448 (E); Kashmir, OSMASTON 137 (K); Tibet Occ., 11,000—16,000'. THOMSON (K); Imit near Ishkoman, 3.8. 1954, SCHMID (RAW); Khardang La, Ladakh, 15,500', LUDLOW & SHERRIFF 842 (BM), 8411 (BM); Ladakh, 15,500', F. LUDLOW 560 (BM). — Punjab: Kunawar, 1835, ROYLE (K); Piti, 11,000', 25. 8. 1847, THOMSON (K); Bashahr, Rurang Pass, 14,750', 24. 8. 1890, LACE (E).

Distribution: Kashmir; India, Punjab; Russia, Pamir-Alai; Afghanistan; Tibet.

Flowering period: June—September.

4. *Oxytropis tatarica* CAMB. ex BUNGE 1874: 16

Description: BUNGE 1874: 16.

Holotype: Kashmir (?) JACQUEMONT, 1789 (P).

Representative Specimens: Kashmir: Janali, 10,000—11,000', Gilgit Exped., GILES 435 (K); Rupshu, HEYDE (K); Ladakh, 15,000—17,000', 7. 7. 1848, THOMSON (K); Tibet Occ., 15,000—17,000', THOMSON (BM, E); Rupshu, Debring, 15,000', W. KOELZ 6559 (G). — Punjab: Kenlung, 15,000', Lahul, BOR 16463 (K); Dhankar, Spiti, 13,000', JACQUEMONT 1946 (K); Kangra, Spiti, Landarse, W. KOELZ 7055 (G).

Distribution: Kashmir; Tibet; Nepal; India, N. Punjab; W. Turkistan (?). — BUNGE 1874 quotes one specimen from Alai, though I have not seen any specimen from there and this species has also not been included by FEDTSCHENKO & al. 1948 in the Flora of U.S.S.R.

Flowering period: June—September.

5. *Oxytropis cachemiriana* CAMBESSÉDES 1844: 38, t. 44

Description: BUNGE 1874: 43 „*O. Kashemiriana*“.

Type: Kashmir, 3500 m., JACQUEMONT (P — not seen). — The type specimen was not traceable in Paris Herbarium.

Synonymy: *Oxytropis proboscidea* BUNGE 1874: 17. — I have not seen the holotype (Tibet occidentalis, 15,000—17,000' THOMSON ex Herb. FALCONER, 425 ex p.) which is in Leningrad. My observations are based on Type numbers in Kew Herbarium.

Figure Reference: COVENTRY 1930: t. 23.

Representative Specimens: Kashmir: Ind. Orient., JACQUEMONT 1013 (K), 1946 (K); Dras valley, 10,000—11,000', DUTHIE 13709 (K); W. Tibet, FALCONER 425 (Type number of *O. proboscidea* BUNGE) (K); West of Leh, Indus valley, 11,000', 1852, THOMSON (K); Baltal, 9,500', 27. 9. 1848, THOMSON (K); Liddar valley, near Shishnag, 12,000—13,000', DUTHIE 13337 (K); Kashmir, 8,000—10,000', THOMSON (K, BM, G); Marpo La, west of Dras, 10,000—15,000', R. R. STEWART 22279 (K); Zoji Pass, 11,000', R. R. STEWART 6723 (K); Shishnag, 11,000—12,000', R. R. STEWART

WART 8419 (K); above Dras, 11,000—12,000', Baltistan, DUTHIE 13775 (BM, E); Thajwas near Sonamarg, 10,500', LUDLOW & SHERRIFF 7909 (BM); Ladakh, W. KOELZ 6190 (G); Zanskar, 15,000', I. 7. 1848, THOMSON (K). — N. W. F. Province: Hazara, 8,000', 23. 5. 1896 DUTHIE 19362 (K); Chitral, Yarkhun valley, 4,000 m., 22.—27. 8. 1954, F. SCHMID 2326 (G).

