

PLANTS COLLECTED BY R. C. CHING IN SOUTHERN MONGOLIA AND KANSU PROVINCE, CHINA

By EGBERT H. WALKER

INTRODUCTION

IN 1923 the National Geographic Society sent Dr. F. R. Wulsin to China to conduct its Central China Expedition. The objective was to collect ethnological, zoological, and botanical material and to make a general survey preparatory to more intensive exploration at a later time. The personnel of the expedition was drawn from various Chinese institutions, R. C. Ching, the botanist, coming from Southeastern University (now National Central University), Nanking. The expedition assembled in March at Pao T'ou, Mongolia, at the end of the Peking-Suiyuan Railroad, on the Yellow River, and proceeded by the camel route leading northwest, west, and south to Wang Yeh Fu, the capital of the territory of A La Shan, Mongolia. The first collections were made at Pao T'ou. At Wang Yeh Fu Mr. Ching's party left the main group and followed a botanically more promising but rougher route to Ningsia. The whole expedition traveled together from there to Lanchow, where the botanical party again followed a separate circuit to the north, west, and south as far as Cho Ni. Meanwhile the anthropological and zoological parties went west to Hsi Ning and Lake Kokonor. On returning they traveled south from Hsi Ning across the western Kansu grasslands to Cho Ni, where they were rejoined by the botanical party. All traveled together to Lanchow, arriving at the end of September. From there the expedition floated down the Yellow River on a raft to Pao T'ou, and then returned by rail to Peking. No botanical collections were made after leaving Lanchow. Mr. Ching employed a resident mule driver in the Ho Lan Shan, Mongolia, to collect plants after the expedition left that region in the spring. These specimens, over 100 in number, were received by Mr. Ching on his return and were added at the end of his series.

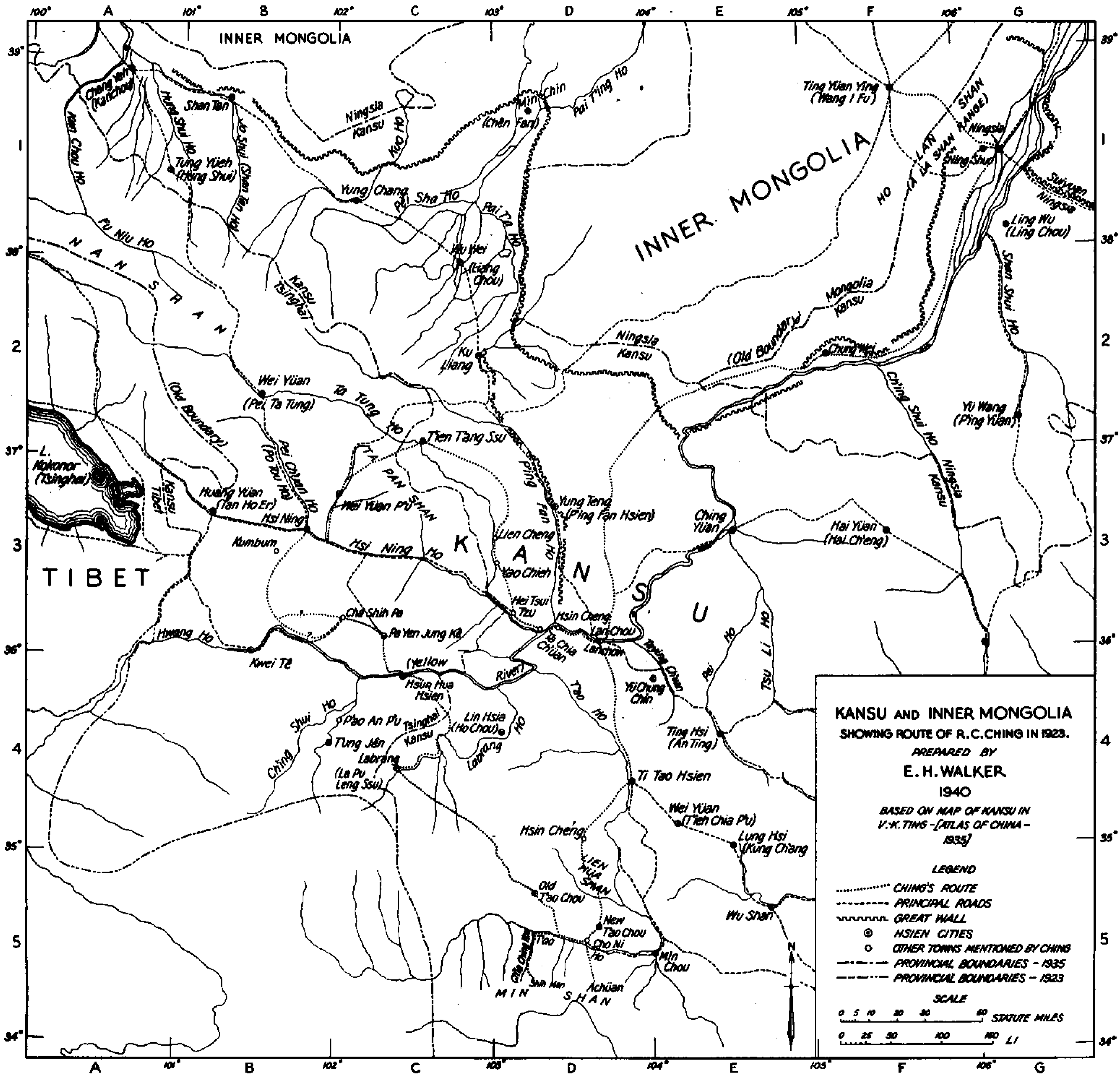
The 1,158 numbers of botanical specimens, with numerous duplicates, were presented by the National Geographic Society to the United States National Museum, and the duplicates were distributed later to various institutions the world over. The pteridophytes were determined by Dr. Carl Christensen and enumerated in 1927 (1).¹

¹ See bibliography, p. 566.

The field labels, prepared by Mr. Ching to accompany the specimens, bear unusually full and interesting notes, which are made available to students of the flora of this relatively little known part of China in the present enumeration. Since the collector's report, which was extracted from his daily journal, also contains much valuable information on the expedition and on the flora, it is published here with little modification. The bulk of the collection was named by the following specialists or their associates: Oakes Ames (Orchidaceae), E. B. Babcock (*Crepis* and relatives), G. Becker (*Viola*), G. Bonati (*Pedicularis*), Fêng-huei Ch'ên (*Saussurea*, in part), L. Diels (various families), W. E. Evans (various families), F. Fedde (*Corydalis*), H. Fröderström (*Sedum*, in part), R. Görz (*Salix*, in part), R. Gross (*Carex*, in part), H. Handel-Mazzetti (most of the Compositae), Kin-shen Hao (*Salix*, in part), H. Hara (*Chrysplenium*), H. Harms (Araliaceae), A. Heimerl (*Achillea*), A. S. Hitchcock (most of the Gramineae), I. M. Johnston (Boraginaceae), Y. L. Keng (Gramineae, in part), K. Krause (Liliaceae, in part), C. V. B. Marquand (Gentianaceae, in part), J. Matfeld (Compositae, in part), M. Onno (*Aster*, in part), C. H. Ostenfeld (Ranunculaceae, in part), F. W. Pennell (Scrophulariaceae, in part), E. Peter-Stibal (*Astragalus*, *Oxytropis*), F. Petrak (*Cirsium*, in part), R. Pilger (*Plantago*), K. H. Rechinger, fil. (*Rumex*), A. Rehder (woody plants, in part), P. L. Ricker (*Lespedeza*), O. E. Schulz (Cruciferae), W. W. Smith (Primulaceae), G. L. Stebbins (*Ixeris* and relatives), A. N. Steward (*Polygonum*), T. Tang (Liliaceae and Orchidaceae, in part), E. Ulbrich (Araliaceae, Ranunculaceae, in part, etc.), Fa-tsuang Wang (Liliaceae and Orchidaceae, in part), L. O. Williams (Orchidaceae, in part), and E. H. Wilson (woody plants, in part). The remainder of the collection was named by the writer. Because of the existing confusion in many genera of Chinese plants, such as *Astragalus* and *Oxytropis*, some specimens are determined only to genera.

The photographs here reproduced are selected from those made by F. R. Wulsin, supplemented by four others (pls. 4, *B*; 5, *A* and *B*; and 6) taken by J. F. Rock in 1925. The former are reproduced through the courtesy of the National Geographic Society, the latter with the kind permission of the Arnold Arboretum.

This collection represents 2 families, 12 genera, and 22 species of pteridophytes and 81 families, 318 genera, and 767 species of seed plants. About 25 new species and new varieties have been based on Ching's Kansu specimens. Most of the new species have already been described in various publications, but the present enumeration includes three original descriptions. Mr. Ching's collection adds much to our previous rather meager knowledge of the flora of this interesting province.



KANSU AND INNER MONGOLIA
 SHOWING ROUTE OF R. C. CHING IN 1928.

PREPARED BY
E. H. WALKER

1940

BASED ON MAP OF KANSU IN
 V. K. TING - [ATLAS OF CHINA -
 1935]