Distribution: W. Pakistan, N. W. F. Province; Kashmir; West Tibet, 8,000—17,000'. — BAKER 1876 records it from Central Siberia. But neither have I seen any specimen from Siberia nor has it been reported by KRYLOV 1933 and FEDTSCHENKO & VASSILCZENKO 1948. Hence it is likely to be a mistake.

6. *Oxytropis lapponica* (WAHL.) GAY 1827: 30

Description: BUNGE 1874: 8.

Type: Lapland, WAHLENBERG (UPS) (not seen). — According to BALFOUR (1879) and de CANDOLLE (1880) the herbarium of WAHLENBERG is in Uppsala.

Synonymy: *Phaca montana* WAHLENBERG 1812: 189, non LINNÉ — *P. lapponica* WAHLENBERG 1813: 131. — *Oxytropis microrhyncha* BENTHAM M. SS. (nom. nud.). — *O. amoena* KARELIN & KIRILOV 1842: 327. — *O. lapponica* var. *xanthantha* BAKER in HOOKER 1876: 137.

Figure Reference: REICHENBACH & BECK v. MANNAGETTA 1903: t. 173, f. 6—15. — LANGE 1874: t 20.

Representative Specimens: Kashmir: Dras, 9,000', 24. 9. 1848, THOMSON (K); Baltal, 9,500', 27. 9. 1848, THOMSON (K); Ladakh, MUNRO 681 (K); Chillam swamp, north slope, Burzil pass, 10,000—13,000', R. R. STEWART 18972, 22020, 22101 (K); Matayan-Dras, 11,000', R. R. STEWART 7420 (K); Boji pass, to Matayan, 12,000', R. R. STEWART 7483 (K); Gilgit, 11,000—12,000', 4. 8. 1892, DUTHIE (K); Kashmir, 12,000', R. R. STEWART 6888 (K); Alampi La, Astor, 14,000', DUTHIE 12163 (BM); Kishtwar, 11,000', LUDLOW & SHERRIFF 9168 (BM); Naltar, Gilgit, 12,000', R. R. STEWART 26506 (RAW); Mitsahoi, 11,000', Ladakh Road, August, 1928, R. R. STEWART (RAW); Chhantir Gah, 2750 m., 5.—6. 8. 1954, F. SCHMID 2165 (G). — Punjab: Kulu, DRUMMOND 23501 (K); Kenlung, 15,500', Lahul, BOR 15449 (K); Bara Lacha La, 16,000', Lahul, BOR 15056 (K).

Distribution: India, Punjab; Kashmir; Tibet; Russia, Altai, Tien Shan, Dzungaro-Tarbagatai, Caucasus (FEDTSCHENKO & VASSILCZENKO 1948); Norway; Sweden; Switzerland; Austria; Hungary; Italy, Bormio; Spain, Prov. Huesca.

Flowering period: June—August.

7. *Oxytropis glabra* DC. 1802: 95

Description: BUNGE 1874: 40.

Holotype: Sibiria, de CANDOLLE (G).

Synonymy: *Astragalus glaber* (DC.) LAMARCK 1810: 525. — *Oxytropis diffusa* LEDEBOUR 1831: 281. — *O. drakeana* FRANCHET 1883: 241, t. 12.

Figure Reference: de CANDOLLE 1802: t. 8. — LEDEBOUR 1834: t. 451.

Representative Specimens: Kashmir: Ascent to Deotsoi (Deosai) from Iskurdoe (Skardu) 1852, WINTERBOTTOM (K); West Tibet, FALCONER (K); Iskardo, Balti, 7,000', Nov. 1847, THOMSON (K); Shayuk valley, Balti, 8,000', 5. 11. 1847, THOMSON (K); Skardo, CLARKE 29968, 30020 A (K), 29968 E (BM); Saling on the right side of Shayok, opposite Khapalu, to Hushe, on the Tsetanga river, Balti, 13 to 15. 7. 1856, SCHLAGINTWEIT (BM); Karakorum, 10,200', CLARKE 30476 B (BM); Chantir Gah, 2750 m., 5.—6. 8. 1954, F. SCHMID 2167 (G); Entre Gilgit et Imit, vallee semi-desertique, 1620—2580 m, 28. 7. 1954, F. SCHMID 2024 (G); Skardu, 8,000', R. R. STEWART 20433, 20372 (RAW).