LEGEND

- CHING'S ROUTE
- PRINCIPAL ROADS
- ~~~~~ GREAT WALL
- ⊙ HSIEN CITIES
- OTHER TOWNS MENTIONED BY CHING
- PROVINCIAL BOUNDARIES - 1935
- PROVINCIAL BOUNDARIES - 1923

SCALE
 0 5 10 20 30 40 50 60 STATUTE MILES
 0 25 50 100 150 LI

SURVEY OF BOTANICAL EXPLORATION IN KANSU

Kansu Province is crossed by the principal trade routes from Peking to Turkestan and Tibet. Many travelers have explored the region, but not many have made botanical collections. The first botanical explorers were Russians, the most important being N. M. Przhevalski, G. N. Potanin, and P. J. Piasetski,² whose collections made during the period from 1871 to 1886 were studied by C. J. Maximowicz. Many new species based on these collections have been described by him in the publications of the Russian Academy of Sciences. He also began an enumeration of these collections (16, 17), but his series was never completed. The collections made by L. Lóczy on the expedition from 1877 to 1880 by the Hungarian Count Béla Széchenyi were enumerated by A. Kanitz (13, 14). In 1898 K. Fütterer led an expedition into central Asia, which included Kansu in its itinerary. The collections made by the leader were enumerated by L. Diels (3), who also published an enumeration of the collections of the Filchner expedition in 1903-05 (4). The small collection made by the Japanese botanist Tsunobu Umemura around Lanchow in 1905 was enumerated in Japanese by S. Matsuda (15). The French archeological expedition led by P. Pelliot, with L. Vaillant as botanist, collected over 1,100 numbers of specimens on its trip from the Pamir across central Asia through Kansu and Shensi in 1906-08. An enumeration was prepared by P. Danguy (2). In 1911 William Purdom (22) made horticultural collections in southern Kansu and in 1914-15 accompanied the better-known horticultural explorer Reginald Farrer into the same territory. Farrer also explored the central and western part of the province and published two popular books and several reports on his work (5-10). Although he collected herbarium material, this was incidental to his major interest, and no enumeration has been issued. The American horticultural explorer Frank N. Meyer was in the province in the autumn of 1917. The well-known French explorer for the Musée Hoangho Paiho de Tientsin, Père E. Licent, made collections in 1918-19, the new species from which were published from time to time by the late H. Handel-Mazzetti. As yet no full enumeration of this collection has been issued.

The next botanical expedition was that by R. C. Ching in 1923, of which this paper is an account. From 1925 to 1927 Joseph F. Rock explored the province for the Arnold Arboretum of Harvard University, making large herbarium collections as well as gathering living material for planting abroad. His herbarium collections have been enumerated by A. Rehder, E. H. Wilson, and C. E. Kobuski (23, 24).

² Of the 767 species in the present enumeration 109, or 14 percent, were first described from the collections made by these three Russians in this region.

In 1930 the Chinese botanist Kin-shen Hao accompanied the Chinese-Swedish expedition from Szechwan to the Kokonor region through Kansu, and published an enumeration of his collection and an account of the vegetation in 1938 (12). The latest collections from Kansu seem to be those of Fenzel and Trippner in 1935, from which several new species have been described by H. Handel-Mazzetti.

PRINCIPAL PUBLICATIONS ON KANSU, MOSTLY BOTANICAL³

1. CHRISTENSEN, C. On a small collection of pteridophytes from the province of Kansu, China. *Journ. Washington Acad. Sci.* **17**: 497-501. 1927.
An enumeration of Ching's collections.
2. DANGUY, P. Mission Pelliot-Vaillant dans l'Asie centrale. Collections botaniques rapportées par le Dr. L. Vaillant. Liste des espèces. *Bull. Mus. Hist. Nat. (Paris)* **17**: 260-272, 331-346, 446-453. 1911.
This expedition crossed Kansu.
3. DIELS, L. Beschreibung der auf der Forschungsreise durch Asien gesammelten Pflanzen. *In* K. Futterer, *Durch Asien* **3**: 1-24. *pl. 1-4*. 1903.
A systematic enumeration of collections from Mongolia, Kansu, and Tibet.
4. ———. Botanische Ergebnisse. *In* Wissenschaftliche Ergebnisse der Expedition Filchner nach China und Tibet 1903-1905, **10**: 245-273. 1908.
An enumeration of collections.
5. FARRER, R. J. Report of work in 1914 in Kansu and Tibet. *Journ. Hort. Soc. (London)* **42**: 47-114. *fig. 14-18*. 1916.
A description of the region, with a list of all plants of which seeds were collected.
6. ———. Report of work in 1915 in Kansu and Tibet. *Journ. Hort. Soc. (London)* **42**: 324-348. *fig. 62*. 1917.
A continuation of the preceding.
7. ———. The Kansu marches of Tibet. *Geogr. Journ. (London)* **49**: 106-124. 1917.
A description of his first year of exploration.
8. ———. On the eaves of the world. 2 vols., 1917; ed. 2, 2 vols., 1926.
An account of the first part of his exploration in Kansu.
9. ———. My second year's journey on the Tibetan border of Kansu. *Geogr. Journ. (London)* **51**: 342-359. 1918.
10. ———. The rainbow bridge. 383 pp. 1921.
An account of the second part of his exploration in Kansu.
11. FUTTERER, K. Verzeichnis der während der Reise gesammelten Blütenpflanzen und Flechten. *In* his *Durch Asien* **3**: 25-37. 1903.
A chronological enumeration of collections from Mongolia, Kansu, and Tibet.
12. HAO, KIN-SHEN. Pflanzengeographische Studien über den Kokonor-See und über das angrenzende Gebiet. *Bot. Jahrb. Engler* **68**: 515-668. *pl. 63-65*. *1 folded map*. 1938.
A description and enumeration with a bibliography.
13. KANITZ, A. Die botanischen Resultate der centralasiatischen Expedition des Grafen Béla Széchenyi. *Bericht. Math. Naturw. Ungarn* **3**: 1-15. 1885.
A summary of collections. A summary of the next entry.

³ Additional botanical references on both Kansu and Mongolia may be obtained from E. D. Merrill and E. H. Walker, *A bibliography of eastern Asiatic botany*, xlii+719 pp. 1938.

14. KANITZ, A. A növénytani gyűjtések eredményei Gróf Széchenyi Béla keletázsiai utjából (1877–1880). (Plantarum in expeditione speculatoria comitis Béla Széchenyi a Ludovico de Lóczy in Asia centrali collectarum enumeratio.) In Graf Béla Széchenyi, Keletázsiai utjának tudományos eredményei című munka 2: 789–852. *pl.* 1–7. 1891.
An enumeration in Hungarian. A German edition also has been published.
15. MATSUDA, S. A list of plants collected in Lan-chou, Kansu, by Tsugunobu Umemura. *Bot. Mag. Tokyo* 23: (24)–(30), (55)–(64). 1909.
A systematic enumeration.
16. MAXIMOWICZ, C. J. Flora Tangutica, sive Enumeratio plantarum regionis Tangut (Amdo) Provincia Kansu, nec non Tibetiae praesertim, orientali-borealis atque Tsaidam, ex collectionibus N. M. Przewalski atque G. N. Potanin. Fasc. 1: Thamniflorae et Disciflorae. xviii + 110 + 4 pp. *31 pl.* 1889.
The incomplete botanical part of a natural history based on their collections.
17. ———— Enumeratio plantarum hucusque in Mongolia nec non adjacentē parte Turkestaniae sinensis lectarum. Fasc. 1, iv + 138 + [8] pp. *14 pl.* 1889.
This is the incomplete vol. 2, fasc. 1, of the natural history of Przewalski's and Potanin's collections.
18. POTANIN, G. N. Tangutsko-Tibetskaia Okraina Kitaia, i tsentral'naia Mongolia, puteshestvie G. N. Potanin 1884–1886. [The Tangut–Tibet border region of China and central Mongolia.] 2 vols. 1893.
This general traveler's account in Russian contains a list of vernacular names with Latin equivalents.
19. PRZHEVALSKI, N. M. Mongolia, the Tangut country and the solitudes of northern Tibet; being a narrative of three years' travel in eastern High Asia. Translated by E. D. Morgan, with introduction and notes by Colonel H. Yule. 2 vols. 1876.
This includes general observations on the vegetation. The original was in Russian. A German edition has also been published.
20. ———— Iz Zaisana cherez Khami v Tibet i na verkhov'ia Zheltoi Riiki. (Tret'e puteshestvie v Tsentral'noi Azii.) [From Zaisan through Khami to Tibet and the head-waters of the Yellow River. (Third expedition through central Asia.)]. iv + ii + 473 pp. *2 maps, 118 illustr.* 1883.
A general account with botanical observations in chapters 15 and 16. A German edition has also been published.
21. ————. Ot Kiakhty na istoki Zheltoi Riiki, izslédovanie sêvernoi okrainy Tibeta i put' cherez Lob-nor po basseinu Tarima. [From Kiakhta to the headwaters of the Yellow River; exploration of the northern borderline of Tibet, and the journey through Lobnor, along the basin of the river Tarim.] iii + 536 pp. *29 illustr. 3 maps.* 1888.
This account of his fourth expedition contains general observations.
22. PURDOM, W. Plant-collecting in China by Mr. Purdom. *Gard. Chron.* III. 54: 229–231. *figs. 82–85.* 1913.
General observations on the vegetation of Kansu and the Tibetan border.
23. REHDER, A., and WILSON, E. H. An enumeration of the ligneous plants collected by J. F. Rock on the Arnold Arboretum expedition to north-western China and northeastern Tibet. *Journ. Arn. Arb.* 9: 4–27, 37–125. *pl. 12, 18.* 1928; 13: 385–409. 1932.
24. REHDER, A., and KOBUSKI, C. E. An enumeration of the herbaceous plants collected by J. F. Rock for the Arnold Arboretum. *Journ. Arn. Arb.* 14: 1–52. 1933.

25. ROCK, J. F. The land of the Tebbus. *Geogr. Journ.* **81**: 108-127. *12 pl.*
1 text map. 1933.
An account of exploration.
26. TING, V. K.⁴ [New atlas of the Chinese Republic.] 1935.
An atlas in Chinese only, on which the map (pl. 21) accompanying this paper is based.
27. WULSIN, F. R. Non-Chinese inhabitants of the province of Kansu, China. *Amer. Journ. Phys. Anthropol.* **8**: 203-320. *1 text map.* 1925.
A report by the ethnologist of the expedition of which R. C. Ching was the botanist.
28. ————. The road to Wang Ye Fu. An account of the work of the National Geographic Society's Central-China expedition in the Mongol kingdom of Ala Shan. *Nat. Geogr. Mag.* **49**: 197-234. *illustr.* 1926.
A popular account of the first part of this expedition.

LOCALITIES VISITED

Most of the locality names mentioned in Mr. Ching's report and in this enumeration have been transliterated according to the Wade system, with the assistance of Dr. A. W. Hummel, of the Library of Congress, and Dr. Dean R. Wickes, of the Soil Conservation Service of the United States Department of Agriculture. The names of provincial capitals are given according to the postal romanization. The characters were largely furnished by Mr. Ching from his field notes and from the field labels accompanying the specimens, supplemented by reference to the Chinese atlas by Ting (26), the base from which the map (pl. 21) accompanying this paper was drawn. Since the geographic names on the printed labels, which were prepared for mounting with the herbarium specimens, were not romanized by the Wade system, these names are added in italics in the following list of localities. Names for which no characters have been found are given in quotation marks. The numbers given after the explanation of the location of these places indicate the collector's numbers on the specimens obtained in that locality.

The designation of some places as in Mongolia or in Kansu is attended by some difficulties due to the change of the boundary line when the Inner Mongolian provinces of Suiyuan and Ningsia were established, subsequent to 1923. When Mr. Ching made this trip, the northern boundary of Kansu was considered to pass north of the Yellow River and through the Ho Lan Shan. Thus the city of Ningsia was in Kansu, rather than in Inner Mongolia as now considered.

The list of localities follows:

A Chüan (*Archuen*), 阿絹, south of Choni, T'ao Chou Hsien. This is the Chinese equivalent of the Tibetan name A-E-Nar (sometimes given as Adjuan), a village and region 90 li south of Cho Ni. (See map, D-5.) Nos. 970-992.

⁴ 中華民國新地圖

- Cha Shih Pa**, 札什巴, northwest of Pa Yen Jung Kê. (See map, C-3, and report, p. 580.)
- Chen Fan Ch'üan Tzu**, 鎮番泉子, Wu Yüan Hsien, Inner Mongolia. North of the great bend in the Yellow River. Nos. 11-14.
- Chen Mu Kuan**, 鎮木關, Ho Lan Shan. Nos. 164-166.
- Chi Cha Ssu**, 鷄榨寺. A monastery east of Kuei Tê (see report, p. 579).
- Ch'ia Ch'ing Kou** (*Kar Ching K'ou*), 卡清溝, T'ao Chou Hsien. A valley extending south from the T'ao Ho into the Min Shan and containing the village of Ch'ia Ch'ing and a route to Shih Men and to the Tebbu country. (See map, D-5.) (This is apparently called "Kadja Ku" by Rock.) Nos. 824-881, 888, 935-954, 1157.
- Chia Ku K'ou**, 嘉谷口, Inner Mongolia. No. 24.
- Ch'ia Te Kou**, 卡德溝, Ho Lan Shan. Nos. 157, 159.
- Ch'ien Kou**, 乾溝, enroute from Cho Ni to Lanchow. Nos. 1007, 1011-1013, 1030, 1037, 1045.
- Ch'ien K'ou**, 錢口, Wu La Shan, Inner Mongolia. Nos. 2-4.
- Ch'ing Kang Yai**, 清岡崖, P'ing Fan Hsien. Nos. 565-577.
- Cho Ni** (*Choni*), 卓泥, T'ao Chou Hsien. (See map, D-5.) This was the residence of the Prince of Choni, who governed a large area until 1928. (The location given on Ting's map is not in conformity with that given on the maps of various botanical explorers. This may be due to political changes, for a partial account of which see pp. 110-111 of Rock's paper (25). Playfair uses the name 卓尼.) Nos. 993-1004.
- Chung Wei** (*Chungwei*), 中衛, Inner Mongolia. A city about half way between Ningsia and Lanchow. (See map, F-2.) Nos. 212-223, 226-237.
- Gargannar**. See Shih Men.
- Ha Ho**, 哈河, enroute from Cho Ni to Lanchow. Nos. 1015, 1022, 1042, 1044.
- Ha La Hu Kou**, 哈拉湖溝. A valley on the northwest side of the Ho Lan Shan range, its mouth 30 li from Wang Yeh Fu. Nos. 46-78.
- Ha Ta Men River** (*Hatamen*), 哈達門, Wu La Shan, Inner Mongolia. West of Ch'ien Kou. Nos. 5-6.
- Hei Tsui Tzu**, 黑嘴子. On north bank of Hsi Ning Ho near the Yellow River. (See map, D-3, and report, p. 576.)
- Ho Lan Shan**, 賀蘭山, Mongolia. (See map, F-1.) A well-wooded range. Ting gives A La Shan Mountain as 阿拉善山 as an alternative name. Nos. 201-207, 291, 1047-1156.⁵

⁵ Nos. 1047-1156 were collected by a resident mule-driver who was employed by Mr. Ching to collect plants after the latter had gone on farther west. They are labeled as Ho Lan Shan, Ningsia, without more precise localities. In this enumeration they are designated only as collected in Ho Lan Shan.

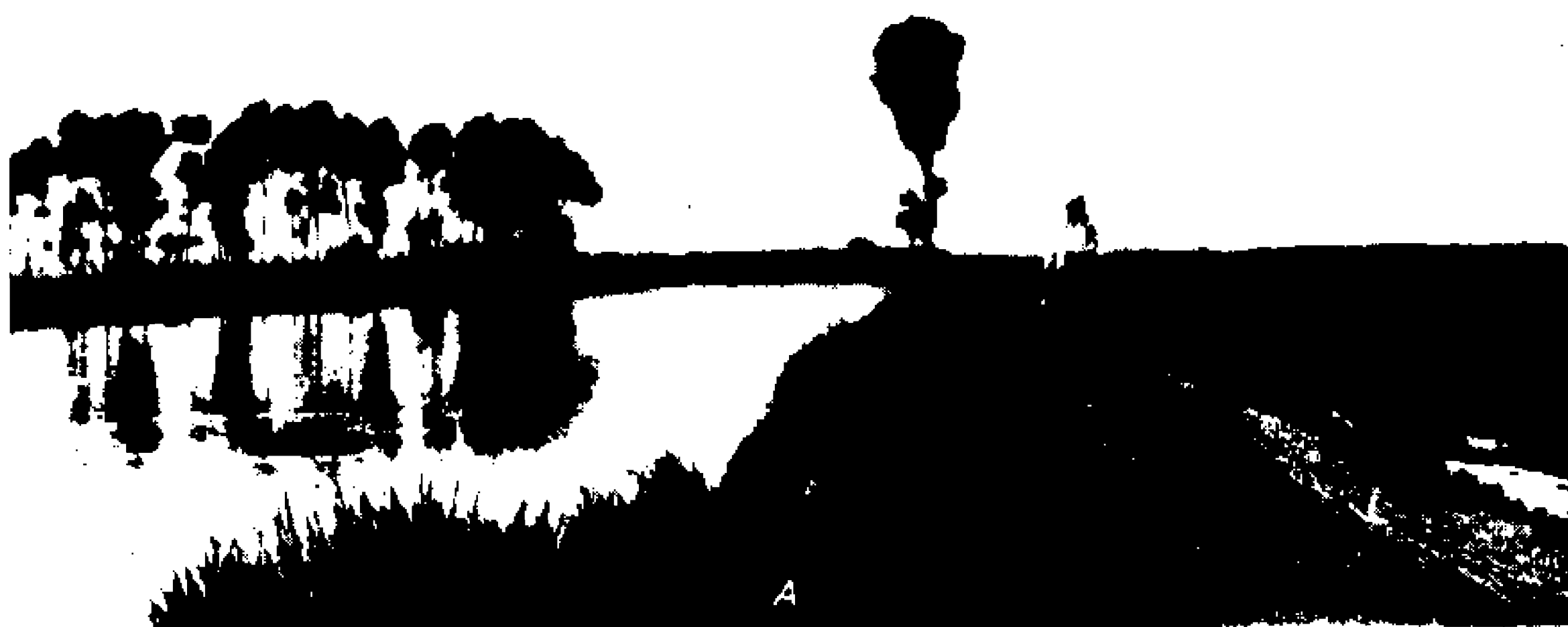
- Hsi Ch'iao Ssu**, 喜鵲寺. A lamasery north of the Yellow River in Kuei Tê Hsien. No. 730.
- Hsi Mi Yai**, 細米崖, P'ing Fan Hsien. Nos. 460, 478-505.
- Hsi Ning** (*Sining*), 西寧. An important trading city on the Hsi Ning Ho. (See map, B-3.)
- Hsi Yeh Kou**, 錫葉溝, Ho Lan Shan. Nos. 160-163, 167-185.
- Hsin Ch'eng**, 新城. There are three towns with this name designated as follows:
1. Northwest of Ningsia. Nos. 208-211.
 2. Seventy li west of Lanchow on the north bank of the Yellow River. (See map, D-3.) Nos. 302-304, 308-309.
 3. South of Lanchow on the route from Cho Ni. (See map, D-4.) Nos. 1005-1006, 1031-1033, 1040, 1043.
- Hsün Hua Hsien** (*Hsün Hwa Hsien*), 循化縣. On the south bank of the Yellow River. (See map, C-4.) Nos. 731-739.
- Hua Hsi Kou**, 華溪溝, Ho Lan Shan. No. 79.
- Huang Hsi Kou**, 黃溪溝, Ho Lan Shan. (Ting's map gives Hua Hsia K'ou, 華峽口, which may be the place designated by Ching.) Nos. 194-200.
- Hung Yang Tung**, 洪陽洞, Lang Shan, Inner Mongolia. A village. Nos. 17-20.
- I T'ai K'uei**, 義太魁, Wu Yüan Hsien, Inner Mongolia. A town. No. 15.
- Jargannar**. See Shih Men.
- "Kan Ku You."** A village 120 li north of Cho Ni and south of Lien Hua Shan. (No characters are available.) (See report, p. 592.)
- Kokonor** (Chinese—Ch'ing Hai 青海). (See map, A-3.)
- Kuei Tê Hsien**, 貴德縣. A city on the Yellow River. (See map, B-3.)
- Kumbum**. A famous monastery south of Hsi Ning, known locally as T'a Er Ssu, 塔兒寺. (See map, B-3.)
- "Kwa Shan,"** 60 (?) li south of Lanchow. Nos. 1035, 1041.
- La Chi Tzu Shan** (*La Che Tzu Shan*), 拉鷄子山, Hsi Ning Hsien. South of Kumbum. (See report, p. 579.) Nos. 686-723.
- La Ch'iung Kou** (*La Chang K'ou*), 拉穹溝, Hsi Ning Hsien, north of Hsi Ning City. Nos. 600-641.
- La Pu Lêng Ssu**, 拉卜楞寺, or Labrang. A famous lamasery and trading center. (See map, C-4.) Ting gives the new name of this place as Hsia Ho, 夏河. Nos. 770-780.
- Labrang**. See the preceding name.
- Lanchow**, 蘭州. The capital of Kansu Province. (See map, D-3.) Ting gives the new name as Kao Lan, 皋蘭. Nos. 239-240, 244-245, 1046.

- Lang Shan** (*Lon Shan*), 狼山, Inner Mongolia. A crescent-shaped range of mountains north of the big bend in the Yellow River. Ting gives this as an alternate name for Yin Shan, 陰山, the new name. No. 16 and others.
- Lang Tzu T'ang Kou** (*Lan Ze Cheon K'ou*), 廊子堂溝, Hsi Ning Hsien. A gorge in the Ta P'an Shan, extending 120 li west of the Ta T'ung Ho. (See report, p. 578.) Nos. 578-599.
- Lien Ch'eng** (*Lichen*), 蓮城, P'ing Fan Hsien. (See map, D-3.) Thirty-two numbers between 278 and 455.
- Lien Hua Shan** (*Lian Hwa Shan*), 蓮花山. A large mountain range inside the bend of the T'ao Ho. (See map, D-5, and report, pp. 584, 592.) Fifteen numbers between 1008 and 1158.
- Liu Fu Yai**, 柳府崖, P'ing Fan Hsien. A mountain pass between Lien Ch'eng and T'ien T'ang Ssu. Nos. 458-459, 461-477.
- Lung Hua**, 龍華 or 隆窪. A half Tibetan village between Labrang and Old T'ao Chou. (See report, p. 581.) Nos. 781-815.
- Malisoondo**. See next name.
- Ma Li Sung Tu**, 馬利松渡. A Chinese transliteration of the Tibetan Malisoondo. A gorge 16 li long on the north side of the Min Shan range south of the T'ao Ho. (See report, p. 583.) Nos. 882-887, 889-890, 944.
- Min Chou Hsien**, 岷州縣. (See map, E-5.)
- Min Shan**, 岷山. A large range south of the T'ao Ho. (See map, D-5.)
- Nan Ssu Kou**, 南寺溝, Ho Lan Shan. A valley on the southern side of the range wherein is situated a large lamasery. Nos. 131-156, 158-159.
- Nei Mu Kun**, 內木棍. A market village 40 li south of Hsün Hua Hsien. (See report, p. 580.)
- Nei Wu**, 內烏. A Mohammedan country north of Old T'ao Chou en route from Labrang. The lamasery of Nei Wu Ch'iu Ssu is located here. (See report, p. 581.)
- Ni Ma Lang Kou** (*Ni Mar Lan K'ou*), 尼馬郎溝. A valley between Hsün Hua Hsien and Labrang. Nos. 742-768.
- Ningsia**, 寧夏. A large city on the Yellow River. (See map, G-1.) Nos. 224-225.
- Pa Yen Jung Kê**, 巴燕戎格. A *hsien* city north of the Yellow River. (See map, C-3, and report, p. 580.) No. 741.
- Pai Yang Wen**, 白陽汶, in Ni Ma Lang Kou, en route to Labrang.
- Pan Ch'iao**, 板橋, T'ao Chou Hsien. No. 1014.
- Pao T'ou**, 包頭, Inner Mongolia. A large city at the end of the Peking-Sui Yüan Railway. No. 1.
- Pei Ssu Kou**, 北寺溝. A valley 10 li long on the north side of the Ho Lan Shan range, its mouth 6 li from Shui Mo Kou. Here is situated a large lamasery. Nos. 106-125, 186-193.

- P'ing Fan Hsien** (*Pingfan*), 平番縣. On the P'ing Fan Ho north of Lanchow. (See map, D-3.) Ting gives Yung Têng 永登 as the new name.
- San Ta Lai Ssu** (*Sun Dar La Tze*), 三達賴寺, Hsi Ning Hsien. A lamasery near the Yellow River below Kuei Tê Hsine. (See report, p. 579.) Nos. 724-729.
- Shang Hsin Chuang** (*Chian Shing Cheon*), 上新庄, Hsi Ning Hsien. Sixty li south of Hsi Ning and 10 li east of Kumbum. (See report, p. 578.) Nos. 677-685.
- Shih Men**, 石門, or Jargannar, or Gargannar. A pass or gateway in the Min Shan range leading to the "Tebbu" country. (See map, D-5, and report, p. 582.) Nos. 891-934.
- Shui Ch'ü**, 水曲, Wu Yüan Hsien, Inner Mongolia. Nos. 7, 8.
- Shui Mo Kou**, 水磨溝. The largest valley in the north side of the Ho Lan Shan range, being 40 li long and parallel to [and next west of Ha La Hu Kou. Nos. 84-105.
- Shui Mo Kou** (*Hsia Mo K'ou*), 水磨溝, near Lien Ch'eng, P'ing Fan Hsien. Fifty-four numbers between 311 and 482.
- "**Suan Sun Miar**," a village on the north slope of the Lien Hua Shan range, 120 li south of Ti Tao Hsien. (See report, p. 592.)
- Suiyüan**, 綏遠, Inner Mongolia. Capital of Suiyüan Province. (See report, p. 574.)
- Sung P'an** 松潘, northeastern Szechwan. (See report, pp. 580, 584.)
- Ta Chia Ch'üan**, 達家川. A town at the confluence of the Hsi Ning Ho and the Yellow River. (See map, D-3, and report, p. 576.)
- Ta P'an Shan** (*Dar Pan*), 大盤山, Hsi Ning Hsien. A mountain range about 80 li east of Hsi Ning. (See map, C-3, and report, p. 577.) Nos. 642-675.
- Ta Shui Kou**, 大水溝, Lang Shan, Inner Mongolia. Nos. 22-23.
- Ta T'ung Ho**, 大通河. A river. (See map, B-C-2.)
- T'a Er Ssu**, 塔兒寺. See Kumbum.
- T'ai Hua** (*Ta Hwa*), 泰華, P'ing Fan Hsien. Nos. 506-558.
- Tai Wang Kou** (*Tai Hwang K'ou*), 戴王溝, Lien Ch'eng, P'ing Fan Hsien. Nos. 439-448, 451, 454.
- T'ao Chou Chiu Ch'eng** (*Old Taochow*), 洮州舊城. (See map, D-5.)
- T'ao Chou Hsien**, 洮州縣. This *hsien* district includes the new and old cities of T'ao Chou and Cho Ni, as well as the south side of the Min Shan range.
- T'ao Chou Hsin Ch'eng** (*New Taochow*), 洮州新城. (See map, D-5.)
- T'ao Ho**, 洮河. A river. (See map, D-5.)
- Ti Shui Kou**, 滴水溝, Inner Mongolia. No. 21.



A, R. C. Ching supervising the loading of a pack mule with botanical equipment.
B, The ethnological party halting for lunch on the Tibetan grasslands.



A, One of the many canals on the great Ningsia Plain on the north side of the Yellow River, where much rice is grown.

B, A small temple at the desert's edge south of Chung Wei Hsien.

the prince giving me his personal card with a written statement in Tibetan, quite unintelligible to me.

Since the flora here was a repetition of what we had seen, we soon departed for Cha Shih Pa,⁹ altitude 10,210 feet, a populous Mohammedan town 95 li northeast of Chi Cha Ssu. The whole region was very mountainous, with scarcely any agriculture. The town lay on an important trade route from Hsi Ning to Pa Yen Jung Kê, a *hsien* city 60 li to the southeast, our destination the following day.

Pa Yen Jung Kê, altitude 9,700 feet, had only a few inhabitants, largely Mohammedans, and has been raised to the rank of a *hsien* only since the establishment of the Republic of China. We stayed here one day to procure a new guide, as the man from Lien Ch'eng was no longer familiar with the route. The new guide, obtained through the innkeeper, was a Mohammedan and proved to be a very useful man, as before mentioned.

The next day a gentle ascent followed by an abrupt descent of 70 li brought us over a mountain with an altitude of 10,800 feet and down to the Yellow River beyond. Twenty li to the east we crossed the river to Hsün Hua Hsien, altitude 6,600 feet, a newly built city but already in a dilapidated condition with fewer inhabitants than Pa Yen Jung Kê. The inhabitants in this vicinity are "Sar Lar," a people of Mohammedan religion, but of a distinct racial origin and with a language of their own. They are said to be savages, though those we met on the way were innocent farmers.

Forty li to the south of this city¹⁰ we arrived at a market village, altitude 8,800 feet, called Nei Mu Kun, with an almost pure "Sar Lar" population. This village, probably the last on the extreme southern boundary of the *hsien*, stood at the mouth of a valley. It marked the entrance to a Tibetan country stretching away as almost uninterrupted grassland as far south as the neighborhood of Sung P'an, in extreme northwestern Szechwan. We entered the Tibetan grasslands with great dread, as we had been told all along the way of the savage and bloodthirsty character of these Tibetans. It was normally a two days' journey of 100 li over this wilderness to La Pu Lêng Ssu, or the famous monastery of Labrang, our long-anticipated destination. The route for the first day followed mainly up the bed of a torrent. The second day we crossed an immense undulating grassland ranging in

⁹ The map (pl. 21) shows only approximately Ching's route from Kumbum to Cha Shih Pa. In answer to an inquiry concerning this route addressed to Mr. Ching, he replied: "The route from Hsi Ning to Cha Shih Pa is not indicated on any map, because it is a very small trail. One has to camp overnight".—E. H. W.

¹⁰ The route shown on the map (pl. 21) is that of a trade route shown in Ting's atlas. Concerning the route to Labrang Mr. Ching writes: "The route from Hsün Hua Hsien to Labrang is non-existent; I just took a cross-country run over undulating rolling country not inhabited by people for three successive days' journey".—E. H. W.

night. The road followed up a shallow valley, with dome-topped hills absolutely bare of vegetation lining both sides. A stream flowing north to the Hsi Ning Ho somewhat impeded our progress at frequent intervals. Farm villages and hamlets were frequently passed, and all the land among the foothills appeared devoted to agriculture. Poplars (closely allied to *Populus simonii*) surrounded every farmstead. Kumbum, the largest Tibetan lamasery in the vicinity of Hsi Ning (known locally as T'a Er Ssu), was said to be only 10 li west of Shang Hsin Chuang. I would have visited it, had we started the day's march earlier.

We set out the following morning at daybreak, as we were told the way ahead was difficult. We ascended gradually for some 40 li to the summit of the grass-clad La Chi Tzu Shan at an elevation of 11,210 feet on the north side of the Yellow River. Our route was the main road to the city of Kuei Tê on the other side of the river. Turning to the east we were brought by a sharp descent of 20 li into a well-wooded country with a pure Tibetan population. Since no inn of any kind was available at night, and as we were told the Tibetans never receive any strangers in their houses, we camped in a thick spruce forest in a valley by the lama temple called San Ta Lai Ssu, altitude 9,710 feet. From there we could see scattered Tibetan houses, or huts of black rugs, extending far up on the foothills, and herds of grazing yaks, cows, and horses.

Twenty li farther east in the same valley we arrived at a Tibetan farm village, altitude 8,410 feet, consisting of about 25 families. This was called Chi Cha Ssu, named after the large lamasery nestling on the right side of the valley at the northwest corner of the village. We found here for the first time Tibetans engaged largely as farmers. Wheat is their principal crop. They are governed by a Tibetan prince known as Now-So Dar-Ren, who shortly after our arrival came to call upon us. I presented him with a package of brown sugar and a piece of brick tea wrapped in red paper, for which he expressed in his face great appreciation. In return his servant brought us a cup of Tibetan butter and a piece of light-green cheesecloth, the latter, as we learned later, being a typical Tibetan present.

The inn in which we stayed was a flat-roofed Tibetan house kept by a Chinese from Hsi Ning. On the advice of the guide and mule drivers, I finally went to call on the prince at his yamen, in order to obtain his patronage and protection for our party while traveling in his territory. The Tibetans are said to be notorious barbarians and to pay no regard to strangers of any sort, unless the latter are properly guarded by the prince or hold a certificate from him. The yamen was undoubtedly the most magnificent and artistic building I saw in this part of the country. My mission was fully successful,

Of the whole journey from Lien Ch'eng to Hsi Ning we agreed that the worst was that section between Tien T'ang Ssu and Ta P'an Shan. The way led uphill for 120 li through a gorge known as Lang Tzu T'ang Kou, from an altitude of 7,810 feet at its mouth to about 11,100 feet at its upper end in the Ta P'an Shan. The torrent in the gorge, zigzagging down to the Ta T'ung Ho, caused us the most trouble. We crossed and recrossed the swift water as often as 25 times in going 60 li. After crossing the Ta P'an Shan and following another gorge down for about 50 li, we again entered an agricultural country where all the surrounding hills of gentle gradient were under cultivation, wheat and rape being the principal crops. The farmers were all of aboriginal origin, as was shown by the headdress worn by the women. In other respects they resembled the Chinese. They present an interesting ethnological problem, as little light has ever been thrown on their origin. In the city of Wei Yüan P'u, about 90 li northeast of Hsi Ning, they are found in greatest number.

Our party arrived at Hsi Ning, altitude 7,760 feet, on July 29, after following down an almost straight valley for over 100 li, and crossing the Hsi Ning Ho at a public ferry about 3 li south of the city. We were all glad to have traversed successfully this section of the journey, having been a month en route. About two thirds of the time had been devoted to collecting, with an accumulation of over 400 numbers.

Section 3: Hsi Ning to Old T'ao Chou; distance, 930 li.—Our first concern on arriving at Hsi Ning was to get the collections properly dried and packed in wooden boxes for shipment to Lanchow. They had, of course, been dried on the way, but they were re-dried at the end of each section of the journey before being packed for shipment, lest they mold en route. After this came the more serious problem of determining our next destination. Before leaving Lanchow we had tentatively planned to include Kokonor or Ch'ing Hai and Kuei Tê in our field of exploration. However, we learned authentically at Hsi Ning that these regions are comparatively poor botanically, consisting of vast steppes with an almost complete absence of woody plants. Accordingly, I decided to go directly to T'ao Chou in southern Kansu, where it was generally considered we should find more profitable fields. The choice of route proved to be a difficult problem, settled only after two full days of consultation. There were two possible trade routes, but as they offered practically no opportunity for botanical work we rejected both. The route finally selected proved in the end to be the most satisfactory one we could have chosen from the meagre information available. It is shown on the accompanying map, plate 21.

At noon on August 4, our party, as previously organized, left the south gate of Hsi Ning for Shang Hsin Chuang, a market village at an altitude of 9,710 feet, 60 li to the south, and our resting place for the

this was a gentle descent for about 40 li through a glen with steep clay cliffs on each side. At the end of this stretch was Yao Chieh, a town of considerable commercial importance and our halting-place for the night.

Yao Chieh is situated on the north bank of the Ta T'ung Ho, in a broad and level valley hemmed in on all sides by high bare mountains. The town is one of the great pottery-manufacturing centers of Kansu, enormous quantities of earthenware products of various kinds being turned out annually. It also boasted a copper and iron smelting plant, which, however, suspended operations over 10 years ago because of failure of the ore supply. Part of the abandoned buildings are now occupied by an apparently prosperous match-making company. The match-sticks are made from two species of poplar, locally abundant.⁸

Early the next afternoon we arrived at Lien Ch'eng, altitude 6,500 feet, after an easy march of 40 li along the Ta T'ung Ho. The whole valley is a vast agricultural country of fertile soil provided with an ample water supply from the river. Wheat is the staple crop, though barley, poppy, beans, and fruits are by no means scarce. The people here seemed more prosperous than in any of the country traversed since we left Lanchow.

Lien Ch'eng is on the southern side of a densely wooded area extending as far as the Ta P'an Shan. Here began the most extensive collecting thus far undertaken. The route followed was difficult, running largely through valleys and gorges with swift torrents or over mountain ridges. Without our competent guide from Lien Ch'eng we surely would have strayed from the obscure path and become lost. There were inns at regular intervals, but they offered the worst of accommodations, being filthy, dark, wet, and unsanitary, scarcely better than pigpens.

Because of its alpine character, the country is agriculturally poor. Not a single acre of level land was seen, but here and there on gentle slopes or in clearings barley and peas were raised, these constituting apparently the sole means of livelihood of the people. Pasturage was much in evidence. Herds of yaks, cows, sheep, goats, horses, and mules, grazing lazily in the wilderness, were more numerous than the inhabitants.

Tibetans predominate between Lien Ch'eng and Ta P'an Shan, the whole area being owned by them. Unlike their countrymen in the southwestern part of the province, they are not agriculturists. They lease the land, however, to Chinese at a very low rate paid in kind. Animal breeding and wild-game hunting are probably the chief occupations.

⁸ Only one species, however, is represented in Mr. Ching's collections from that region, *Populus suaveolens*.—E. H. W.

for several li, then began an abrupt and rough descent, finally entering a gorge 40 li in length. The path here was the worst we found in all Kansu. The boulders underfoot were abominably slippery, and huge fallen rocks were everywhere. On emerging from the gorge we found a village of some 30 scattered farmhouses and a couple of miserable inns, of which we chose the better for the night's rest.

The next day's journey was far easier. It lay for the first 50 li over a gravel-strewn foothill and then passed over a level cultivated country known as the Ningsia Plain, an important rice-producing area of Kansu.⁷ (See pl. 23.) Ten li northwest of Ningsia we passed the badly neglected city of Hsin Ch'eng or "New City." Although we arrived at Ningsia at 7:30 in the evening, it was late at night before we could find a decent inn.

The two days' journey thus far had been so hard that our animals were unable to get on their legs the next day. We had found the vegetation along the trail very sparse because of the exposure and dryness. The longer route would have been better because less fatiguing and more comfortable.

Section 2: Lanchow to Hsi Ning, distance 800 li.—The whole expedition arrived in Lanchow (altitude 6,200 feet) on June 20. There are two official routes to Hsi Ning, a cart road and a mule trail. The former lay some distance north of the Hsi Ning Ho, passing through P'ing Fan Hsien, about 170 li from Lanchow. Eight days were required for this route. The mule trail lay along the north bank of the Hsi Ning Ho and required only six days, although the traveling was much more difficult. Inns were available at the end of each day's journey along both routes, but the accommodations were very poor.

We chose, however, neither of these regular routes, but a third way, which coincided with the mule trail for 200 li from Lanchow and then followed a very obscure path, seldom traversed by merchants because of its rugged character. It had been reported to us as passing through thickly wooded mountainous country inhabited by Tibetans and aborigines of an obscure origin. The other routes were said to be absolutely bare and not botanically interesting.

The route from Lanchow first followed the south bank of the Yellow River for a day and a half. There is a government ferry at Hsin Ch'eng, on the south bank, 70 li from Lanchow, but the muleteers insisted on crossing at Ta Chia Ch'üan, 30 li farther on at the junction with the Hsi Ning Ho, for reasons I could not determine. Thence we followed the north bank of the Hsi Ning Ho for another day and a half. Hei Tsui Tzu, a market village almost entirely inhabited by Mohammedans, was our stopping place after our third day's march.

The route now left the river and turned northwestward, first ascending steeply a mountain range 8,200 feet in altitude. Following

⁷ See explanation of provincial boundary changes, p. 568.

in the mountains. The servant, Chinese by birth, had lived in Mongolia for over 10 years and spoke the Mongolian tongue perfectly. This man dried specimens and cared for my belongings, besides doing some very crude cooking.

The botanical party on leaving Lanchow was composed of myself, one servant, and two mule drivers with four mules and one donkey of the very best breed. The added personnel and equipment were necessary to care for extra supplies, because we were to be for some months in regions where even ordinary provisions were hardly obtainable, to say nothing of paper and other necessities required for botanical work. (See pl. 22, A.) The four mules carried all our load, about one-third being food, the remainder consisting of clothing, bedding, and the collecting outfit. One mule carried a much lighter load so that in case the servant or a mule driver became tired or sick he could ride without hindering the progress of the party. The donkey, the property of the servant from Mongolia, proved to be very helpful, enabling me to ride whenever I became tired of walking.

Six days from Lanchow a local guide from Lien Ch'eng was obtained. At Pa Yen Jung Kê he was replaced by a native of that town, a Mohammedan, who remained with the expedition for the rest of the trip. His tolerably good knowledge of the Tibetan language proved an invaluable aid in southwestern Kansu, where that tongue predominates. The mule drivers also rendered much faithful assistance with the field collecting and with the indoor work, thus making it unnecessary to hire additional help. The first principle in organizing a party is to keep the personnel as small as possible without endangering the objectives of the trip. This requires a high type of experienced, willing, and intelligent workers. My party was of the right size, but the men, although diligent, did not know how to work carefully and intelligently.

ROUTE OF THE BOTANICAL PARTY

Section 1: Wang Yeh Fu to Ningsia, distance 140 li.—There are two routes between these cities, one a cart road, the other a trail. We chose the latter, a shorter but more difficult route traversable in two instead of three days. The cart route lay 100 li or more farther south and was said to be broad and level but was reported to be of less botanical interest. We left Wang Yeh Fu, altitude 4,900 feet, on May 9. The first half day's journey was a steady ascent to the ridge of the Ho Lan Shan, altitude 8,260 feet, largely through Ha La Hu Kou. Here was the first real verdure seen after 40 days' travel in the Mongolian desert. About halfway to the top we passed an inn and guardhouse manned by a dozen Mongolian soldiers. Although my peculiar dress aroused suspicions in these guardians of the route, I was released after a half-hour of cross-examination. From the summit the way followed along the flank of a bare debris-strewn slope

specimens for the Society, with photographic work as an important adjunct. It was my privilege to join him as a botanist, on recommendation of Prof. W. Y. Chun, then at Southeastern University (now National Central University), Nanking.

The expedition was in the field for eight months, from early March to late October 1923, of which time about half was spent in mere travel, the remainder in field work. Since Kansu is such a large area, too large by far to be covered in one season, our work was of necessity extensive rather than intensive and may be considered a preliminary survey. We observed the essential characteristics of the flora and located regions worthy of intensive study at some future time. The specimens collected will contribute materially to our knowledge of this botanically least-known province of China. This collection was made in part of Inner Mongolia and northern and western Kansu, over a route of approximately 8,600 li,⁶ beginning and ending at the town of Pao T'ou, 300 li west of the city of Suiyüan, now capital of the Inner Mongolian province of that name. The total collection comprises 1,158 numbers, of which about two-fifths are woody. About one-fifth of the woody plants are arborescent, the rest shrubby. This shows the general character of the vegetation of northwestern China proper, since Kansu may be considered as a typical province of this section of the country. The area studied, especially the western part, was fascinating in every respect, nearly everything being new to me. The following extracts from my journal are restricted largely to the botanical work and observations.

ORGANIZATION OF THE EXPEDITION

All the members of the National Geographic Society's expedition traveled as a single unit until they reached Wang Yeh Fu (Ting Yüan Ying), Mongolia. There I left the expedition for a 2½ weeks' exploration of Ho Lan Shan, rejoining the party at Ningsia and journeying with it to Lanchow, the capital of Kansu.^{6a} There the expedition divided into two parties, one headed by Mr. Wulsin for zoological work, the other under my direction for botanical work. These two groups explored separate fields for three months, reuniting at Lanchow in October, before returning by way of the Yellow River.

The organization of the botanical party was very simple. During my 18 days on Ho Lan Shan, a mountain between Wang Yeh Fu and Ningsia, the party consisted only of myself, a servant, and a driver. Four donkeys carried the collecting outfit, provisions, and personal belongings. The donkey driver, being a local man, besides attending and driving the animals, acted as a guide and carrier during this period

⁶ One li equals about one-third English mile.

^{6a} Mr. Ching prepared a separate report on this side journey, which I have edited and sent to him with the suggestion that he publish it in China.—E. H. W.

- Ti Tao Hsien**, 狄道縣. A city on the Tao Ho, 道河 where the route from Cho Ni to Lanchow crosses. (See map, D-4.) (Ting's map gives this as Lin T'ao 臨洮.)
- T'ien T'ang Ssu** (*Ti Taon Sse*), 天堂寺, P'ing Fan Hsien. A lamasery and town on the Ta T'ung Ho. (See map, C-2.) This has been called by various travellers "Cheterton" and on some maps is given as "Ti Town Su." Nos. 559-564.
- Ting Yüan Ying**. See Wang Yeh Fu.
- T'u Er P'ing** (*Toul Ping*), 土兒坪, P'ing Fan Hsien. A mountain 10 li north of Lien Ch'eng. Sixty-three numbers between 338 and 457.
- Tu I Kou**, 杜一溝, T'ao Chou Hsien. A valley south of Cho Ni and the T'ao Ho, extending to A Chüan. This is called Tayü Ku by Rock. Nos. 955-969.
- Wa P'ing Hsiang**, 瓦瓶鄉, 35 li south of Lanchow. Nos. 1023, 1029.
- Wang Te Lin Kou**, 王得林溝, Ho Lan Shan. Nos. 80-83.
- Wang Yeh Fu**, 王爺府, or Ting Yüan Ying, 定遠營, Inner Mongolia. An important town north of the Ho Lan Shan range. (See map, F-1.) Nos. 25-45, 126-130.
- Wei Yüan P'u**, 威遠堡, about 90 li north of Hsi Ning. (See map, C-3, and report, p. 578.) The new name of this city is Hêng Chu, 互助.
- "Woo Chi," Hsi Ning Hsien. No. 676.
- Wu Ch'uan Shan**, 五泉山. "A hill, now a public park, 7 li south of the city of Lanchow"—R. C. Ching. No. 238.
- "Wu La Koo Do," Wu Yüan Hsien, Inner Mongolia. No. 9.
- Wu La Shan**, 烏拉山, Inner Mongolia. A small mountain range just west of Pao T'ou and north of the Yellow River
- Wu Yüan Hsien** (*Wu Ye Hsien*), 五原縣, Inner Mongolia. West of Pao T'ou. No. 10.
- Yang She**, 楊舍, en route from Cho Ni to Lanchow. No. 1039.
- Yao Chieh** (*Yao Kai*), 饒街. A town 30 li south of Lien Ch'eng, P'ing Fan Hsien. (See map, D-3, and report, p. 577.) Forty-eight numbers between 241 and 300.
- Yeh Ts'ang Kou** (*Ye Cheon K'ou*), 葉倉溝, T'ao Chou Hsien. Near Old T'ao Chou. Nos. 816-823.

REPORT OF THE EXPEDITION

By R. C. CHING

Early in the spring of 1923 F. R. Wulsin came from the United States to China to conduct his second scientific expedition in Central China under the auspices of the National Geographic Society. The purpose of this expedition was to collect zoological and botanical



A, The Golden Stupa of Labrang.

B, Some of the temples of Labrang with surrounding hills.



A, The city of Old T'ao Chou with its surrounding barren hillsides terraced and cultivated almost to the summit.
B, The T'ao Ho looking downstream from the top of a ridge in the T'ao Valley showing the forested hills.

elevation from 9,500 to 11,500 feet. Woody plants were almost completely lacking. Not a single human being was seen during these two days, although deserted Tibetan houses of mud were observed. We camped at night. Because of missing the way on the second day we did not arrive at our destination until 9 a. m. on the third day.

Labrang, altitude 8,900 feet, is a trading center and a meeting ground for Tibetans, Mohammedans, and Chinese. Besides having over a hundred shops kept by Mohammedan and Chinese merchants from Shensi, it boasted a magnificent temple housing more than 3,000 Tibetan lamas. (See pl. 24.) The Labrang Ho runs placidly through the valley from the west, the water blue and clear, spanned by 5-arch bridges, being the loveliest sight I have seen in this part of the country. The clearness of the water suggested the existence of immense forests at its source, far up in the Tibetan country.

Another three days' journey of 240 li, with Lung Hua and Nei Wu as the intervening stopping-places, brought us to Old T'ao Chou, altitude 8,850 feet, thus finishing another of the major stages of the journey. Between Labrang and Lung Hua the way led steeply over a sharp ridge attaining an elevation of 11,610 feet, but otherwise the journey was rather easy, being chiefly through shallow valleys and over low, gentle, partly cultivated hills. Most of the farmers were Tibetans. A hardy variety of barley constituted the main crop, with peas and broad beans much less common and wheat particularly rare on account of its inability to reach maturity at this altitude of over 9,000 feet. The neighborhood of Lung Hua was very densely wooded, while the regions beyond as far as T'ao Chou were merely typical Tibetan grasslands.

This section, from Hsi Ning to Old T'ao Chou, took us altogether 20 days, of which only 8 were devoted to collecting, as the whole region with a few exceptions was very bare. It is doubtful whether more time spent en route would have been profitable.

Section 4: Old T'ao Chou to Cho Ni.—It is only 40 li between these points by the regular trade route, the only one so far as we know ever taken, but by the time we reached Cho Ni we had covered 450 li. The route of our exploration can be seen on the map (pl. 21).

The city of Old T'ao Chou is situated in a valley bottom 20 li north of the T'ao Ho. (See pl. 25, A.) This river winds through a mountainous country, pursuing a very long and dragonlike course by way of Cho Ni, Min Chou, and Ti Tao Hsien before it empties into the Yellow River. We had planned to make the vicinity of T'ao Chou our last collecting point, but grateful information from Mr. Fesmire, an American missionary there, concerning the geography and strategic collecting grounds, caused us to alter our original plan.

On August 28, after spending two days in drying our collections, we left the city by the south gate for an area called Jargannar in Tibetan

Alpine belt.—Altitude 12,500 to 14,000 feet. Practically no woody plants of tree form are to be found here, though procumbent shrubs occur sparingly. The wealth of low herbs is really astonishing. They clothe the vast rolling country late in summer and in autumn with a carpet of intense color. Chief among them on the steppes are many species of lemon-yellow, purplish-blue, and deep red *Meconopsis*, blue *Gentiana*, lemon-yellow, purplish red *Pedicularis*, and lemon-yellow and purplish *Aster*. Minor herbs are species of grasses, sedges, *Paraquilegia*, *Parnassia*, *Anaphalis*, *Crepis*, and *Saussurea*. A striking feature of these alpine regions is the suddenness with which they burst into bloom, usually in June. From then till late in August the country is a riot of intense and varying color, fairly dazzling the traveler's eyes, simulating an earthly paradise. When this brief season is over, scarcely a plant remains in bloom. Another striking feature is the relative paucity of species as compared with a similar habitat in other regions. Roughly speaking, the highland flora in this province contains only about as many species as are to be found in like situations in temperate regions. This is in accordance with the well-recognized fact of the intensely gregarious, hence exclusive nature of the alpine floral components, whether grass, herbs, scrub, or forest. I remember on one mountain in Hupeh¹³ we collected in a single day 125 different species, both woody and herbaceous, mixed in great confusion; but with only one or two exceptions, I never collected more than 50 species in two or three days of consecutive collecting in a single locality on the present expedition.

A final fact not to be overlooked by a student of these alpine floras is the great preponderance of herbs over trees or shrubs, because the short growing season and the low mean annual temperature combine to make the existence of woody perennials precarious. The change in vegetation with increase in altitude was particularly striking at Lien Ch'eng, where between 7,000 and 8,000 feet altitude herbs are subordinate to woody plants, both in number and extent, but at higher elevations herbaceous and woody plants give way almost completely to low herbs so characteristic throughout all alpine regions.

PRINCIPAL BOTANICAL AREAS

Throughout the whole region we traversed there were only four areas of much botanical interest. The first was Ho Lan Shan, on the north-eastern border of Kansu; the second was around Lien Ch'eng, in the northern or north-central part; the third was the southern area south of Old T'ao Chou; and the fourth was Lien Hua Shan, between the

¹³ In the summer of 1922 Prof. W. Y. Chun, S. Chien, Mr. Whang, and the writer conducted a botanical expedition in western Hupeh.

elevation from 9,500 to 11,500 feet. Woody plants were almost completely lacking. Not a single human being was seen during these two days, although deserted Tibetan houses of mud were observed. We camped at night. Because of missing the way on the second day we did not arrive at our destination until 9 a. m. on the third day.

Labrang, altitude 8,900 feet, is a trading center and a meeting ground for Tibetans, Mohammedans, and Chinese. Besides having over a hundred shops kept by Mohammedan and Chinese merchants from Shensi, it boasted a magnificent temple housing more than 3,000 Tibetan lamas. (See pl. 24.) The Labrang Ho runs placidly through the valley from the west, the water blue and clear, spanned by 5-arch bridges, being the loveliest sight I have seen in this part of the country. The clearness of the water suggested the existence of immense forests at its source, far up in the Tibetan country.

Another three days' journey of 240 li, with Lung Hua and Nei Wu as the intervening stopping-places, brought us to Old T'ao Chou, altitude 8,850 feet, thus finishing another of the major stages of the journey. Between Labrang and Lung Hua the way led steeply over a sharp ridge attaining an elevation of 11,610 feet, but otherwise the journey was rather easy, being chiefly through shallow valleys and over low, gentle, partly cultivated hills. Most of the farmers were Tibetans. A hardy variety of barley constituted the main crop, with peas and broad beans much less common and wheat particularly rare on account of its inability to reach maturity at this altitude of over 9,000 feet. The neighborhood of Lung Hua was very densely wooded, while the regions beyond as far as T'ao Chou were merely typical Tibetan grasslands.

This section, from Hsi Ning to Old T'ao Chou, took us altogether 20 days, of which only 8 were devoted to collecting, as the whole region with a few exceptions was very bare. It is doubtful whether more time spent en route would have been profitable.

Section 4: Old T'ao Chou to Cho Ni.—It is only 40 li between these points by the regular trade route, the only one so far as we know ever taken, but by the time we reached Cho Ni we had covered 450 li. The route of our exploration can be seen on the map (pl. 21).

The city of Old T'ao Chou is situated in a valley bottom 20 li north of the T'ao Ho. (See pl. 25, A.) This river winds through a mountainous country, pursuing a very long and dragonlike course by way of Cho Ni, Min Chou, and Ti Tao Hsien before it empties into the Yellow River. We had planned to make the vicinity of T'ao Chou our last collecting point, but grateful information from Mr. Fesmire, an American missionary there, concerning the geography and strategic collecting grounds, caused us to alter our original plan.

On August 28, after spending two days in drying our collections, we left the city by the south gate for an area called Jargannar in Tibetan

and Shih Men in Chinese, on the northern border of the land of the Tebbus,¹¹ a region noted for robbery. We took with us a new local guide who could speak Tibetan and who was very familiar with the country. It required three days to reach our destination, 180 li from T'ao Chou, although it could be accomplished in two days in spite of the roughness of the road. For the first 20 li the road led down a valley to the edge of the T'ao Ho, which we crossed on a boat. (See pl. 25, *B*.) Here was a large landing for spruce logs floated down the river from its upper reaches. They were piled by the thousands on the bank for seasoning before being transported by carts to the cities north of the river for sale.

Having followed a sinuous path by the river for about 7 li, we turned into Ch'ia Ch'ing Kou, a large valley extending almost due south and traversed by a stream flowing into the T'ao Ho. On both sides, especially in the short lateral valleys, nestled Tibetan hamlets at frequent intervals. We crossed and recrossed the stream four or five times before reaching our camping ground under a broken spruce forest beside the village of Ch'ia Ch'ing at an altitude of 9,800 feet. We had come 70 li during the day, over an easy road.

Shortly after we started the next morning, the road divided, one branch leading due south, the other southwest. We chose the latter, which at once crossed a bridge and then grew very confusing as it broke up into numerous lateral branches. The Tibetan hamlets became less frequent as we ascended the valley, because of the increasing altitude and the diminishing amount of arable land, till at last they disappeared entirely and for the last 20 li of our day's journey we found no human habitations, but only lofty rocky ridges of magnificent and savage grandeur on every side. We camped at the end of 60 li on a flat piece of grassland beside the stream we had been crossing and recrossing by bridges and logs many times during the day. Our altitude was over 10,800 feet and the temperature particularly low. We found the next morning the water frozen in our water-bag left outside the tent. In spite of the cold night we had all felt quite at home, since we had a large charcoal fire in the tent with fuel brought from T'ao Chou.

An early start was made the next morning, as the road for the day was said to be difficult. After proceeding 25 li up the valley followed the previous day, we began ascending a gravel-strewn narrow trail over a snow-clad and sharp rocky ridge of gray limestone almost entirely devoid of vegetation, at an altitude of 12,800 feet, part of the Kansu Min Shan. The bare, rugged, perpetually snow-clad ridge was

¹¹ For a vivid account of a journey into this region, in June 1925, probably by the same entrance through which Ching approached its border, see Joseph F. Rock, *The Land of the Tebbus*. Geogr. Journ. 81: 108-127. *illus.* 1933.—E. H. W.

a grand and conspicuous feature of the region, and was visible for a distance of 150 li.

From the summit we descended westward by a gentle path for 6 li and then, turning south, entered the upper mouth of a gorge at an altitude of 11,500 feet. This gorge, known in Tibetan as Malisoondo (transliterated into Chinese as Ma Li Sung Tu), is 16 li long and bounded on both sides by absolutely perpendicular gray limestone cliffs, which seemed so newly formed that no green plant had been able to gain a foothold. Ten li farther south we passed a defile called the "Stone Gate," only 13 feet wide, between two vertical cliffs with their upper parts almost joined together. (See pl. 26, A.) It would have been almost impossible for either man or beast to pass through without being swept away by an extremely violent mountain torrent forcing its way through, had it not been bridged by a series of logs.

Five li farther south the gorge widened all at once into a great cup-shaped depression, walled in on all sides by lofty, almost unscalable rocky and partly wooded slopes. A Tibetan hamlet of about 30 families, together with a small lamasery nestled halfway up the northern slope, commanded a view of the surrounding country. On the lower slopes, and wherever the nature of the land permitted, barley and broad beans were grown. To my mind, the whole region could hardly be surpassed in savage grandeur, even by the most splendid scenes of western Hupeh or Szechwan, and nowhere in all China could the gorge of Malisoondo together with its "Stone Gate" possibly find a parallel in magnificence. (See pl. 26, B.)

We stayed here at a Tibetan house, our host being an acquaintance of my new guide. We collected in the vicinity for a couple of days before traveling back by the same route as far as the T'ao Ho. Cho Ni was reached on September 3 by a march along the south bank of the river.

The city of Cho Ni, at an altitude of 8,700 feet, lies on the north side of the river. Here is the yamen of a prince by the name of Yun, a hereditary officer governing a population of 48 clans of Tibetans, largely inhabiting the country south of the river beyond the Min Shan range. The city boasts some hundred Tibetan families and about 30 shops kept by Chinese and Mohammedans.

Mr. Wulsin with his party unexpectedly joined me here the next day. After resting for a couple of days we started together for a country called A Chüan (in Tibetan called A-E-Nar),¹² 90 li south of the river on the northern side of the Min Shan. The road on the whole was an easy one to travel. For the first 18 li, as far as the Tibetan hamlet "Mo-U," it followed along the south bank of the river. Here is the home of the present Prince Yun, and the yamen where his

¹² Called Adjuan by J. F. Rock.

predecessors carried on their administrative work is still in good condition. On leaving the hamlet, we gradually ascended a low ridge, at an altitude of 9,500 feet, with a lamasery and a few farmhouses nestled away on the slope on our left. Descending the farther side, we found ourselves in a large open village drained by a stream of crystal-clear water, a tributary of the T'ao Ho only a few li to the north. For the remainder of the day we ascended this valley almost due south and thrice crossed the stream on well-built wooden bridges. This stream is an important route for the rafting of enormous numbers of spruce and fir logs cut on the Min Shan and shipped in small rafts to the T'ao Ho. There were many small hamlets by the roadside and intensive agriculture was much in evidence. We did not reach our destination till dark, but with the aid of Mr. Liu, Mr. Wulsin's taxidermist, who had arrived a few days previously, we were able to obtain a Tibetan house without trouble.

From A Chüan we could see only 40 li to the south the lofty snow-clad, rock ridges we had crossed a few days previously on our way to Jargannar (Shih Men). (See pl. 26.) This town was said to be at the end of the first stage from Cho Ni along a main trade route to Sung P'an in northwestern Szechwan, which might be reached in 9 or 10 days on horseback. We remained here for two days before turning back by the same route to Cho Ni.

One striking fact we observed here was that practically the whole country south of the T'ao Ho extending for hundreds of li in length and breadth was densely wooded, or at least grass-covered, whereas the north side was dry and exposed and as bare as it could be. (Compare pls. 25, A, and 27.) The relative density of population was exactly opposite to that of the vegetation, thus showing again the influence of civilization on the forests. We found this section of the trip from Old T'ao Chou to Cho Ni botanically very interesting, as will be described later.

Section 5: Cho Ni to Lanchow, distance 490 li.—The route we followed for this journey was the regular trade highway. We traveled steadily, except for a few stops at places of botanical interest. The road lay either through valleys or over transverse mountain ridges, partly in the Lien Hua Shan, and, though at times arduous, was on the whole easy. The whole region was highly cultivated, and agriculture seemed to become increasingly prosperous as we journeyed, because of the increasingly favorable climate, the more level land, and the greater fertility of the lower country. Inns were available every 30 or 40 li. On two occasions our daily stages were 110 and 120 li each, yet the following mornings we were as refreshed as ever before. We arrived at Lanchow at noon on September 26, the Chinese midautumn festival.

General observations.—Our experience indicated that Kansu is one of the most peaceful provinces in all China, there being no robbers and very few bandits, if any. We were told that some of the Moham-medans and Tibetans are notorious and habitual thieves and have often caused travelers to suffer when chance offered, but we think that accidents of this sort can be avoided by taking proper precautions or by obtaining competent escort from the local officials.

Western Kansu has an ideal climate, being cool and comparatively dry even in summer and autumn. The temperature in the hottest season of the year is somewhat equivalent to midspring and late autumn in eastern China, and thick blankets can never be done away with at night. The rainy season begins about the middle of June and continues far into September. During this period it rains almost every day, but it is only a fine drizzle, generally of short duration. The atmosphere and the ground in the wooded and grass-clad country in the southwestern part of the province are very moist, the latter often assuming a swampy appearance.

Meat from sheep, pigs, cattle, and chickens is particularly cheap and is available almost everywhere. Rice is scarce and obtainable only in the *hsien* cities, wheat flour being available in the small towns and market villages. Marine and aquatic products are exceedingly expensive, as are also articles of foreign origin. In general, the cost of living is almost as high as in eastern China, but several times more expensive for travelers from the coast, owing to the scarcity and high cost of the products to which they are accustomed.

THE VEGETATION OF KANSU

At the present time the vegetation of Kansu is on the wane, as is true elsewhere in China. Throughout the length and breadth of the whole province no vegetation of any sort is still virgin or still in the virgin state. Areas of dense vegetation, as in other parts of China, are relegated to localities that are either inaccessible or uninhabitable, for wherever the Chinese go agriculture follows and the natural vegetation begins to disappear. Possibly the more primitive peoples have a better appreciation of and instinctive love for the natural beauty of their environment, which depends so largely on an extensive and varied plant cover. More likely, however, their nomadic life and sparser population call for less agricultural land than do the agricultural life and denser population of the Chinese. The forests still remaining in this province are fast being destroyed by the reckless Chinese wood merchants.

The northeastern part of the province, as far as we could observe on our journey, is absolutely bare except for a very small part of Ho Lan Shan, which is wooded chiefly with second-growth spruce. The

region is either an immense desert of shifting sands from Mongolia or else is devoted to intensive cultivation, dry farming being in a highly developed state and a noteworthy feature along the road from Ningsia to Lanchow. About the villages and hamlets are grown poplars (*Populus simonii*), elms (*Ulmus pumila*), and willows (*Salix* sp., probably *S. matsudana*), but nothing else, and these are rarely found wild. In the vicinity of Ningsia *Elaeagnus angustifolia* is found fairly commonly both about farms and in the wild state, often reaching 15 meters in height and a meter in girth. Two or three horticultural varieties of *Zizyphus* are abundant, several large plantations of jujubes being met with along the way. They seemed to thrive on moist sandy soil. This paucity of vegetation in northern Kansu is probably due to the loess soil and the scant precipitation. Only strongly xerophytic plants can survive.

Of the flora of the southeastern part of the province we have no knowledge; but it is probably little if any better, judging from reports of the denseness of the population, although the climate is more favorable.

The only part of Kansu at all botanically rich is unquestionably the western portion, of which the regions south of T'ao Chou and west of Lien Ch'eng may be considered typical. The vegetation there is by no means rich in variety, as compared with parts of western Hupeh and Szechwan, but it is interesting because of its distribution and its cold-temperate and subalpine components. I have never before in China seen the vegetational formations so clearly defined. There were generally three distinct types, namely, forest formations, scrub formations, and grassland, steppe, or prairie formations. The first are either pure or mixed forests, the pure forests being either spruce or pine, or, to a lesser extent, birch. The mixed forests are composed of spruce, birch, willow, and poplar, with spruce predominating. In the cut-over mixed forests, however, where the spruces of merchantable size are mostly cut, poplar (*Populus tremula* var. *dauriana*) takes the place of the spruce with incredible rapidity. In the pure stands, notably those of fir, the very density of the growth precludes the entrance of other arborescent species, and even of much undergrowth. *Rhododendron rufum*, a large-leaved, evergreen species, growing up to 5 meters in height, seems to be the only constant companion of the fir, while under spruce forests *Caragana jubata*, a very thorny slender species with white flowers, is always to be expected. The forest formations, though limited in area, furnish the people with wood for hundreds of uses. No pure fir forests are to be found below 11,500 feet elevation. Forests of spruce and other species occur below this as far as the 7,000 foot elevation. *Larix potanini* is found scattered here and there only above the fir on inaccessible cliffs and quite exposed rocky ridges.

The scrub formations, the least in extent of the three, are composed of three or four species of small-leaved rhododendrons forming immense low impenetrable thickets reaching from the foothills up to the summits of the gentle moist slopes. No other species, with the possible exception of a shrubby willow, ever occur in the scrub. They are of no economic importance.

The prairie or grassland, known locally as "tsao-ti," is typical of the Tibetan Plateau and is greater in extent than both of the other formations combined. Vast rolling stretches of verdure with the complete absence of woody plants are characteristic features of this formation. It constitutes an ideal pasturage for herds, and consequently grazing is the main occupation of the Tibetans.

These three types of vegetation, although often interrupted by hard, dry, gray hills of clay, or clearings made by man, frequently border one another in a distinctly regular way, the scrub emerging, as it were, from the forest, and the grassland from the scrub.

As mentioned above, the flora of western Kansu is essentially of cold-temperate and subalpine composition, though high alpine forms are by no means uncommon, more especially on the steppes and above the tree line. The temperate or warm-temperate forms, as those that predominate in the mountains of the Yangtze basin, are almost totally absent. The following description of the distribution of the vegetation according to the altitude may be of help in understanding this:

Cold-temperate belt.—Altitude 6,000 to 10,000 feet. This is the most important belt, since the bulk of the economic timber species grow here, besides flowering shrubs in great luxuriance. The commonest and possibly the only arborescent constituents of this zone are species of *Picea*, *Betula*, *Populus*, *Ulmus*, and *Pinus*.

Of the showy and ornamental shrubs common throughout this zone there are species of *Juniperus*, *Salix*, *Corylus*, *Ostryopsis*, *Berberis*, *Hydrangea*, *Philadelphus*, *Ribes*, *Cotoneaster*, *Crataegus*, *Malus*, *Potentilla*, *Prunus*, *Rosa*, *Rubus*, *Sorbaria*, *Sorbus*, *Caragana*, *Evonymus*, *Acer*, *Cornus*, *Syringa*, *Lonicera*, and *Viburnum*. In summer the valleys and lower slopes are almost completely clad in a mass of color.

Subalpine belt.—Altitude 9,500 to 12,500 feet. In this zone the woody species are fewer. *Abies* is the dominant element, with two species of *Picea* next in abundance and *Larix* still less common and confined to the extreme upper part of the belt. *Betula* is not uncommon. In valleys, along streams, and on slopes other than those occupied by pure spruce and fir forests, species of the following genera are found forming a luxuriant scrub growth: *Juniperus*, *Salix*, *Potentilla*, *Rosa*, *Sibiraea*, *Sorbus*, *Caragana*, *Daphne*, *Elaeagnus*, *Rhododendron*, *Abelia*, and *Lonicera*. Among the common herbs are various species of coarse grasses, *Polygonum*, *Aconitum*, *Delphinium*, *Corydalis*, *Parnassia*, *Potentilla*, *Astragalus*, *Gentiana*, and *Pedicularis*.

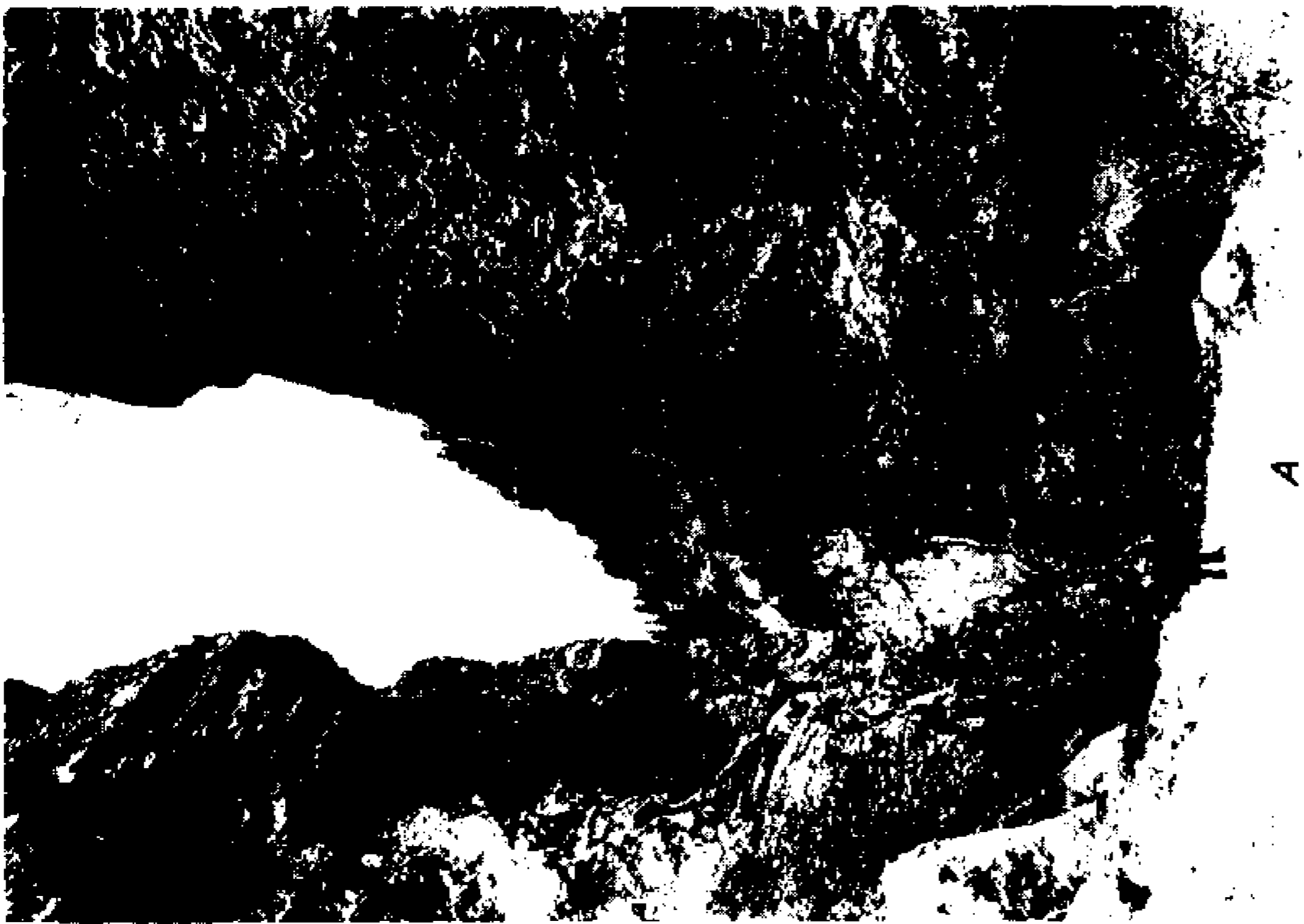
Alpine belt.—Altitude 12,500 to 14,000 feet. Practically no woody plants of tree form are to be found here, though procumbent shrubs occur sparingly. The wealth of low herbs is really astonishing. They clothe the vast rolling country late in summer and in autumn with a carpet of intense color. Chief among them on the steppes are many species of lemon-yellow, purplish-blue, and deep red *Meconopsis*, blue *Gentiana*, lemon-yellow, purplish red *Pedicularis*, and lemon-yellow and purplish *Aster*. Minor herbs are species of grasses, sedges, *Paraquilegia*, *Parnassia*, *Anaphalis*, *Crepis*, and *Saussurea*. A striking feature of these alpine regions is the suddenness with which they burst into bloom, usually in June. From then till late in August the country is a riot of intense and varying color, fairly dazzling the traveler's eyes, simulating an earthly paradise. When this brief season is over, scarcely a plant remains in bloom. Another striking feature is the relative paucity of species as compared with a similar habitat in other regions. Roughly speaking, the highland flora in this province contains only about as many species as are to be found in like situations in temperate regions. This is in accordance with the well-recognized fact of the intensely gregarious, hence exclusive nature of the alpine floral components, whether grass, herbs, scrub, or forest. I remember on one mountain in Hupeh¹³ we collected in a single day 125 different species, both woody and herbaceous, mixed in great confusion; but with only one or two exceptions, I never collected more than 50 species in two or three days of consecutive collecting in a single locality on the present expedition.

A final fact not to be overlooked by a student of these alpine floras is the great preponderance of herbs over trees or shrubs, because the short growing season and the low mean annual temperature combine to make the existence of woody perennials precarious. The change in vegetation with increase in altitude was particularly striking at Lien Ch'eng, where between 7,000 and 8,000 feet altitude herbs are subordinate to woody plants, both in number and extent, but at higher elevations herbaceous and woody plants give way almost completely to low herbs so characteristic throughout all alpine regions.

PRINCIPAL BOTANICAL AREAS

Throughout the whole region we traversed there were only four areas of much botanical interest. The first was Ho Lan Shan, on the northeastern border of Kansu; the second was around Lien Ch'eng, in the northern or north-central part; the third was the southern area south of Old T'ao Chou; and the fourth was Lien Hua Shan, between the

¹³ In the summer of 1922 Prof. W. Y. Chun, S. Chien, Mr. Whang, and the writer conducted a botanical expedition in western Hupeh.



A, The Shih Men, or Rock Gate, into Tebbu Land, worn by the "Kaichou" or "Wutu" through a limestone barrier at 9,700 feet altitude.



B, The Great Shih Men, or Great Rock Gate, leading into Tebbu Land in the Min Shan Range at 11,500 feet altitude.



The densely forested Ta Kou, or Big Gorge, southwest of the Tibetan village A Chüan.

southern area and the capital at Lanchow, about in the center of the province. The following is a brief floristic description of each area:

Ho Lan Shan.—This was the first region visited. It extends for several hundred li from the northeast to the southwest parallel to the Yellow River, which it cuts off from the Gobi Desert in Inner Mongolia. It is wooded chiefly in its central parts, where altitudes of 12,500 feet are attained. Southeast of this range lies the Ningsia Plain, 100 li long, and 60 li wide, between the mountains and the river. It is flat and exceedingly fertile; hence it is the richest agricultural part of the province. On a foothill on the northwestern border of the Ho Lan Shan range lies Wang Yeh Fu, where our first major collection was made.

My donkey driver informed me that the northern side of the range is regularly dissected by almost parallel, narrow valleys and gorges intercommunicable at one end or the other. Similar gorges dissect the southern side, but the two series are not connected except in one place that forms a natural pass, through which we went on our way to Ningsia. A network of woodcutters' trails and donkey paths covers the rough and precipitous interior of the range. The outer portions are bare except for low drought-stunted junipers (*Juniperus rigida*). The interior, however, bore pure, dense forests of spruce (*Picea asperata*) on the lower slopes. *Populus tremula* var. *dauriana* along with spruce was common on cut-over areas. Pure forests of pine (*Pinus tabulaeformis*) were restricted to one or two valleys. Since this pine is heavier, hence more costly to transport, it is seldom molested by the woodcutters. Trees with trunks two feet in diameter were therefore abundant. The spruce, on the other hand, had been cut rather recklessly, and none as much as a foot in diameter were seen. It is not improbable that this forest will disappear completely in the near future, unless the local officials act to limit the annual destruction and encourage natural reproduction.¹⁴

Willows (*Salix*) of many species, both shrubby and arborescent forms, are a feature of the wet valleys and lower slopes. Most noteworthy was a dense shrub, *Syringa oblata* var. *giraldii*, clothed with a mass of purple and filling the air with fragrance. This was equally true of a yellow-flowered rose (*Rosa xanthina*), a low dense bush on exposed, dry, rocky slopes, and of several species of *Caragana*. A small-leaved, medium-sized elm (*Ulmus glaucescens*) was common along the roadsides in Pei Ssu Kou. Other common shrubs were *Ostryopsis*, *Berberis*, *Cotoneaster*, *Malus*, *Potentilla*, *Spiraea*, *Syringa oblata* var.

¹⁴ Readers interested in this subject will find the following paper instructive: Lowdermilk, W. C., and D. R. Wickes, History of soil use in the Wu T'ai Shan area. Pp. 1-31. fig. 1-22. maps 1-3. 1938 (a monograph issued under the auspices of the North China Branch of the Royal Asiatic Society).—E. H. W.

alba, and *Lonicera*. A single stately specimen of *Xanthoceros sorbifolia* was seen, its profusion of white paniced flowers making it unsurpassed in beauty by any other species.

Among the most common and striking herbs were various species of *Primula*, three species of *Androsace* and *Anemone*, and two species of *Clematis* with large white and purple flowers, respectively. *Pyrola rotundifolia* subsp. *chinensis* with a species of *Caragana* formed an undergrowth in spruce forests at an altitude of about 10,000 feet.¹⁵ *Juglans regia* and *Morus alba* were grown on the farms among the foothills on the south side of the range. The former seemed to thrive well and to attain a diameter of 2 to 3 feet. This locality is probably the northwestern limit of this species, as none were seen beyond.

Lien Ch'eng.—This region was visited early in June. It was found to have a far richer flora than the Ho Lan Shan region, with the forest type predominating. The woodland region began not more than 3 li from the city walls and extended along the Ta T'ung Ho for over 250 li. Scrub formations occurred at altitudes above the forests, and there were grasslands on the highest mountains.

As in the Ho Lan Shan range, spruce (*Picea asperata*) was the dominant forest species between 6,500 and 10,200 feet altitude. Two other species of spruce occurred at lower altitudes and were reported to be better timber trees, furnishing a superior grade of wood. Trees, with trunks 7 to 9 feet in diameter were abundant everywhere, but especially in the mountains. Ten years from now conditions will be greatly changed, since the trees are being cut by Chinese merchants in a very destructive way. This forest wealth, as almost everywhere in the province, is owned by the Tibetan lamaseries, from whom the lumbering rights are purchased by Chinese merchants at a very low annual rent. Poplars (*Populus tremula* var. *dauriana*) and birches of three kinds are the next most dominant species. One (*Betula japonica*), with white or grayish bark, is known locally as "white birch." Another (*Betula albo-sinensis* var. *septentrionalis*) is called "red birch," on account of its shining brown, papery bark, marked by long horizontal lenticels, which peels off in large thin sheets. This is used locally for wrapping butter and other articles of food. The third kind, the "purplish birch" (*Betula albo-sinensis*), has a dark-brown, tight-fitting bark with white, roundish lenticels. They are found either in association with spruce or in pure stands of restricted extent. *Corylus sieboldiana* var. *mandschurica* and two species of *Acer* (*A. davidi* and *A. tetramerum* var. *betulifolium*) are common shrubs in ravines and in woods. A thorny bush, *Hippophae rhamnoides* var. *procera*, frequently forms impenetrable thickets in wet

¹⁵ This is apparently *Caragana jubata*, but it may be *C. tangutica*, both of which Ching mentions on field labels as occurring in *Picea* forests (see p. 636).—F. H. W.

swampy valleys and even on flat mountain summits. The outstanding feature, however, is the gorgeous display of white blossoms of *Philadelphus pekinensis* var. *kansuensis*, *Hydrangea bretschneideri*, *Sorbus* (2 species), and *Sorbaria arborea*, found everywhere. Other woody species found here, but not in the Ho Lan Shan area, are *Prunus* (3 or 4 species), *Ribes* (2 or 3 species), *Rosa* (3 species), *Lonicera* (5 or 6 species), *Juniperus* (2 species), *Daphne giraldii*, *Sibiraea laevigata* var. *angustata*, *Salix* (several species), and *Populus* (2 species). The scrub from 9,500 to 10,500 feet altitude is composed of small-leaved rhododendrons (*Rhododendron capitatum* and *R. thymifolium*). Two other rhododendrons with large obovate evergreen leaves (*R. agglutinatum* and *R. anthopogonoides*) are frequently found in woods with wet mossy floors and on ridges at higher elevations.

Lien Ch'eng is the chief lumbering section of Kansu, shipping to Lanchow fully one-half of the annual crop of timber cut in the western part of the province. The logs are floated down the Ta T'ung Ho late in spring and early in autumn, when the current is not so swift as in summer.

During the four weeks spent in this vicinity over 400 specimens of woody and herbaceous species were collected. Further gleaning would no doubt increase this number. So far as known, Reginald Farrer is the only other botanist who has collected here extensively.^{15a} The lack of proper food and the rugged country made work difficult. Further explorations would have been undertaken, but for the failure of the food supply.

Old T'ao Chou.—This was the third important region in which we collected. Frequent reports had filled us with high hopes for successful botanical and zoological work in this collecting ground. In this we were partly disappointed, for with the exception of a few restricted wooded areas in the extreme north near Labrang the whole region north of the T'ao Ho was absolutely bare of woody species, only the typical Tibetan grasslands abounding.¹⁶ Hence, we were chiefly concerned with the region between the T'ao Ho and the Min Shan range, an area inhabited entirely by Tibetans. It is all mountainous and has altitudes ranging from 8,300 feet at the river to 13,500 feet on the perpetually snow-clad rocky ridges.

An enumeration of the flora of this region would be largely a repetition of that of the other areas discussed. Among the interesting