Distribution: Kashmir; Tibet; Mongolia; China, Kansu, Shansi (PETER-STIBAL 1938); Russia, Altai, Dauria, Tsungaro-Tarbagatai, Tien Shan, Pamir Alai, Turkistan. — The following localities are being listed after FEDTSCHENKO & VASSILCZENKO 1948: Irtysh, Upper Tobol, Angara Sayan, Lena-Kolyma, Aralo-Caspia, Balkhash.

Flowering period: July—August.

8. *Oxytropis immersa* (BAKER) BUNGE ex FEDTSCHENKO 1907: 212.

Description: PARSA, 1952: 66.

Holotype: Sikaram, 12,000—14,000', AITCHISON 924 (K); Isotype (BM).

Synonymy: *Oxytropis merkensis* Bunge subsp. *incanescens* FREYN 1905: 1023. It has not been possible to verify this synonym. It has been listed here following FEDTSCHENKO & VASSILCZENKO 1948.

Representative Specimens: N. W. F. Province: Barum Gol, Camp 2 by South Barum Glacier, ca. 4500 m, Chitral, 27. 7. 1950, WENDELBO (K, BM).

Distribution: W. Pakistan, Chitral; Persia; Afghanistan; Russia, Tien Shan, Pamir Alai (FEDTSCHENKO & VASSILCZENKO 1948).

Flowering period: June—August.

9. *Oxytropis humifusa* KARELIN & KIRILOV 1842: 535.

Description: BUNGE 1874: 28.

Holotype: Alatau, 1841, KAR. et KIR. 236 (MW — not seen). My observations are based on KAR. et KIR. 1370 (BM) collected from Alatau in 1841 and identified by KARELIN and KIRILOFF.

Synonymy: *Oxytropis glacialis* BENTH. ex BUNGE 1874: 18. — *O. lapponica* (WAHL.) GAY var. *humifusa* (KAR. & KIR.) BAKER in HOOKER 1876: 137. — *O. lapponica* (WAHL.) GAY var. *jacquemontiana* BENTH. ex BAKER in HOOKER 1876: 137.

BAKER 1876 reduced this species to a variety of *Oxytropis lapponica* (WAHL.) GAY, from which it differs markedly in having (I) much reduced internodes, which remain permanently covered with old leaf bases and

stipules, (II) in having lateral adnate stipules in contrast to leaf-opposed stipules met with in *O. lapponica*.

BUNGE 1874 recognised *O. glacialis* BENTH. ex BUNGE as a species distinct from *O. humifusa* KAR. & KIR. and put them in two different sections. Nevertheless the observation of the isotypes in Kew Herbarium confirms their conspecific nature and the character of the stipules firmly adherent to the base of the rachis justifies its position in section *Janthina* BUNGE.

Representative Specimens: Kashmir: Zoji Pass, between Dras and Kashmir, 11,000', 27. 9. 1848, THOMSON (K); Gilgit Expedition, Jan. 1887, GILES (K); Shah Jamali, 9,000—11,000', GILES 436 (K); Baltistan, 10,000', LUDLOW 300 (BM); Thalle La, Baltistan, R. R. STEWART 20665 (RAW). — Punjab: Patseo, 12,000', Lahul, BOR 15257, 14922 (K); Kyelang, Lahul, BOR 8704 (K); Lahul, Kenlung, BOR 15449 (E); Lahul, Bara Lacha La, BOR 15056 (E). — N. W. F. Province: Hazara, J. L. STEWART 119 C/H (K). — Kumaun: Pindari Glacier, 12,000', Kumaun, STRACHEY & WINTERBOTTOM 6 (BM).

Distribution: W. Pakistan, N. W. F. Province; India, Punjab, Kumaun; Kashmir; Tibet; Afghanistan; Kurram valley; Russia, Dzungaro-Tarbagatai, Tien Shan; Eastern Turkistan (FEDTSCHENKO & VASSILCZENKO 1948).

Flowering period: June—September.

10. *Oxytropis mollis* ROYLE ex BENTH. in ROYLE 1835: 198.

Description: BUNGE 1874: 72. This description should be supplemented as follows: Leaflets ovate, elliptical, lanceolate, oblong, orbicular to oblong-lanceolate; tip acute, obtuse to subtruncate. Calyx c. 6—10 mm. Vexillum c. 9—16 mm, rarely 18 mm; mucro of keel c. 1—3 mm.

Holotype: Kunawar, 1835, ROYLE (K).

Synonymy: *Oxytropis thomsonii* BENTH. ex BUNGE 1874: 72.

Representative Specimens: Kashmir: Zanskar, 12,000', 1852, THOMSON (K); Kashmir, 7,000—8,000' May 1852, THOMSON (isotype of *O. thomsonii* BENTH. ex BUNGE) (K); Baltal, 9,500', 1852, THOMSON (K); Matayan, Dras valley, INAYAT 25559 (K); Ladakh, 11,500', OSMASTON 136 (K); Karakorum, 14,000', CLARKE 30451 A (K), 30451 (BM); Deosai Pass, head of Kishenganga valley, lower alpine zone, R. R. STEWART 22164 (K); Burzil Pass, 13,000', DUTHIE 14040 (K); Sunamarg, Sind valley, DUTHIE 25558 (K); Kashmir, FALCONER 424 (K); Kishenganga valley, 1852, WINTERBOTTOM (K); Chenab valley, 9,000', 1851, THOMSON (K); Kala Pani, 10,600', Gilgit Expedition, GILES 665 (K); Gorais, Kishenganga valley, DRUMMOND 15018 (K); Baltal, Sind valley, 9,500', 30. 7. 1891, G. A. GAMMIE (K); Sumbiali, 10,000—11,000', DUTHIE 11148 (K); Tilel to Gangabal lakes, 9,000', R. R. STEWART 4404 (K); Pahlgam, 9,000', R. R. STEWART 7978 (K); Bhujag, foot of Umasi La, Zanskar frontier, 11,000',

LUDLOW & SHERRIFF 9196 (BM, E); Sunamarg, Sind valley, 9,000', LUDLOW & SHERRIFF 8302 (BM, E); Kajnag range, 10,000', DUTHIE 10961 (BM, E). — Punjab: Kulu, Lahul, DRUMMOND 23482 (K, E); Gondla, 10,000', Lahul, BOR 12446 (K); above Pangli, Kunawar, 10,000', 18. August 1847, THOMSON (K); Purbani forest, Bashahr, LACE 222 (K, E); Pangli, Chamba, 9,000', R. R. STEWART 2804 (K); Kardong, Lahul, 13. 6. 1856, SCHLAGINTWEIT (BM); Lahul, Kardong, 12,000', BOR 14742 (E); Lahul, Beling Lungsa, 13,000', BOR 14763 (E); Lahul, Gondla, 10,000' BOR 12446 (E); Lahul, Koksar, BOR 14561 (E). — N. W. F. Province: Lowari Pass, 10,000', Chitral Relief Expedition, S. A. HARRISS 16063 (K); Hazara, 11,000', DUTHIE 19363 a (K); Naran Kagan, 8,400', 20. 6. 1899, DUTHIE (K); Chitral, 9,500', TOPPIN 349 (K); Naran, Kagan valley, 10,000', 24. 5. 1896, DUTHIE 19363 (K); very common below Hazara, J. L. STEWART (K); Kagan, HASAN DIN 36 (RAW); Sho nallah, near Kalam, 10,000', Swat state, R. R. STEWART & A. RAHMAN 25194 (RAW); Naran, Kagan valley, Hazara, July 1952, M. A. SIDDIQI (RAW).

Distribution: Pakistan, N. W. F. Province; Kashmir; India, N. Punjab. Above 7,000—9,000'.

Flowering period: May—September.

11. *Oxytropis densa* BENTH. ex BUNGE 1874: 24.