^{15a} Many species described by Maximowicz from Przewalski's collections are designated as from the Ta T'ung Ho Valley, and may have come from at least the vicinity of Lien Ch'eng.

¹⁶ Mr. Ching seems to have placed undue emphasis on the importance of collecting only in wooded areas. It is doubtless true that there is a greater number of species to be found in such regions, but the intervening areas contain plants not found elsewhere, especially species of the all-important grasses.—E. H. W.

new arborescent forms collected were the silver fir (*Abies sutchuenensis*), the larch (*Larix potanini*), and two or three species of spruce. *Picea purpurea* and two other closely allied species were more abundant than *Picea asperata*, and proved to be hardier, growing at higher elevations, between 8,500 and 10,000 feet. At their upper limits they gradually give way to the silver fir, which extends up to 10,700 feet throughout an extensive area and in pure stands. In these fir forests the large-leaved evergreen *Rhododendron rufum* thrives as the sole woody undershrub. *Larix potanini* terminated the tree line at 11,000 feet, growing on sheer rocky ridges and on inaccessible cliffs. On the lower slopes it was often sparsely mixed with birch and silver fir, but always its crown of pendulous branches towered above in the better light. Four junipers (*Juniperus pseudosabina*, *J. saltuaria*, *J. squamata*, and *J. squamata* var. *fargesii*), not collected previously on this trip, were found in abundance. *J. squamata* is a shrub, but the others are trees. *J. pseudosabina*, with drooping branches and large black fruits, attains a diameter of 1 meter and a height of 15 meters and often forms small groves on flat moist foothills at 9,500 feet altitude. Around Cho Ni in the valley of the T'ao Ho the much-branched shrub *Malus transitoria*, with small, lobed leaves and an abundance of acrid, buttonlike, red fruits, was conspicuous. *Tamarix chinensis*, *Sibiraea laevigata* var. *angustata*, and several bushy willows were common shrubs along the mountain streams. Other shrubs not seen before were *Abelia zanderi*, *Rubus* (3 species), *Berberis* (2 species), *Prunus* (2 species), *Cotoneaster* (2 species) and *Lonicera* (several species).

That the wealth of the flora of Kansu is concentrated in the watershed of the upper T'ao Ho is unmistakably shown by the extreme clearness and the placid flow of this river. Nowhere else did we see a single river or stream of such clear water as here, except possibly the Labrang Ho (see p. 581). The presence of enormous quantities of logs up to a meter in diameter floating by endlessly year after year affords further evidence of the existence of a vast primeval forest on this watershed.

Lien Hua Shan.—This was the last though not the least important place where we collected on this trip. It is a massive mountain of hard limestone 11,500 feet in altitude, situated midway between Cho Ni and Ti Tao Hsien. It is only 120 li from Cho Ni to the village of "Kan Ku You" at an elevation of 9,300 feet on the southern foothills of the Lien Hua Shan area, and an equal distance from Ti Tao Hsien to another and smaller village called "Suan Sun Miar," at an altitude of 7,300 feet on its northern slope. To my everlasting regret we were unable to pay more attention to the flora here, since the party remained only one and a half days for a general survey before hurrying back to Lanchow. However, judging from our collections and obser-

vations, it is safe to say that this mountain can boast the richest flora of all the localities visited on this trip. Besides many endemics, the flora embraces practically all the species found in the previously mentioned localities. Furthermore, it contains a greater proportion of woody plants. The species collected here that were not found elsewhere were *Pinus armandi*, *Tilia chinensis*, *Viburnum lobophyllum*, *V. opulus*, *Acer* (3 species), *Elaeagnus umbellata*, *Rosa davidii*, *Cotoneaster acutifolia* var. *villosula*, *Viscum album*, and a number of herbaceous plants. The general appearance of this mountain reminded me of some of the richest mountains in western Hupeh, and it is my hope to return some day and explore it thoroughly.

SYSTEMATIC ENUMERATION OF SPECIES

PINACEAE

Abies sutchuenensis Rehd. & Wils. in Sarg. Pl. Wils. 2: 48. 1914.

First described from Szechwan.

Lung Hua, Nos. 803, 806; Tu I Kou, No. 984. In pure stands or associated with *Picea*. Common at altitudes above 3,300 meters.

A tree, up to 28 meters high; cones deep purple, resinous, upright, not easily detached. The timber is harder than that of *Picea* and inferior in quality. It is used for general construction and low-grade furniture.

Larix potanini Batalin, Act. Hort. Petrop. 13: 385. 1894.

First described from Potanin's Tibet collections.

Tu I Kou, No. 985. On summits of rocky ridges by the "Stone Gate" (Shih Men), forming pure stands or scattered among *Picea* and *Betula*. Common.

A tree, up to 30 meters high, the branches shining, yellowish brown, smooth; cones persistent, the scales brown-margined. The wood is of fine quality and is used for good furniture and other articles.

Picea asperata Mast. Journ. Linn. Soc. Bot. 37: 419. 1906.

First described from "western China."

Wang Yeh Fu, No. 34; T'u Er P'ing, No. 453. In forests. Common. Cho Ni, No. 995. In hard clay along an exposed roadside.

A tree, up to 25 meters high, appearing glaucous from a distance, contrasting with those of *P. wilsonii*; flowers fully open, the pistillate cones very resinous, deep purple, with persistent bud scales, the mature cones deciduous. The wood is softer than that of *P. wilsonii* and is brittle. It is used for general construction.

Picea purpurea Mast. Journ. Linn. Soc. Bot. 37: 418. 1906.

First described from "western China."

Between Labrang and Lung Hua, Nos. 804, 805; Tu I Kou, No. 992. In *Picea* forests, reaching higher elevations on mountains than any other spruce. Common.

A tree, up to 25 meters high with a slender trunk, the foliage dense, dark green; cone scales purple-margined. The timber is of fine quality and is used for general construction.

Picea wilsonii Mast. Gard. Chron. III. 33: 133. fig. 55, 56. 1903.

First described from Hupeh.

T'u Er P'ing, No. 452; Tai Wang Kou, No. 454. In *Picea* forests up to 3,000 meters altitude, not occurring with *P. asperata*. Common.

A tree, up to 21 meters high, appearing yellowish green from a distance; cones persistent, smaller than those of the two other species occurring here. The wood

is harder than that of *P. asperata* and is the most valuable of the three, being used for general construction.

Pinus armandi Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 7: 95. *pl. 12*. 1884. (Pl. David. 1: 285. *pl. 12*. 1884).

First described from central Shensi.

Between Hsin Ch'eng and Ha Ho, No. 1043. In forests on northern slopes, generally on the edges of rocks and cliffs. Common.

A tree, up to 25 meters high, the trunk straight, 45 cm. in diameter. The seeds are edible. The timber is of fine quality.

Pinus tabulaeformis Carr. Trait. Conif. ed. 2, 510. 1867.

First described from trees grown in France from Chinese seeds.

Ch'ien K'ou, No. 2; Wang Yeh Fu, No. 33; Shui Mo Kou, Ho Lan Shan, No. 104; Cho Ni, No. 998. Small, scattered, and associated with broad-leaved trees in the first localities, larger and in pure stands in Shui Mo Kou above 2,600 meters altitude, and in pure forests of large trees along the T'ao Ho in southern Kansu.

A tree, up to 30 meters high; cones persistent for 20 years or more. The wood is more valuable than that of *Picea* and is used for furniture. In Mongolia the stumps and roots are distilled for pyroligneous acid, used in curing wounds on camels.

CUPRESSACEAE

Juniperus chinensis L. Mant. Pl. 1: 127. 1767.

First described from China.

Ha La Hu Kou, Nos. 52, 53. A dwarf shrub, 30 to 60 cm. high, forming large patches, often in rocky crevices on exposed cliffs. Pei Ssu Kou, No. 110. A single tree, 10 meters high, growing by the lama temple, Pei Ssu. Lien Ch'eng, No. 320. Many cultivated trees, 10 meters high.

Berries glaucous, blue. The wood is used for high-grade furniture.

Juniperus pseudosabina Fisch. & Mey. Ind. Sem. Hort. Bot. Petrop. 8: 65. 1842.

First described from the Altai Mountains.

T'ai Hua, No. 558; Shih Men, No. 892; A Ch'uan, No. 990. Forming pure forests or growing isolated on dry slopes. Common.

A tree, up to 9 meters high, the branches drooping; berries black, slightly glaucous, over 1 cm. in diameter. The wood is of good quality and is used for furniture and burned as incense by Tibetans.

Juniperus rigida Sieb. & Zucc. Fl. Japon. 2: 56. *pl. 125*. 1870.

First described from Japan.

Ch'ien K'ou, No. 4; Wang Yeh Fu, Nos. 39, 43; Shui Mo Kou, Ho Lan Shan, Nos. 93, 101. Growing with *Pinus* and *Thuja* or along roadsides with *Picea*, *Populus*, and *Salix*. Common, but especially abundant in Shui Mo Kou. Cultivated at Wang Yeh Fu.

A tree, up to 7 meters high, the branches drooping; flowers dioecious, the berries glaucous. The wood is used for fuel and for making valuable furniture.

Juniperus saltuaria Rehd. & Wils. in Sarg. Pl. Wils. 2: 61. 1914.

First described from Purdom's Kansu and Wilson's Szechwan collections.

Upper Ch'ia Ch'ing Kou, No. 881. On exposed moist slopes. Common.

A tree, up to 7 meters high, the branches erect, the foliage dark green. The timber is used for building material.

Juniperus squamata Lambert, Descr. Pinus 2: 17. 1824.

First described from the Himalayan region.

Upper Chi'a Ch'ing Kou, No. 862. On the lower slopes of rocky ridges, forming a dense, impenetrable scrub. Common.

A shrub, 1 meter high, the stems very tough, long, slender; foliage dense, dark green. The arrangement of the stems gives this a very ornamental appearance.

Juniperus squamata var. *fargesii* Rehd. & Wils. in Sarg. Pl. Wils. 2: 59. 1914.

First described from Szechwan.

Shih Men, No. 908. On exposed slopes. Common.

A conical tree, up to 6 meters high, the needles of one kind only.

Thuja orientalis L. Sp. Pl. 1002. 1753.

First described from Siberia. Chi'en K'ou, No. 3. Associated with *Pinus*, *Juniperus*, and *Cotoneaster*. Very common.

A tree, up to 3 meters high, generally sprouting from old stumps. The wood is used as fuel and for furniture, buckets, tubs, etc.

GNETACEAE

Ephedra equisetina Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 7: 500. 1851.

First described from the Ural-Caspian region.

Ha Ta Men River, No. 6; Pei Ssu Kou, No. 109. In isolated clusters on exposed rocky cliffs, often associated with *Lycopodium*. Rare.

A dwarf shrub, 30 to 60 cm. high, the stem woody, brown, persistent. Used medicinally.

Ephedra intermedia Schrenk & Mey. var. *glauca* (Regel) Stapf, Denkschr. Akad. Wiss. Math. Naturw. Wien 56²: 62. 1888 (?).

First described from central Asia.

Wang Yeh Fu, No. 29. In pure stands in large patches on dry, exposed sand.

An evergreen shrub, up to 50 cm. high; cone scales yellowish with a green circular spot in the center.

Ephedra monosperma J. G. Gmel. Mém. Acad. Sci. St. Pétersb. Sci. Nat. 5, Bot.: 279. 1846.

First described from Siberia.

La Chi Tzu Shan, No. 709. In dense tufts on partially shaded, rocky cliffs. Common.

A low shrub, 18 cm. high; cones reddish yellow. Used medicinally.

TYPHACEAE

Typha minima Hoffm. Deutschl. Fl. ed. 2, 2: 251. 1804.

First described from Europe.

Chung Wei, No. 229. On margins of streams.

Height about 60 cm.

JUNCAGINACEAE

Triglochin maritimum L. Sp. Pl. 339. 1753.

First described from Europe.

La Chi Tzu Shan, No. 695. Forming thick carpets on alpine summits or on moist, exposed steppes. Common.

Height up to 20 cm.; flowers yellowish green.

Triglochin palustre L. Sp. Pl. 338. 1753.

First described from Europe.

Shih Men, No. 911. Forming pure stands of large extent on exposed stream banks, where sometimes submerged. Common.

Height 45 cm.; fruit brown.

GRAMINEAE ¹⁷

Agrostis hugoniana Rendle, Journ. Linn. Soc. Bot. **36**: 389. 1904.

First described from Shensi.

Ta P'an Shan, No. 672, in part. Forming a thick carpet on exposed, moist slopes. Common. Upper Ch'ia Ch'ing Kou, No. 857. Associated with *Trisetum spicatum* on steppes. Common.

Height about 45 cm.

Arundinaria sp.

A Ch'uan, No. 974 (sterile). In an open forest at 4,400 meters altitude. Common in the southwestern part of the province.

Height up to 3 meters, the stems and branches purplish.

Arundinella anomala Steud. Syn. Pl. Glum. **1**: 116. 1854.

First described from Japan.

Tu I Kou, No. 968. In a pure stand on an exposed, moist beach. Common.

Avena altior Hitchc. Proc. Biol. Soc. Washington **43**: 96. 1930.

La Chi Tzu Shan, No. 716 (type). Scattered on an exposed moist slope. Common.

Height up to 1 meter.

Avena suffusca Hitchc. Proc. Biol. Soc. Washington **43**: 95. 1930.

T'ai Hua, No. 527 (type); La Ch'ung Kou, No. 627; La Chi Tzu Shan, No. 687. In tufts or tussocks in exposed, moist places in ravines or on grassy slopes or steppes.

Height about 75 cm.

Beckmannia erucaeformis (L.) Host, Icon. Gram. Austr. **3**: 5. *pl. 6*. 1805.

First described from Siberia.

Yeh Ts'ang Kou, No. 822. In pure, dense stands on steppes.

Height 45 cm. Common.

Brachypodium sylvaticum (Huds.) Beauv. Ess. Agrost. 101, 155. 1812.

First described from England.

Hsin Ch'eng, No. 303; La Ch'ung Kou, No. 626. In tufts on exposed, bare or grassy slopes or cliffs. Common.

Height 75 cm.

Bromus tectorum L. Sp. Pl. 77. 1753.

First described from Europe.

Pa Yen Jung Kê, No. 741. On exposed, moist steppes. Common.

Height up to 50 cm.

Bromus sp.

Ni Ma Lang Kou, No. 763. On exposed, moist slopes. Common.

Height up to 1 meter.

Calamagrostis epigeios (L.) Roth. Tent. Fl. Germ. **1**: 34. 1788.

First described from Europe.

Chen Fan Ch'üan Tzu, No. 13. Forming shallow-rooted patches on sandy soil along the margins of intermittent mountain streams. Not common.

Height about 1 meter. Used as fodder for domestic animals.

Calamagrostis scabrescens Griseb. Nachr. Ges. Wiss. Göttingen **1868**: 79. 1868.

First described from the Himalayas.

Shih Men, No. 926. In large, dense tussocks on steppes.

Height 1 meter; panicle deep purple. Common.

¹⁷ Dr. Y. L. Keng has designated a number of these grasses as new, but, since his species are not yet published, the names are not used here.

Chloris virgata Swartz, Fl. Ind. Occ. 1: 203. 1797.

First described from the West Indies.

Yao Chieh, No. 258. On a dry, bare, gravelly roadside.

Height 45 cm.

Deschampsia caespitosa (L.) Beauv. Ess. Agrost. 91, 149, 160. *pl.* 18. *fig.* 3. 1812.

First described from Europe.

Shih Men, No. 910. In swampy places. Common.

Height up to 1 meter.

Deyeuxia spp.

1. T'ai Hua, No. 521a.

2. Lung Hua, No. 800. Forming a dense carpet in open forests.

Height up to 1 meter.

Elymus dahuricus Turcz. Bull. Soc. Nat. Moscou 11: 105. 1838 (*nomen nudum*); 29: 62. 1856 (Fl. Baical. 2: 348. 1856).

First described from Dahuria.

Ni Ma Lang Kou, No. 765. On exposed, moist slopes. Common.

Height up to 1 meter.

Elymus dasystachys Trin. in Ledeb. Fl. Alt. 1: 120. 1829.

First described from the Altai Mountains.

Yao Chieh, No. 253. On dry, bare, gravelly foothills. Common.

Height up to 45 cm.; inflorescence purple.

Elymus sibiricus L. Sp. Pl. 83. 1753.

First described from Siberia.

T'ai Hua, No. 521. On moist, partially shaded slopes. Common.

Height up to 60 cm.

Elymus sp.

Ni Ma Lang Kou, No. 748. Forming pure stands covering extensive areas.

Common.

Height up to 40 cm. Used as forage.

Hordeum nodosum L. Sp. Pl. ed. 2, 126. 1762.

First described from Europe.

Yao Chieh, No. 298. On grasslands.

Height 25 cm.

Melica scabrosa Trin. Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 146. 1833.

First described from Bunge's collections near Peking.

Mouth of Hsi Yeh Kou, No. 184a. Associated with *Poa sphondylodes*.

Oryzopsis munroi Stapf, in Hook. f. Fl. Brit. Ind. 7: 234. 1896.

First described from western Himalaya.

La Chi Tzu Shan, No. 717. In tussocks on partially shaded slopes. Common.

Height up to 1 meter.

Pennisetum flaccidum Griseb. Nachr. Ges. Wiss. Göttingen 1868: 86. 1868.

First described from Kashmir.

Ni Ma Lang Kou, No. 749; Yeh T'sang Kou, No. 823. In extensive stands on very moist steppes. Common.

Height 60 to 90 cm. This is an important forage for the domestic animals of the Tibetans.

Phalaris arundinacea L. Sp. Pl. 55. 1753.

First described from Europe.

A Chüan, No. 983. Forming pure stands in rich soil along exposed, moist roadsides. Common.

Height 1 meter.

Phleum alpinum L. Sp. Pl. 59. 1753.

First described from the Alps.

Upper Ch'ia Ch'ing Kou, No. 855. In extensive, pure stands on steppes. Common.

Height up to 45 cm.

Phragmites communis Trin. Fund. Agrost. 134. 1820.

First described from Europe.

Chen Fan Ch'üan Tzu, No. 11, 12. Forming pure stands on alkaline, marshy soils, especially along lake shores. Labrang, No. 776. In wheatfields. Common.

Height up to 1.5 meters. Used for fuel and for fodder for domestic animals.

Poa acroleuca Steud. Syn. Pl. Glum. 1: 256. 1854.

First described from Japan.

La Ch'iung Kou, No. 638. In clusters on exposed, moist, gravelly beaches. Occasional.

Height 45 cm.

Poa arctica R. Br. Chlor. Melv. 30. 1823.

First described from Arctic America.

Shui Mo Kou, Ho Lan Shan, No. 98; T'ai Hua, No. 509. In a large patch forming a thick carpet on rich soil beside a stream.

Height 25 cm.

Poa attenuata Trin. var. *vivipara* Rendle, Journ. Linn. Soc. Bot. 36: 423. 1904.

First described from Shensi.

La Chi Tzu Shan, Nos. 691, 693. In tufts, forming a dense stand on exposed, moist steppes. Common.

Height 35 cm.; panicle reddish purple.

Poa nemoralis L. Sp. Pl. 69. 1753.

First described from Europe.

T'ai Hua, No. 543. In dense clumps in shady places. Common.

Height 35 cm.

Poa sphondylodes Trin. Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 145. 1833.

First described from Hupeh.

Mouth of Hsi Yeh Kou, Nos. 182, 184; Hsin Ch'eng, No. 302. On moist or dry, clay soil. Common.

Height up to 1 meter.

Setaria viridis (L.) Beauv. Ess. Agrost. 51, 178. 1812.

First described from Europe.

Yao Chieh, No. 257. Along bare, dry, gravelly roadsides.

Height 30 to 60 cm.

Stipa breviflora Griseb. Nachr. Ges. Wiss. Göttingen 1868: 82. 1868.

First described from the Himalayas.

Pei Ssu Kou, No. 111. Along the foot of a wall, in clay soil. Common.

Height up to 60 cm.

Stipa chingii Hitchc. Proc. Biol. Soc. Washington 43: 94. 1930.

Lung Hua, No. 785 (type). In a large dense tussock, up to 1 meter high, in open woods.

Stipa purpurascens Hitchc. Proc. Biol. Soc. Washington 43: 95. 1930.

La Chi Tzu Shan, No. 686 (type). In large tufts on exposed, moist, grassy slopes on steppes. Common.

Height 20 cm.

Stipa sibirica (L.) Lam. Tabl. Encycl. 1: 185. 1791.

First described from Siberia.

Chen Mu Kuan, No. 165. In clay soil on the dry, exposed, western foothills of the Ho Lan Shan. Common.

Height up to 1.5 meters. This species is reported to be poisonous to domestic animals, which either die or become "intoxicated" upon eating it.¹⁸

Stipa splendens Trin. in Spreng. Neu. Entd. 2: 54. 1821.

First described from Transbaikalia.

Shui Ch'ü, No. 8; Yao Chieh, No. 247. Occurs at Shui Ch'ü in tufts over an immense area in both dry and swampy habitats, known locally as "grasslands," and used as pasturage by Mongolians. It is also cut and used as fodder and fuel and in place of sticks in spinning, weaving cloth, and making mats.

Height up to 2.5 meters.

Trisetum spicatum (L.) Richt. Pl. Eur. 1: 59. 1890.

First described from Lapland.

Ta P'an Shan, No. 672, in part; Ch'ia Ch'ing Kou, Nos. 846, 856. Often associated with *Phleum alpinum* on steppes. Common.

Height up to 45 cm. Used as forage.

CYPERACEAE

Carex atrata L. Sp. Pl. 976. 1753 (forma).

First described from the Alps.

T'ai Hua, No. 510. Associated with *Poa arctica* on a moist grass- and bush-covered slope. Common.

Height up to 60 cm.; inflorescence deep purple.

Carex atrata subsp. *pullata* (Boott) Kükenth. in Engl. Pflanzenreich 38 (IV. 20): 400. 1909.

First described from the Himalayan region.

T'ai Hua, No. 528; Ch'ing Kang Yai, No. 576 (?); La Chi Tzu Shan, No. 689; Shih Men, No. 898 (?); A Chüan, No. 989. In tussocks, in open or moist woods or in ravines and on exposed moist steppes. More or less common.

Height up to 80 cm.; spikes greenish purple to deep purple.

Carex caespitosa L. Sp. Pl. 978. 1753, vel aff.

First described from Europe.

Shui Mo Kou, Ho Lan Shan, No. 90; mouth of Hsi Yeh Kou, No. 183. Forming a thick carpet on moist banks of irrigation ditches and streams. Common.

Height 18 cm.

Carex dielsiana Kükenth. Notes Bot. Gard. Edinburgh 8: 10. 1913.

First described from Yunnan.

La Ch'üung Kou, No. 613. In large tufts on exposed, moist, grassy slopes or in woods. Common.

Height 60 cm.; inflorescence purplish brown.

Carex pallida C. A. Meyer, Mém. Acad. Sci. St. Pétersb. 1: 215. pl. 8. 1830.

First described from Kamchatka.

Wang Yeh Fu, No. 26 (immature). In patches on exposed, dry, fine, sandy soil over clay. Fairly common.

Height 20 cm.; inflorescence greenish yellow. This sedge is used also as a soil binder on banks of ditches and sandy slopes.

¹⁸ For a discussion of this phenomenon and the original description of *Stipa inebrians* Hance, based on specimens from this same mountain range, see H. F. Hance, On a Mongolian grass producing intoxication in cattle. Journ. Bot. Brit. & For. 14: 210-212. 1876.

Carex stenophylla Wahl. Vet. Akad. Nya Handl. (Stockholm) 24: 142. 1803.

First described from northern Europe.

Wang Yeh Fu, No. 126. Along the open margin of a pond. Common.

Height 25 cm.

Cobresia schoenoides (C. A. Meyer) Steud. Syn. Pl. Glum. 2: 246. 1855.

First described from the Caucasus Mts.

La Chi Tzu Shan, No. 692. In tufts, on an exposed moist steppe. Common.

Height 25 cm.; inflorescence deep purple.

Scirpus maritimus L. Sp. Pl. 51. 1753.

First described from Europe.

Chung Wei, No. 215. On the margin of a stream.

Height 30 cm.

ARACEAE

Arisaema consanguineum Schott, Bonplandia 7: 27. 1859; Prodr. Syst. Aroid. 52. 1860 (emend.).

First described from Sikkim.

Ch'ia Ch'ing Kou, No. 836. In woods. Rare.

Height 60 cm.; fruits yellowish red when mature.

JUNCACEAE

Juncus allioides Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 10: 99. 1886 (Pl. David. 2: 137. 1888).

First described from western Szechwan.

T'ai Hua, No. 507; Shih Men, No. 917. On a moist, densely bushy mountain top and in a partially shaded swamp, forming dense stands. Common.

Height up to 50 cm.; flowering inflorescence whitish.

Juncus bufonius L. Sp. Pl. 328. 1753.

First described from Europe.

Liu Fu Yai, No. 467; Ch'ia Ch'ing Kou, No. 950. Near streams, on frequently flooded, sandy, and gravelly soil and on steppes. Common.

Height 15 cm.

Juncus exploratorum Walker, sp. nov.

Fig. 144

Stolonifer; caules erecti, 55-70 cm. alti; folia basilaria cataphyllina, supremum frondescens, caulina circa 4, frondosa, auriculis destituta; lamina plana, circa 6 mm. lata vel margine tantum involuta; inflorescentia 3-10 cm. longa, bracteis duabus frondescens, capitulis longioribus; capitula circa 6; flores 5-8, magni, cum fructu maturo 7 mm. longi, breviter pedunculati; tepala anguste lanceolata, acutissima, subaequilonga vel interna breviora, 4-5 mm. longa, pallida; stamina 6, circa 3 mm. longa; filamenta linearia, basi fusca, antheris linearibus longioribus stylus brevis; fructus trigono-prismaticus, acuminatus vel rostratus, fuscescens vel pallido-castaneus; semina circa 3 mm. longa, scobiforma, albida.

Type in the United States National Herbarium, No. 1245913, collected by R. C. Ching, No. 912, on August 31, 1923, at Shih Men (Gargannar), upper Ch'ia Ch'ing Kou, Min Shan Range, southern Kansu, reported to be common and associated with *Triglochin palustre* on exposed margins of streams where sometimes submerged. An additional specimen examined is *J. F. Rock 18742*, collected in October 1925, in alpine meadows of Mount Kwang Kei, western Tebbu Land, also in the Min Shan Range.

This species seems to resemble most closely *Juncus castaneus* J. E. Smith, from which it differs in its greater height, wider leaves, shorter and paler perianth parts, and paler and more acuminate fruits. It may resemble *Juncus giganteus* Samuelson, described from northern Szechwan, of which no specimens have been seen. *J. exploratorum*, however, seems to be smaller throughout with much fewer heads.



FIGURE 144.—*Juncus exploratorum* Walker, sp. nov.: *A*, Whole plant, $\times \frac{1}{2}$; *B*, fructing head, $\times 5$; *C*, seeds, $\times 5$.

It is named in honor of the two plant explorers on whose collections this new species is based.

Juncus luzuliformis Gennardi var. *potanini* Buchenau, Bot. Jahrb. Engler 36: Beibl. 82: 15. 1905.

First described from Potanin's Kansu and Szechwan collections.

La Ch'ung Kou, No. 640. In tufts, on densely shaded, rocky cliffs by a stream.

Common.

Height up to 18 cm.; flowers white.

LILIACEAE

Aletris glabra Bur. & Franch. Journ. de Bot. 5: 156. 1891.

First described from Szechwan.

Shih Men, No. 931. In a dense forest of *Abies* and *Picea*. Fairly common.

Height up to 75 cm.

Allium chrysanthum Regel, Act. Hort. Petrop. 3²: 91. 1875.

First described from Przhevalski's collections on the Ta T'ung Ho, Kansu.

T'ai Hua, No. 508; Ta P'an Shan, No. 671; La Chi Tzu Shan, No. 702; A Ch'uan, No. 975. Scattered on exposed moist steppes or densely bushy mountain sides. Common to abundant.

Flowers yellowish green. The bulbs are edible.

Allium cyaneum Regel, Act. Hort. Petrop. 3²: 174. 1875.

First described from Przhevalski's collection on the Ta T'ung Ho, Kansu.

Ho Lan Shan, No. 1121. On a shaded, mossy forest floor.

Height 30 cm.; flowers purple.

Allium forrestii Diels, Notes Bot. Gard. Edinburgh 5: 302. 1912.

First described from Yunnan.

Ho Lan Shan, No. 1107. At edge of woods. Common.

Height 30 cm.; flowers purplish.

Allium henryi C. H. Wright, Kew Bull. Misc. Inf. 1895: 119. 1895.

First described from Hupeh.

Ch'ia Ch'ing Kou, No. 839. In tufts on a mossy forest floor. Common.

Height up to 45 cm.; flowers bluish purple.

Allium kansuense Regel, Act. Hort. Petrop. 10: 690. 1889.

First described from Przhevalski's Kansu collections.

La Ch'ing Kou, No. 623; Upper Ch'ia Ch'ing Kou, No. 864; Labrang, No. 771. Sometimes forming dense tussocks, in partially shaded woods or on open, exposed, moist slopes. Common.

Height up to 50 cm.; flowers blue to turquoise.

Allium rubellum Bieb. Fl. Taur. Cauc. 1: 264. 1808.

First described from the southern Caucasus region.

Lien Ch'eng, No. 296. On an exposed, bare, clay cliff. Rare.

Height up to 55 cm.; flowers purplish.

Allium tenuissimum L. Sp. Pl. 301. 1753.

First described from Siberia.

Shui Mo Kou, near Lien Ch'eng, No. 363; Ho Lan Shan, Nos. 1094, 1106 (infected with *Puccinia porri* (Sow.) Wint.). On exposed, grassy or moist, rocky slopes. Common.

Height up to 25 cm.; flowers purplish, fragrant.

Allium victorialis L. Sp. Pl. 295. 1753.

First described from the Alps.

Shui Mo Kou, near Lien Ch'eng, No. 348. In woods.

Height 60 cm.; flowers purplish.

Allium sp.

La Chi Tzu Shan, No. 690. Scattered, on an exposed, moist steppe. Common.
Height up to 38 cm.; flowers yellowish green; basal bulbs small.

Asparagus brachyphyllus Turcz. Bull. Soc. Nat. Moscou 1840: 78. 1840.

First described from northern China.

Mouth of Hsi Yeh Kou, No. 178. On a dry, exposed foothill. Rare.

Height up to 1 meter; flowers purplish green.

Asparagus trichophyllus Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 139. 1833 (Enum. Pl. China Bor. 65. 1835).

First described from Hopeh.

Hsi Mi Yai, No. 491. On dry, exposed, clay stream banks, sometimes forming a dense carpet. Very common.

Height up to 1 meter; flowers said to be red.

Clintonia udensis Trautv. & Mey. in Midd. Reise Nord Ost. Sibir. 1², Suppl.: 92. 1856 (Fl. Ochot. 92. 1856).

First described from Priamur, Primorsk region.

Shih Men, No. 932. In a dense forest of *Abies* and *Picea*. Common.

Height up to 1 meter; fruit dark green.

Lloydia tibetica Baker var. *purpurascens* Franch. Journ. de Bot. 12: 193. 1898.

First described from Yunnan.

Ha La Hu Kou, No. 54; Ta P'an Shan, No. 675; Ho Lan Shan, No. 1148.

On exposed, moist, rocky cliffs or other exposed places. Common, except at Ta P'an Shan.

Height up to 60 cm.; flowers white or yellowish with a purple stripe on back of perianth.

Maianthemum bifolium (L.) DC. in Lam. & DC. Fl. Franç. ed. 3, 3: 177. 1805.

First described from northern Europe.

T'u Er P'ing, No. 429. In woods.

Height up to 30 cm.; flowers creamy white.

Polygonatum fuscum Hua, Journ. de Bot. 6: 444. 1892.

First described from Yunnan.

Ho Lan Shan, No. 1135. In woods.

Stem slender, up to 2 meters high; flowers white.

Polygonatum multiflorum (L.) All. Fl. Pedem. 1: 131. 1785.

First described from Europe.

Pei Ssu Kou, No. 119. Under bushes in a forest. Common.

Height 36 cm.; flowers greenish yellow.

Polygonatum sibiricum Delmar in Redoute, Liliac. 6: pl. 315. 1812.

First described from Siberia.

Upper Shui Mo Kou, near Lien Ch'eng, No. 395. In woods. Rare.

Height 60 cm.; flowers greenish white.

Smilax stans Maxim. Bull. Acad. Sci. St. Pétersb. 17: 170. 1872. (Mém. Biol. Acad. Sci. St. Pétersb. 8: 407. 1872).

First described from Japan.

Shui Mo Kou, near Lien Ch'eng, No. 346. In woods.

Streptopus amplexifolius (L.) DC. in Lam. & DC. Fl. Franç., ed. 3, 3: 174. 1805.

First described from Europe.

Tai Wang Kou, No. 439. At the base of a rocky cliff in a forest.

Height up to 60 cm.; flowers purplish.

Tofieldia yunnanensis Franch, Journ. de Bot. 12: 225. 1898.

First described from Yunnan.

A Chüan, No. 972. On a shaded, rocky cliff. Rare.

Height 12 cm.; flowers yellowish green.

DIOSCOREACEAE

Dioscorea quinqueloba Thunb. Fl. Japon. 150. 1784.

First described from Japan.

Shui Mo Kou, near Lien Ch'eng, No. 357. On a bushy slope.

A climbing herb, 6 meters long; flowers white.

IRIDACEAE

Iris ensata Thunb. Trans. Linn. Soc. 2: 328. 1794.

First described from Japan.

Wang Yeh Fu, No. 37; Liu Fu Yai, No. 476; Cho Ni, No. 993. In pure stands of great extent along roadsides, in either wet or dry places. Common.

Height up to 90 cm.; flowers purple; seeds brown.

Iris aff. polysticta Diels, Svensk. Bot. Tidskr. 18: 428. 1924.

First described from Szechwan.

T'u Er P'ing, No. 408. In woods. Rare.

Height 45 cm.; flowers violet. Differs from other species in the form of growth, one stem appearing isolated, not in tufts.

Iris tenuifolia Pall. Reise Prov. Russ. Reich. 3: 714. *pl. C.* 1776.

First described from Dahuria.

Ti Shui Kou, No. 21; Shui Mo Kou, Ho Lan Shan, No. 95. Along exposed, dry roadsides or on foothills of coarse sand and gravel. Rare, isolated.

Height up to 40 cm.; flowers appearing soon after the leaves, the outer petals pale, the middle one marked with deep violet lines inside. The leaves are made into ropes and the roots into brushes, because of their great toughness when dried.

Iris ventricosa Pall. Reise Prov. Russ. Reich. 3: 712. *pl. B.* 1776.

First described from Dahuria.

Wang Yeh Fu, No. 27; Nan Ssu Kou, No. 132. In large compact clusters, along dry sandy roadsides and on moist, rich farm land. Very common.

Height 30 to 60 cm.; flowers deep purple.

ORCHIDACEAE

Cypripedium fasciolatum Franch. Journ. de Bot. 8: 232. 1894.

First described from Szechwan.

Shih Men, No. 933. In dense woods. Rare.

Height 38 cm.

Habenaria bifolia R. Br. in Ait. Hort. Kew, ed. 2, 5: 193. 1813.

First described from Europe.

T'u Er P'ing, No. 349. In a dense *Picea* forest. Ch'ing Kang Yai, No. 570. In woods. Rare.

Height up to 60 cm.; flowers creamy white or yellowish green, the anthers orange-yellow.

Habenaria conopsea (Willd.) Benth. Journ. Linn. Soc. Bot. 18: 354. 1881.

First described from Europe.

Shih Men, No. 928. On steppes. Rare.

Height 50 cm.

Habenaria cucullata (L.) Hoefft. Cat. Pl. Kursk. 56. 1826.

First described from Europe.

Ch'ia Ch'ing Kou, No. 838. On a mossy forest floor. Common.

Height 20 cm.; flowers pink, very fragrant; leaves mottled with brown above.
Herminium tanguticum Rolfe, Journ. Linn. Soc. Bot. 36: 51. 1903.

First described from Przewalski's Kansu collections.

Liu Fu Yai, No. 462. On a moist rocky cliff. Very rare.

Height up to 23 cm.; flowers greenish yellow, highly fragrant. The tuberous root is said to be edible.

Orchis chusua D. Don, Prodr. Fl. Nepal. 23. 1825.

First described from Nepal.

T'u Er P'ing, No. 428; Liu Fu Yai, No. 473. In forests. Common.

Height up to 40 cm.; flowers purplish, dotted inside with deeper colored spots.

Spiranthes sinensis (Pers.) Ames, Orchid. 2: 53. 1908.

First described from Canton, China.

Shang Hsin Chuang, No. 679. Scattered on exposed, moist grassland. Common.

Height 20 cm.; flowers reddish, sweetly fragrant.

SALICACEAE

Populus cathayana Rehd. Journ. Arn. Arb. 12: 59. 1931.

First described from Szechwan, Kansu (Ching's collections), Mongolia, Manchuria, and Korea.

Ha La Hu Kou, No. 75; Shui Mo Kou, near Lien Ch'eng, No. 482. Common throughout the province, often along roads or on stream banks.

A tree, up to 25 meters high. This species is useful as a street tree, casting a dense shade.

Populus euphratica Olivier, Voy. Emp. Othoman. 3: 450; atlas pl. 45, 46. 1807.

First described from Persia.

Ta Shui Kou, No. 23. On exposed, coarse, sandy soil. Rare, only two trees seen.

A tree, up to 13 meters high.

Populus simonii Carr. Rev. Hort. (Paris) 39: 360. 1867.

First described from "Si Wan Tzu", southern Mongolia.

Ningsia, No. 225. In cultivation on a farm. Common.

A tree, up to 18 meters high.

Populus suaveolens Fisch. Allg. Gartenz. 9: 404. 1841.

First described from eastern Siberia.

Hsi Mi Yai, No. 505. Along moist roadsides in gorges, sometimes forming fine avenues. Common.

A tree, up to 30 meters high, the trunk straight, up to 1 meter in diameter, the bark dark gray on old trees, smooth gray on young trees, the crown umbrella-shaped.

Populus tremula L. var. *dauriana* C. Schneid. in Sarg. Pl. Wils. 3: 24. 1916.

First described from Hupeh, Szechwan, Hopeh, etc.

Wang Yeh Fu, No. 40. Cultivated along roadsides with *Salix*, *Picea*, and *Juniperus*.

Height up to 10 meters.

Salix caprea L. Sp. Pl. 1020. 1753.

First described from Europe.

Ha La Hu Kou, Nos. 59 ♀, 60 ♂.¹⁹ On sheltered, moist valley bottoms and foothills. Fairly common. Mountains south of Ha La Hu Kou, No. 77. In an open *Picea* forest on moist, rich soil.

¹⁹ See footnote to *S. wallichiana* Anders, p. 607.

A rather small tree, up to 9 meters in the first locality, branched near the ground; bark greenish gray, fissured on the trunk.

Salix cheilophila C. Schneid. in Sarg. Pl. Wils. 3: 69. 1916.

First described from western Szechwan.

Lien Ch'eng, No. 284, Hsi Mi Yai, No. 485. Along mountain streams. Common.

A shrub, up to 5 meters high, in dense stands, the branchlets brown, shining; capsules greenish.

Salix chingiana Hao, Repert. Sp. Nov. Fedde Beih. 93: 86. 1936.

Lang Tzu T'ang Kou, No. 584 (type). Forming dense thickets in *Betula* woods. Common.

Height up to 6 meters; leaves glaucous beneath.

Salix dissa C. Schneid. in Sarg. Pl. Wils. 3: 52. 1916.

First described from Szechwan.

Lung Hua, No. 791. In a forest of *Picea* and *Betula*. Common.

A shrub, up to 4.5 meters high.

Salix matsudana Koidz. Bot. Mag. Tokyo 29: 312. 1915.

First described from Umemura's Kansu collections.

Wang Yeh Fu, Nos. 30♂, 31♀. Cultivated, in clay soil on a farm, associated with *Ulmus* and *Populus*. Fairly common.

Height 15 meters. The wood is used for farm implements.

Salix melea C. Schneid. in Sarg. Pl. Wils. 3: 176. 1916.

First described from W. Purdom's collections, without precise locality, possibly from Kansu.

T'u Er P'ing, No. 426. In a forest. Ho Lan Shan, No. 1054. Alongstreams. Common.

Height up to 6 meters; dense; branches dull brown; leaves glaucous beneath.

Salix microstachya Turcz. Mém. Acad. St. Pétersb. Sav. Étrang. 3: 628. pl. 4. 1837 (Salicet. 21. pl. 4. 1837).

First described from Baical or Dahuria.

Ha La Hu Kou, Nos. 71♀, 72♂; Ho Lan Shan, No. 1052. The commonest species along streams, forming almost impenetrable thickets.

A dense shrub, up to 6 meters high, the branchlets brownish purple, tough; fruits persistent for a whole year, the capsules greenish yellow.

Salix paraplesia C. Schneid. in Sarg. Pl. Wils. 3: 40. 1916.

First described from western Szechwan.

T'u Er P'ing, No. 433; Labrang, No. 779. In forests. Common.

A tree or shrub, up to 9 meters high.

Salix phylicifolia L. Sp. Pl. 1016. 1753.

First described from northern Sweden.

T'ai Hua, No. 526. On a moist, exposed slope and in a ravine.

A shrub, 2 meters high, the branches exceedingly tough. Rare.

Salix plocotricha C. Schneid. in Sarg. Pl. Wils. 3: 49. 1916.

First described from western Szechwan.

Lung Hua, No. 808. A shrub up to 7 meters high; associated with *Picea*, *Betula*, and *Abies*, generally much branched. Common. Upper Ch'ia Ch'ing Kou, No. 858.²⁰ A low shrub up to 60 cm. high; forming a dense, flat-topped scrub of large extent. Common.

Stems propagating very rapidly by suckers and rhizomes.

²⁰ This is Görz's determination. K. S. Hao, in Repert. Sp. Nov. Fedde Beih. 93: 87. 1936, considers this as *S. spathulifolia* Seemen, Bot. Jahrb. Engler 36, Beibl. 82: 31. 1905.

Salix wallichiana Anders. Svensk. Vet. Akad. Handl. 1850: 477. 1851.

First described from Nepal.

Nan Ssu Kou, No. 143.²¹ In dry, rocky stream bottoms. Rather common.

A much-branched shrub, up to 3 meters high, the branches shining brown.

Salix wuiana Hao, Repert. Sp. Nov. Fedde Beih. 93: 95. 1936.

First described from Kansu (Ching) and Shensi.

T'u Er P'ing, No. 425. One of the principal species in these forests along with *Betula*, *Populus*, and *Picea*.

JUGLANDACEAE

Juglans regia L. Sp. Pl. 997. 1753.

First described without locality.

Near Ningsia, No. 206. Cultivated on farms. Common.

A tree, up to 20 meters high, the trunk 1 meter in diameter. Valued for its nuts and lumber.

BETULACEAE

Betula albo-sinensis Burkill, Journ. Linn. Soc. Bot. 26: 497. 1899.

First described from Szechwan.

T'u Er P'ing, No. 448; Lung Hwa, No. 799. In *Picea* and *Abies* forests, but less common than the other species of *Betula*. Common.

A tree, up to 14 meters high; bark dark brown, smooth. The wood is used for farm implements.

Betula albo-sinensis var. **septentrionalis** C. Schneid. in Sarg. Pl. Wils. 2: 458. 1916.

First described from western Szechwan.

T'u Er P'ing, Nos. 449, 450. One of the dominant forest species, in pure stands on certain parts of the mountains.

A tree, up to 24 meters high; bark dark brown or orange-red, the inner layers brownish yellow, peeling off in thin sheets. The wood is used for farm implements and bowls, the bark in thin sheets for wrapping food.

Betula japonica Sieb. in Winkler in Engl. Pflanzenreich 19 (IV. 61): 78. 1904.

First described from Japan.

Shui Mo Kou, near Lien Ch'eng, No. 322; T'u Er P'ing, No. 447; Tai Hua, Nos. 538, 554. A common forest species.

A tree, up to 14 meters high; bark brownish gray, curling; petioles red. The wood is used for farm implements.

Corylus sieboldiana Blume var. **mandschurica** (Maxim.) C. Schneid. in Sarg. Pl. Wils. 2: 454. 1916.

First described from Manchuria.

Shui Mo Kou, near Lien Ch'eng, No. 347; Wa P'ing Hsiang, No. 1023. In mixed broad-leaved forests, often forming dense thickets. Common.

A shrub, up to 4 meters high. The greenish-brown, bristly nuts are edible and are sold in the markets.

Ostryopsis davidiana Decaisne, Bull. Soc. Bot. France 20: 155. 1873.

First described from Mongolia.

Pei Ssu Kou, No. 115; Shui Mo Kou, near Lien Ch'eng, No. 351. In mixed forests of *Pinus*, *Populus*, and *Acer*, on slopes of crumbled, black shale and clay, often forming an almost impenetrable thicket. Common at 2,100 meters altitude.

A shrub, up to 2 meters high.

²¹ This is Görz's determination. K. S. Hao, in Repert. Sp. Nov. Fedde Beih. 93: 91. 1936, considers this as *S. caprea* L.

FAGACEAE

Quercus mongolica Fisch. in Turcz. Bull. Soc. Nat. Moscou 11: 101. 1838.

First described from Mongolia.

Ha Ho, No. 1015. Associated with *Ulmus*, *Populus*, *Acer*, and *Pinus* in woods; also found isolated on exposed, dry slopes. Common.

A tree, up to 12 meters high. The wood is used for axles and mule saddles.

ULMACEAE