Description: The descriptions given by BUNGE 1874 and BAKER 1876 are not complete, hence fresh description of the species has been drawn. — Perennial herb, densely caespitose, not more than c. 7 cm long. Root woody, thick. Stem trailing, profusely branched; older portion covered with persistent stipules, internodes almost absent. Leaf stipulate, compound, imparipinnate; stipules lateral, whitish, pilose, c. 5—7 mm long, adnate for most part with rhachis except the upper, c. 2—4 mm tip acute, each half of the stipule provided with only one main vein; rhachis c. 10—25 mm, petiole 5—18 mm, leaflets 11—15, rarely 19, lateral leaflets opposite, occasionally alternate to sub-alternate, sessile, c. 2—4 mm long, c. 1 mm broad, oblong to oblong-lanceolate, margin entire, tip obtuse, densely pilose on both sides. Inflorescence peduncled raceme, 4-6-flowered; peduncle 3—4 mm (in fruits). Flower bracteate, bract c. 3—4 mm long, c. 1 mm broad, linear, acute, minutely pilose, whitish, pedicel c. 1—3 mm covered with black and white hairs. Calyx c. 4—5 mm, covered with black and white hairs, quinque-denticulate, teeth subequal, c. 1—2 mm, linear, acute. Corolla yellow-orange (in dry condition), vexillum c. 5—7 mm long, c. 4—5 mm broad. Wing 6—7 mm long, c. 1—2 mm broad, claw c. 2—3 mm, auricle c. 1—2 mm. Keel c. 5—6 mm long, c. 1—2 mm broad, claw c. 2—3 mm. Stamens diadelphous, (5 + 4) 1, filaments c. 4—5 mm. Ovary c. 3—4 mm long, densely pilose, style glabrous c. 1 mm bent at 135° to the axis of the ovary; stigma capitate. Fruit c. 9—11 mm, long,

2—3 mm broad, tip acute to acuminate; longitudinally septate. Seeds 5—7, reniform, glabrous, finely pilose. — Walter KOELZ (specimen no 2254, herb. Kew.) states the colour of the flowers as “rose purple, with white triangular spot in the center of standard”.

Holotype: Western Tibet, 16,000—17,000', THOMSON (LE- not seen). I have seen THOMSONS specimens from Tibet, 16,000—17,000', in Kew Herbarium and British Museum (Natural History) bearing BENTHAM'S identification labels.

Representative Specimens: Kashmir: Tibet Occ., 16,000—17,000', THOMSON (K, BM, G); Tibet near Karakorum, 16,000', August 1852, THOMSON (K); Khyung Tso, Rupshu, in sandy plain, 16,500', W. KOELZ 2254 (K, E). — N. W. F. Province: Chitral, haute vallee de Yakhun, Hauts paturages, 4000 m. 22.—27. 8. 1954, F. SCHMID 2324 (G).

Distribution: Kashmir; W. Pakistan, Chitral; W. Tibet. This is the first record of this species from Chitral.

Flowering period: July—September.

12. *Oxytropis stracheyana* BUNGE 1874: 62.

Description: BAKER in HOOKER 1876: 138.

Holotype: Darma Yankti, 15,500', STRACHEY & WINTERBOTTOM 5 (LE — not seen). Isotype (K).

Representative Specimens: Kumaun: Chojan, N. Kumaun, 15,000', H. J. CHAMPION (K). — Kashmir: Sar-had-i-Wukham, 10,500', Gilgit Expedition, GILES (K).

Distribution: Kashmir; India, Kumaun; Tibet; Russia, Pamir Alai, Tien Shan.

Flowering period: July—September.