Ulmus glaucescens Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 7: 77. pl. 8. 1884 (Pl. David. 1: 267. pl. 8. 1884).

First described from A. David's Mongolian collections.

I T'ai K'uei, No. 15. An isolated tree, 18 meters high in an open garden, branching from the ground into four stems; branches smooth, gray, the branchlets greenish gray, slender. The wood is used for farm implements; the matured fruit is said to be edible. Shui Mo Kou, Ho Lan Shan, No. 88; Nan Ssu Kou, No. 140. Growing by itself on rocky slopes from valley bottom to summit. Common.

A small tree, 5 to 8 meters high or sometimes stunted into a dwarf bush; bark dark gray, deeply fissured. This is a good street tree and is so used in Pei Ssu Kou, where its crown is umbrella-shaped.

Professor Rehder has commented on this species and these collections (Journ. Arn. Arb. 11: 156-157. 1930) as follows: "This species which has been known so far only from David's collection near Sartchy or Sarchi about 20 miles west of the border of Northern Shansi has now turned up east and west of this locality, namely in northern Chihli, at another locality in Mongolia west of Sarchi and in Kansu. It is very similar to *Ulmus pumila* L. and like this it has small glabrous leaves with simple or nearly simple teeth, but the leaves are dull, somewhat bluish green above, comparatively shorter and broader, with fewer, usually 7-9 pairs of veins, while *U. pumila* often has more than 10 pairs of veins. The chief difference is in the fruit, which is broadly elliptic or elliptic-obovate, more or less narrowed at base and 2 to 2.5 cm. long, while in *U. pumila* the samaras are suborbicular, rounded at base and not more than 15 mm. long."

Ulmus glaucescens var. *lasiocarpa* Rehder, Journ. Arn. Arb. 11: 157. 1930.

Hsi Yeh Kou, No. 160 (type).

On dry, exposed, rocky slopes and along roadsides. Very common in the lower parts of this valley.

A small tree, up to 5 meters high; trunk short, 10 cm. in diameter, the crown umbrella-shaped; bark brownish gray, smooth; fruit abundant (May 24, 1923).

Professor Rehder's comments accompanying the original description are as follows: "This interesting variety which differs from the type in its pilose samaras resembles in this character *U. davidiana* Planch. and *U. macrocarpa* Hance, which, however, differ in their much larger doubly serrate and generally obovate leaves, pubescent in *U. davidiana*, scabrid in *U. macrocarpa*. No other species of *Ulmus* is known which varies with pubescent and glabrous fruit, but as this plant agrees in every other character perfectly with typical *U. glaucescens* and grows with it at the same locality, it can hardly be considered anything else but a variety or form of that species."

Ulmus japonica Sarg. Trees & Shrubs 2: 1. pl. 101. 1907.

First described from Japan.

Tai Wang Kou, No. 444. Along exposed roadsides. Very common in the lower part of the gorge.

A tree, up to 8 meters high, the trunk short, crooked; twigs 4-angled with thick, corky ridges.

Ulmus macrocarpa Hance, Journ. Bot. Brit. & For. 6: 332. 1868.

First described from Jehol, Mongolia.

Pao T'ou, Mongolia, No. 1 (determination doubtful). A commonly cultivated tree not found wild, often of great size (up to 24 meters), the trunk often not branching below 8 meters from the base, the crown round; bark dark gray, deeply fissured; branchlets slender, often fascicled or whorled. Wu Yüan Hsien, No. 10. A fairly common tree, especially in the southern rocky ravines in the foothills of the Ho Lan Shan, up to about 8 meters high, the trunk short, crooked, irregularly furrowed, the crown rounded, with long, slender, gray, smooth branches. The wood is used for furniture, farm implements, and interior finishing.

Ulmus pumila L. Sp. Pl. 226. 1753.

First described from Siberia.

Wang Yeh Fu, No. 32. Cultivated on farms, associated with willows. Common.

A tree, up to 18 meters high. The wood is used for farm implements.

MORACEAE

Cannabis sativa L. Sp. Pl. 1027. 1753.

First described from India.

Shang Hsin Chuang, No. 681. On exposed moist grassland. Common.

Height 50 cm.; flowers yellowish green.

Humulus lupulus L. Sp. Pl. 1028. 1753.

First described from Europe.

Hsin Ch'eng, south of Lanchow, No. 1040. Climbing on fences along a moist, clay roadside. Common.

Stem up to 10 meters long; flowers creamy white, fragrant.

Morus alba L. Sp. Pl. 986. 1753.

First described from China.

Huang Hsi Kou, No. 200. Seems to be cultivated on dry, gravelly foothills. Rare.

A shrub, up to 5 meters high.

URTICACEAE

Urtica laetevirens Maxim. Bull. Acad. Sci. St. Pétersb. 22: 236. 1876 (Mél.

Biol. Acad. Sci. St. Pétersb. 9: 620. 1877).

First described from Hokkaido, Japan.

Lung Hua, No. 810. In a forest. Common.

Height up to 1 meter; stems purple; flowers greenish.

Urtica triangularis Hand.-Mazz. Symb. Sin. 7: 110. 1929.

First described from Szechwan and Yunnan.

T'ai Hua, No. 542. In woods and shady places. Common.

Height up to 1 meter; flowers purplish green. The sting is very painful to animals.

LORANTHACEAE

Viscum album L. Sp. Pl. 1023. 1753, vel aff.

First described from Europe.

Ha Ho, No. 1044. In large clumps (1.8 meters) hanging from the branches of *Populus*, *Ulmus*, and *Acer*. Common.

BALANOPHORACEAE

Balanophora sp.

Chen Fan Ch'üan Tzu, No. 14. On the lee of an exposed dune of fine loose sand.

A root-parasite (host not indicated), 18 cm. high, only the upper 3 cm. exposed above the sand and bearing a purplish-red inflorescence, the covered parts deep brown, succulent. This plant is said to be edible and to be used as a medicine for rheumatism.

POLYGONACEAE

Atraphaxis lanceolatum (Ledeb.) Bunge, *Mém. Acad. Sci. St. Pétersb. Sav. Étrang.* 7: 483. 1851.

First described from the Altai Mountains.

Chung Wei, No. 222. On a dry, exposed slope of hard clay. Rare.

A shrub, up to 1.3 meters high; branches distinctly brownish gray; flowers purplish.

Koenigia islandica L. *Mant. Pl.* 1: 35. 1767.

First described from Iceland.

Lang Tzu T'ang Kou, No. 593. In a dense patch, partially submerged in a stream under a high rocky cliff.

Height 15 cm.; flowers white, terminal.

Polygonum amphibium L. *Sp. Pl.* 351. 1753.

First described from Europe.

Lien Ch'eng, No. 315. In a flowing stream. Rare.

Height 60 cm.; flowers purplish.

Polygonum auberti L. Henry, *Rev. Hort. (Paris)* 79: 82. *fig. 23, 24.* 1907.

First described from Szechwan.

Lien Ch'eng, No. 375. In woods.

Height up to 1 meter; flowers pink.

Polygonum aviculare L. *Sp. Pl.* 362. 1753.

First described from Europe.

Lien Ch'eng, No. 319; Ho Lan Shan, No. 1093. On edges of moist fields and along roadsides. Common.

Height up to 40 cm.; flowers pink.

Polygonum cyanandrum Diels, *Notes Bot. Gard. Edinburgh* 5: 257. 1912.

First described from Yunnan.

T'ai Hua, No. 517. Forming pure stands of small area in open woods. Common.

Height up to 60 cm.; flowers white.

Polygonum lapathifolium L. var. *salicifolium* Sibth. *Fl. Oxon.* 129. 1794.

First described from Europe.

Lien Ch'eng, No. 317. On a frequently submerged, gravelly beach.

Flowers purplish.

Polygonum macrophyllum D. Don, *Prodr. Fl. Nepal.* 70. 1825.

First described from Nepal, India.

T'ai Hua, No. 537; upper Ch'ia Ch'ing Kou, No. 876; Ho Lan Shan, No. 1050. On exposed, moist mountain tops and on steppes. Common.

Height up to 50 cm.; flowers white, fragrant, the anthers deep purple.

Polygonum nepalense Meisn. *Monog. Pl. Polygon.* 84. *pl. 7. fig. 2.* 1826.

First described from Nepal, India.

Shih Men, No. 915. On an exposed moist clay roadside. Common.

Height 24 cm.; flowers reddish.

Polygonum pilosum (Maxim.) Forbes & Hemsl. *Journ. Linn. Soc. Bot.* 26: 345. 1891.

First described from Przewalski's Kansu collections.

Lang Tzu T'ang Kou, No. 594. In dense patches in dense woods. Common.

Flowers white.

Polygonum sibiricum Laxm. Nov. Comm. Acad. Sci. Petrop. 18: 531. *pl.* 7. *fig.* 2. 1774.

First described from the Altai Mountains.

Chung Wei, No. 217; Yao Chieh, No. 269; Ho Lan Shan, Nos. 1116, 1133. Gregarious, beside cultivated fields, streams, and ponds and in swamps. Common.

Height up to 50 cm.; flowers greenish yellow.

Polygonum tataricum L. Sp. Pl. 364. 1753.

First described from Tataria.

Yao Chieh, No. 273. On margins of cultivated fields.

Height 75 cm.

Polygonum viviparum L. Sp. Pl. 360. 1753.

First described from Europe.

Shui Mo Kou, near Lien Ch'eng, No. 353; T'u Er P'ing, No. 456; Ho Lan Shan, No. 1065. On moist grassland on ridges and as undergrowth in *Picea* forests. Common.

Flowers white, fragrant.

Rheum delavayi Franch. Bull. Mus. Hist. Nat. Paris 1: 212. 1895.

First described from Yunnan.

La Chi Tzu Shan, No. 705. On partially shaded, very moist steppes. Common.

Height 30 cm.; flowers green, tinged on margin with deep red.

Rheum leucorrhizum Pall. Nov. Act. Acad. Sci. Petrop. 10: 381. 1797.

First described from Siberia.

Nan Ssu Kou, No. 148. On a dry, exposed, gravelly, and rocky valley bottom. Common locally.

Height up to 75 cm.

Rheum sp.

Wang Yeh Fu, Nos. 28, 128. On dry, exposed sand over clay or along gravelly and sandy roadsides. Very rare.

Height up to 20 cm., the rootstock tuberous, succulent, soft, with bright-yellow pith; flowers red, highly fragrant.

Rumex crispus L. Sp. Pl. 335. 1753.

First described from Europe.

Mouth of Hsi Yeh Kou, No. 175. Beside an artificial ditch in clay soil. Common.

Height up to 1 meter.

Rumex gmelini Turcz. Bull. Soc. Nat. Moscou 1838: 100. 1838; 25²: 444. 1852-

First described from the Baikal region.

La Ch'ung Kou, No. 624. On an exposed moist grassy slope. Common.

Height up to 1.2 meters; flowers reddish green.

Rumex nepalensis Spreng. Syst. Veg. 2: 159. 1825.

First described from Nepal, India.

Lung Hua, No. 786. In a dense formation along exposed moist roadsides in rich soil. Common.

Height up to 1.3 meters; fruit brownish red. Root used medicinally.

CHENOPODIACEAE

Parthrophytum arborescens Litvinov, Trav. Mus. Bot. Acad. Sci. St. Pétersb. 11: 44. 1913.

First described from Turkestan.

Chia Ku K'ou, No. 24a. On a moving sand dune.

A shrub. This is the host plant for *Phelipaea salsa* C. A. Meyer, vel. aff.

Chenopodium botrys L. Sp. Pl. 219. 1753.

First described from Europe.

Lung Hua, No. 789. On an exposed, moist roadside in rich soil. Common.

Height up to 45 cm.

Chenopodium hybridum L. Sp. Pl. 219. 1753.

First described from Europe.

Yao Chieh, No. 274. On a moist, clay bank.

Height 60 cm.; flowers greenish.

Eurotia ceratoides (Willd.) C. A. Meyer, in Ledeb. Fl. Alt. 4: 239. 1833.

First described from Moravia, Tataria, Armenia, and Arabia.

Lien Ch'eng, No. 370. On a dry, exposed, rocky roadside. Common.

A dense herb, 1 meter high; flowers greenish red.

Halopeplis sp.

Hsün Hua Hsien, No. 736. In a dry region. Common.

A dense bushy plant, up to 40 cm. high; leaves very succulent, swollen.

Kalidium foliatum (Pall.) Moq. in DC. Prodr. 13²: 147. 1849, vel aff.

First described from the Caspian Sea region.

Shui Ch'ü, No. 7. In wet places on open alkaline deserts, forming pure stands that cover very extensive areas.

A dwarf shrub, up to 45 cm. high, branching profusely from the ground and producing suckers freely. It is used for fuel and for fodder for camels because of its salty taste.

Salsola arbuscula Pall. Reise Prov. Russ. Reich. 1: 487. *pl. G.* 1771.

First described from "deserto Tatarico."

Yao Chieh, No. 261. On dry, bare, exposed, clay slopes.

A semiwoody shrub, 60 cm. high. The branches bear many insect galls.

Salsola kali L. Sp. Pl. 222. 1753.

First described from Europe.

San Ta Lai Ssu, No. 726. Forming dense, pure stands of considerable extent along exposed, moderately moist, clay roadsides. Common.

Height up to 40 cm.; flowers pink.

Suaeda obtusifolia (Bunge) Trautv. Bull. Soc. Nat. Moscou 40²: 62. 1867.

First described from the Caspian Sea region.

Yao Chieh, No. 262. On a dry, bare, clay cliff.

A semiwoody shrub.

Suaeda stauntonii Moq. Chenop. 131. 1840.

First described from China.

Yao Chieh, No. 243. On a bare, dry, hard, clay cliff.

Height 30 cm.

CARYOPHYLLACEAE

Arenaria cerastiformis F. N. Williams, Journ. Linn. Soc. Bot. 38: 402. 1909.

First described from Tibet.

Ta P'an Shan, No. 674; La Chi Tzu Shan, No. 697. On exposed, moist, bare, loose slopes. Common.

Flowers pure white, faintly tinged with purple; calyx purplish green; anthers deep purple.

Arenaria holosteoides Edgew. in Hook. f. Fl. Brit. Ind. 1: 241. 1874.

First described from Himalaya and western Tibet.

Yao Chieh, No. 297. On the edge of a cultivated field.

A prostrate herb, 30 cm. long; flowers white.

Arenaria kansuensis Maxim. Bull. Acad. Sci. St. Pétersb. 26: 428. 1880 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 579. 1880).

First described from Przhevalski's Kansu collections.

Ta P'an Shan, No. 652. On an exposed, moist, alpine summit. Rare.

Height 3 cm.; flowers greenish yellow.

Arenaria przewalski Maxim. Bull. Acad. Sci. St. Pétersb. 26: 428. 1880 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 578. 1880).

First described from Przhevalski's Kansu collections.

La Chi Tzu Shan, No. 694. Forming dense patches on exposed, moist steppes. Common.

Petals pure white; sepals greenish purple; anthers purple. This herb is very ornamental, decorating the grasslands with a mass of white.

Arenaria spp.

1. Pei Ssu Kou, No. 116. Rare, on a shaded, moist stream bank in a pine forest.

2. Ho Lan Shan, No. 1069. In tough tufts on steppe. Common.

Cerastium vulgatum L. Fl. Suec. ed. 2, 158. 1755.

First described from Sweden.

T'ai Hua, No. 520; Ta P'an Shan, No. 669; Middle Tu I Kou, No. 964; Ho Lan Shan, No. 1079. On exposed, moist, grassy slopes or in forests and open woods. Common.

Height up to 40 cm.; flowers white.

Dianthus chinensis L. Sp. Pl. 411. 1753.

First described from China.

Near Ch'ien Kou, No. 1012. On exposed, moist steppes along the roadside. Fairly common.

Height 34 cm.; flowers purple on opening, later turning pink, fragrant.

Dianthus superbus L. Amoen. Acad. 4: 272. 1788.

First described from Europe.

T'u Er P'ing, No. 457; La Chi Tzu Shan, No. 713; Ho Lan Shan, No. 1127. On exposed, moist foothills and steppes. Usually common.

Height 45 cm.; flowers pink.

Gypsophila davurica Turcz. in Ledeb. Fl. Ross. 1: 294. 1842.

First described from Dahuria.

Lanchow, No. 240; Liu Fu Yai, No. 477. On bare, dry, clay cliffs or by moist roadside. Common.

Height up to 75 cm.; flowers white or bluish.

Gypsophila gmelini Bunge, in Ledeb. Fl. Alt. 2: 128. 1830.

First described from the Altai Mountains.

Ho Lan Shan, No. 1067. Along an exposed, dry roadside. Common.

Height 20 cm.; flowers pink.

Lychnis apetala L. Sp. Pl. 437. 1753.

First described from Lapland and Siberia.

La Ch'ung Kou, No. 639. On exposed, moist foothills. Rare.

Flowers greenish, the tip of the petals purplish.

Lychnis sp.

Ho Lan Shan, No. 1130. On steppes.

Height 45 cm.; flowers greenish yellow.

Silene conoidea L. Sp. Pl. 418. 1753.

First described from Europe.

Ningsia, No. 207. On grasslands along streams. Rare.

Flowers pink.

Silene repens Patrin, in Pers. Syn. Pl. 1: 500. 1805.

First described from Siberia.

La Chi Tzu Shan, No. 721; Ho Lan Shan, No. 1131. On partially shaded cliffs and slopes. Common.

Height 30 cm.; flowers white.

Silene tenuis Willd. Enum. Pl. Hort. Berol. 474. 1809.

First described from the Baikal region.

Liu Fu Yai, No. 463. On moist slopes. Rare.

Height up to 75 cm.; several stems coming from one root; flowers greenish purple.

Stellaria graminea L. Sp. Pl. 422. 1753.

First described from Europe.

T'u Er P'ing, No. 372. On moist grasslands.

Height 36 cm.; flowers white.

Stellaria graminea var. *pilosula* Maxim. Fl. Tangut. 91. 1889.

First described from Przewalski's collections from Amdo, eastern Tibet.

Lower Tu I Kou, No. 960. In dense tussocks along shaded roadsides. Rare.

Height up to 45 cm.; fruit yellowish brown.

Stellaria infracta Maxim. Act. Hort. Petrop. 11: 72. 1890.

First described from Potanin's and Piasetski's Hopeh, Kansu, and Szechwan collections.

Pei Ssu Kou, No. 192. In a compact cluster on a rocky cliff. Rare.

Height 50 cm.; flowers white.

RANUNCULACEAE

Aconitum excelsum Reichenb. Illustr. Spec. Aconiti Gen. pl. 53. 1827.

First described from Siberia.

Shui Mo Kou, near Lien Ch'eng, No. 334. In woods.

Height up to 1.2 meters, the stem often procumbent at base; flowers purple.

Aconitum gymnandrum Maxim. Bull. Acad. Sci. St. Pétersb. 23: 308. 1877

(Mél. Biol. Acad. Sci. St. Pétersb. 9: 711. 1877).

First described from Przewalski's Kansu collections.

Lien Ch'eng, No. 279. Along moist, clay roadsides.

Height 1 meter; flowers blue.

Aconitum szechenyianum Gáy. Magyar Bot. Lap. 8: 127. 1909.

First described from Széchenyi's Kansu collections.

La Ch'iung Kou, No. 620; Shih Men, No. 921. Fairly common on steppes and grassy slopes.

Height 45 cm. to 1.2 meters; stems purple; flowers deep purple (No. 921) or greenish yellow (No. 620).

Aconitum tanguticum (Maxim.) Stapf, Ann. Bot. Gard. Calcutta 10: 151. 1905.

First described from Przewalski's collections from Amdo, eastern Tibet.

Ta P'an Shan, No. 668; La Chi Tzu Shan, No. 708; Ch'ia Ch'ing Kou, No. 943.

On exposed, moist, grassy slopes, and rocky cliffs, and along roadsides. Common.

Height up to 60 cm.; flowers bluish purple; anthers deep purple.

Aconitum volubile Pall. Enum. Hort. Dimidof. 21. 1781 (*nomen nudum*);

Koelle, Spic. Obs. Aconito 21. 1787.

First described from the Altai Mountains.

Ni Ma Lang Kou, No. 758; Ch'ia Ch'ing Kou, No. 946. Climbing on bushes in woods. Fairly common.

Length up to 4.5 meters; flowers purple.

Aconitum sp.

Upper Ch'ia Ch'ing Kou, No. 850. In dense stands in woods, partially shaded. Common.

Height up to 1 meter.

Anemone japonica Sieb. & Zucc. var. *tomentosa* Maxim. Fl. Tangut. 1: 7. 1889.

First described from Piasetzki's and Potanin's Kansu and Shensi collections.

Yao Chieh, No. 293. On a moist, clay roadside.

Height 1 meter; flowers 6 cm. in diameter, purplish.

Anemone narcissifolia L. Sp. Pl. 542. 1753.

First described from Europe and Siberia.

Ha La Hu Kou, Nos. 57, 58. On shaded, moist, rocky slopes with roots in crevices. Rare.

Flowers white or very slightly tinted outside with violet.

Anemone rivularis Buch.-Ham. in DC. Reg. Veg. Syst. 1: 211. 1818.

First described from Nepal.

Lien Ch'eng, No. 287; T'u Er P'ing, No. 397; Hsi Mi Yai, No. 493. Along irrigation ditches and on steppes and moist slopes. Common.

Height up to 60 cm.; flowers white.

Anemone aff. *rupestris* Wall. List No. 4696. 1831 (*nomen nudum*); Hook. f. & Thoms. Fl. Ind. 1: 21. 1855.

First described from alpine Himalaya.

La Ch'ung Kou, No. 605. On an exposed, moist, grassy slope. Rare.

Height 20 cm.; flowers orange-yellow with a black stripe on the outside of the petals.

Aquilegia ecalcarata Maxim. Fl. Tangut. 1: 20. *pl. 8. fig. 12.* 1889 (= *Semiaquilegia simulatrix* Drumm. & Hutch.).

First described from Potanin's and Przhivalski's Kansu, Szechwan, and Tibet collections.

T'u Er P'ing, No. 436. In woods. Rare, only one specimen found.

Height 45 cm.; flowers purple.

Aquilegia viridiflora Pall. Act. Acad. Sci. Petrop. 1779²: 260. *pl. 11.* 1783.

First described from Dahuria.

Ha La Hu Kou, No. 61. Along a stream in the shade of willows and often on exposed gravelly bottoms. Fairly common.

Height 30 cm.; flowers purplish green, nodding.

Aquilegia sp.

Shui Mo Kou, near Lien Ch'eng, No. 331. Scattered throughout woods. Common.

Flowers purple.

Batrachium flavidum Hand.-Mazz. Medd. Bot. Trädg. Göteborg 13: 168. 1940.

First described from Szechwan, Kansu, and Kashmir.

Chung Wei, No. 228. In a pond.

Stem up to 1.5 meters long; flowers pale yellow.

Caltha scaposa Hook. f. & Thoms. Fl. Ind. 1: 40. 1855.

First described from Sikkim.

Ch'ia Ch'ing Kou, Nos. 852, 859. Rare in wet rich woods or common in pure stands in deep, muddy, water-covered soil on steppes.

Height 5 to 20 cm.; stems square; flowers lemon-yellow; fruits brown.

Cimicifuga foetida L. var. *typica* Regel, Bull. Soc. Nat. Moscou 34²: 123. 1861.

First described from eastern Siberia.

La Chi Tzu Shan, No. 711. On the exposed, moist, gravelly bottom of a gorge. Common.

Height 1.8 meters; flowers yellowish, very fragrant.

Clematis aethusifolia Turcz. Bull. Soc. Nat. Moscou 5: 181. 1832.

First described from Mongolia.

Hsi Yeh Kou, No. 173; Ho Lan Shan, Nos. 1078, 1155. Climbing on bushes on dry, exposed, rocky or clay foothills or prostrate covering large areas. Common.

Length up to 4.5 meters; flowers greenish yellow or white.

Clematis alpina Mill. Gard. Dict. ed. 8, No. 9. 1768.

First described from Europe.

Nan Ssu Kou, Nos. 144, 158. Along partially shaded roadsides or on foothills. Common.

A climbing herb, 6 meters long; flowers abundant, large, double, creamy white or pink, fragrant.

Clematis brevicaudata DC. Reg. Veg. Syst. 1: 138. 1818.

First described from between Peking and Jehol.

Ho Lan Shan, No. 1074. In woods, climbing on shrubs. Common.

Length up to 6 meters; stems purplish; flowers yellowish, fragrant.

Clematis glauca Willd. var. *akebioides* (Maxim.) Rehd. & Wils. in Sarg. Pl. Wils. 1: 342. 1913.

First described from Piassetki's Kansu collections.

Labrang, No. 775. In woods, climbing on shrubs. Fairly common.

Length up to 3 meters; flowers brownish purple.

Clematis grata Wall. Pl. Asiat. Rar. 1: 83. pl. 98. 1830.

First described from Himalaya, China, and Africa.

Hsi Mi Yai, No. 478; Malisoondo, No. 883. On wooded as well as exposed, moist slopes. Common.

A climbing shrub, up to 6 meters long.

Clematis macropetala (Ledeb.) Ledeb. Icon. Pl. Ross. 1: 5. pl. 11. 1829.

First described from Dahuria.

Nan Ssu Kou, No. 142. Climbing on partially shaded, roadside bushes. Rare.

Length 6 meters; flowers large, double, purple.

Clematis nannophylla Maxim. Bull. Acad. Sci. St. Pétersb. 23: 305. 1877 (Mél. Biol. Acad. Sci. St. Petersb. 9: 707. 1877).

First described from Przhevalski's Kansu collections

Yao Chieh, No. 241. On a dry, exposed, bare, clay slope. Common.

Height 30 to 60 cm.; flowers dirty yellow.

Clematis tangutica Korsh., Bull. Acad. Sci. St. Pétersb. V. 9: 399. 1898.

First described from Przhevalski's Tibet and Mongolia collections.

Lien Ch'eng, Nos. 286, 318. Along bare, dry roadsides and moist stream banks. Common.

A procumbent or climbing herb, up to 6 meters long; flowers purplish or dull yellow.

Delphinium grandiflorum L. Sp. Pl. 531. 1753, vel aff.

First described from Siberia.

Shih Men, No. 922; Ho Lan Shan, No. 1070. On steppes and in woods. Very common.

Up to 60 cm. high; flowers purplish blue, yellow inside.

Delphinium henryi Franch. Compt. Rend. Soc. Philom. 1893¹⁹: 8. 1893.

First described from Hupeh.

T'ai Hua, No. 534. In a moist, exposed ravine. Rare.

Height 45 cm.; flowers deep purple.

Delphinium labrangense Ulbrich.²²

Ta P'an Shan, No. 657. On an exposed, moist slope. Very common.
Height up to 60 cm.; flowers purplish blue.

Delphinium tanguticum (Maxim.) Huth, Bull. Herb. Boiss. 1: 331. *pl.* 15. 1893.

First described from western Szechwan.

Ta P'an Shan, No. 657a.

Delphinium tongolense Franch. Bull. Soc. Philom. Paris VIII. 5: 166. 1893.

First described from Szechwan.

Upper Ch'ia Ch'ing Kou, No. 849. In partially shaded woods. Common, gregarious.

Height up to 1 meter; flowers purplish blue, the anthers black.

Delphinium spp.

1. Upper Ch'ia Ch'ing Kou, No. 861. On ridge and steppe. Common.

Height up to 45 cm.; flowers purplish green.

2. Ho Lan Shan, No. 1123. On steppes. Common.

Height 30 cm.; flowers deep purplish blue.

Leptopyrum fumaroides (L.) Reichenb. Consp. Veg. 192. 1828 (= *Isopyrum fumaroides* L.).

First described from Siberia.

Liu Fu Yai, No. 464. On moist, exposed slope. Common.

Height 30 cm.; flowers greenish yellow.

Oxygraphis glacialis (Fisch.) Bunge, Mém. Acad. Sci. St. Pétersb. 2: 557. 1835.^{22a}

First described from Siberia.

Ta P'an Shan, No. 654. On exposed, moist, grassy slopes. Rare.

Height 10 cm.; flowers yellowish green.

Paeonia anomala L. Mant. Pl. 2: 247. 1771.

First described from Siberia.

Hsi Mi Yai, No. 492; T'ai Hua, No. 546. On exposed, clay banks and in woods.

Common.

Height up to 1 meter; flowers deep red, fragrant.

Paraquilegia anemonoides (Willd.) Ulbrich, Notizbl. Bot. Gart. Berlin 9: 209. 1925.

First described from the Altai Mountains.

Ta P'an Shan, No. 663; Upper Ch'ia Ch'ing Kou, No. 865; A Ch'ian, No. 973.

In tussocks, on partially shaded, rocky cliffs. Common.

Height up to 38 cm.; flowers purplish or bluish; fruit brownish green.

Ranunculus affinis R. Br. in Parry, Journ. Voy. Disc. N.-W. Pass. Append. 265. 1821.

First described from Arctic America.

Ta P'an Shan, No. 644. In pure stands. Common.

Height up to 40 cm.

²² This specimen appears to be the same as *Rock 14482, 14483, 14504, and 14505*, all except the last determined by E. Ulbrich and cited as *Delphinium labrangense* Ulbrich "ined." (Journ. Arn. Arb. 14: 11. 1933). However, this name seems still to be unpublished. Attempts to clarify this uncertainty have been unsuccessful because of the war.

^{22a} Dr. Lyman Benson has determined Ching's specimen as *Ranunculus kamchaticus* DC. He has referred *Oxygraphis* Bunge to a subgenus of *Ranunculus* (Amer. Journ. Bot. 27: 806. 1940) and in a letter to the writer has placed *O. glacialis* (Fisch.) Bunge as a synonym of *R. kamchaticus* DC.

Ranunculus affinis var. *capillaceus* Franch. Pl. Delav. 1: 19. 1889.

First described from Yunnan.

T'u Er P'ing, No. 413; Hsi Mi Yai, No. 498. At edge of woods. Common.

Height up to 45 cm.

Ranunculus arcuans Chien, Rhodora 18: 190. 1916, vel aff.

First described from Hupeh and Fukien.

Yao Chieh, No. 293. On a moist, cultivated field and along irrigation ditches. Common.

Height 50 cm.

Ranunculus hirtellus Royle, Illustr. Bot. Himal. 1: 53. 1839.

First described from India.

Ta P'an Shan, No. 653. On exposed, moist, grassy slopes. Common.

Height up to 20 cm.

Ranunculus plantaginifolius Murr. Nov. Comm. Soc. Sci. Göttingen 7: 39. pl. 2. 1777.

First described from Siberia.

Chung Wei, No. 216; Ho Lan Shan, No. 1118. On alkaline soil or in swampy places. Common.

Height 18 cm.; flowers deep lemon-yellow.

Ranunculus pulchellus C. A. Meyer, in Ledeb. Fl. Alt. 2: 333. 1830; Icon. Pl. Ross. 2: 8. pl. 111. 1830.

First described from the Altai Mountains.

Ha La Hu Kou, No. 63; Shui Mo Kou, Ho Lan Shan, No. 94. Along an exposed, rocky roadside in a moist valley bottom. Rare.

Height 25 cm.

Ranunculus sp.

Wang Te Lin Kou, No. 81. Among grasses. Fairly common.

Height 25 cm.; flowers bright yellow.

Thalictrum baicalense Turcz. Bull. Soc. Nat. Moscou 11: 85. 1838 (*nomen nudum*); 15: 29. 1842 (Fl. Baical. 1: 29. 1842).

First described from the Baikal region.

Shui Mo Kou, near Lien Ch'eng, No. 360. On a bushy slope.

Height 1 meter.

Thalictrum javanicum Blume, Bijdr. Fl. Nederl. Ind. 1: 2. 1825.

First described from Java.

Shui Mo Kou, near Lien Ch'eng, No. 333. On grassy slopes.

Height 1 meter; flowers white.

Thalictrum petaloideum L. Sp. Pl. ed. 2, 771. 1762.

First described from Siberia.

Liu Fu Yai, No. 468. Dotting moist grasslands and along roadsides. Common.

Height up to 60 cm.; flowers snow white.

?**Thalictrum przewalskii** Maxim. Bull. Acad. Sci. St. Pétersb. 23: 305. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 9: 707. 1877).

First described from Przewalski's Kansu collections.

Lower Tu I Kou, No. 956. On fairly moist roadsides. Common.

Height 1 meter; fruit brown.

Thalictrum simplex L. Mant. Pl. 1: 78. 1767.

First described from Sweden.

Yao Chieh, No. 282. On moist clay roadsides.

Height 1 meter; flowers greenish yellow.

Thalictrum simplex var. **affine** (Ledeb.) Regel, Bull. Soc. Nat. Moscou 34¹: 57. 1861.

First described from western Siberia.

Lien Ch'eng, No. 278. On a moist roadside.

Height 1.2 meters; flowers greenish yellow.

Thalictrum spp.

1. Shui Mo Kou, near Lien Ch'eng, No. 333a.. On grassy slopes.

Height about 1 meter; flowers white.

2. Cho Ni, No. 1003. In woods. Common.

Height up to 1.2 meters; fruit brownish green.

3. Ho Lan Shan, No. 1089. On bushy and quite wooded slopes. Common.

Height up to 75 cm.; flowers greenish yellow, fragrant.

Trollius pumilus D. Don, Prodr. Fl. Nepal. 195. 1825.

First described from Nepal.

T'u Er P'ing, No. 394; La Ch'ung Kou, No. 610; Ta P'an Shan, No. 651.

In dense tussocks scattered on wet grassland. Common.

Height 45 cm.; flowers lemon-yellow to greenish purple.

BERBERIDACEAE

Berberis boschanii C. Schneid. in Sarg. Pl. Wils. 1: 369. 1913.

First described from western Szechwan.

Shui Mo Kou, Ho Lan Shan, No. 86; near Labrang, No. 773. In compact groups forming impenetrable thickets beside streams and on exposed, hard, clay slopes. Very common.

A shrub, up to 4 meters high; flowers yellow; fruits red.

Berberis brachypoda Maxim. Bull. Acad. Sci. St. Pétersb. 23: 308. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 9: 711. 1877).

First described from Piasetski's Kansu collections.

Wa P'ing Hsiang, No. 1029. On an exposed, fairly moist, clay slope. Common.

A shrub, up to 2 meters high; leaves distinctly reticulate; fruits red.

Berberis diaphana Maxim. Bull. Acad. Sci. St. Pétersb. 23: 309. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 9: 712. 1877).

First described from Przhevalski's Kansu collections.

T'u Er P'ing, No. 432. On exposed clay ridges. Rare. T'ai Hua, No. 556.

On an exposed moist slope. Very common. Lower Tu I Kou, No. 961. Fairly common.

A dense thorny shrub, up to 2 meters high; flowers yellow; berries purplish red.

Berberis kansuensis C. Schneid. Oesterr. Bot. Zeitschr. 67: 288. 1918.

First described from Purdom's Kansu collections.

Shui Mo Kou, near Lien Ch'eng, No. 342. At edge of forest.

A shrub, 3 meters high.

Berberis parvifolia Sprague, Kew Bull. Misc. Inf. 1908: 445. 1908.

First described from "western China."

Ch'ia Ch'ing Kou, No. 845. On upper parts of dry, exposed, clay foothills.

Common.

A dense, dwarf shrub, up to 60 cm. high; fruit reddish.

Berberis purdomii C. Schneid. in Sarg. Pl. Wils. 1: 372. 1913.

First described from Shensi.

Hsi Yeh Kou, No. 167. In a gorge along a dry, rocky roadside. Common.

A shrub, up to 4 meters high; flowers yellow, fragrant.

Berberis verna C. Schneid. in Sarg. Pl. Wils. 1: 372. 1913.

First described from Purdom's Kansu collections from Min Chou.

Lang Tzu T'ang Kou, No. 599; Labrang, No. 770; Cho Ni, No. 1001; Lien Hua Shan, No. 1036. In woods, on exposed river banks, and on exposed moist foothills. Common.

A dense, thorny shrub, forming dense thickets up to 4.5 meters high; flowers lemon-yellow; fruits deep red.

Epimedium sagittatum (Sieb. & Zucc.) Baker, Gard. Chron. n. ser. 13: 683. 1880.

First described from Japan.

Ch'ia Ch'ing Kou, No. 941. In a *Populus* forest. Common.

Height 54 cm.

Podophyllum emodi Wall. List No. 814. 1829 (*nomen nudum*); Hook. f. & Thoms. Fl. Ind. 1: 232. 1855.

First described from Himalaya.

T'u Er P'ing, No. 379. In woods.

Height 75 cm.

PAPAVERACEAE

Hypocoum leptocarpum Hook. f. & Thoms. Fl. Ind. 1: 276. 1855.

First described from western Tibet and Sikkim.

Liu Fu Yai, No. 470. Creeping over moist soil. Common.

Flowers purplish.

Meconopsis horridula Hook. f. & Thoms. var. *racemosa* (Maxim.) Prain. Journ. Asiat. Soc. Bengal 64²: 313. 1896.

First described from Przewalski's Kansu collections.

T'ai P'an Shan, No. 655. On exposed, moist, alpine summits. Common.

Height up to 45 cm.; flowers deep blue.

Meconopsis integrifolia (Maxim.) Franch. Bull. Soc. Bot. France 33: 389. 1886.

First described from Przewalski's Kansu collections.

T'ai Hua, No. 555. On moist, exposed slopes. Common.

Height up to 1.2 meters.

Meconopsis punicea Maxim. Fl. Tangut. 1: 34. 1889.

First described from Przewalski's northeastern Tibet and Szechwan collections.

T'ai Hua, No. 519; Yeh Ts'ang Kou, No. 818. On moist exposed slopes. Common.

Height up to 75 cm.; flowers purple to deep red, the anthers yellow, the filaments red; calyx deciduous, armed with brown hairs.

Papaver nudicaule L. Sp. Pl. 507. 1753.

First described from Siberia.

La Chi Tzu Shan, No. 699. On exposed, moist steppes.

Height up to 45 cm.; flowers yellow; calyx armed with purple spines.

FUMARIACEAE

Corydalis adunca Maxim. Bull. Acad. Sci. St. Pétersb. 24: 29. 1878 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 47. 1878).

First described from Przewalski's Kansu collections.

Nan Ssu Kou, No. 150. On an exposed, dry, rocky cliff. Common.

Flowers yellow.

- Corydalis albicaulis** Franch. *Nouv. Arch. Mus. Hist. Nat. (Paris) II.* 5: 182. *pl.* 8. 1883 (*Pl. David.* 1: 30. *pl.* 8. 1884).
First described from David's Mongolian collections.
Lanchow, No. 239. On an exposed, bare, clay cliff.
Flowers yellow.
- Corydalis chingii** Fedde, *Repert. Sp. Nov. Fedde* 22: 219. 1926.
Liu Fu Yai, No. 461 (type). In a moist place at foot of a rocky cliff. Rare.
Height 60 cm.; flowers purplish.
- Corydalis dasyptera** Maxim. *Bull. Acad. Sci. St. Pétersb.* 24: 28. 1877 (*Mél. Biol. Acad. Sci. St. Pétersb.* 10: 45. 1878).
First described from Przewalski's Kansu collections.
La Chi Tzu Shan, No. 703. On partially shaded, very moist steppes. Common.
Flowers yellow.
- Corydalis hannaë** Kanitz in Széchenyi, *Keletaz Utjánk* 2: 795. 1891 (*Pl. Exped. Szech. Asia Centr.* 7. 1891).
First described from Loczy's Kansu collections.
Ta P'an Shan, No. 658. In dense patches on exposed, moist, bare slopes and along roadsides. Very common.
Lips deep purple, the remainder of the corolla greenish purple.
- Corydalis impatiens** (Pall.) Fisch. in DC. *Reg. Veg. Syst.* 2: 124. 1821.
First described from Siberia.
Lang Tzu T'ang Kou, No. 589. In large tufts in shade at foot of rocky cliffs. Common.
Stem triangular, tender, hollow; flowers greenish yellow.
- Corydalis kansuana** Fedde, *Repert. Sp. Nov. Fedde* 22: 221. 1926.
Lien Hua Shan, No. 1025 (type). On an exposed, moist, clay bank. Common.
Flowers purple with white lips.
- Corydalis linarioides** Maxim. *Bull. Acad. Sci. St. Pétersb.* 24: 27. 1877 (*Mél. Biol. Acad. Sci. St. Pétersb.* 10: 44. 1878).
First described from Przewalski's Kansu collections.
T'ai Hua, No. 545. On shady edges of forests. Common.
Flowers yellow, the lips brownish.
- Corydalis pauciflora** Pers. var. *holanschanica* Fedde, *Repert. Sp. Nov. Fedde* 22: 221. 1926.
Hua Hsi Kou, No. 79. Found only at 2,830 meters altitude, under grass beside the trail. Flowers violet-colored. Ho Lan Shan, No. 1150 (type).
On exposed moist humus. Common.
Flowers bluish.
- Corydalis rosea** Maxim. *Bull. Acad. Sci. St. Pétersb.* 24: 28. 1877 (*Mél. Biol. Acad. Sci. St. Pétersb.* 10: 46. 1878).
First described from Przewalski's Kansu collections.
Hsi Mi Yai, No. 494. On a dry, exposed, clay slope. Common.
Flowers purplish.
- Corydalis scaphopetala** Fedde, *Repert. Sp. Nov. Fedde* 22: 220. 1926.
Ch'ia Ch'ing Kou, No. 843 (type). On the shady edges of woods. Common.
Flowers greenish yellow.

Corydalis sp.

A Chüan, No. 970.²³ In *Abies* forest at foot of a bare rocky ridge. Fairly common.

Height up to 50 cm.

CRUCIFERAE

Arabis (?) *alaschanica* Maxim. Bull. Acad. Sci. St. Pétersb. 26: 421. 1880 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 568. 1880).

First described from Przhevalski's Alashan, Mongolia collections.

Ha La Hu Kou, No. 65; Ho Lan Shan, No. 1061. On shaded, moist, gravelly valley bottoms, rarely in exposed places.

Flowers purplish white, fragrant.

Arabis *hirsuta* (L.) Scop. Fl. Carn. ed. 2, 2: 30. 1772.

First described from Europe.

Lang Tzu Tang Kou, No. 588. Beside a stream, at the foot of a cliff. Common.

Flowers white.

Arabis *pendula* L. Sp. Pl. 665. 1753.

First described from Siberia.

Upper Ch'ia Ch'ing Kou, No. 855a; Ho Lan Shan, No. 1082. At edge of woods.

Flowers white.

Brassica *juncea* (L.) Czern. & Coss. Bull. Soc. Bot. France 6: 609. 1859.

First described from Europe.

Lien Ch'eng, No. 289. On margins of cultivated fields.

Flowers yellow.

Capsella *bursa-pastoris* (L.) Moench. Meth. Pl. 271. 1794.

First described from Europe.

Yao Chieh, No. 292. On moist roadsides.

Flowers white.

Cardamine *macrophylla* Willd. Sp. Pl. 3: 484. 1800.

First described from Siberia.

T'u Er P'ing, No. 437. In woods. Rare.

Flowers purple.

Cardamine *tangutorum* O. E. Schulz, Bot. Jahrb. Engler 32: 360. 1903.

First described from central and northern China.

Ta P'an Shan, No. 673. On exposed, moist slopes. Common.

Height 45 cm.; flowers purplish.

Descurainia *sophia* (L.) Webb. forma *hygrophila* (Fourn.) O. E. Schulz, in Engl. Pflanzenreich 86 (IV. 105): 313. 1924.

First described from France.

La Ch'ung Kou, No. 619. On exposed, moist foothills and on summits, in association with *Thlaspi arvense* L. Common.

Flowers yellow, fragrant.

Dilophia *fontana* Maxim. Bull. Acad. Sci. St. Pétersb. 26: 423. 1880 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 570. 1880).

First described from Przhevalski's Kansu collections.

La Ch'ung Kou, No. 636. In a tuft on exposed, wet beaches. Common.

Petals white.

²³ This is apparently identical with *J. F. Rock 12834*, collected in July 1925 on mossy slopes in the "valley of Shiaoku, beyond Adjuan [= A Chüan], Tao River basin," reported to have pale yellow flowers. The identity of this specimen is not reported by Rehder and Kobuski (24).

Draba eriopoda Turcz. Bull. Soc. Nat. Moscou 15¹: 260. 1842 (Fl. Baical. 1: 42. 1842).

First described from Lake Kossogol and Dahuria.

Hsi Mi Yai, No. 495 (a large form). Rare, only one plant found, in woods. Lang Tzu T'ang Kou, No. 591. Along a stream, at the foot of a cliff. Common. Flowers yellow or greenish yellow.

Draba lanceolata Royle var. *chingii* O. E. Schulz in Engl. Pflanzenreich 89 (IV. 105): 298. 1927.

Hsi Mi Yai, No. 497 (type). At sandy edges of woods. Common. Flowers white.

Draba lanceolata var. *leiocarpa* O. E. Schulz in Engl. Pflanzenreich 89 (IV. 105): 297. 1927.

First described from Mongolia, Turkestan, and Himalaya.

Ho Lan Shan, No. 1047. On exposed, rocky slopes. Common. Flowers white.

Draba nemorosa L. Sp. Pl. 643. 1753.

First described from Sweden.

Pei Ssu Kou, No. 117. On shaded, moist, rich soil in pine forests. Rare.

Ho Lan Shan, No. 1112. On grassy foothills.

Flowers greenish yellow.

Eruca sativa Mill. var. *lativalvis* subvar. *eriocarpa* (Boiss.) Post, Notizbl. Bot. Gart. Berlin 12: 212. 1934.

First described from "Hopkinson's" (Hao Kin-shen's) Min Chou, Kansu, collections.

Lien Ch'eng, No. 316. In a cultivated field.

Flowers lemon-yellow.

Eutrema compactum O. E. Schulz, Repert. Sp. Nov. Fedde Beih. 12: 387. 1922.

First described from Turkestan, northern Mongolia, northern China, and Tibet.

Ta P'an Shan, No. 649. On an exposed, moist, grassy slope. Rare.

Height 30 cm.

Lepidium apetalum Willd. Sp. Pl. 3: 439. 1800.

First described from Siberia.

Chung Wei, No. 220; Ni Ma Lang Kou, No. 750. In a moist field of alkaline soil and on exposed steppes. Common.

Lepidium latifolium (L.) subsp. *sibiricum* (Schweigger) Thell. Nouv. Mém. Soc. Helvet. Sci. Nat. 41¹: 161. 1906.

First described from Siberia.

Hsin Ch'eng, near Ningsia, No. 210; Yao Chieh, No. 272. In cultivated fields of clay soil. Common.

Flowers white, fragrant.

Malcolmia africana (L.) R. Br. in Ait. Hort. Kew, ed. 2, 4: 121. 1812.

First described from Ethiopia.

Hsi Mi Yai, No. 502. On the margin of a stream.

Nasturtium palustre (Leyss.) DC. Reg. Veg. Syst. 2: 191. 1821.

First described from Sweden.

Yao Chieh, No. 290. On edges of cultivated fields.

Flowers greenish yellow.

Raphanus sativus L. Sp. Pl. 669. 1753.

First described without locality.

Ho Lan Shan, No. 1141. Cultivated.

Flowers pink.

Thlaspi arvense L. Sp. Pl. 646. 1753.

First described from Europe.

La Ch'ung Kou, No. 618; Ho Lan Shan, No. 1108. In dense patches on exposed, moist, grassy valley bottoms and hills. Common.

Flowers white, fragrant. The foliage is edible.

Torularia humilis (C. A. Meyer) O. E. Schulz forma *hygrophila* (Fourn.) O. E. Schulz in Engl. Pflanzenreich 86 (IV. 105): 225. 1924.

First described from Siberia.

Shui Mo Kou, Ho Lan Shan, No. 99. In rich soil along shaded roadsides. Rare.

Flowers white.

Torularia humilis prol. *piasezkii* (Maxim.) O. E. Schulz in Engl. Pflanzenreich 86 (IV. 105): 226. 1924.

First described from Piasezki's Kansu and Mongolia collections.

T'u Er P'ing, No. 373. On grasslands.

Flowers white.

CRASSULACEAE

Sedum aizoon L. forma *angustifolia* Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 6: 9. 1883 (Pl. David. 1: 129. 1884).

First described from Peking.

Yao Chieh, No. 266. On a shaded clay cliff. Sparsely scattered. Ningsia, No. 1076. In woods and along moist roadsides

Height 25 cm.; flowers greenish yellow; leaves purplish.

Sedum crassipes (Wall.) Hook. f. & Thoms. Journ. Linn. Soc. Bot. 2: 99. 1858. First described from Himalaya and northern India.

Ta P'an Shan, No. 661. In a large patch on the exposed gravelly margin of a stream. Common.

Height up to 38 cm.; fruits and stems red.

Sedum dumulosum Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 6: 9. 1883 (Pl. David. 1: 129. 1884).

First described from Hopeh.

Ta P'an Shan, No. 642; Ho Lan Shan, No. 1144. In drooping tufts in crevices of a moist, shady cliff. Common.

Height up to 30 cm.; flowers creamy white; anthers deep purple.

Sedum elatinoides Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 6: 11. *pl. 16.* 1883 (Pl. David. 1: 131. *pl. 16.* 1884), vel aff.

First described from Shensi.

Lang Tzu T'ang Kou, No. 579. On an exposed, moist, gravelly stream bank. Common.

Height 8 cm.; flowers yellow.

Sedum fimbriatum (Turcz.) Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 6: 8. 1883 (Pl. David. 1: 128. 1884).

First described from Dahuria.

Ni Ma Lang Kou, No. 767. On an exposed, dry, rocky cliff. Rare.

Height up to 30 cm.; flowers purplish.

Sedum quadrifidum Pall. var. *fastigiatum* (Hook. f. & Thoms.) Fröderst. Medd. Bot. Trädg. Göteborg 5, Append.: 30. *pl. 6, 7. fig. 61-67.* 1930.

First described from Sikkim, India.

La Chi Tzu Shan, No. 696. Forming an umbrella-like tuft on an exposed, moist, limestone cliff. Common.

Height 10 cm.; fruit red.

Sedum roseum (L.) Scop. Fl. Carn. ed. 2, 1: 326. 1772.

First described from Europe.

Ta P'an Shan, No. 664. In a dense tussock on a partially shaded, rocky cliff
Common.

Height 45 cm.; flowers yellowish brown.

Sedum telephium L. subsp. *angustum* (Maxim.) Fröderst. Medd. Bot. Trädg.
Göteborg 5, Append.: 64. pl. 24. 1930.

First described from Przhevalski's Kansu collections from the Ta T'ung Valley.

"Kwa Shan," No. 1041. On an exposed, dry, bare, clay slope. Rare.

Height up to 90 cm.; fruit brownish.

Sedum sp.

T'ai Hua, No. 550. In woods. Common.

Height 45 cm.; flowers yellow.

SAXIFRAGACEAE

Chrysosplenium axillare Maxim. Bull. Acad. Sci. St. Pétersb. 23: 341. 1877
(Mél. Biol. Acad. Sci. St. Pétersb. 9: 758. 1877).

First described from Przhevalski's Kansu collections.

La Ch'iung Kou, No. 641. On a densely shaded, rocky cliff beside a stream.
Common.

Flowers yellowish.

Chrysosplenium chingii Hara, sp. nov. (*Oppositifolia-Nepalensia*).

Herba glaberrima. Caulis erectus 6-12 cm. altus. Innovationes epigaei ascendentes foliati. Folia radicalia parva rotundato-ovata usque ad 1 cm. longa apice rotundata basi late cuneata margine utrinque 5-6-obtuso-serrata 7-12 mm. longa 6-10 mm. lata herbacea, petiolis 5-10 mm. longis; folia innovationis caulinis conformia. Inflorescentia compacta involucrata 2-3 cm. in diametro. Folia involucralia inferiora caulinis similia brevius petiolata, superiora parva saepe paullo angustiora basi oblique cueneata lutescentia. Flores brevissime pedicellati. Sepala depresso semirobundata ca. 1.5 mm. long a 1.5-2 mm. lata luteo-viridescencia. Stamina vulgo 8, filamentis subulatis circa 0.7 mm. longis, antheris luteis. Ovarium semi-inferius. Fructus immaturi circa 4 mm. longi semi-inferiores, rostris ovatis suberectis inaequalibus apice stylo circa 0.5 mm. erecto-patente coronatis. Semina immatura sublaevia.

Type in the United States National Herbarium, No. 1245628, collected by R. C. Ching, No. 601, at La Ch'iung Kou, near Sining, 3,200 meters altitude, July 24, 1923.

A *C. chamaedryoide* Engler rostris capsulae brevioribus obtusioribus, et a *C. quebriantiano* Hand.-Mazz. innovationis epigaeis, foliis margine non incrassatis, staminibus 8, capsulis majoribus semi-inferioribus differt.

Chrysosplenium griffithii Hook. f. & Thoms. Journ. Linn. Soc. 2: 74. 1858.

First described from eastern temperate Himalaya.

Lung Hua, No. 809. In rocky crevices in a forest. Fairly common.

Height 20 cm.; flowers yellowish green.

Chrysosplenium nudicaule Bunge, in Ledeb. Fl. Alt. 2: 114. 1830.

First described from the Altai Mountains.

Ta P'an Shan, No. 665. On a partially shaded, rocky cliff.

Flowers greenish, the anthers bright yellow.

Hydrangea bretschneideri Dippel, Handb. Laubh. 3: 320. 1893.

First described from northern China and Mongolia.

Shui Mo Kou, near Lien Ch'eng, No. 336; Ch'ia Ch'ing Kou, No. 835.

In woods, mixed with *Sorbaria*, *Acer*, and *Philadelphus*. Common.

Bracts white.

Parnassia laxmanni Pall. in Roem. & Schult. Syst. Veg. 6: 696. 1820.

First described from Kamchatka.

Ch'ing Kang Yai, No. 565. At the foot of a shaded cliff. Very rare.

Flowers white.

Parnassia trinervis Drude var. *viridiflora* (Batalin) Hand.-Mazz. Symb. Sin. 7: 432. 1931.

First described from Potanin's and Przewalski's Kansu collections.

Ni Ma Lang Kou, No. 745. On exposed, moist steppes. Common.

Flowers yellowish green, fragrant.

Philadelphus pekinensis Rupr. var. *kansuensis* Rehd. Journ. Arn. Arb. 9: 49. 1928.

First described from Rock's Kansu collections.

Shui Mo Kou, near Lien Ch'eng, No. 325; T'u Er P'ing, No. 393; Tai Wang Kou, No. 440; Hsi Mi Yai, No. 484. One of the commonest flowering shrubs in woods and on bushy slopes.

Height up to 6 meters; flowers snow white, fragrant.

Saxifraga atrata Engl. in Maxim. Bull. Acad. Sci. St. Pétersb. 29: 117. 1883 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 718. 1883).

First described from Przewalski's Kansu collections.

La Ch'ung Kou, No. 611. On exposed, moist, grassy slopes. Rare.

Petals white, the disk deep purple.

Saxifraga egregia Engl. in Maxim. op. cit. p. 114 (p. 712).

First described from Przewalski's Kansu collections.

Ni Ma Lang Kou, No. 768. Rare. Lung Hua, No. 814. In woods. Common.

Flowers yellow, the inner face of the petals dotted with orange spots.

Saxifraga giraldiana Engl. var. *biondiana* Engl. Bot. Jahrb. Engler 29: 366 1901.

First described from Shensi (?).

Ch'ia Ch'ing Kou, No. 947. In woods. Common.

Flowers lemon-yellow.

Saxifraga montana H. Smith, Medd. Bot. Trädg. Göteborg 1: 9. 1924.

First described from northern Szechwan.

La Ch'ung Kou, No. 633. On a densely shaded, rocky cliff beside a stream. Rare.

Flowers orange-yellow, the lower half of the petals dotted with many bright yellow spots.

Saxifraga pseudohirculus Engl. Bot. Jahrb. Engler 48: 590. 1912.

First described from Przewalski's Kansu collections as *S. hirculoides* Engl. (not Decaisne).

La Ch'ung Kou, No. 622. On a moist, partially shaded slope. Rare.

Upper Ch'ia Ch'ing Kou, No. 869. In tussocks in woods. Common.

Flowers orange-yellow.

Saxifraga tangutica Engl. var. *minutiflora* Engl. in Maxim. Bull. Acad. Sci. St. Pétersb. 29: 114. 1883 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 714. 1883).

First described from Przewalski's Kansu collections.

T'u Er P'ing, No. 419. In woods. Common.

Flowers brownish yellow.

GROSSULARIACEAE

Ribes emodense Rehd. var. **verruculosum** Rehd. Journ. Arn. Arb. 5: 162. 1924.
First described from Hopeh and Shansi.

Upper Shui Mo Kou, near Lien Ch'eng, No. 381; Upper Ch'ia Ch'ing Kou, No. 867; Ho Lan Shan, No. 1113. In open woods or exposed bushy slopes. Common.

A dense shrub, 2.5 meters high; flowers purplish; fruit deep purple, very acid but edible.

Ribes giraldii Jancz. Bull. Acad. Sci. Cracovie Sci. Math. Nat. 1906: 289. 1906 (Mém. Soc. Phys. Hist. Nat. Genève 35: 455. 1907).

First described from Shensi.

South of Lien Hua Shan, No. 1158. On a dry, exposed slope of hard clay. Common.

Fruit reddish yellow, slightly acid.

Ribes meyeri Maxim. Bull. Acad. Sci. St. Pétersb. 19: 260. 1874 (Mél. Biol. Acad. Sci. St. Pétersb. 9: 232. 1873).

First described from the Altai Mountains and Hopeh.

Upper Shui Mo Kou, near Lien Ch'eng, Nos. 377, 383. At the foot of a rocky cliff.

A low, much-branched shrub, up to 2 meters high.

Ribes pulchellum Turcz. Bull. Soc. Nat. Moscou 5: 191. 1832.

First described from Mongolia.

Shui Mo Kou, Ho Lan Shan, No. 91. On an exposed rocky ridge. Rare. Nan Ssu Kou, No. 141. On a dry, exposed, gravelly stream bank.

A shrub, up to 3 meters high; branches long, slender, pendent, thorny, shining brown and corky-ridged; fruits edible.

Ribes stenocarpum Maxim. Bull. Acad. Sci. St. Pétersb. 27: 475. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 228. 1881).

First described from Przhevalski's Kansu collections.

Upper Shui Mo Kou, near Lien Ch'eng, No. 392. At the foot of a rocky cliff. Common.

A shrub, about 1.2 meters high; flowers greenish white; fruits edible but somewhat acid.

ROSACEAE

Agrimonia eupatoria L. Sp. Pl. 448. 1753.

First described from Europe.

T'u Er P'ing, No. 400. On a bushy slope.

Flowers yellow.

Chamaerhodos erecta (L.) Bunge in Ledeb. Fl. Alt. 1: 430. 1829.

First described from Siberia.

Hsin Ch'eng, west of Lanchow, No. 308; Ho Lan Shan, No. 1087. On dry grasslands and clay slopes.

Height 30 cm.; flowers yellowish or white; fragrant.

Cotoneaster acutifolia Turcz. var. **villosula** Rehd. & Wils. in Sarg. Pl. Wils. 1: 158. 1912.

First described from Hupeh.

Ch'ien Kou, No. 1037. At edge of woods, associated with *Salix* and other species of *Cotoneaster*. Common.

Fruits black, hairy.

Cotoneaster adpressa Bois in Vilm. & Bois, Frutic. Vilm. Cat. Prim. 116. 1 fig. 1904.

First described from plants grown from seeds from China.

San Ta Lai Ssu, No. 728; Pa Yen Jung Ké, No. 740. Shih Men, No. 916. On exposed, grassy, moist or dry slopes. Common.

A dwarf shrub, about 60 cm. high; fruits deep red.

Cotoneaster ambigua Rehd. & Wils. in Sarg. Pl. Wils. 1: 159. 1912.

First described from western Szechwan.

In gorge of Malisoondo, No. 884; Upper Tu I Kou, No. 969. In dry places. Fairly common.

A dense shrub, up to 3 meters high; fruits red, stems brown.

Cotoneaster apiculata Rehd. & Wils. in Sarg. Pl. Wils. 1: 156. 1912, vel aff.

First described from western Szechwan.

Shih Men, No. 914. On bare, dry, limestone cliffs. Fairly common.

A shrub, 4 meters high; fruits purplish red, small.

Cotoneaster foveolata Rehd. & Wils. in Sarg. Pl. Wils. 1: 162. 1912.

First described from western Hupeh.

Shui Mo Kou, near Lien Ch'eng, No. 352; Ni Ma Lang Kou, No. 757; Ch'ien Kou, No. 1045. At edges of forests, in *Betula* woods, or along moist roadsides. Common.

A shrub, up to 2 meters high; fruits red.

Cotoneaster melanocarpa (Ledeb.) Loud. Hort. Brit. ed. 2, 585 (suppl. 1). 1832.

First described from the Altai Mountains.

Nan Ssu Kou, No. 147; Ch'ia Te Kou, No. 157. In exposed places on hills or along roadsides. Rare.

A very distinct low shrub, 1.2 meters high; flowers pink, fragrant.

Cotoneaster multiflora Bunge in Ledeb. Fl. Alt. 2: 220. 1830; Icon. Pl. Ross. 2: 22. pl. 274. 1831.

First described from the Altai Mountains.

Lien Ch'eng, No. 329; Lung Hua, No. 796. In open forests or along roadsides. Common.

A large shrub or small tree, the largest specimen found being up to 4 meters high, with a large crown spreading 4 meters from the trunk; fruit purplish red.

Cotoneaster multiflora var. *calocarpa* Rehd. & Wils. in Sarg. Pl. Wils. 1: 170. 1912.

First described from western Szechwan.

Ch'ia Ch'ing Kou, No. 827; Shih Men, No. 896; Cho Ni, No. 1004. On exposed slopes of hard clay. Common.

Fruits deep red.

Cotoneaster racemiflora K. Koch var. *soongorica* (Regel) C. Schneid. Handb. Laubh. 1: 754. 1906.

First described from Sungaria.

Pei Ssu Kou, No. 106; Nan Ssu Kou, No. 153; Shui Mo Kou, Ho Lan Shan, No. 168; Lien Ch'eng, No. 301. In dry rocky ravines or valley bottoms on exposed, moist stream banks. Common.

A shrub, 2 to 6 meters high; flowers creamy white, fragrant, abundant.

Cotoneaster tomentosa Lindl. Trans. Linn. Soc. 13: 101. 1822, vel aff.

First described from southern Europe.

Ho Lan Shan, No. 201. On a dry, exposed, rocky slope. Common.

A shrub, 2.5 meters high, usually deformed by constant cutting for fuel; flowers pink.

Crataegus kansuensis E. H. Wils. Journ. Arn. Arb. 9: 58. 1928.

First described from Rock's collection from forests northwest of Cho Ni, Kansu.

Lanchow, No. 244. Possibly cultivated. Rare. Lien Ch'eng, No. 366; north side of Lien Hua Shan, No. 1017; Ch'ien Kou, No. 1030. In *Betula* woods, at edge of woods, or in moist open places. Common.

A shrub, up to 5 meters high; fruits deep red.

Fragaria vesca L. Sp. Pl. 494. 1753.

First described from northern Europe.

Shui Mo Kou, near Lien Ch'eng, No. 332. In woods. Common.

Fruit purplish red, acid, highly edible.

Geum strictum Ait. Hort. Kew. 2: 217. 1789.

First described from North America.

Yao Chieh, No. 300; T'u Er P'ing, No. 416; Ch'ing Kang Yai, No. 566. In woods or along streams. Common.

Height up to 60 cm.; flowers bright yellow.

Maddenia hypoxantha Koehne, in Sarg. Pl. Wils. 1: 57. 1912.

First described from western Szechwan.

Upper Shui Mo Kou, near Lien Ch'eng, No. 391. In woods. Common.

A shrub, up to 4 meters high; fruit purplish.

Malus baccata Borkh. Handb. Forstbot. 2: 1280. 1803.

First described from Dahuria.

Lien Hua Shan. No. 1038. At edges of woods on northern slopes, associated with *Salix* and *Crataegus*. Common.

A shrub, up to 9 meters high; fruit purplish red, highly acidic.

Malus kansuensis (Batalin) C. Schneid. Repert. Sp. Nov. Fedde 3: 178. 1906.

First described from Potanin's Szechwan and Henry's Hupeh collections.

Ch'ia Ch'ing Kou, No. 942; Ch'ien Kou, No. 1007. In woods, sometimes densely shaded. Common.

A shrub or small tree, up to 9 meters high; fruit purplish red, soft, highly acid, edible. The wood is hard, and is used for mule saddles.

Malus transitoria (Batalin) C. Schneid. Handb. Laubh. 1: 726. 1906.

First described from Potanin's and Przhivalski's Kansu collections.

Pei Ssu Kou, No. 120; Tai Wang Kou, No. 445. Rare. San Ta Lai Ssu, No. 724; Cho Ni, No. 997. Along exposed dry roadsides, on rocky slopes, and in ravines. Common.

A shrub or small tree, up to 8 meters high; fruit red or yellow, strongly astringent, edible. This species is highly ornamental in flower and in fruit.

Potentilla anserina L. Sp. Pl. 495. 1753.

First described from Europe.

Pei Ssu Kou, No. 123; Ho Lan Shan, No. 1120. Along margins of streams or in wet places. Common, gregarious.

Height up to 25 cm.; flowers lemon-yellow.

Potentilla bifurca L. Sp. Pl. 497. 1753.

First described from Siberia.

Wang Yeh Fu, No. 36; Nan Ssu Kou, No. 139; Ho Lan Shan, No. 1053. In patches on moist steppes. Common.

Height up to 15 cm.; flowers yellow.

Potentilla chinensis Seringe, in DC. Prodr. 2: 581. 1825.

First described from China.

Ha La Hu. Kou, No. 48; Hsi Yeh Kou, No. 170; Huang Hsi Kou, No. 196; Ho Lan Shan, Nos. 1055, 1088. On exposed, moist or dry slopes and along roadsides, sometimes among grasses. Common.

Height up to 45 cm.; plant very variable; flowers yellow, opening only in bright sunlight.

Potentilla fruticosa L. var. *parvifolia* (Fisch.) T. Wolf, *Bibl. Bot.* 16⁷¹: 58. 1908.

First described from Sungaria.

Yao Chieh, No. 265; Shui Mo Kou, near Lien Ch'eng, No. 376; T'u Er P'ing, No. 406; Ho Lan Shan, No. 1114. On exposed rocky and bushy or clay slopes and cliffs. One of the commonest shrubs (except at T'u Er P'ing).

A low, dense shrub, 75 cm. high; flowers bright yellow, fragrant. This variety is very resistant to drought.

Potentilla fruticosa var. *veitchii* (E. H. Wils.) Bean, *Trees & Shrubs Brit. Isl.* 2: 223. 1 fig. 1914.

First described from Hupeh.

Nan Ssu Kou, No. 154; Lien Ch'eng, No. 368; T'u Er P'ing, No. 435; Ho Lan Shan, No. 1146. On bare, exposed, bushy slopes or in woods. Common in northern and western Kansu.

A low, dense shrub, up to 1 meter high; flowers creamy white, abundant, fragrant.

Potentilla leschenaultiana Seringe in DC. *Prodr.* 2: 584. 1825.

First described from India.

Hsi Mi Yai, No. 501. Beside streams. Common.

Height 30 cm.; flowers bright yellow.

Potentilla salesoviana Steph. *Mém. Soc. Nat. Moscou* 2: 6. pl. 3. 1809.

First described from Siberia.

La Chi Tzu Shan, No. 714; Ho Lan Shan, No. 1134. On an exposed, moist, gravelly stream bottom, sometimes swampy. Common.

A dense shrub, up to 1.3 meters high; flowers white.

Potentilla subacaulis L. *Syst. Nat.* ed. 10, 1065. 1759.

First described without locality.

Chen Mu Kuan, No. 166. Along dry, exposed, clay roadsides. Common.

Height 10 cm.; flowers yellowish.

Potentilla viscosa Donn, *Hort. Cantabr.* ed. 2, 68. 1800 (*nomen nudum*); Ledeb.

Fl. Ross. 2: 41. 1844; *Icon. Pl. Ross.* 4: pl. 343. 1833.

First described from Siberia.

Hsi Mi Yai, No. 479. On clay banks along roadsides. Common.

Height up to 45 cm.; flowers bright yellow, fragrant.

Prinsepia uniflora Batalin, *Act. Hort. Petrop.* 12: 167. 1892.

First described from Potanin's Mongolia collections.

East of Hsin Ch'eng, south of Lanchow, No. 1033. Along exposed, dry, clay roadsides. Common.

A low, dense shrub, up to 2 meters high; fruit purplish red.

Prunus mongolica Maxim. *Bull. Soc. Nat. Moscou* 54: 16. 1879.

First described from Przhevalski's Mongolian collections.

Ha Ta Men River, No. 5; "Wu La Koo Do," Wu Yüan Hsien, No. 9; Hsi Yeh Kou, No. 161. On exposed southern slopes, often associated with *Zizyphus* and *Berberis*. Common in Inner Mongolia.

An early blossoming shrub, 1 to 3 meters high, the twigs thornlike; sepals red, petals pink, notched at tip; fruit small, densely pubescent, strongly acid, separating from the stone. The wood is hard and reddish brown and is valued for ax handles. The flowers make this species highly ornamental, Peking gardeners coming here for them every spring.

Prunus padus L. Sp. Pl. 473. 1753.

First described from Europe.

T'u Er P'ing, No. 378; Cho Ni, No. 1002. On wooded or bushy slopes. Common in southern Kansu.

A shrub, up to 8 meters high, sprouting freely from old stumps, the stems and leaves giving off a peculiar odor when broken; fruit deep purple or black. This species is very ornamental because of long strings of black fruits.

Prunus salicina Lindl. Trans. Hort. Soc. London 7: 239. 1830.

First described from southern China.

Ch'ia Ch'ing Kou, No. 832. On exposed and wooded foothills. Very common especially in the lower part of the valley.

A shrub or small tree, up to 8 meters high; fruit covered with bloom, astringent.

Prunus sibirica L. Sp. Pl. 474. 1753.

First described from Siberia.

Hsi Ch'iao Ssu, No. 730. On an exposed, moist stream bank. Common.

A small tree, up to 8 meters high; fruit red, acid, edible.

Prunus stipulacea Maxim. Bull. Acad. Sci. St. Pétersb. 29: 97. 1883 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 689. 1883).

First described from Przhevalski's Kansu collections in the Ta T'ung valley.

Shui Mo Kou, near Lien Ch'eng, No. 341; T'u Er P'ing, No. 405; Tai Wang Kou, No. 443. In woods. Common.

A shrub, up to 6 meters high; fruits purplish red, bitter.

Prunus tangutica (Batalin) Koehne, in Sarg. Pl. Wils. 1: 276. 1912.

First described from Potanin's Kansu collections from the T'ao Ho region.

Ch'ia Ch'ing Kou, No. 831. On exposed, dry, clay foothills along the river. Very common.

A dense shrub, up to 3 meters high; branches thorny; fruit brownish green, densely pubescent, bitter. Foliage ornamental.

Prunus tomentosa Thunb. Fl. Japon. 203. 1784.

First described from Japan.

Shui Mo Kou, near Lien Ch'eng, No. 335; T'u Er P'ing, No. 388. In woods and in the open.

A shrub, up to 4 meters high; fruit purplish brown (immature).

Prunus triloba Lindl. forma *multiplex* (Bunge) Rehd. Journ. Arn. Arb. 5: 216. 1924.

First described from northern China.

Wang Yeh Fu, No. 42. Cultivated in a garden.

A tree, 5 meters high; leaves greenish yellow, the veins prominent below; flowers pink, fragrant; ovary densely pubescent; fruit smooth, the stones finely pitted. This species is high ornamental because of its prolific, double, pink flowers.

Pyrus pashia Buch.-Ham. in D. Don, Prodr. Fl. Nepal. 236. 1825.

First described from Nepal.

Tai Wang Kou, No. 451; Middle Tu I Kou, No. 966. Along roadsides or stream banks. Rare.

A tree, 8 to 12 meters high; fruit purplish red, very acid, bitter, eaten by the Tibetans.

Rosa bella Rehd. & Wils. in Sarg. Pl. Wils. 2: 341. 1915.

First described from Shansi.

Shui Mo Kou, near Lien Ch'eng, No. 344. On bushy slopes. Common.

A large, dense shrub, 3 meters high; flowers pink.

Rosa davidii Crép. Bull. Soc. Bot. Belg. 13: 253. 1874 (Prim. Monogr. Ros. 260. 1874).

First described from David's Mongolian collections.

Lien Hua Shan, No. 1018. At edges of woods. Common.

A dense shrub, 2 meters high; fruit yellowish red.

Rosa omeiensis Rolfe, Curtis's Bot. Mag. 138: pl. 8471. 1912.

First described from Szechwan.

T'u Er P'ing, No. 398; T'ai Hua, No. 516; Lung Hua, No. 797. In open woods. Common.

A dense shrub, up to 2 meters high; flowers pink or red, fragrant.

Rosa rugosa Thunb. var. *chamissoniana* forma *rubro-plena* Rehd. Journ. Arn. Arb. 5: 204. 1924.

Huang Hsi Kou, No. 198. Along moist, exposed roadsides. Probably sometimes cultivated. Common.

A shrub, up to 3 meters high; flowers deep red, fragrant.

Rosa willmottiae Hemsl. Kew Bull. Misc. Inf. 1907: 317. 1907 (Curtis's Bot. Mag. 134: pl. 8186. 1908).

First described from plants grown from seeds collected by E. H. Wilson at Sung P'an, Szechwan.

Ch'ia Chi'ng Kou, No. 828. On dry, exposed slopes of hard clay. Common.

A dense shrub, 3 meters high; fruit yellowish red, sweet.

Rosa xanthina Lindl. forma *spontanea* Rehd. Journ. Arn. Arb. 5: 209. 1924.

First described from northern China.

Shui Mo Kou, Ho Lan Shan, No. 103. On bare, rocky slopes and along streams. Very common. Lanchow, No. 245. On a moist clay cliff. Rare.

A shrub, about 2 meters high; flowers a delicate bright yellow; calyx reflexed.

Rubus amabilis Focke, Bot. Jahrb. Engler 36, Beibl. 82: 53. 1905.

First described from Shensi.

Ni Ma Lang Kou, No. 762. In woods. Rare.

A shrub, up to 1.3 meters high; fruit brownish yellow, up to 2.5 cm. in diameter, sweet, edible.

Rubus idaeus L. Sp. Pl. 492. 1753.

First described from Europe.

T'ai Hua, No. 547. Along trails in *Betula* woods. Common.

A shrub, up to 50 cm. high; flowers white, fragrant; fruits eaten.

Rubus parvifolius L. Sp. Pl. ed. 2, 707. 1762.

First described from India.

Lien Hua Shan, No. 1028. On exposed, moist roadsides. Common.

A shrub, 3 meters high; fruit purplish red, sweet.

Rubus pileatus Focke, Hook. Icon. Pl. 20: pl. 1952. 1891, vel aff.

First described from Hupeh.

Shui Mo Kou, near Lien Ch'eng, No. 328 (rare); Ch'ia Ch'ing Kou, No. 837 (common). In woods.

A shrub, 1 meter high; stems thorny; flowers purplish, fruit yellowish red, covered with a thin, white tomentum, sweet, eaten locally.

Rubus pungens Cambess. in Jacquem. Voy. Ind. 4: 48. pl. 59. 1844.

First described from India.

Shui Mo Kou, No. 328a.

Rubus stans Focke, Notes Bot. Gard. Edinburgh 5: 76. 1911.

First described from Yunnan.

Ch'ia Ch'ing Kou, No. 841. On an exposed, fairly dry foothill of talus. Common.

A shrub, up to 1 meter high; fruit deep purple, edible.

Rubus xanthocarpus Bur. & Franch. Journ. de Bot. 5: 46. 1891.

First described from Szechwan.

Shih Men, No. 893. In patches along exposed, fairly moist roadsides. Common. Herbaceous, 30 cm. high; fruit yellowish red, acid, edible.

Sanguisorba officinalis L. Sp. Pl. 116. 1753.

First described from Europe.

Shang Hsin Chuang, No. 685; Pan Ch'iao, No. 1014. In patches along moist roadsides or streams. Common.

Height up to 1.2 meters.

Sibbaldia procumbens L. Sp. Pl. 284. 1753.

First described from Europe.

Upper Ch'ia Ch'ing Kou, No. 872. On steppes. Common.

Fruit brown.

Sibiraea laevigata Maxim. var. *angustata* Rehd. in Sarg. Pl. Wils. 1: 455. 1913.

First described from western Szechwan and from Purdom's Kansu collections from Min Chou and Cho Ni.

T'u Er P'ing, No. 434; Hsi Mi Yai, No. 504 (?). In woods.

A much-branched shrub, up to 2.5 meters high.

Sorbaria arborea C. Schneid. Handb. Laubh. 1: 490. 1906.

First described from Hupeh.

Cho Ni, No. 994. Along exposed, moist, clay roadsides. Common.

A shrub, 3 meters high; flowers creamy white; calyx red.

Sorbaria arborea var. *glabrata* Rehd. in Sarg. Pl. Wils. 1: 48. 1912.

First described from western Hupeh and Szechwan.

Lien Ch'erg, No. 374. Very abundant, at flowering time whitening the valley and lower slopes.

A shrub; flowers creamy white, fragrant.

Sorbus hupehensis C. Schneid. Bull. Herb. Boiss. II. 6: 316. 1906; Handb.

Laubh. 1: 680. fig. 374r, 375n. 1906.

First described from Hupeh.

T'u Er P'ing, No. 407; Ni Ma Lang Kou, No. 751; Lung Hua, No. 798 (a variety); Shih Men, No. 920 (a variety?). In forests, sometimes associated with *Picea* and *Abies*. Common.

A shrub or small tree, up to 7 meters high; fruit red (except No. 798 reported as creamy white), highly acid. Very ornamental in flower and in fruit.

Sorbus koehneana C. Schneid. Bull. Herb. Boiss. II. 6: 316. 1906; Handb.

Laubh. 1: 681. fig. 374o. 1906.

First described from Hupeh.

T'u Er P'ing, Nos. 339, 422. In forests of *Betula*, *Salix*, and *Picea*. Common.

A shrub or small tree, 6 meters high; flowers creamy white.

Sorbus tapashana C. Schneid. Bull. Herb. Boiss. II. 6: 313. 1906; Handb.

Laubh. 1: 672. fig. 369b. 1906.

First described from northern Shensi.

A Chüan, No. 987. On partially shaded foothills. Fairly common.

A shrub, 6 meters high; fruit bright red. Very ornamental in fruit.

Spiraea canescens D. Don var. *glaucophylla* Franch. Pl. Delav. 1:200. 1890.

First described from Yunnan.

Shui Mo Kou, Ho Lan Shan, No. 84. Common, but only one bush found in bloom. Nan Ssu Kou, No. 149. Very common.

A shrub, up to 3 meters high; flowers white, very abundant on long, slender, curving branches; fruits of previous year persistent, brown. Highly ornamental.

Spiraea fritschiana C. Schneid. Bull. Herb. Boiss. II. 5: 347. 1905.

First described from Shantung.

T'u Er P'ing, No. 338. In open *Picea* woods. Common.

A shrub, 1.3 meters high.

Spiraea gemmata Zabel, Strauch. Spir. Deutsch. Gärt. 23. 1893.

First described from Mongolia.

T'ai Hua, No. 544. In woods. Common.

A shrub, up to 1.3 meters high; flowers white, fragrant.

Spiraea hypericifolia L. Sp. Pl. 489. 1753.

First described from Canada.

Shui Mo Kou, Ho Lan Shan, No. 96. On exposed, moist foothills in the valley. Common.

A shrub, 1.5 meters high; flowers small, white.

Spiraea longigemmis Maxim. Act. Hort. Petrop. 6: 205. 1879.

First described from Przhevalski's and Piasetski's Kansu collections.

T'u Er P'ing, No. 420. In woods. Very common.

A shrub, up to 5 meters high; flowers creamy white, fragrant.

LEGUMINOSAE

Astragalus adsurgens Pall. Sp. Astrag. 40. *pl.* 31. 1880.

First described from Transbaikalia.

Hsi Mi Yai, No. 490; Ho Lan Shan, No. 1091. On exposed, clay banks, bushy places, and margins of cultivated fields. Common.

Spreading and trailing herbs, up to 1 meter long; flowers purple or blue.

Astragalus chingianus Peter-Stibal, Medd. Bot. Trädg. Göteborg 12: 36. 1937.

Based on *Licent 5476* from the Ordos.

Ho Lan Shan, No. 1048. On margins of forests. Common.

Height 18 cm.; flowers greenish yellow.

Astragalus chrysopterus Bunge, Bull. Acad. Sci. St. Pétersb. 24: 32. 1878 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 51. 1878).

First described from Kansu (without citation of a specimen).

T'ai Hua, No. 548. On margins of woods. Rare.

Height up to 50 cm.; flowers greenish yellow.

Astragalus discolor Bunge, Bull. Acad. Sci. St. Pétersb. 24: 33. 1878 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 53. 1878).

First described from the "Alashan Mts." (=Ho Lan Shan) and the Ordos, Mongolia (without citation of specimens).

Ho Lan Shan, No. 1109. In woods. Common.

Height 45 cm.; flowers purplish blue.

Astragalus floridus Benth. in Bunge, Mém. Acad. Sci. St. Pétersb. VII. 11¹⁶: 24. 1868; VII. 15¹: 28. 1869; in Baker, in Hook. f. Fl. Brit. Ind. 2: 127. 1876.

First described from India.

Shih Men, No. 927. On steppes. Fairly common.

Height 60 cm.; several stems arising from one root.

Astragalus hoantchy Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 5: 238. 1883 (Pl. David. 1: 86. 1884).

First described from A. David's Mongolian collections.

Shui Mo Kou, Ho Lan Shan, No. 87. On an exposed rocky slope. Rather rare.

Height 75 cm.; flowers purple.

Astragalus aff. hyogaëus Ledeb. Icon. Pl. Fl. Ross. Alt. 1: 23. *pl. 95*. 1829; Fl. Alt. 3: 329. 1831.

First described from the Altai Mountains.

Hung Yang Tung, No. 17. On coarse sand and gravelly soil on exposed dry foothills, associated with *Astragalus* sp., No. 18. Rare.

A perennial herb, 2.5 to 5 cm. high; leaves and creamy white flowers almost buried.

Astragalus longilobus Peter-Stibal, Medd. Bot. Trädg. Göteborg 12: 47. 1937.

First described from Rock's "Tebbu Land," Kansu collection.

Shih Men, No. 918. On steppes and edges of forests on the southern ridge only. Fairly common.

Height up to 75 cm.; roots bearing 3 or 4 stems; fruit greenish brown.

Astragalus melilotoides Pall. Reise Prov. Russ. Reich. 3²: 748. *pl. Dd. fig. 1, 2*. 1776.

First described from Siberia.

T'ai Hua, No. 557. Along a partially shaded, moist roadside. Rare. Height up to 1 meter; flowers white.

Astragalus monadelphus Bunge, Bull. Acad. Sci. St. Pétersb. 24: 32. 1878 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 52. 1878).

First described from Kansu (without citation of a specimen).

T'u Er P'ing, No. 427. In a forest. Common.

Height up to 45 cm.; flowers greenish yellow.

Astragalus przewalskii Bunge, Bull. Acad. Sci. St. Pétersb. 24: 32. 1878 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 52. 1878).

First described from Kansu (without citation of specimens).

T'ai Hua, No. 540. In a partially shaded ravine. Rare.

Height up to 75 cm.; flowers deep purple; stems purplish.

Astragalus variabilis Bunge, Bull. Acad. Sci. St. Pétersb. 24: 33. 1878 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 53. 1878).

First described from the left bank of the Yellow River in Mongolia (without citation of specimens).

Pei Ssu Kou, No. 112. On exposed, moist farm clay. Common.

Height 18 cm.; flowers purplish violet.

Astragalus spp.

1. Lang Shan, No. 16. On foothills, associated with and very similar to No. 49. The most common species locally.

Perennial herbs, 5 to 10 cm. high growing in head-shaped groups 30 to 60 cm. in diameter; flowers purplish, faintly fragrant.

2. Hung Yang Tung, No. 18. Along roadsides, extending over a wide area. Fairly common.

A spreading herb, 13 cm. high; flowers purplish, appearing soon after the leaves. This species is eaten by animals.

3. Ha La Hu Kou, No. 49. On an exposed gravelly foothill, associated with No. 16.

Height 15 cm.; flowers creamy white, faintly tinged with pink.

4. Shui Mo Kou, Ho Lan Shan, No. 102. On exposed, gravelly valley bottoms.

Height 13 cm.; flowers creamy white.

5. Ho Lan Shan, No. 1073. In pure stands in a dense *Picea* forest. Common. Height up to 45 cm.; flowers greenish yellow.

6. Ho Lan Shan, No. 1156. (Without field label.)

Caragana brevifolia Komar. Act. Hort. Petrop. 29: 211. 1908.

First described from Kashmir and from Ladygin's Kansu collections.

T'u Er P'ing, No. 403; Labrang, No. 774. On exposed, moist ridges and in shaded woods. Common.

A shrub, up to 1.5 meters high; flowers greenish yellow.

Caragana jubata (Pall.) Poir. in Lam. Encycl. Suppl. 2: 89. 1811.

First described without locality.

Upper Ch'ia Ch'ing Kou, No. 853; Ho Lan Shan, No. 1147. On steppes and bushy slopes and as undergrowth in *Picea* forests at high altitudes. Common.

A shrub, up to 1.5 meters high in open, up to 2.4 meters high in forests; stems long, extremely tough, seldom branching; flowers creamy white, fragrant.

Caragana aff. jubata (Pall.) Poir.

Pei Ssu Kou, No. 108. In large compact, head-shaped clumps, dotting dry, exposed, rocky ridges.

Semiterbaceous; height 10 cm.; flowers purple, fragrant. Highly ornamental.

Caragana maximowicziana Komar. Act. Hort. Petrop. 29: 269. pl. 11. fig. B. 1909.

First described from Potanin's and Ladygin's Kansu collections and from Tibet.

Lien Hua Shan, No. 1021. Along dry, exposed roadsides. Common.

A shrub, forming dense thickets, 3 meters high; fruit brown.

Caragana opulens Komar. Act. Hort. Petrop. 29: 208. 1908.

First described from Przewalski's Kansu collections and from his and Artselaer's Mongolian collections.

Hsi Yeh Kou, No. 162. In exposed rocky places. A very common shrub locally and in Inner Mongolia, sometimes forming dense thickets, up to 6 meters high. Yao Chieh, No. 260. On moist grassy and bushy slopes. A common shrub, up to 1.5 meters high.

Branches distinctly shining brown; flowers greenish to lemon-yellow.

Caragana pygmaea (L.) DC. Prodr. 2: 268. 1825.

First described from Siberia.

Hung Yang Tung, No. 19; Wang Yeh Fu, No. 25; Shui Mo Kou, Ho Lan Shan, No. 85; Nan Ssu Kou, No. 155. On sand dunes and exposed rocky slopes, usually in pure stands, sometimes associated with *Zygophyllum xanthoxylum* (Bunge) Engl. Common.

A semiwoody, dwarf shrub, 18 cm. to 1.2 meters high; flowers appearing early or with the leaves, bright yellow, becoming dark brown.

Caragana roborovskyi Komar. Act. Hort. Petrop. 29: 280. 1909.

First described from the Kohonor region.

Ha La Hu Kou, No. 73. On exposed rocky slopes. Fairly common.

A shrub, up to 1 meter high; flowers bright yellow, becoming brown.

Caragana tangutica Maxim. in Komar. Act. Hort. Petrop. 29: 286. 1909.

First described from Przewalski's Kansu collections.

T'u Er P'ing, No. 385. In *Picea* forests at high altitudes. Common.

An undershrub, up to 1.8 meters high.

Caragana tibetica Komar. Act. Hort. Petrop. 29: 282. pl. 10. 1909.

First described from Potanin's and Przewalski's Kansu and Szechwan collections.

Nan Ssu Kou, No. 156. In compact patches up to several feet across and 20 cm. high, on dry exposed rocky slopes and level places in foothills. The commonest species of *Caragana*.

Flowers yellow.

Coluria longifolia Maxim. Bull. Acad. Sci. St. Pétersb. 27: 466. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 215. 1881).

First described from Przhevalski's Kansu collections.

La Chi Tzu Shan, No. 701. On exposed, moist steppes. Common.

Height 60 cm.; flowers orange-yellow.

Glycyrrhiza uralensis Fisch. in Seringe, in DC. Prodr. 2: 248. 1825.

First described from western Siberia.

Pei Ssu Kou, No. 188; Ho Lan Shan, No. 1060. In exposed, dry places.

Common over a wide range.

Height up to 1 meter; flowers deep purple. The long, cylindrical, very sweet tap roots producing licorice, one of the best tonics in Chinese medicine, are exported from here.²⁴

Gueldenstaedtia diversifolia Maxim. Bull. Acad. Sci. St. Pétersb. 27: 462. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 209. 1881).

First described from Przhevalski's Kansu collections.

T'ai Hua, No. 536; Lang Tzu T'ang Kou, No. 595. Occasionally found on partially shaded, moist slopes, commoner in woods.

A prostrate herb, up to 20 cm. high.

Hedysarum multijugum Maxim. Bull. Acad. Sci. St. Pétersb. 27: 464. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 212. 1882).

First described from Mongolia and Kansu.

Chung Wei (?), No. 237 (without field label).

Hedysarum polybotrys Hand.-Mazz. Symb. Sin. 7: 563. 1933.

Ch'ia Ch'ing Kou, No. 842 (type).^{24a} On dry, exposed, rocky slopes. Common.

Height 1.2 meters; flowers greenish yellow.

Hedysarum pumilum (Ledeb.) Fedtsch. Act. Hort. Petrop. 19: 309. 1902.

First described from the Altai Mountains.

Ha La Hu Kou, No. 46; Ch'ia Te Kou, No. 159. On exposed, coarse, gravelly or rocky slopes and roadsides. Common.

Height 10 cm.; leaves very inconspicuous; flowers conspicuous, bright red or pink.

Hedysarum sp.

Lang Tzu T'ang Kou, No. 582.^{24b} In densely shaded woods. Rare.

Height 18 cm.; flowers pink.

Lathyrus pratensis L. Sp. Pl. 733. 1753.

First described from Europe.

Ch'ia Ch'ing Kou, No. 824. Under a *Berberis* bush. Rare.

A climbing herb, up to 1 meter long; flowers lemon-yellow.

Lespedeza daurica (Laxm.) Schindl. Repert. Sp. Nov. Fedde 22: 274. 1926.

First described from Dauria.

Near Ch'ien Kou, No. 1011. In tufts on dry, exposed, clay cliffs. Fairly common.

Height 30 cm.; fruit brownish.

²⁴ For further data on this root in Mongolia see E. V. Bretschneider, History of European botanical discoveries in China, p. 990 (1898), and J. W. Palibin in Trav. Sous-sect. Troitzk. Kiakhta Sect. Amour Soc. Russ. Géogr. 6¹: 7-20. 1903, and in Věstn. Ross. Obsheh. Sad. 1903: 47-52. 1903, both in Russian.

^{24a} Ching's collector's number was omitted from the original description of this species, apparently through oversight.

^{24b} The specimen is identical with *Purdom* 1051, collected near Cho Ni in 1911.

Lespedeza floribunda Bunge, Pl. Mong.-Chin. 13. 1835.

First described from near Peking.

Ha Ho, No. 1042. On dry, exposed, clay slopes. Rare.

Height 30 cm.

Medicago lupulina L. Sp. Pl. 779. 1753.

First described from Europe.

Chung Wei, No. 218; Yao Chieh, Nos. 267, 294; Ho Lan Shan, No. 1119. At edges of cultivated fields, on dry, exposed, clay cliffs, or on moist grasslands.

An erect or prostrate herb, up to 30 cm. high; flowers yellow.

Medicago sativa L. Sp. Pl. 788. 1753.

First described from Spain.

Pei Ssu Kou, No. 186. On the edges of moist, rich farmlands. Common, spreading over a large area.

Height 50 cm.; flowers purple.

Melilotus alba Desv. in Lam. Encycl. 4: 63. 1796.

First described from Siberia and Europe.

Hsi Mi Yai, No. 480. On moist foothills. Common.

Height up to 1.2 meters; flowers bright yellow.

Oxytropis glabra DC. Astragal. 95. pl. 8. 1802.

First described from Siberia.

Ho Lan Shan, No. 1068. In woods. Common.

Height 30 cm.; flowers purplish blue.

Oxytropis imbricata Komar. Repert. Sp. Nov. Fedde 13: 232. 1914.

First described from Potanin's Kansu collections.

Hsin Ch'eng, west of Lanchow, No. 309. Along dry, exposed, sandy roadsides. Common.

A procumbent herb; flowers yellowish; very drought-resistant.

Oxytropis melanocalyx Bunge, Mém. Acad. Sci. St. Pétersb. VII. 22¹: 8. 1874, vel. aff.

First described from Przewalski's Kansu collections.

Hsin Ch'eng, west of Lanchow, No. 309a.

Oxytropis aff. yunnanensis Franch. Pl. Delav. 1: 163. 1890.

First described from Yunnan.

La Ch'iung Kou, No. 632. On exposed, dry, gravelly stream bottoms. Common.

A spreading herb, up to 20 cm. high, with a long taproot.

Oxytropis spp.

1. Chung Wei, No. 232a. On alkaline soil beside a cultivated field.

2. Chung Wei, No. 233. On a dry, exposed, clay cliff.

Height 30 cm.; flowers yellow.

3. Yao Chieh, No. 250. Along a moist, sandy roadside.

A procumbent herb, 1.2 meters high; flowers blue.

4. T'u Er P'ing, No. 415. Forming a thick carpet on the ridge in a woods and on exposed grasslands. Very common.

Height up to 45 cm.; flowers greenish yellow.

Piptanthus mongalicus Maxim. in Komar. Bot. Zhurn. SSSR. 18: 59. 1 fig. 1933.

First described from Kozlov's collections in the Alashan Mountains, Mongolia, and adjacent Kansu.

Ta Shui Kou, No. 22. In pure stands of bushlike clusters, occupying an extensive range, on coarse sandy soil near foothills. Very common.

An evergreen, semiwoody shrub, up to 1.2 meters high; flowers abundant, bright yellow, fragrant. Very ornamental; not eaten by domestic animals.

Sophora alopecuroides L. Sp. Pl. 373. 1753.

First described from "Oriente."

Mouth of Hsi Yeh Kou, No. 181. On dry, exposed foothills. Common.

Height up to 50 cm.; flowers yellow, very fragrant, in columnar inflorescences.

Swainsona salsula (Pall.) Taub. in Engl. & Prantl. Pflanzenfam. 3^a: 281. 1894.

First described from Dahuria.

Pei Ssu Kou, No. 191; Yao Chieh, No. 285; Ho Lan Shan, No. 1117. On edges of fields and along roadsides and on dry clay cliffs. Common.

A dense herb, up to 60 cm. high; flowers bright purplish red. Very ornamental in bloom.

Thermopsis lanceolata R. Br. in Ait. Hort. Kew. ed. 2, 3: 3. 1811.

First described from Siberia.

Wang Yeh Fu, No. 45. In patches on exposed, clay soil on a farm. Common.

Height 25 cm.; flowers greenish yellow.

Thermopsis sp.

Ch'ing Kang Yai, No. 577. In woods and on exposed, dry slopes and along roadsides. Common.

Height up to 45 cm.

Vicia amoena Fisch. in Seringe, in DC. Prodr. 2: 255. 1825.

First described from Siberia.

Hsi Mi Yai, No. 487; Lower Tu I Kou, Nos. 957, 958. In woods and along exposed, moist, clay roadsides. Fairly common.

Stems up to 1.8 meters long; flowers purple.

Vicia cracca L. Sp. Pl. 735. 1753.