13. *Oxytropis duthieana* ALI, sp. nov. (Fig. 1, H—O)

Descriptio: Herba perennis radice simplici elongata. Caule super terram emergente valde abbreviato, internodiis quasi deficientibus, raro ad 10 mm longis, vulgo stipulis persistentibus obtectis; parte subterranea elongata, e nodis radicante, internodiis 5—10 mm longis. Folia imparipinnata, stipulis lateralibus rhachidem adnatis, c. 6—10 mm longis, lanceolatis extus pilosis, intus glabris; rhachide aequaliter pilosa, 4—12 cm longa, petiolo 2—7 cm longo; foliolis 11—15, sessilibus vel minutissime petiolulatis; lamina c. 5—11 mm longa, c. 2—4 mm lata, oblongo-lanceolata vel elliptica, margine integra, apice acuta. Inflorescentia racemosa, 3-6-flora, pedunculo 5—9 cm (raro c. 2 cm tantum) longo. Flores bracteis c. 4—6 mm longis, c. 1—2 mm latis, lanceolatis, acutis pilosis suffulti; pedicelli c. 2—4 mm longi, pilosi. Calyx (Fig. 1 N) quinquedentatus, parte connata c. 4—5 mm longa, duobus dentibus superioribus c. 3 mm longis, 3 dentibus inferioribus c. 4 mm longis, acutis. Corolla (in sicco) flavi-aurantiaca

apicibus violascentibus; vexillo (Fig. 1 M) c. 13—14 mm longo, c. 9—10 mm lato, emarginato; alis (Fig. 1 H) c. 12 mm longis, c. 3—4 mm latis, apice oblique emarginatis, ungui c. 4—5 mm longo, auriculis c. 1—2 mm longis; carina (Fig. 1 K) c. 10 mm longa, c. 3 mm lata, ungui c. 4—5 mm longo, mucrone minusculo, c. 1 mm longo. Stamina (Fig. 1 L) diadelpia, (5 + 4) 1, filamentis c. 9 mm longis. Ovarium (Fig. 1 J) c. 7—8 mm longum, c. 1 mm latum, aequaliter pilosum, ovulis 26—30, stylo in angulo recte superne curvato, c. 2 mm longo, stigmatibus capitato. Fructus (Fig. 1 O) 3—4 cm longus, minute pilosus, haud septatus, dehiscens; seminibus 26—30. Semina reniformia, colore castanea, glabra; matura non vidi.

Holotype: Ourie gadh in Nila Valley, 14,000—15,000', Tihri Garhwal, 15. 8. 1883, J. F. DUTHIE 981 (K).

Synonymy *Oxytropis colletii* DUTHIE & PRAIN, sched. Herb. Kew. (nom. nud.)

Representative Specimens: Kumaun: Nipchang valley, 14,000', 31. 8. 1884, DUTHIE 2813 (K); Nila valley, 14,000—15,000', DUTHIE 983 (K); Patang Garh, Byans, 11,000—12,000', DUTHIE 5463, 5464 (K); Kutti, Yangti valley, Byans, 14,000—15,000', DUTHIE 5460 (K). — Nepal: Near Budhi village, 11,000—12,000', West Nepal, DUTHIE 5462 (K).

Distribution: India, Kumaun; Nepal, 11,000—15,000'.

Flowering period: July—September.

This species is closely related to *O. yunnanensis* FRANCH., from which it mainly differs in the characters of fruits. In *O. yunnanensis* FRANCH. the fruit (Fig. 1 P) is stipitate (stipe 4—7 mm long) and the number of seeds per fruit is 6—10 (PETER-STIBAL 1938); in *O. duthieana* ALI the fruit is without a stipe or the stipe is c. 1 mm (Fig. 1, O) and the number of seeds per fruit is 26—30.

Excluded Species

Oxytropis meinshausenii SCHRENK, Bull. Soc. Acad. St-Petersb. 10: 254 (1842). BAKER in HOOKER 1876: 139 has included this species in Flora of British India. I have not seen any specimen from Indo-Pakistan subcontinent belonging to this species. BAKER has most probably referred to a specimen from Punjab, collected by J. L. STEWART, now in Kew Herbarium. It resembles the above species, but it is a poor specimen with no fruits and flowers gummed; hence its exact identity is difficult to determine.

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Summary

An attempt has been made to revise the widely distributed genus *Oxytropis* from the area W. Pakistan and N. W. Himalayas (Kashmir, E. Punjab and Kumaun including Garhwal). Two of the 13 recognised species — *O. chitralensis* and *O. duthicana* — are new to science. An artificial key to the species is added.

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