First described from Europe.

Hsün Hua Hsien, No. 737; Shih Men, No. 895. In a dense stand on an exposed, dry, clay cliff and along a moist, clay roadside. Common.

Stems up to 1.5 meters long; flowers purple.

Vicia sativa L. Sp. Pl. 736. 1753.

First described from Europe.

Yao Chieh, No. 271; Ho Lan Shan, No. 1068a. At edges of cultivated fields and in woods.

Flowers blue.

Vicia tridentata Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 93. 1833 (Enum. Pl. China Bor. 19. 1835).

First described from Peking.

Lien Ch'eng, No. 455. On a farm. Common.

Height up to 1.5 meters; flowers purple.

Vicia unijuga A. Br. Ind. Sem. Hort. Berol. Append. 1853: 12. 1853²⁸ (Ann. Sci. Nat. IV. 1: 366. 1854).

First described as *Orobis lathyroides* L. from Siberia, according to the alternative reference.

Shui Mo Kou, near Lien Ch'eng, No. 356; Lower Tu I Kou, No. 963. On edges of woods and along exposed roadsides.

Height up to 50 cm.; flowers purplish blue; fruit brown.

²⁸ This reference, derived from Index Kewensis, could not be verified by me. It is probably a *nomen nudum*.

GERANIACEAE

Biebersteinia heterostemon Maxim. Bull. Acad. Sci. St. Pétersb. 27: 439. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 176. 1881).

First described from Piasetsk's and Przhevalski's Kansu collections from near Lanchow.

Yao Chieh, No. 268. At the moist edge of a cultivated field.

Height 1.3 meters; flowers yellowish; plant peculiarly aromatic.

Erodium stephanianum Willd. Sp. Pl. 3: 625. 1800.

First described from Dahuria.

Pei Ssu Kou, No. 124. On moist, exposed margins of streams. Common.

Flowers purplish.

Geranium eriostemon Fisch. in DC. Prodr. 1: 641. 1824.

First described from Dahuria.

Shui Mo Kou, near Lien Ch'eng, No. 330; T'u Er P'ing, No. 412. In woods

Height 60 cm.; flowers pinkish or purplish.

Geranium pratense L. Sp. Pl. 681. 1753.

First described from Europe.

Lien Ch'eng, No. 396; T'u Er P'ing, No. 431. In forests and on dry, exposed, clay cliffs. Common.

Height up to 60 cm.; flowers violet.

Geranium pylzowianum Maxim. Bull. Acad. Sci. St. Pétersb. 26: 466. 1880 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 633. 1880).

First described from Przhevalski's Kansu collections from the Ta T'ung Valley. T'u Er P'ing, No. 418; Hsi Mi Yai, No. 500. On moist grasslands or on forest floors. Common.

Flowers pink.

Geranium sibiricum L. Sp. Pl. 683. 1753.

First described from Siberia.

Liu Fu Yai, No. 466; Ho Lan Shan, No. 1092. Along exposed, moist roadsides and on bushy slopes. Common.

Stems creeping, up to 45 cm. long; flowers purplish or pink.

ZYGOPHYLLACEAE

Nitraria schoberi L. Syst. Nat. ed. 10, 1044. 1759.

First described from Siberia.

Wang Yeh Fu, No. 130; Hsin Ch'eng, north of Ningsia, No. 211. On sand dunes and along fairly moist, clay roadsides. One of the most abundant plants in the deserts of Inner Mongolia.

A shrub, up to 2.5 meters high, with creeping branches; flowers greenish yellow, abundant, highly fragrant; fruit a red, edible drupe. An important source of fuel in deserts.

Peganum harmala L. Sp. Pl. 444. 1753.

First described from the Mediterranean region.

Wang Yeh Fu, No. 44. Along exposed roadsides. Fairly common.

A spreading herb, 30 cm. high; flowers greenish or creamy white.

Peganum nigellastrum Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 87. 1833 (Enum. Pl. China Bor. 87. 1835).

First described from northern China and Mongolia.

Mouth of Hsi Yeh Kou, No. 176; Ho Lan Shan, No. 1115. On exposed, gravelly or clay hillsides. Common, covering an extensive area.

A spreading and somewhat prostrate herb, up to 45 cm. high; flowers pinkish or white, fragrant.

Tribulus terrestris L. Sp. Pl. 387. 1753.

First described from southern Europe.

Yao Chieh, No. 251. On dry, exposed edges of cultivated fields. Common.

A prostrate herb, 45 cm. high; flowers yellow.

Zygophyllum mucronatum Maxim. Bull. Acad. Sci. St. Pétersb. 27: 438. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 175. 1881).

First described from Przhevalski's and Piasetski's Kansu collections from near Lanchow.

Nan Ssu Kou, No. 135; Yao Chieh, No. 246 (?). On coarse desert sands and along gravelly roadsides. Common.

Leaves and stems deep green, very succulent; flowers white.

Zygophyllum xanthoxylum (Bunge) Engl. in Engl. & Prantl. Pflanzenfam. 3 4: 81. 1890.

First described from the Gobi Desert in Mongolia.

Hung Yang Tung, No. 20; Wang Yeh Fu, No. 129. On sand dunes in deserts of Inner Mongolia. Very common.

A semiwoody shrub, up to 1.5 meters high, the stems crooked, rooting freely; flowers yellowish, appearing with the leaves, abundant, faintly fragrant. Used as fuel. Highly ornamental because of the leaves and flowers.

RUTACEAE

Dictamnus fraxinella Pers. Syn. Pl. 1: 464. 1805.

First described from Europe.

Lien Hua Shan, No. 1027. In *Betula* woods. Common.

Herb, 75 cm. high.

Haplophyllum tragacanthoides Diels, Notizbl. Bot. Gart. Berlin 9: 1028. 1926.

Pei Ssu Kou, No. 107 (type). On dry, exposed, rocky ridges or cliffs. Common.

A low, compact, shrubby herb, 20 cm. high; flowers greenish yellow, extremely sweet, highly ornamental, dotting the cliffs with yellow.

POLYGALACEAE

Polygala sibirica L. Sp. Pl. 702. 1753.

First described from Siberia.

Chen Mu Kuan, No. 164; Ningsia, No. 1145. On exposed gravelly slopes and on disintegrated shells by roadside. Rare.

Height up to 18 cm.; flowers purple.

EUPHORBIACEAE

Euphorbia esula L. Sp. Pl. 461. 1753.

First described from Europe.

Nan Ssu Kou, No. 151. On a shaded valley bottom of rich soil. Rare.

Herb, 23 cm. high.

Euphorbia humifusa Willd. Hort. Berol. Suppl. 27: 27. 1813.

First described from cultivation.

Yao Chieh, No. 256. Along an exposed, moist roadside.

A procumbent herb.

Euphorbia macrorhiza C. A. Meyer in Ledeb. Fl. Alt. 4: 191. 1833; Icon.

Pl. Ross. 2: 26. pl. 192. 1830.

First described from the Altai Mountains.

T'ai Hua, No. 522. On moist exposed slopes. Common.

Stem red; flowers green.

Securinega ramiflora Muell. Arg. in DC. Prodr. 15²: 449. 1862.

First described from Dahuria and Amur.

Pei Ssu Kou, No. 193. In the bottom of a dry, rocky gorge. Rare.

Shrub, 3 meters high; flowers greenish yellow.

CELASTRACEAE

Evonymus amygdalifolia Franch. Bull. Soc. Bot. France 33: 453. 1886.

First described from Yunnan.

Ch'ia Ch'ing Kou, No. 844. In woods. Rare, only one specimen found.

A shrub, up to 1 meter high; fruit reddish; seeds red.

Evonymus giraldii Loesener var. *angustialata* Loesener in Sarg. Pl. Wils. 1: 495. 1913.

First described from western Hupeh and Szechwan.

Upper Shui Mo Kou, near Lien Ch'eng, No. 380; Malisoondo, No. 886. In woods. Fairly common.

A graceful shrub, 1 to 3 meters high, with drooping branches; fruit reddish purple; seeds reddish yellow.

Evonymus nanoides Loes. & Rehd. in Sarg. Pl. Wils. 1: 492. 1913.

First described from western Szechwan.

Upper Ch'ia Ch'ing Kou, Nos. 847, 935. Rare, on dry, exposed, clay and gravelly slopes. Yang She, No. 1039. On cliffs. Common.

A dense, dwarf shrub of irregular form, up to 1 meter high; flowers reddish; fruit purplish red; seed yellowish red.

Evonymus nanus Bieberst. Fl. Taur. Cauc. 3: 160. 1819.

First described from the western Caucasus.

Shui Mo Kou, near Lien Ch'eng, Nos. 327, 389. On bushy slopes or in woods. Common.

A slender shrub, up to 4 meters high, the stem often single with slender branches; flowers purple.

Evonymus phellomana Loesener in Diels, Bot. Jahrb. Engler 29: 444. 1900.

First described from Shensi (?).

Ch'ia Ch'ing Kou, No. 833. In wood. Rare.

A shrub, up to 3 meters high, the branches and twigs with 4 corky ridges.

Evonymus przewalskii Maxim. Bull. Acad. Sci. St. Pétersb. 27: 451. 1882
(Mél. Biol. Acad. Sci. Pétersb. 11: 194. 1881).

First described from Przhevalski's Kansu collections.

Ch'ing Kang Yai, No. 574. In densely shaded woods. Rare. Lower Tu I Kou, No. 962. Along roadsides. Common.

A low, dense shrub, 1 meter high; stems and branches green; fruit purplish red; calyx red.

ACERACEAE

Acer davidi Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 8: 212. 1885 (Pl. David. 2: 30. 1888).

First described from western Szechwan.

Shui Mo Kou, near Lien Ch'eng, No. 321. In woods.

A small tree, 8 meters high; stems and branches dark green.

Acer ginnala Maxim. Bull. Phys. Math. Acad. Sci. St. Pétersb. 15: 126. 1856
(Mél. Biol. Acad. Sci. St. Pétersb. 2: 415. 1857).

First described from Amur and Ussuri.

Ha Ho, No. 1022. In woods and on bushy slopes. Fairly common.

A small tree, up to 9 meters high; bark brownish gray.

Acer maximowiczii Pax, Hook. Icon. Pl. 19: text to pl. 1897. 1889.

First described from Hupeh.

Lien Hua Shan, No. 1009. In woods of *Betula*, *Salix*, *Acer*, *Tilia*, etc. Common.

A small tree, 12 meters high, sometimes bushlike, bark gray, rough on old stems, deep green on young twigs.

Acer tetramerum Pax var. *betulifolium* Rehd. in Sarg. Pl. Wils. 1: 95. 1911.

First described from Szechwan, Kansu (Potanin's collections), and Shensi.

Shui Mo Kou, near Lien Ch'eng, No. 323; Lien Hua Shan, Nos. 1008, 1010. In woods. Common.

A treelike shrub, 6 meters high; bark purplish; fruit purplish when mature.

SAPINDACEAE

Xanthoceros sorbifolia Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 85. 1833 (Enum. Pl. China Bor. 11. 1835).

First described from northern China.

Pei Ssu Kou, No. 122. On moist soil at the upper end of the valley. Only one tree found, this a mass of white.

Height 5 meters; petals white with a purplish base, each alternating with a bright yellow, rudimentary petal; fruit said to be sweet and edible.

BALSAMINACEAE

Impatiens sp.

Shih Men, No. 905. Rare, in woods in a gorge.

RHAMNACEAE

Rhamnus leptophyllus C. Schneid. Notizbl. Bot. Gart. Berlin 5: 77. 1908.

First described from Hupeh and Szechwan.

T'u Er P'ing, No. 345; Tai Wang Kou, No. 441; T'ien T'ang Ssu, No. 559; Ch'ia Ch'ing Kou, No. 829; Hsin Ch'eng, south of Lanchow, No. 1031. On dry hillsides, and gravelly valley bottoms, and along roadsides. Common.

A shrub, 1 to 5 meters high, with a spreading crown; fruit deep purple or black. Very ornamental in fruit.

Rhamnus parvifolius Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 88. 1833 (Enum. Pl. China Bor. 88. 1835).

First described from near Peking.

Ho Lan Shan, No. 205. On bare, exposed, dry, rocky slopes. Common.

A low shrub, 2 meters high; flowers greenish yellow.

Zizyphus jujuba Mill. Gard. Dict. ed. 8, No. 1. 1768.

First described from cultivation in Europe.

Chung Wei, No. 223. Cultivated trees up to 12 meters high, on fairly moist clay soil. No. 227. Wild shrubs about 1 meter high, on the exposed sandy banks of the Yellow River.

Flowers greenish yellow. The fruits are eaten.

VITACEAE

Ampelopsis japonica (Thunb.) Makino, Bot. Mag. Tokyo 17: 113. 1903.

First described from Japan.

Pei Ssu Kou, No. 190. On dry, rocky foothills. Common.

A vine, up to 9 meters long, climbing on bushes; flowers greenish yellow; leaves shining green.

TILIACEAE

Tilia chinensis Maxim. Act. Hort. Petrop. 11: 83. 1890.

First described from Potanin's and Piesetski's Kansu collections.

Lien Hua Shan, No. 1020. On northern slopes, associated with *Betula*, *Acer*, and *Salix*. Common.

A tree with greenish fruits and purplish winter buds. Wood of good quality, used for furniture.

MALVACEAE

Malva verticillata L. Sp. Pl. 689. 1753.

First described from China and Syria.

La Chi Tzu Shan, No. 719; Ho Lan Shan, No. 1100. In exposed moist cultivated fields. Common.

Height 30 cm.; flowers pink.

ACTINIDIACEAE

Clematoclethra actinidioides Maxim. Act. Hort. Petrop. 11: 38. 1890.

First described from Potanin's and Piasetski's Kansu collections.

Lien Hua Shan, No. 1026. In woods. Common.

A large, dense vine, 16 meters long, climbing on trees and often killing them; fruit purple.

Clematoclethra integrifolia Maxim. Act. Hort. Petrop. 11: 38. 1890.

First described from Potanin's and Piasetski's Kansu collections.

Ch'ia Ch'ing Kou, No. 940. In partially shaded woods. Rare.

A low shrub, 2 meters high; fruits purplish red, with slender beak.

HYPERICACEAE

Hypericum aff. *monanthemum* Hook. f. & Thoms. in Thiselt.-Dyer, in Hook. f. Fl. Brit. Ind. 1: 256. 1874.

First described from Sikkim.

T'u Er P'ing, No. 409. Growing in tufts in woods. Rare.

Height 50 cm.; flowers bright yellow.

TAMARICACEAE

Hololachna songarica (Pall.) C. G. Ehrenb. Linnaea 2: 273. 1827.

First described from Sungaria.

Yao Chieh, No. 248; Hsün Hua Hsien, No. 738; 25 li from Ch'ien Kou, No. 1013. On dry, exposed, bare, clay slopes and cliffs and on gravel by streams. Common.

A dense, shrubby herb, up to 1 meter high; flowers white. Very drought-resistant.

Myricaria germanica (L.) Desv. Ann. Sci. Nat. 4: 349. 1825.

First described from Germany.

Yao Chieh, No. 295. On a frequently submerged, sandy river beach. Common, occupying a large area.

A coarse shrub, up to 2.4 meters high.

Tamarix chinensis Lour. Fl. Cochinch. Ed. Willd. 1: 228. 1793.

First described from Canton.

Wu Ch'uan Shan, No. 238. On a farm of moist clay soil. Often cultivated.

Usually a small tree, often a shrub, up to 8 meters high; flowers pink, fragrant.

VIOLACEAE

Viola biflora L. Sp. Pl. 936. 1753.

First described from Europe.

Wang Te Lin Kou, No. 82; T'ai Hua, No. 506; Ho Lan Shan, No. 1151. On shaded, moist roadsides, in a *Juniperus* forest, and on a shaded rocky cliff. Rare.

Flowers bright yellow, marked within with purplish lines.

Viola chingiana Becker, Proc. Biol. Soc. Washington 38: 117. 1925.

Ta P'an Shan, No. 648 (type). On exposed, moist, grassy slopes. Common. Stem deeply buried; fruit green, triangular, hidden.

Viola pinnata L. subsp. *multifida* Becker, Repert. Sp. Nov. Fedde Beih. 12: 439. 1922.

First described from Hopeh.

Ha La Hu Kou, No. 56; Shui Mo Kou, Ho Lan Shan, No. 89. On shaded or exposed roadsides or stream banks, sometimes several growing together, the leaves under the grass, the delicate reddish flowers appearing above. Rare.

Viola prionantha Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 82. 1833 (Enum. Pl. China Bor. 8. 1835).

First described from northern China.

Ha La Hu Kou, No. 66. On moist, rich, shaded soil. Very common.

Flowers white, faintly tinted with purple.

THYMELAEACEAE

Daphne giraldii Nitsche, Beitr. Kennt. Daphne 7. 1907.

First described from northern Shensi.

Lien Ch'eng, No. 367. On a bushy slope.

A low, many-stemmed shrub, 60 cm. high; bark exceedingly tough; fruit yellowish red.

Daphne tangutica Maxim. Bull. Acad. Sci. St. Pétersb. 27: 531. 1881 (Mém. Biol. Acad. Sci. St. Pétersb. 11: 309. 1881).

First described from Przewalski's Kansu collections.

Lung Hua, No. 794. In partially exposed places in woods. Common.

A low, dense shrub, up to 60 cm. high; stems tough; fruit a deep-red berry; seeds with a black husk.

Hippophae rhamnoides L. var. *procera* Rehd. in Sarg. Pl. Wils. 2: 409. 1915.

First described from western Szechwan.

Upper Shui Mo Kou, near Lien Ch'eng, No. 390; Ni Ma Lang Kou, No. 755.

In valley bottoms. Common.

A dense, thorny shrub, up to 6 meters high, often forming almost impenetrable scrub or thickets at high altitudes; fruit highly acid, but eaten when ripe and bright yellow.

Stellera chamaejasme L. Sp. Pl. 559. 1753.

First described from Siberia.

Chung Wei, No. 226. On exposed, bare, sandy slopes.

Height 23 cm.; flowers purplish, very fragrant.

ELAEAGNACEAE

Elaeagnus angustifolia L. Sp. Pl. 121. 1753.

First described from Europe.

Hsi Yeh Kou, No. 179. Commonly cultivated on fairly moist, rich soil here and in Wang Yeh Fu.

A tree, up to 12 meters high, of willowlike form, the trunk crooked, the crown umbrella-shaped, the bark peeling off in long flakes; branches thorny, brown;

leaves silvery; flowers abundant, yellow inside, silvery outside, exceedingly fragrant (can be detected at a distance of 1 li); fruit large, sweet, edible.

Elaeagnus umbellata Thunb. Fl. Japon. 66. pl. 14. 1784.

First described from Japan.

Lien Hua Shan, No. 1016. On dry, exposed, clay banks. Fairly common.

A shrub, up to 6 meters high; fruit brownish, sweet.

ONAGRACEAE

Chamaenirion angustifolium (L.) Scop. Fl. Carn. ed. 2, 1: 271. 1772.

First described from Europe.

T'u Er P'ing, Nos. 401, 438; Ho Lan Shan, No. 1064. In *Betula* woods, sometimes covering an extensive area. Common.

Height up to 1.2 meters; flowers red or pink.

?*Epilobium tanguticum* Hausskn. Oesterr. Bot. Zeitschr. 29: 56. 1879.

First described from Przhivalski's Kansu collections.

Ch'ing Kang Yai, No. 575; Shih Men, No. 909. In partially shaded woods and on banks of streams. Common.

Height up to 60 cm.; flowers pink or purple.

ARALIACEAE

Acanthopanax giraldii Harms, Bot. Jahrb. Engler 36, Beibl. 82: 80. 1905.

First described from Shensi.

Malisoondo, No. 887. At edge of woods. Common.

A dense, prickly, highly aromatic shrub, up to 2.5 meters high.

Acanthopanax giraldii var. *pilosulus* Rehd. Journ. Arn. Arb. 9: 99. 1928.

First described from Rock's Kansu collections.

Shui Mo Kou, near Lien Ch'eng, No. 337. On a wooded slope. Common, associated with *Sorbaria*, *Acer*, *Picea*, etc.

A shrub, up to 6 meters high; flowers yellowish green with creamy white bracts.

?*Panax ginseng* C. A. Meyer, Bull. Phys. Math. Acad. Sci. St. Pétersb. 1: 340. 1843.

First described from Manchuria and Korea.

Shih Men, No. 899. In dense fir forests. Fairly common.

Fruit yellowish red.

UMBELLIFERAE

Angelica wulsiniana Wolff, Repert. Sp. Nov. Fedde 27: 334. 1930.

Upper Ch'ia Ch'ing Kou, No. 848 (type). Only one specimen found, on steppe.

Height 60 cm.; flowers greenish yellow, aromatic.

Bupleurum spp.

1. T'ien T'ang Ssu, No. 562. On exposed, dry roadsides. Fairly common.

Height up to 20 cm.; flowers greenish yellow.

2. Lang Tzu T'ang Kou, No. 856. On exposed, dry, grassy foothills. Common.

Height up to 60 cm.; flowers yellow, bracts yellow.

3. Ho Lan Shan, No. 1062. On grasslands. Rare.

Height 20 cm.; flowers green, stamens yellow.

Carum carvi L. Sp. Pl. 263. 1753.

First described from Europe.

Hsin Ch'eng, west of Lanchow, No. 304; Ho Lan Shan, No. 1049. Along moist, clay roadsides.

Height up to 45 cm.; flowers purplish.

Ferula sp.?

Chung Wei, No. 234. On an exposed, bare, clay cliff.

Aromatic herb, 45 cm. high; flowers greenish yellow.

Heracleum barbatum Ledeb. Fl. Alt. 1: 300. 1829.

First described from the Altai Mountains.

San Ta Lai Ssu, No. 729. In pure stands in deep rich soil, on exposed, moist stream banks. Common.

Height up to 1.8 meters; flowers white, aromatic.

Heracleum millefolium Diels, Repert. Sp. Nov. Fedde 2: 65. 1906.

First described from collections of the Filchner Expedition in Tibet.

Ta P'an Shan, No. 660. Along exposed moist roadsides. Fairly common.

Height up to 45 cm.; flowers purplish.

Ligusticum pilgerianum Wolff, Repert. Sp. Nov. Fedde 27: 307. 1930.

First described from Szechwan.

Lang Tzu T'ang Kou, No. 581. In woods. Common.

Height up to 1.5 meters; stems purplish, the whole plant highly aromatic. Valued medicinally.

Pleurospermum kansuense Wolff, Repert. Sp. Nov. Fedde 27: 115. 1929.

Ta P'an Shan, No. 650 (type). In dense, flat tufts on exposed, moist, grassy slopes. Fairly common.

Height 30 cm.; flowers purple, aromatic.

Pleurospermum longicaule Wolff, Repert. Sp. Nov. Fedde 27: 117. 1929.

Upper Ch'ia Ch'ing Kou, No. 878 (type). On steppes. Rare.

Height up to 1 meter; flowers yellowish.

Pleurospermum sp.

Hsi Mi Yai, No. 488. In woods. Common.

Height up to 75 cm.; flowers fragrant, pale yellow or white, the anthers purple.

Tongoloa elata Wolff, Medd. Bot. Trädg. Göteborg 2: 291. 1926, vel aff.

First described from northern Szechwan.

Upper Ch'ia Ch'ing Kou, No. 874. On steppes and in open woods. Common, gregarious.

Height up to 80 cm.; flowers aromatic, white, the anthers purple.

CORNACEAE

Cornus bretschneideri L. Henry, Jardin 13: 309. *figs. 154, 155.* 1899.

First described from Peking.

Shui Mo Kou, near Lien Ch'eng, No. 343. In woods, associated with *Corylus*, *Acer*, *Picea*, and *Betula*.

A treelike shrub, up to 5 meters high; branches and young stems distinctly purple; flowers creamy white, fragrant.

Cornus poliophylla C. Schneid. & Wangerin, Repert. Sp. Nov. Fedde 7: 228. 1909.²⁶

First described from central China.

Lien Hua Shan, No. 1019. In densely shaded woods, associated with *Betula*, *Acer*, *Pinus*, etc. Common.

A small tree, up to 10 meters high, with a trunk diameter of 15 cm.

²⁶ This was determined by A. Rehder. H. Handel-Mazzetti considers this as *C. macrophylla* Wall. in Roxb. Fl. Ind. Ed. Carey 1: 433. 1820 (first described from India).

ERICACEAE

Arctous alpinus (L.) Niedenzu, Bot. Jahrb. Engler 11: 180. 1889.

First described from Europe and Siberia.

La Ch'iung Kou, No. 607. In large patches, on partially shaded slopes of rich soil. Common.

A shrub, up to 1 meter high; fruit green, the pedicel and calyx reddish yellow.

Pyrola rotundifolia L. subsp. *chinensis* Andres, Deutsch. Bot. Monatschr. 22: 35. 1911.

First described from northern China.

Ha La Hu Kou, No. 78; T'u Er P'ing, No. 424; Shih Men, No. 929; Ho Lan Shan, No. 1136. In forests of *Picea* and *Abies* or of *Betula* and *Salix*, on moist soil. Common at higher altitudes.

Height 8 cm.: flowers purplish yellow; fruit of previous year persistent (May). Used locally by lumbermen as tea.

Rhododendron agglutinatum Balf. & Forr. Notes Bot. Gard. Edinburgh 12: 88. 1920.

First described from Szechwan and Yunnan.

Lang Tzu T'ang Kou, No. 578. In moist woods with other species of *Rhododendron*. Common. Ta P'an Shan, No. 670. On exposed, very moist, alpine summits. Common. Upper Ch'ia Ch'ing Kou, No. 868. In *Juniperus* forests or forming pure stands by itself. Common.

A shrub, up to 4.5 meters high; bark of current year's growth yellowish green, becoming gray the second year; leaves brownish beneath; flowers pure white with brown spots inside of corolla.

Rhododendron anthopogonoides Maxim. Bull. Acad. Sci. St. Pétersb. 23: 350. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 9: 772. 1877).

First described from Przhevalski's Kansu collections.

T'ai Hua, No. 525 (rare); La Ch'iung Kou, No. 615 (common). Associated with *R. capitatum* on moist exposed slopes.

A shrub, up to 1.8 meters high, producing suckers freely; flowers greenish, faintly fragrant.

Rhododendron capitatum Maxim. Bull. Acad. Sci. St. Pétersb. 23: 351. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 9: 773. 1877).

First described from Przhevalski's Kansu collections.

T'ai Hua, No. 524; La Ch'iung Kou, No. 603; Ch'ia Ch'ing Kou, Nos. 871, 951. Forming a dense, sometimes almost impenetrable scrub, often of large extent, on exposed, moist slopes at rather high altitudes.

A shrub, up to 1 meter high; leaves abundantly silvery lepidote above, brownish lepidote beneath.

Rhododendron rufum Batalin, Act. Hort. Petrop. 11: 490. 1891.

First described from Szechwan.

Lung Hua, No. 801. Forming a pure dense undergrowth in *Picea* and *Abies* forests. Common.

A shrub, up to 6 meters high; leaves thick brown-tomentose beneath.

Rhododendron thymifolium Maxim. Bull. Acad. Sci. St. Pétersb. 23: 35. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 9: 773. 1877).

First described from Przhevalski's Kansu collections.

T'ai Hua, No. 523 (very rare); La Ch'iung Kou, No. 608 (common). Both associated with *R. capitatum* Maxim. on moist exposed slopes.

A shrub, up to 1.2 meters high; bark brownish gray, smooth; flowers purplish, fragrant.

PRIMULACEAE

Androsace erecta Maxim. Bull. Acad. Sci. St. Pétersb. 27: 499. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 262. 1881).

First described from Przhevalski's Kansu collections.

Shang Hsin Chuang, No. 678. Forming large, round patches on an exposed, moist, clay bank. Common.

Height 15 cm.; flowers pink.

Androsace mariae Kanitz var. *tibetica* (Maxim.) Hand.-Mazz. Medd. Bot. Trädg. Göteborg 2: 114. 1926.

First described from Potanin's and Przhevalski's Tibet, Kansu, and Mongolia collections.

Ha La Hu Kou, No. 55; Shui Mo Kou, Ho Lan Shan, No. 100. In compact patches on exposed, gravelly valley bottoms. Common.

Height up to 12 cm.; flowers pink, fragrant.

Androsace aff. saxifragaefolia Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 127. 1833 (Enum. Pl. China Bor. 53. 1835).

First described from near Peking.

Pei Ssu Kou, No. 118. On grasslands of rich soil, hidden under the grass. Rare.

Flowers pink.

Androsace spp.

1. Ha La Hou Kou, No. 69. On exposed, gravelly valley bottoms. Fairly common.

Cushion plants, 2 to 3 cm. high; flowers pure white with red or yellow disk in center.

2. Upper Ch'ia Ch'ing Kou, No. 863. In rocky crevices. Common.

Cushion plants, 3 to 10 cm. high.

Glaux maritima L. Sp. Pl. 207. 1753.

First described from Europe.

Chung Wei, Nos. 212, 232. At edges of moist cultivated fields of alkaline clay soil. Common, gregarious.

Height 10 cm.; flowers pink or white.

Primula algida Adam, in Web. & Mohr, Beitr. Naturk. 1: 46. 1805.

First described from the Caucasus Mountains.

Ha La Hu Kou, No. 64a; Wang Te Lin Kou, No. 80. In large patches, on exposed, moist, very rich grassland. Fairly common.

Flowers purplish red, fragrant.

Primula gemmifera Batalin, Act. Hort. Petrop. 11: 491. 1891.

First described from Grum-Grzhimailo's Kansu collections.

La Ch'ung Kou, No. 616. On an exposed, moist, grassy slope. Rare. Lung Hua, No. 813. In woods. Common.

Flowers purplish pink.

Primula sataniensis Balf. f. & Farrer, Notes Bot. Gard. Edinburgh 13: 18. 1920.

First described from Farrer's and Purdom's Kansu collection.

Ha La Hu Kou, No. 64; Malisoondo, No. 944 (determination doubtful). Under high bushes and on shaded rocky cliffs. Common.

Flowers purplish red.

Primula stenocalyx Maxim. Bull. Acad. Sci. St. Pétersb. 27: 498. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 260. 1881).

First described from Przhevalski's Kansu collections.

T'ai Hua, No. 549. In woods. Very rare. Ta P'an Shan, No. 659. On roadsides. Fairly common.

Flowers purplish.

Primula urticifolia Maxim. Bull. Acad. Sci. St. Pétersb. 27: 497. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 259. 1881).

First described from Przhevalski's Kansu collections.

Ta P'an Shan, No. 656. On a densely shaded, rocky cliff. Fairly common.

Flowers purplish.

Primula woodwardii Balf. f. Notes Bot. Gard. Edinburgh 9: 61. 1915.

First described from plants grown from seeds collected in the northern Peling Mountains, Kansu by Fenwick Owen.

Ch'ia Ch'ing Kou, No. 952. On steppes. Common.

Fruit brown.

PLUMBAGINACEAE

Plumbagella micrantha (Ledeb.) Spach, Hist. Nat. Veg. 10: 333. 1841.

First described from the Altai Mountains.

Lien Ch'eng, No. 312. On grasslands.

Height 45 cm.

Statice aurea L. Sp. Pl. 276. 1753.

First described from Dahuria.

Chung Wei, No. 230; Ho Lan Shan, Nos. 1059, 1075. On exposed, dry, clay cliffs. Common.

Height up to 25 cm.; flowers lemon-yellow, the color persistent.

Statice bicolor Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 129. 1833 (Enum. Pl. China Bor. 55. 1835).

First described from southeastern Mongolia.

Mouth of Hsi Yeh Kou, No. 180; Yao Chieh, No. 249; Ho Lan Shan, No. 1132. On dry, exposed, gravelly slopes and along roadsides. Common.

Height up to 60 cm.; corolla pink or white; calyx violet and open after the corolla is shed.

Statice aff. schrenkiana Fisch. & Mey. Bull. Phys.-Math. Acad. Sci. St. Pétersb. 1: 362. 1843.

First described from Sungaria.

Nan Ssu Kou, No. 134. On a dry, exposed, gravelly ridge. Rare.

Height 17 cm.; flowers yellow.

OLEACEAE

Syringa oblata Lindl. Gard. Chron. 1859: 868. 1859.

First described from a plant in cultivation at Shanghai.

Wang Yeh Fu, No. 38. Growing by itself, on a farm of clay soil. Fairly common.

A shrub, 6 meters high; flowers violet.

Syringa oblata var. *alba* Hort. ex Rehd. in Bailey, Cycl. Amer. Hort. 4: 1763. 1902.

First observed by Bunge in Feking gardens.

Shui Mo Kou, Ho Lan Shan, No. 97. Associated with the next variety, on moist gravelly soil. Only one specimen found.

A shrub, up to 6 meters high; flowers pure white, fragrant; fruit persistent, brown.

Syringa oblata var. *giraldii* (Lemoine) Rehd. Journ. Arn. Arb. 7: 34. 1926.

First described from Shensi.

Ha La Hou Kou, No. 51. On an exposed rocky slope, dominating the landscape at blossoming. Common or very common.

A shrub, up to 6 meters high; flowers pink or violet, fragrant; fruit persistent. The wood of this highly ornamental shrub is used for handles of implements.

Syringa pekinensis Rupr. Bull. Phys. Math. Acad. Sci. St. Pétersb. 15: 371. 1857 (Mél. Biol. Acad. Sci. St. Pétersb. 2: 551. 1858).

First described from Peking.

Tai Wang Kou, No. 446. On exposed, clay soil by a temple. Rare. T'ien T'ang Ssu, No. 560. Cultivated by a lamasery at foot of a hill. Hsin Ch'eng, south of Lanchow, Nos. 1005, 1006. Along partially shaded roadsides. Fairly common.

A tree or large shrub, up to 11 meters high; bark shining brown (similar to that of the red birch), peeling off in long strips; flowers creamy white.

LOGANIACEAE

Buddleia alternifolia Maxim. Bull. Acad. Sci. St. Pétersb. 26: 494. 1880 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 673. 1880).

First described from Piasetski's Kansu collections.

Hsi Yeh Kou, No. 185. On exposed moist foothills. Rather rare.

A shrub, up to 6 meters high, either assuming a bushy form or having a brush of dense branches at the tip of a single stem, the branchlets long, slender, somewhat curving, loaded with a mass of purple flowers.

GENTIANACEAE²⁷

Gentiana chingii Marquand, Kew Bull. Misc. Inf. 1931: 83. 1931.

Yeh T'sang Kou, No. 817 (type). In dense tussocks, on steppes. Very common.

Height up to 20 cm.; flowers blue, the anthers reddish.

Gentiana dahurica Fisch. Mém. Soc. Nat. Moscou 3: 63. 1812.

First described from Dahuria.

T'ai Hua, No. 529. On exposed, dry moist slopes and along clay roadsides. Very common. Ho Lan Shan, No. 1090. On grasslands. Common.

A spreading or somewhat prostrate herb, 18 to 40 cm. high, with a long thick taproot and a compact tuft of leaves, stems, and flowers, flowers deep purple (No. 529) or bluish at mouth of corolla, paler below (No. 1090). Root valued medicinally.

Gentiana farreri Balf. f. Trans. Bot. Soc. (Edinburgh) 27: 248. 1918.

First described from Farrer's and Purdom's Kansu collections.

A Chüan, No. 986. On steppes. Common.

Height 20 cm.; flowers bluish, opening to a width of 3 cm. in sunlight, closing at night.

Gentiana grumii N. I. Kuzen.²⁸ Act. Hort. Petrop. 13: 63. 1893.

First described from Grum-Grzhimailo's Kansu collections in the Nan Shan.

Hsi Mi Yai, No. 499. Beautifully covering the edges of a woods. Common.

Height 10 cm.; flowers purple.

²⁷ All or most of the specimens of this family were sent for determination to Dr. C. V. B. Marquand at Kew, who has cited them from time to time in his published detailed studies. Unfortunately, at the time of his retirement in 1939, these studies with rather important taxonomic changes were far from complete. Therefore, in addition to the full determinations to species, which are Marquand's work, the following incomplete determinations are recorded with doubt even of some of the generic allocations.

²⁸ Determined by E. H. Walker.

***Gentiana hexaphylla* Maxim. var. *caudata* Marquand, Kew Bull. Misc. Inf. 1931: 81. 1931.**

Upper Ch'ia Ch'ing Kou, No. 870 (type). In tussocks on steppes. Common. Height up to 20 cm.; with a very tough root system; flowers blue.

***Gentiana leucomelaena* Maxim. Bull. Acad. Sci. St. Pétersb. 34: 505. 1892.** First described from Mongolia, Tibet, and Kansu.

Yeh Ts'ang Kou, No. 821. On steppes. Fairly common.

Height 18 cm.; flowers white with blue stripes on outside of corolla, dotted inside with small purple spots, closing immediately on being collected

***Gentiana officinalis* H. Smith, in Hand.-Mazz. Symb. Sin. 7: 979. 1936.**

First described from Szechwan and Kansu (Ching's collection).

Ni Ma Lang Kou, No. 753.²⁹ On an exposed, moist, valley bottom of rich loam. Common. Lung Hua, No. 807. On a mountaintop on the margin of an *Abies* forest. Fairly common. Ho Lan Shan, No. 1063. On moist grasslands along a stream. Common.

Height up to 75 cm.; flowers blue above, greenish yellow below, spotted inside with blue.

***Gentiana przewalskii* Maxim. Bull. Acad. Sci. St. Pétersb. 27: 502. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 266. 1881).**

First described from Przhevalski's Kansu collections.

Shih Men, No. 934. In tussocks on steppes. Common.

Height up to 23 cm.; flowers deep blue.

***Gentiana siphonantha* Maxim. var. *latifolia* Marquand, Kew Bull. Misc. Inf. 1937: 167. 1937.**

Lang Tzu T'ang Kou, No. 585 (type). On an exposed, moist foothill. Rare. Height up to 45 cm.; flowers deep turquoise blue.

***Gentiana squarrosa* Ledeb. Mém. Acad. Sci. St. Pétersb. Hist. Acad. 5: 527. 1815? (1812?).**

First described from Transbaikalia.

Ha La Hu Kou, No. 68. On a moist valley bottom of rich soil.

A low herb, about 3 cm. high, with a long taproot; flowers violet.

***Gentiana straminea* Maxim. Bull. Acad. Sci. St. Pétersb. 27: 502. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 267. 1881).**

First described from Przhevalski's Kansu collections.

Shang Hsin Chuang, No. 682. On exposed, moist grasslands or steppes. Common.

A prostrate herb, up to 60 cm. high, the ends of the stems ascending; flowers yellowish green, dotted with many green spots.

***Gentiana striata* Maxim. Bull. Acad. Acad. Sci. St. Pétersb. 27: 501. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 265. 1881).**

First described from Przhevalski's Kansu collections.

Lung Hua, No. 815. On an exposed, moist stream bank. Common.

Height up to 45 cm.; flowers greenish yellow.

***Gentiana* spp.**

1. T'ai Hua, No. 515. Gregarious, on a moist, bushy slope. Common.

Height up to 38 cm.; flowers greenish yellow.

2. A Chüan, No. 976. On steppes. Common.

Height up to 36 cm.; flowers bluish.

²⁹ This number is cited with the original description.

Gentianella spp.

1. T'u Er P'ing, No. 411. In woods and moist, shaded places. Common.
Height 60 cm.; flowers deep violet.
2. La Ch'iung Kou, No. 606. On an exposed, moist, grassy slope. Rare.
Near Labrang, No. 772. In woods, on partially shaded, very moist soil.
Height 30 cm.; flowers deep turquoise blue.
3. Lung Hua, No. 781. In woods, partially shaded. Common.
Height up to 30 cm.; flowers pure white inside, greenish yellow outside.
4. Upper Ch'ia Ch'ing Kou, No. 888. On a rocky cliff. Only one clump found.
Height 5 cm.; flowers bluish purple.
5. Ch'ia Ch'ing Kou, No. 953. On steppes at the foot of a bare rocky ridge.
Rare.
Height 18 cm.; flowers bluish.
6. Ho Lan Shan, No. 1122. Decorating the grasslands. Common.
Height 18 cm.; flowers purplish blue.
7. Ho Lan Shan, No. 1125. On steppes.
Height 18 cm.; flowers bluish.
8. Ho Lan Shan, No. 1126. At edge of forests.
Height 25 cm.; flowers blue.

Halenia elliptica D. Don, Trans. Linn. Soc. 27: 525. 1837.

First described from India.

Shih Men, No. 925; Ho Lan Shan, No. 1124. On steppes and in open woods.
Common.

Height about 40 cm.; stems purple; flowers purplish or blue.

Swertia pusilla Diels, Notizbl. Bot. Gart. Berlin 11: 215. 1931.

Ha La Hu Kou, No. 70 (type). In rich soil on moist valley bottoms. Fairly common.

Height 5 cm.; flowers white, slightly tinged with purple; young leaves and petioles tinged with purple.

Swertia spp.

1. La Chi Tzu Shan, No. 706. On partially shaded, very moist steppes.
Common.
Height 25 cm.; flowers turquoise blue.
2. Lung Hua, No. 792. In forest. Rare.
Height up to 60 cm.; flowers greenish yellow, dotted with purple spots.
3. Yeh Ts'ang Kou, No. 816. On steppes. Rare.
Height up to 25 cm.; flowers deep purplish blue.
4. Upper Ch'ia Ch'ing Kou, No. 860. Beautifully dotting steppes and bushy slopes. Common.
Height up to 30 cm.; flowers purplish blue with deeper lines on petals.

APOCYNACEAE

Trachomitum venetum (L.) Woodson, Ann. Missouri Bot. Gard. 17: 158. 1930.

First described from southern Europe.

Chung Wei, No. 235. On edges of cultivated fields.

Flowers purplish.

ASCLEPIADACEAE

Cynanchum chinense R. Br. Mem. Wern. Soc. 1: 44. 1809 (?).

First described from Hopeh.

Chung Wei, No. 221. Along roadsides, in alkaline, alluvial soil.

A climbing or prostrate herb, with milky juice; flowers white.

Cynanchum mongolicum (Maxim.) Hemsl. Journ. Linn. Soc. Bot. 26: 107. 1889.

First described from plants grown from seeds sent from the Ordos Desert in Mongolia.

Hsin Ch'eng, No. 214; Yao Chieh, No. 252. On a bare, dry, gravelly foothill. Flowers greenish yellow to deep purple. Hardy and drought-resistant.

Cynanchum sibiricum R. Br. Mem. Wern. Soc. 1: 48. 1809 (?).

First described from Siberia and China.

Huang Hsi Kou, No. 195 (common); Hsün Hua Hsien, No. 735 (rare). In dry, exposed places.

Flowers yellowish, very fragrant.

CUSCUTACEAE

Cuscuta chinensis Lam. Encycl. 2: 229. 1786.

First described from China.

La Chi Tzu Shan, No. 715 (host not identifiable); Tu I Kou, No. 967a (on *Sambucus wrightiana* Wall.)

CONVOLVULACEAE

Convolvulus arvensis L. Sp. Pl. 153. 1753.

First described from Europe.

Hsi Yeh Kou, No. 171. On moist farm clay. Common.

Height 60 cm.; flowers pink, fragrant.

Convolvulus tragacanthoides Turcz. Bull. Soc. Nat. Moscou 5: 201. 1832.

First described from Mongolia.

Ha La Hu Kou, No. 47; Wang Yeh Fu, No. 127. On exposed, gravelly foothills and along roadsides in desert. Common.

In compact clusters up to 10 cm. high; flowers pink.

POLEMONIACEAE

Polemonium caeruleum L. subsp. *villosum* (Rudolph) Brand in Engl.

Pflanzenreich 27 (IV. 250): 38. 1907.

First described from Siberia.

T'u Er P'ing, No. 414. In a large patch in woods. Common.

Height up to 90 cm., flowers deep blue.

BORAGINACEAE

Arnebia szechenyii Kanitz in Széchenyi, Keletáz. Utjának 2: 828. 1891 (Kanitz, Pl. Exped. Széch. Asia Centr. 42. pl. 5. 1891).

First described from Loczy's Kansu collections.

Five li east of Hsün Hua Hsien, No. 731. On an exposed, dry, bare slope. Fairly common.

Flowers yellow, with 5 black spots on some flowers.

Asperugo procumbens L. Sp. Pl. 138. 1753.

First described from Europe.

Lien Ch'eng, No. 313; Ho Lan Shan, No. 1101. In cultivated fields or woods.

A procumbent herb; flowers bluish.

Eritrichium pectinatum DC. Prodr. 10: 127. 1830.

First described from Dahuria.

Ho Lan Shan, No. 1095. On dry, exposed, bare slopes or cliffs. Common.

Flowers blue.

Lappula redowskii (Hornem.) Greene, *Pittonia* 2: 182. 1891.

First described from Europe.

Pei Ssu Kou, No. 187; Ho Lan Shan, No. 1111. In woods or on fairly moist, exposed farmland. Common.

Flowers blue.

Lycopsis orientalis L. Sp. Pl. 137. 1753.

First described from "Oriente."

Hsi Yeh Kou, No. 177; Ho Lan Shan, No. 1057. On exposed banks of a ditch and in *Picea* forests. Common.

Flowers blue.

Messerschmidia siberica L. Mant. Pl. 2: 334. 1771.

First described from Dahuria.

Chung Wei, No. 213. In cultivated fields of moist alkaline soil. Common.

Height 20 cm.; flowers yellow.

Microula myosotidea (Franch.) I. M. Johnston, *Contr. Gray Herb.* 73: 62. 1924.

First described from Yunnan.

Liu Fu Yai, No. 474. On moist grasslands. Common.

Flowers shining blue.

Microula trichocarpa (Maxim.) I. M. Johnston, *Contr. Gray Herb.* 81: 83. 1928.

First described from Przhevalski's Kansu collections.

Shih Men, No. 919. On steppes. Common.

VERBENACEAE

Caryopteris mongholica Bunge, *Pl. Mong.-Chin.* 28. 1835.

First described from Mongolia.

Ho Lan Shan, No. 1086. On an exposed, dry, clay cliff. Fairly common.

Height 30 cm.; flowers shining blue, fragrant.

Caryopteris tangutica Maxim. *Bull. Acad. Sci. St. Pétersb.* 11: 301. 1881.

First described from Przhevalski's Kansu collections.

T'ien T'ang Ssu, No. 564. On an exposed, gravelly river bank. Common.

Flowers deep purple, aromatic.

LABIATAE

Ajuga lupulina Maxim. *Bull. Acad. Sci. St. Pétersb.* 23: 391. 1877 (*Mémoires*

Biol. Acad. Sci. St. Pétersb. 9: 831. 1877).

First described from Przhevalski's Kansu collections.

Ta P'an Shan, No. 643. On moist, grassy slopes. Very common.

Flowers white with many blue stripes.

Ajuga ovalifolia Bur. & Franch. *Journ. de Bot.* 5: 150. 1891.

First described from Szechwan.

Upper Ch'ia Ch'ing Kou, No. 851. In dense woods. Only one specimen found.

Flowers purplish blue.

Dracocephalum heterophyllum Benth. *Labiatae Gen. Sp.* 738. 1835.

First described from eastern India.

Lien Ch'eng No. 305. On a moist, exposed, sandy beach.

Flowers creamy white, fragrant.

Dracocephalum imberbe Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 560. 1835.

First described from the Altai Mountains.

Lang Tzu T'ang Kou, No. 590. In dense tussocks, on an exposed, moist, gravelly foothill. Common.

Flowers deep purple.

Dracocephalum sibiricum L. Syst. Nat. ed. 10, 1104. 1759.

First described from Dahuria.

Upper Shui Mo Kou, near Lien Ch'eng, No. 384. On a shrub-covered slope. Height 60 cm.; flowers purplish blue.

Dracocephalum tanguticum Maxim. Bull. Acad. Sci. St. Pétersb. 27: 530. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 307. 1880).

First described from Przhevalski's Kansu collections.

T'ai Hua, No. 535. On an exposed, dry roadside of hard clay. Common.

Flowers purple.

Elsholtzia cristata Willd. in Roem. & Ust. Mag. Bot. 5¹¹: 5. 1790.

First described without locality.

A Ch'uan, No. 978. On an exposed, moist roadside. Rare.

Flowers purplish, fragrant.

Elsholtzia densa Benth. Labiat. Gen. Sp. 714. 1835.

First described from India.

Ho Lan Shan, No. 1142. In a dense stand, on edges of cultivated field. Common.

Flowers purplish.

Elsholtzia eriostachya Benth. Labiat. Gen. Sp. 163. 1833.

First described from India.

Lung Hua, No. 788. In a pure stand, along exposed, very moist roadsides of rich soil. Common.

Flowers purple, aromatic. Used medicinally.

Galeopsis tetrahit L. Sp. Pl. 579. 1753.

First described from Europe.

La Ch'ung Kou, No. 629. Forming dense, pure stands on exposed, grassy slopes. Common.

Height 18 cm.; flowers yellowish, the lower lip tinted with purple.

Lamium amplexicaule L. Sp. Pl. 579. 1753.

First described from Europe.

La Chi Tzu Shan, No. 720. In an exposed yard of rich, clay soil. Common.

Height up to 60 cm.; flowers purple.

Leonurus lanatus (L.) Pers. Syn. Pl. 126. 1805.

First described from Siberia.

Ningsia, No. 224; Ho Lan Shan, No. 1105. Scattered, on dry, exposed, sandy soil.

Flowers creamy white, fragrant.

Leonurus sibiricus L. Sp. Pl. 584. 1753.

First described from Siberia and China.

Hsün Hua Hsien, No. 732. On exposed, fairly moist foothills or along roadsides. Common.

Flowers purplish, aromatic.

Marrubium incisum Benth. Labiat. Gen. Sp. 586. 1834.

First described from Siberia, Dahuria, and northern China.

Pei Ssu Kou, No. 189. In large patches in dry or moist exposed places. Common. Shang Hsin Chuang, No. 677. Growing in tufts with some prostrate stems, along exposed roadsides. Rare.

Height 25 cm.; flowers purple or white, aromatic.

Mentha arvensis L. Sp. Pl. 577. 1753.

First described from Europe.

Shang Hsin Chuang, No. 684: Ho Lan Shan, No. 1099. Along roadsides and ditches, or on rather swampy land. Common.

Flowers white or pink. Valued medicinally.

Nepeta macrantha Fisch. Cat. Jard. Gorenk. ed. 2, 22. 1812 (*nomen nudum*); Benth. Labiat. Gen. Sp. 482. 1834.

First described from the Altai Mountains.

Ho Lan Shan, No. 1128. At edge of woods. Common.

Flowers blue.

Phlomis mongolica Turcz. Bull. Soc. Nat. Moscou 24²: 406. 1851 (Fl. Baical. 2: 434. 1856).

First described from Mongolia.

Huang Hsi Kou, No. 197. On bottom of an exposed, moist, rocky gorge. Common. Chung Wei, No. 231. On an exposed, bare, gravelly slope.

Height 30 cm.; flowers purplish.

Salvia przewalskii Maxim. Bull. Acad. Sci. St. Pétersb. 27: 526. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 301. 1881).

First described from Przhevalski's Kansu collections.

Shui Mo Kou, near Lien Ch'eng, No. 355. On an exposed, wet stream bank.

Flowers bluish purple.

Salvia roborowskii Maxim. Bull. Acad. Sci. St. Pétersb. 27: 527. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 302. 1881).

First described from Przhevalski's Kansu collections.

Ni Ma Lang Kou, No. 759. Along exposed, very moist roadsides of black, rich soil. Common.

Flowers greenish yellow, pleasantly aromatic.

Scutellaria baikalensis Georgi, Reise Russ. Reich. 1: 223. 1775.

First described from the Baikal region.

Nan Ssu Kou, No. 138. In dry, mountain stream beds.

Height 25 cm.; flowers violet. Fairly common.

Scutellaria rivularis Wall. List No. 2140. 1829 (*nomen nudum*); Pl. Asiat. Rar. 1: 66. 1830.

First described from Nepal.

Ho Lan Shan, No. 1154. On exposed, dry, clay cliffs.

Height 30 cm.; flowers blue.

Stachys baikalensis Fisch. in Benth. Labiat. Gen. Sp. 543. 1834, vel. aff.

First described from Dahuria and Siberia.

Yao Chieh, No. 270. On margins of cultivated fields. Lung Hua, No. 787. Forming dense patches, along exposed, very moist roadsides of rich soil. Common.

Height up to 60 cm.; flowers creamy white to purplish blue, the whole plant aromatic. Used medicinally.

Thymus serpyllum L. subsp. *mongolicus* Ronniger, Notizbl. Bot. Gart. Berlin 10: 890. 1930.

First described from Kansu (Rock's collections), Tibet, the Altai Mountains, etc.

Labrang, No. 780; Ho Lan Shan, No. 1138. In dense *Picea* forests. Common. A low herb, spreading by runners; flowers purple.

SOLANACEAE

Anisodus tanguticus (Maxim.) Pascher, Repert. Sp. Nov. Fedde 7: 167. 1909.

First described from Przewalski's Kansu collections.

Liu Fu Yai, No. 469; La Ch'ung Kou, No. 600. On exposed, moist foothills or along roadsides. Common.

A large, bushy herb, up to 1.2 meters high; flowers deep purple; fruit enclosed in a green, corrugated involucre. Used medicinally.

Hyoscyamus niger L. Sp. Pl. 179. 1753.

First described from Europe.

Pei Ssu Kou, No. 121; Yao Chieh, No. 275; Ho Lan Shan, No. 1102. Along roadsides or in other open places. Common.

Flowers pale brownish with a network of purple lines; anthers deep red.

Lycium chinense Mill. Gard. Dict. ed. 8, No. 5. 1768.

First described from China.

Hsin Ch'eng, north of Ningsia, No. 208.²⁰ On exposed, hard, clay cliffs in eastern and northeastern Kansu. Common.

A shrub, up to 2.5 meters high; flowers purple; fruit red. Cultivated for its medicinally very valuable fruits, these gathered also from wild plants.

Solanum nigrum L. Sp. Pl. 186. 1753.

First described from cultivation.

Lien Ch'eng, No. 299. Along moist edges of cultivated fields.

Flowers yellowish; fruit green.

Solanum septemlobum Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 3: 122. 1833 (Enum. Pl. China Bor. 48. 1835).

First described from near Peking.

Hsi Yeh Kou, No. 172; Ho Lan Shan, No. 1104. Along moist roadsides, often in thickets. Common.

Flowers deep violet.

SCROPHULARIACEAE

Cymbaria mongolica Maxim. Mém. Acad. Sci. St. Pétersb. VII. 29²: 66. 1881.

First described from Przewalski's Mongolia and Kansu collections.

Nan Ssu Kou, No. 131. On moist, rich grasslands and in dry places. Very common.

Height 5 cm.; flowers brownish red without, yellowish green within, fragrant.

Euphrasia officinalis L. Sp. Pl. 604. 1753.

First described from Europe.

Ho Lan Shan, No. 1083. Along the shaded margins of streams.

Height 20 cm.; flowers purplish.

Euphrasia tatarica Fisch. in Spreng. Syst. Veg. 2: 777. 1825.

First described from Siberia.

Hsi Mi Yai, No. 486. Along shaded streams. Common.

Flowers faintly purplish; anthers dark purple.

Lancea tibetica Hook. f. & Thoms. Journ. Bot. Kew Misc. 9: 244. pl. 7. 1857.

First described from alpine Tibet.

Liu Fu Yai, No. 472. Rare. Lung Hua, No. 812. Many growing together on exposed, moist, valley bottoms. Common.

Height 8 cm.; flowers deep violet; fruit shining purple, immature (August).

Odontites rubra Pers. Syn. Pl. 2: 150. 1807.

First described from Europe.

²⁰ This specimen has been reported by Handel-Mazzetti as possibly a new species.

- Hsün Hua Hsien, No. 734; Ho Lan Shan, No. 1143. Along exposed, wet, clay roadside and irrigation ditches. Common.
Height 30 cm.; flowers purple.
- Pedicularis alaschanica** Maxim. Bull. Acad. Sci. St. Pétersb. 24: 59. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 91. 1878).
First described from Przhevalski's Mongolia and Kansu collections.
Lien Ch'eng, No. 365. On sandy and gravelly beaches. Ho Lan Shan, No. 1081. In *Picea* forests. Common.
Flowers yellowish.
- Pedicularis anas** Maxim. Bull. Acad. Sci. St. Pétersb. 32: 578. 1888 (Mél. Biol. Acad. Sci. St. Pétersb. 12: 860. 1886).
First described from Szechwan.
Ta P'an Shan, No. 645. On exposed, moist, grassy slopes. Very common.
Flowers purplish, showy.
- Pedicularis armata** Maxim. Bull. Acad. Sci. St. Pétersb. 24: 56. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 86. 1878).
First described from Przhevalski's Kansu collections.
Hsi Mi Yai, No. 460. In large dense patches by shady streams in gorges. Very common.
Flowers yellow, fragrant.
- Pedicularis chingii** Bonati, Arch. Bot. (Caen) Bull. 1: 4. 1927.
Ni Ma Lang Kou, No. 761 (type). In woods. Rare.
Flowers purple.
- Pedicularis kansuensis** Maxim. Bull. Acad. Sci. St. Pétersb. 27: 516. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 287. 1881).
First described from Przhevalski's Kansu collections.
Yao Chieh, No. 280. Along moist roadsides.
Flowers purplish.
- Pedicularis muscicola** Maxim. Bull. Acad. Sci. St. Pétersb. 24: 54. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 84. 1878).
First described from Przhevalski's Kansu and Mongolia collections.
T'u Er P'ing, No. 423; Ho Lan Shan, No. 1129. In dense, wet woods and on swampy grasslands. Common.
A tufted herb; flowers purplish.
- Pedicularis rhinanthoides** Schrenk in Fisch. & C. A. Meyer, Enum. Pl. Nov. Schrenk 1: 22. 1841.
First described from the Altai Mountains.
Liu Fu Yai, No. 471. On moist grasslands. Common. Lang Tzu T'ang Kou, No. 580. In dense, shaded woods. Rare.
Flowers purple, fragrant.
- Pedicularis rudis** Maxim. Bull. Acad. Sci. St. Pétersb. 24: 67. 1877 (Mél. Biol. Acad. Sci. St. Pétersb. 10: 102. 1878).
First described from Przhevalski's Mongolia and Kansu collections.
Ch'ing Kang Yai, No. 568. In woods. Common.
A very tall form, up to 1 meter high; flowers yellow.
- Pedicularis striata** Pall. Reise Prov. Russ. Reich. 3: 737. pl. R. 1776.
First described from Dahuria.
Ho Lan Shan, No. 1066. On steppes. Common.
Flowers greenish yellow.

Pedicularis torta Maxim. Bull. Acad. Sci. St. Pétersb. 32: 538. 1888 (Mél. Biol. Acad. Sci. St. Pétersb. 12: 801. 1886).

First described from Potanin's Kansu collections.

Lung Hua, No. 784. In dense patches in woods and other shady places. Common.

Flowers yellow, the beak purplish.

Pedicularis spp.

1. T'ai Hua, No. 514. In tufts, on moist bushy slopes. Common.

Height 23 cm.; flowers yellow.

2. Ni Ma Lang Kou, No. 743. On exposed, moist steppes. Common.

Height up to 25 cm.; flowers creamy white, very showy.

Behmannia glutinosa Libosch. in DC. Prodr. 9: 275. 1845.

First described from China.

Mouth of Hsi Yeh Kou, No. 174. Along exposed, moist, rocky banks of irrigation ditches. Common.

Height 20 cm.; flowers purple, lined within, fragrant.

Scrofella chinensis Maxim. Bull. Acad. Sci. St. Pétersb. 32: 511. 1888 (Mél.

Biol. Acad. Sci. St. Pétersb. 12: 763. 1886).

First described from Szechwan.

Lung Hua, No. 782. In *Picea* and *Abies* forests. Common.

Height up to 50 cm.; flowers greenish yellow; fruit deep blue (immature).

Scrophularia alaschanica Batalin, Act. Hort. Petrop. 13: 380. 1894.

First described from Przhevalski's Mongolia collections.

Ha La Hu Kou, No. 76. At foot of large rocks, partially shaded.

Flowers greenish yellow.

Scrophularia delavayi Franch. Bull. Soc. Bot. France 47: 15. 1900.

First described from Yunnan.

Ho Lan Shan, No. 1149. On moist, gravelly valley bottoms.

Height 30 cm.; flowers greenish yellow.

Scrophularia incisa Weinm. Bot. Gart. Univ. Dorpat 1810. 136. 1810.

First described from Siberia.

Shui Mo Kou, near Lien Ch'eng, No. 364. On exposed, moist foothills of sandy soil.

Height 80 cm.; flowers violet.

Veronica anagallis L. Sp. Pl. 12. 1753.

First described from Europe.

Hsi Mi Yai, No. 483. Along shaded stream banks. Common.

Height 30 cm.; flowers purplish.

Veronica ciliata Fisch. Mém. Soc. Nat. Moscou 3: 56. pl. 9. 1812.

First described from Siberia.

Ta P'an Shan, No. 646. On exposed, moist, grassy slopes. Common.

Height 18 cm.; flowers purple.

Veronica tournefortii K. Gmel. Fl. Badens. 1: 139. 1805.

First described from Europe.

La Ch'iung Kou, No. 628. On partially shaded, moist, grassy slopes. Common.

Height up to 1.2 meters; flowers pink.

Veronica sp.

Lung Hua, No. 811. In forests. Fairly common.

Height up to 45 cm.; flowers purplish blue.

OROBANCHACEAE

Boschniakia sp.

A Chüan, No. 977. In an open *Abies* forest. Rare.

Height 38 cm.; fruit brownish.

¶Orobanche ammophila C. A. Meyer,³¹ in Ledeb. Fl. Alt. 2: 454. 1830.

First described from the Altai Mountains.

Shui Mo Kou, near Lien Ch'eng, No. 371. In woods. Rare.

Flowers bluish white.

Phelipaea salsa C. A. Meyer³² in Ledeb. Fl. Alt. 2: 461. 1830; Icon. Pl. Ross. 4: 21. pl. 37b. 1833.

First described from the Altai Mountains.

Chia Ku K'ou, No. 24. On slopes of moving sand dunes.

An herbaceous root-parasite on *Arthropytum arborescens* Litvinov, the stems up to 30 cm. high, completely underground except the upper 1 cm., the upper half white, the lower more creamy, tender, branching into 2 to 6 shoots from the long slender roots, but such occurring only where most abundant; blooming under almost any conditions as long as the basal storage tissue and the flowering parts are not severed; flowers fragrant, the sepals white, the petals purplish with two bright yellow ridges on the inside. This herb is reported to be one of the most valuable Chinese medicines. It is also made into a delicious dish, either fresh or salted.

BIGNONIACEAE

Incarvillea compacta Maxim. Bull. Acad. Sci. St. Pétersb. 27: 521. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 294. 1881).

First described from Przhevalski's Kansu collections.

Ni Ma Lang Kou, No. 766. On exposed, moist steppes. Common.

Flowers rosy red; anthers white.

Incarvillea sinensis Lam. Encycl. 3: 243. 1789.

First described from near Peking.

Lien Ch'eng, No. 288. On edges of moist cultivated fields. Rare.

Height 60 cm.; flowers purple.

Incarvillea variabilis Batalin, Act. Hort. Petrop. 12: 177. 1892.

First described from Potanin's Kansu collections.

Shui Mo Kou, near Lien Ch'eng, No. 324. On grassy foothills. Rare.

Height 50 cm.; flowers greenish yellow.

PLANTAGINACEAE

Plantago depressa Willd. Hort. Berol. Suppl. 8. 1813.

First described from cultivation.

Nan Ssu Kou, No. 152; Ningsia, No. 291. On moist stream banks. Common.

Plantago lessingii Fisch. & Mey. Ind. Sem. Hort. Bot. Petrop. 2: 22. 1835.

First described from Mongolia.

Pei Ssu Kou, No. 113. Along the foot of a wall on a farm of clay soil. Common.

Flowers green.

³¹ This is W. E. Evans' determination. In G. Beck von Mannagetta's treatment in *Das Pflanzenreich*, this name is placed as a synonym of *O. coerulescens* var. *typica* G. Beck.

³² This species is considered as *Cistanche salsa* (C. A. Meyer) G. Beck, in Engl. & Prantl. *Pflanzenfam.* 4th: 129. 1895.

Plantago major L. Sp. Pl. 112. 1753.

First described from Europe.

Cho Ni, No. 1000. On an exposed, very moist roadside. Common.

An especially large form, up to 75 cm. high.

RUBIACEAE

Galium boreale L. Sp. Pl. 108. 1753.

First described from northern Europe.

T'u Er P'ing, No. 399; Lien Ch'eng, No. 350. In woods or on bushy slopes.

Height 60 cm.; flowers purplish blue or white, highly fragrant.

Galium verum L. Sp. Pl. 107. 1753.

First described from Europe.

Yao Chieh, No. 264. On dry, bare, clay cliffs.

Height 60 cm.; inflorescence very showy; yellow.

Leptodermis sp.

Ho Lan Shan, No. 203. On exposed, dry, gravelly valley bottoms. Common.

A stunted shrub; flowers purplish.

Rubia cordifolia L. Mant. Pl. 197. 1757.

First described from Siberia and China.

Shui Mo Kou, near Lien Ch'eng, No. 311; T'ai Hua, No. 551; Ho Lan Shan, No. 1096. In woods. Common.

Height up to 1.2 meters; flowers greenish yellow.

CAPRIFOLIACEAE

Abelia zanderi (Graebn.) Rehd. in Sarg. Pl. Wils. 1: 121. 1911.

First described from western Szechwan and Tibet.

Shih Men, No. 897. In woods and on exposed slopes. Very common.

A dense shrub, up to 4 meters high; stems drooping, gray, with 6 ridges. Highly ornamental.

Lonicera caerulea L. Sp. Pl. 174. 1753.

First described from Europe. T'u Er P'ing, No. 417. In woods. Very common.

A dense shrub, up to 3 meters high, the bark peeling off in long strips, exposing a brown inner layer; fruit black, glaucous, acidic. Valued for its edible fruits.

Lonicera chrysantha Turcz. Bull. Soc. Nat. Moscou 11¹: 93. 1838 (*nomen nudum*); 18¹: 304. 1845 (Fl. Baical. 1: 522. 1845).

First described from Dahuria.

Shui Mo Kou, near Lien Ch'eng, No. 340; Tai Wang Kou, No. 442; Ch'ia Ch'ing Kou, No. 834. In woods. Common.

A dense shrub, up to 3 meters high; flowers creamy white, fragrant.

Lonicera ferdinandi Franch. Nouv. Arch. Mus. Hist. Nat. (Paris) II. 6: 31. *pl. 12*. 1883 (Pl. David. 1: 151. *pl. 12*. 1884).

First described from Mongolia.

Ch'ia Ch'ing Kou, No. 826. On dry, exposed, hard, clay slopes. Common.

A dense shrub, up to 2 meters high; fruit purplish green (immature).

Lonicera heteroloba Batalin, Act. Hort. Petrop. 12: 174. 1892.

First described from Potanin's Kansu collections.

Lung Hua, Nos. 793, 802; Cho Ni, No. 996. In dense forests of *Picea* and *Abies*, and on exposed, bushy slopes. Common.

A dense shrub, 2 to 6 meters high, the bark gray, stripping off in long narrow flakes; fruit deep red. A very ornamental species when the fruits are fully ripe.

Lonicera hispida Pall. in Roem. & Schult. Syst. Veg. 5: 258. 1819.

First described from the Altai Mountains.

T'u Er P'ing, No. 410. In woods. Rare. Malisoondo, No. 882. Along exposed roadsides. Common.

A shrub, up to 2 meters high; branchlets and winter buds purple; fruit red, partially enclosed by a pair of thin, gray bracts.

Lonicera inconspicua Batalin, Act. Hort. Petrop. 14: 172. 1895, vel. aff.

First described from Tibet.

T'u Er P'ing, No. 369. In *Picea* and *Salix* woods. Common.

A low, dense shrub, 2 meters high, with a rounded crown; flowers creamy white, very fragrant.

Lonicera microphylla Willd. in Roem. & Schult. Syst. Veg. 5: 258. 1819.

First described from eastern Siberia.

Ha La Hu Kou, No. 50. In rocky valleys. Fairly common.

A many-stemmed shrub, 3 meters high; flowers yellowish, fragrant.

Lonicera microphylla var. *gracilior* Ledeb. Fl. Alt. 1: 249. 1829.

First described from the Altai Mountains.

Hsi Yeh Kou, No. 163. In exposed, rocky and gravelly valley bottoms. Rare.

A shrub, 1.5 meters high; flowers pale yellow, fragrant.

Lonicera nervosa Maxim. Bull. Acad. Sci. St. Pétersb. 24: 39. 1877 (Mél.

Biol. Acad. Sci. St. Pétersb. 10: 62. 1878).

First described from Przhevalski's Kansu collections.

San Ta Lai Ssu, No. 727; Lung Hua, No. 795. In *Picea* and *Abies* forests. Common.

A shrub, up to 5 meters high; the branchlets purplish; leaves dark green above, paler beneath; fruit deep purple to black.

Lonicera syringantha Maxim. Bull. Acad. Sci. St. Pétersb. 23: 49. 1877 (Mél.

Biol. Acad. Sci. St. Pétersb. 10: 77. 1878).

First described from Przhevalski's Kansu collections.

T'u Er P'ing, No. 402; Liu Fu Yai, No. 458; San Ta Lai Ssu, No. 725. Along moist, wooded roadsides, sometimes isolated or with other low shrubs as *Berberis*, *Potentilla fruticosa*, etc. Fairly common.

Height 2 meters; flowers at first pink, later the petals becoming white but the corolla tube remaining pink or purplish, fragrant; fruit red. Very ornamental.

Lonicera tangutica Maxim. Bull. Acad. Sci. St. Pétersb. 24: 48. 1878 (Mél.

Biol. Acad. Sci. St. Pétersb. 10: 75. 1878).

First described from Przhevalski's Kansu collections.

T'u Er P'ing, No. 404. In very densely shaded and very moist, wooded regions. Occasional.

A shrub, 2 meters high; flowers pink, fragrant.

Lonicera thibetica Bur. & Franch. Journ. de Bot. 5: 48. 1891.

First described from Tibet.

Upper Ch'ia Ch'ing Kou, No. 879. On exposed, moist slopes of loose clay and debris. Common.

A shrub, up to 60 cm. high, the stems spreading underground; branches prostrate, covering a considerable area; fruit red.

Lonicera trichosantha Bur. & Franch. Journ. de Bot. 5: 48. 1891.

First described from Tibet and Szechwan.

Ni Ma Lang Kou, No. 754. In woods and on exposed slopes. Common.

A shrub, up to 1.2 meters high; fruit bright red, sweet. Very ornamental, especially because of its abundant fruits.

Sambucus adnata Wall. in DC. Prodr. 4: 322. 1830.

First described from Nepal.

Yao Chieh, No. 259. In moist, shaded depressions in clay soil, conspicuous at a distance. Common, many occurring together.

Herbaceous; flowers creamy white, fragrant.

Sambucus wightiana Wall. List No. 6303. 1832 (*nomen nudum*); Wight & Arn.

Prodr. Fl. Ind. Orient. 1: 338. 1834.

First described from India.

Middle Tu I Kou, No. 967. Forming pure, dense stands of large extent on bushy foothills. Common.

A subherbaceous shrub, up to 1.5 meters high; fruit bright red.

Triosteum hirsutum Roxb. Fl. Ind. Ed. Carey 2: 180. 1824.

First described from India.

Upper Shui Mo Kou, near Lien Ch'eng, No. 386. In woods.

Height 50 cm.; flowers white.

Viburnum fragrans Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 107. 1833 (Enum. Pl. China Bor. 33. 1835).

First described from cultivation in Peking.

Wang Yeh Fu, No. 41. Cultivated in partially shaded gardens along with other flowering shrubs. Fairly common.

Height up to 4 meters; flowers white, very fragrant; peduncles reddish. Highly ornamental because of its foliage and flowers.

Viburnum lobophyllum Graebn. Bot. Jahrb. Engler 29: 589. 1901.

First described from Shensi (?).

Lien Hua Shan, No. 1024. In a *Betula*, *Pinus*, and *Acer* woods, on northern slopes. Common.

A shrub, up to 6 meters high; fruit red.

Viburnum mongolicum (Pall.) Rehd. in Sarg. Trees & Shrubs 2: 111. 1908.

First described from Mongolia.

Nan Ssu Kou, No. 146; Ch'ing Kang Yai, No. 569. Along dry, exposed stream banks and in dense woods. Common.

A shrub, 2 meters high; stems gray, smooth; leaves dark green above, pale and with dirty brownish glands beneath; flowers greenish. One of the earliest flowering species of *Viburnum*.

Viburnum opulus L. Sp. Pl. 268. 1753.

First described from Europe.

Lien Hua Shan, No. 1034. Associated with *Crataegus*, *Salix*, and *Malus* at edge of woods. Fairly common.

Fruit bright red.

Viburnum veitchii C. H. Wright, Gard. Chron. III. 33: 257. 1903.

First described from western China.

Ch'ia Ch'ing Kou, No. 1157. On bushy slopes. Rare.

A shrub, up to 1.5 meters high; fruit deep red.

VALERIANACEAE

Patrinia rupestris (Pall.) Dufresne,³³ Hist. Nat. Med. Valérian. 54. 1811.

First described from Siberia.

Ch'ia Ch'ing Kou, No. 840. On partially shaded slopes. Fairly common.

An herb, up to 60 cm. high, often prostrate; flowers lemon-yellow, fragrant.

Valeriana officinalis L. Sp. Pl. 31. 1753.

First described from Europe.

La Chi Tzu Shan, No. 718. Scattered on exposed, moist grasslands. Common.

Height up to 1 meter; flowers purplish, fragrant.

Valeriana tangutica Batalin, Act. Hort. Petrop. 13: 375. 1894.

First described from Przhevalski's and Potanin's Kansu collections.

Nan Ssu Kou, No. 145. On rich soil, on moist, shaded stream banks. Fairly common. La Ch'iung Kou, No. 621; Ho Lan Shan, No. 1051. On shaded, rocky cliffs, and in *Picea* forests. Rare or scattered.

Flowers purplish, fragrant.

Valeriana sp.

T'u Er P'ing, No. 421. In woods. Common.

Height up to 75 cm.; flowers purplish.

DIPSACACEAE

Dipsacus asper Wall. List No. 428. 1829 (*nomen nudum*); DC. Prodr. 4: 646. 1830.

First described from eastern India.

Shih Men, No. 894. Along exposed, fairly moist roadsides. Common.

Height up to 1.3 meters; flowers purplish.

Morina alba Hand.-Mazz. Anzeig. Akad. Wiss. Wien Math.-Naturw. Kl. 62: 68. 1925.

First described from Yunnan.

T'ien T'ang Ssu, No. 561.³⁴ On hard clay, along exposed, dry roadsides. Common.

Flowers creamy white, very fragrant.

Morina chinensis (Batal.) Pai, Repert. Sp. Nov. Fedde 44: 122. 1938.

T'ai Hua, No. 539.³⁴ On exposed, dry, clay mountaintops. Common.

Height up to 45 cm.

³³ The nomenclature of this species is somewhat confused. Index Kewensis erroneously attributes this name to Jussieu, Ann. Mus. Hist. Nat. (Paris) 10: 311. 1807. Although Jussieu there established the genus *Patrinia*, based on *Fedia*, he failed to make the transfer of *F. rupestris* Vahl, based on *Valeriana rupestris* Pall. (which he erroneously cited as on p. 215 rather than p. 266 of "Pall. It.," vol. 3, which is Pall. Reise Prov. Russ. Reich., vol. 3, 1776). The transfer seems to have been first made in 1811 by Dufresne, who cited *Fedia rupestris* Vahl rather than *Valeriana rupestris* Pall.

³⁴ These two specimens of *Morina* were cited in Yin-yüan Pai's revision of the Chinese species in Repert. Sp. Nov. Fedde 44: 114-124. 1938, as here given. The original description of *M. parviflora* var. *chinensis* Batal., which Pai raised to specific rank, has not been located by me.

Pterocephalus hookeri (C. B. Clarke) Airy-Shaw & M. L. Green, Hand-list
Rock Gard. Pl. Roy. Bot. Gard. Kew, ed. 4, 109. 1934.

First described from Sikkim.

Upper Ch'ia Ch'ing Kou, No. 877. On steppes. Common.

Height 45 cm.; flowers white, anthers deep purple.

CAMPANULACEAE

Adenophora polymorpha Ledeb. Fl. Alt. 1: 246 (in note). 1829.

First described from the Altai Mountains.

T'ai Hua, No. 533. Along exposed, clay roadsides. Common.

Flowers purple.

Adenophora potaninii Korsh. Mém. Acad. Sci. St. Pétersb. VII. 42^o: 39. 1894.

First described from Szechwan.

La Chi Tzu Shan, No. 722. On exposed, moist, clay banks. Common.

Flowers purplish. The roots are used medicinally.

Adenophora spp.

1. Lang Tzu T'ang Kou, No. 583. Along roadsides and on margins of woods.
Occasional.

Height 60 cm.; flowers purplish blue.

2. Ho Lan Shan, No. 1084. Along exposed, moist, clay roadsides. Common.

Height 30 cm.; flowers blue.

Campanula aristata Wall. in Roxb. Fl. Ind. Ed. Carey 2: 98. 1824.

First described from Kashmir.

T'ai Hua, No. 511. Many growing together on moist bushy slopes. Common.

Flowers purple.

Codonopsis ussuriensis (Rupr.) Hemsl. Journ. Linn. Soc. Bot. 26: 6. 1889.

First described from Ussuri.

Ni Ma Lang Kou, No. 752. In woods. Common.

An herb, climbing on shrubs, the stems up to 3 meters long, with a peculiar odor; flowers dirty greenish brown. Valued medicinally.

Codonopsis viridiflora Maxim. Bull. Acad. Sci. St. Pétersb. 27: 496. 1882 (Mél.

Biol. Acad. Sci. St. Pétersb. 11: 258. 1881).

First described from Przhevalski's Kansu collections.

La Ch'iung Kou, No. 602; Upper Ch'ia Ch'ing Kou, No. 880. In dense tussocks on exposed, moist, grassy slopes. Common.

Stems with milky juice, peculiarly aromatic; flowers a pale dirty color, the stigma and stamens white. One of the most valuable Chinese medicines.

Cyananthus hookeri C. B. Clarke var. *hispidus* Franch. Journ. de Bot. 1: 281. 1887.

First described from Yunnan.

Upper Ch'ia Ch'ing Kou, No. 875. On steppes. Common.

A prostrate herb; stems 16 cm. long; flowers purplish.

COMPOSITAE

Achillea ptarmica L. Sp. Pl. 898. 1753.

First described from Europe.

Labrang, No. 777. Gregarious, on very moist, exposed grasslands. Common.

Height up to 60 cm.; flowers white.

Anaphalis alata Maxim. Bull. Acad. Sci. St. Pétersb. 27: 478. 1882 (Mél. Biol.

Acad. Sci. St. Pétersb. 11: 232. 1881).

First described from Przhevalski's Kansu collections.

Shih Men, No. 891. In dense patches on dry, exposed, clay slopes. Common.

Height 50 cm.; flowers white, fragrant.

Anaphalis aureo-punctata Lingelsh. & Borza, *Repert. Sp. Nov. Fedde* 13: 392. 1914.

First described from Yunnan.

A Chüan, No. 971. In moss in an *Abies* forest.

Flowers white, persistent throughout winter.

Anaphalis lactea Maxim. *Bull. Acad. Sci. St. Pétersb.* 27: 479. 1882 (*Mémoires Biol. Acad. Sci. St. Pétersb.* 11: 234. 1881).

First described from Przhevalski's Kansu collections.

Liu Fu Yai, No. 475; T'ai Hua, No. 532 (?); Ch'ia Ch'ing Kou, No. 937. On hard clay, along exposed, moist roadsides. Common.

Height up to 30 cm.; flowers white to pink.

Anaphalis margaritacea (L.) Benth. & Hook. f. *Gen. Pl.* 2: 303. 1873.³⁵

First described from western America and Kamchatka.

Liu Fu Yai, No. 465. On moist, gravel-strewn valley bottoms. Common.

Height up to 45 cm.; flowers white with a yellow disk.

Artemisia codonocephala Diels,³⁶ *Notes Bot. Gard. Edinburgh* 5: 186. 1912.

First described from Yunnan.

Ch'ia Ch'ing Kou, No. 938. Along exposed, clay roadsides. Common.

Height up to 1 meter; flowers purplish.

Artemisia mattfeldii Pampanini var. *etomentosa* Hand.-Mazz. *Medd. Bot. Trädg. Göteborg* 12: 276. 1938.

First described from Sikang, Szechwan, and Kansu (Ching's collection).

Shih Men, No. 923. In pure stands of considerable extent, on steppes. Common.

Height up to 75 cm.; stems and leaves very aromatic and exuding a sticky sweet fluid; flowers purplish.

Artemisia sieversiana Ehrh. in Willd. *Sp. Pl.* 3: 1845. 1800.

First described from Siberia.

Ho Lan Shan, No. 1098. On grasslands. Common.

Height 60 cm.; flowers greenish yellow.

Artemisia aff. sieversiana Ehrh.

Shang Hsin Chuang, No. 680. In dense stands, along exposed, moist roadsides. Common.

Height up to 1.7 meters; flowers greenish yellow.

Artemisia vestita Wall. *List No.* 3301. 1831 (*nomen nudum*); *DC. Prodr.* 6: 106. 1837.

First described from India.

Ni Ma Lang Kou, No. 760. In dense formations, on exposed, moist slopes of rich soil. Common.

Height 50 cm.; flowers greenish yellow, aromatic.

Artemisia sp.

Lang Tzu T'ang Kou, No. 596. At shaded foot of cliffs, by a stream. Common.

Height up to 1 meter. Used medicinally.

³⁵ Handel-Mazzetti reports that this is between *A. margaritacea* var. *angustifolia* (Franch. & Sav.) Hand.-Mazz. (*Symb. Sin.* 7: 1102. 1936) and *A. margaritacea* var. *cinnamomea* (Wall.) Hand.-Mazz. (op. cit.), but "needs no particular name."

³⁶ Handel-Mazzetti has reported *A. umbrosa* Turcz. and *A. shansiensis* Pampanini as synonyms.

Aster ageratoides Turcz. var. **adustus** Maxim. Prim. Fl. Amur. 144. 1859.

First described from Amur.

Ni Ma Lang Kou, No. 756; Lower Tu I Kou, No. 955. Along exposed or shaded moist roadsides. Common.

Height up to 1 meter; flowers purplish or lilac, showy, faintly fragrant.

Aster altaicus Willd. Enum. Pl. Hort. Berol. 881. 1809.

First described from the Altai Mountains.

Ho Lan Shan, No. 1072. On dry, gravelly or clay soil. Common.

Height about 25 cm.; flowers violet, fragrant.

Aster alyssoides Turcz. var. **achnolepis** Hand.-Mazz. Notizbl. Bot. Gart.

Berlin 13: 611. 1937.

Yao Chieh, No. 242 (type). On dry, bare, hard, clay cliffs.

Height 50 cm.

Aster crenatifolius Hand.-Mazz. Symb. Sin. 7: 1092. 1936.

First described from Szechwan.

Ch'ia Ch'ing Kou, No. 830. On moist bushy beaches by the T'ao Ho. Very common.

Height 75 cm.; flowers white, aromatic.

Aster flaccidus Bunge, Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 2: 599. 1835.

First described from the Altai Mountains.

Ta P'an Shan, No. 647. On moist, exposed, grassy slopes. Fairly common.

Height 22 cm.; heads with purple rays and yellow disk flowers.

Aster poliothamnus Diels, Repert. Sp. Nov. Fedde Beih. 12: 503. 1922.

First described from Tibet.

Ni Ma Lang Kou, No. 764. In dense clumps on exposed, dry, rocky cliffs. Common.

Height 25 cm.; flowers purple.

Aster vilmorini Franch. Journ. de Bot. 10: 373. 1896.

First described from Szechwan.

T'u Er P'ing, No. 430. In woods and on grasslands. Common.

Height up to 60 cm.; flowers with long, weak, purple rays and an orange-yellow disk.

Cacalia deltophylla (Maxim.) Mattf. Journ. Arn. Arb. 14: 39. 1933.

First described from Przhevalski's Kansu collections.

La Chi Tzu Shan, No. 712. In open stands, on exposed, moist slopes beside a stream. Common.

Height up to 45 cm.; flowers brownish yellow, aromatic.

Cancrinia maximowiczii C. Winkl. Act. Hort. Petrop. 12: 29. 1892.

First described from Przhevalski's Kansu collections.

Lien Ch'eng, No. 306. In low, dense tussocks on bare, exposed, dry, clay slopes.

Height 30 cm.; flowers yellow. Drought-resistant.

Carduus acanthoides L. Sp. Pl. 821. 1753.

First described from Europe.

Ho Lan Shan, No. 1137. Along moist edges of cultivated fields.

Height up to 1 meter; flowers purplish.

Centaurea picris Pall. Nov. Act. Acad. Sci. Petrop. 10: 318. 1797 (*nomen nudum*); Willd. Sp. Pl. 3: 2302. 1800.

First described from the Caspian Sea region.

Chung Wei, No. 236; Ho Lan Shan, No. 1056. Along exposed, dry, clay or rocky roadsides. Common.

Height 45 cm.; flowers purplish.

Chrysanthemum lavandulaefolium (Fisch.) Makino, Bot. Mag. Tokyo 23: 20 (in obs.). 1909.

First described from near Kalgan, Mongolia.

Ch'ia Ch'ing Kou, Nos. 825, 936. Along exposed, dry roadsides or at edge of woods. Fairly common.

Height 1 to 1.8 meters; stems purplish; flowers yellow, aromatic.

Chrysanthemum mutellina (Hand.-Mazz.) Hand.-Mazz. Symb. Sin. 7: 1112. pl. 7. fig. 2. 1936.

First described from Handel-Mazzetti's Yunnan collections.

Ta P'an Shan, No. 662. On exposed, moist roadsides, in rich soil. Common.

Height up to 45 cm.; flowers greenish yellow.

Chrysanthemum naktongense Nakai, Bot. Mag. Tokyo 23: 186. 1909.

First described from Korea.

Ho Lan Shan, No. 1085. On edges of woods, partially shaded. Fairly common.

Height 35 cm.; flowers purplish.

Chrysanthemum nematolobum Hand.-Mazz. Medd. Bot. Trädg. Göteborg 12: 271. 1938.

Forty li south of Lanchow, No. 1046 (type). In dense tufts, at base of exposed, clay cliffs.

Height 45 cm.; flowers lemon-yellow, fragrant.

Chrysanthemum pulvinatum Hand.-Mazz. Medd. Bot. Trädg. Göteborg 12: 263. 1938.

Hsün Hua Hsien, No. 739 (type). In a dense tussock, on exposed, dry, hard, clay cliffs. Common.

Height up to 30 cm.; flowers yellowish, aromatic.

Chrysanthemum salicifolium (Mattf.) Hand.-Mazz. Medd. Bot. Trädg. Göteborg 12: 264. 1938.

First described from Rock's Kansu collections.

T'ai Hua, No. 531. Along moist, exposed, mountain trails. Common.

Height 45 cm.; flowers greenish yellow.

Cirsium arvense (L.) Scop. var. *mite* Wimm. & Grab. Fl. Siles. 3: 82. 1829.

First described from Europe.

Ni Ma Lang Kou, No. 769. Gregarious, along exposed, moist, clay roadsides. Common.

Height up to 75 cm.; flowers purple.

Cirsium souliei (Franch.) Mattf. Journ. Arn. Arb. 14: 42. 1933.

First described from Przewalski's Kansu collections and from Szechwan.

Ni Ma Lang Kou, No. 746. On exposed, very moist steppes. Common.

Flowers purple.

Cremanthodium discoideum Maxim. Bull. Acad. Sci. St. Pétersb. 27: 482. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 238. 1881).

First described from Przewalski's Kansu collections.

Ta P'an Shan, No. 667. On exposed, moist, grassy slopes. Rare.

Flowers deep purple, very fragrant.

Cremanthodium lineare Maxim. Bull. Acad. Sci. St. Pétersb. 27: 482. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 238. 1881).

First described from Przewalski's Kansu collections.

Yeh Ts'ang Kou, No. 819. On steppes. Fairly common locally.

Height 45 cm.; flowers lemon-yellow, drooping, fragrant, the involucre greenish blue.

Cremanthodium plantagineum Maxim. Bull. Acad. Sci. St. Pétersb. 27: 481. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 237. 1881).

First described from Przhevalski's Kansu collections.

Ta P'an Shan, No. 666; Ni Ma Lang Kou, No. 742. On exposed moist, grassy slopes. Common.

Height up to 50 cm.; heads very showy, the rays yellow, the disk purple.

Crepis flexuosa (DC.) Benth. & Hook. f. Gen. Pl. 2: 515. 1873.

First described from central Asia.

Lien Ch'eng, No. 310. On exposed, moist, sandy and gravelly beaches.

Height 15 cm.; flowers yellow.

Erigeron acris L. Sp. Pl. 863. 1753.

First described from Europe.

Ch'ing Kang Yai, No. 567. On shaded, rocky slopes. Rare.

Flowers pinkish.

Gerbera anandria (L.) Schultz Bip. Flora 27: 782. 1844.

First described from Siberia.

Ha La Hu Kou, No. 67. On moist, shaded slopes of rich soil.

Height 20 cm.; rays pink outside, white inside.

Inula brittanica L. var. **chinensis** (Rupr.) Regel, Mém. Acad. Sci. St. Pétersb. VII. 4: 84. 1861.

First described from the Ussuri River, Amur, and northern China.

Hsün Hua Hsien, No. 733; Ho Lan Shan, Nos. 1103, 1140. In dense patches, along exposed, moist roadsides and edges of cultivated fields. Common.

Height up to 60 cm.; flowers orange or lemon-yellow.

Inula racemosa Hook. f. Fl. Brit. Ind. 3: 292. 1881.

First described from Kashmir.

"Woo Chi," No. 676. In a moist, partially shaded place by a ruined house, possibly persistent from cultivation.

Height up to 75 cm.; flowers orange-yellow.

Inula salsoloides (Turcz.) Ostenf. in Hedin, S. Tibet 6²: 39. 1922.

First described from Mongolia.

Chung Wei, No. 219; Yao Chieh, No. 254; Ho Lan Shan, No. 1058. On exposed, dry, clay or rocky slopes and along roadsides. Common.

Height up to 50 cm.; flowers lemon-yellow.

Ixeris chinensis (Thunb.) Nakai, Bot. Mag. Tokyo 34: 152. 1920; Fl. Sylvat. Kor. 14: 113. 1923.

First described from Japan.

Shui Mo Kou, Ho Lan Shan, No. 92; Pei Ssu Kou, No. 125; Nan Ssu Kou, No. 136; Hsi Mi Yai, No. 503; Ho Lan Shan, No. 1071. Usually in dry rocky places, sometimes along more moist roadsides. Common.

Height up to 20 cm.; flowers yellow, becoming pinkish brown.

Ixeris denticulata (Houtt.) Stebbins subsp. **elegans** (Franch.) Stebbins, Journ. Bot. Brit. & For. 75: 48. 1937.

First described from Szechwan.

Huang Hsi Kou, No. 194. Along exposed, dry, rocky roadsides and on grasslands. Common.

Height up to 45 cm.; flowers yellow.

Ixeris denticulata subsp. **sonchifolia** (Maxim.) Stebbins, Journ. Bot. Brit. & For. 75: 48. 1937.

First described from western Manchuria.

Ho Lan Shan, No. 1110. On grasslands.

Height 37 cm.; flowers lemon-yellow.

Lactuca sp.

Shih Men, No. 904. On a rocky cliff in the gorge. Rare.

Height 25 cm.

Leontopodium calocephalum (Franch.) Beauverd var. **uliginosum** Beauverd, Bull. Soc. Bot. Genève II. 5: 144. 1913.

First described from Yunnan.

T'ai Hua, No. 541. Along exposed, moist, clay roadsides. Common.

Leontopodium leontopodioides (Willd.) Beauverd, Bull. Soc. Bot. Genève II. 1: 371. 1909.

First described from the Baikal region.

Ho Lan Shan, No. 1153. On exposed, gravelly foothills.

Flowers yellowish.

Leontopodium linearifolium Hand.-Mazz. Beih. Bot. Centralbl. 44, Abt. 2: 100. 1927.

First described from the area from Kashmir to Kamchatka, including citation of Ching's collection.

Ch'ia Ch'ing Kou, No. 949. On steppes. Common.

Flowers creamy white.

Ligularia achyrotricha (Diels) Hand.-Mazz. Contr. Inst. Bot. Nat. Acad. Peiping 5: 113. 1937.³⁷

A Chüan, No. 980. On shady stream banks. Common.

Height up to 1.3 meters; flowers yellow, aromatic.

Ligularia kansuensis Hand.-Mazz. Bot. Jahrb. Engler 69: 125. 1938.

Cho Ni, No. 999 (type). Gregarious, on exposed, moist, clay banks. Common.

Height 2 meters; flowers lemon-yellow.

Ligularia macrodonta Ling, Contr. Inst. Bot. Nat. Acad. Peiping 5: 2. pl. 2. 1937.³⁷

Upper Ch'ia Ch'ing Kou, No. 866. On steppes and in woods. Common.

Height up to 90 cm.; stems purplish; leaves glaucous beneath, yellowish green above; rays yellow; involucre greenish yellow.

Ligularia przewalskii (Maxim.) Diels, Bot. Jahrb. Engler 29: 621. 1901.

First described from Mongolia.

Shui Mo Kou, near Lien Ch'eng, No. 362. On exposed stream banks. Common.

Flowers yellow.

Ligularia sagitta (Maxim.) Mattf. Journ. Arn. Arb. 14: 40. 1933.

First described from Przhevalski's Kansu collections.

T'ai Hua, No. 513. Gregarious, on moist, bushy slopes. Common.

Height 45 cm.; flowers bright yellow.

Ligularia virgaurea (Maxim.) Mattf. Journ. Arn. Arb. 14: 40. 1933.

First described from eastern Mongolia and Shensi.

T'ai Hua, No. 512; La Chi Tzu Shan, No. 698. On moist, bushy slopes and moist steppes. Common.

Height up to 1.5 meters; stems and leaves purplish; flowers bright yellow, faintly fragrant.

Pertya discolor Rehd. Journ. Arn. Arb. 10: 135. 1929.

First described from Rock's Cho Ni, Kansu, collections and from Shensi.

Labrang, No. 778. On dry, exposed, clay slopes, or in open woods. Common.

A subherbaceous shrub, up to 1.6 meters high; fruit brownish.

³⁷ These references could not be verified.

Pertya sinensis Oliver, Hook. Icon. Pl. 23: pl. 2214. 1892.

First described from Hupeh.

Malisoondo, No. 889; Shih Men, No. 900. On exposed stream-banks or in forests. Common.

A dense shrub, up to 3 meters high; flowers purple; fruit brownish.

Picris hieracioides L. subsp. *japonica* (Thunb.) Hand.-Mazz. Symb. Sin. 7: 1177. 1936.

First described from Japan.

Shui Mo Kou, near Lien Ch'eng, No. 354; Lang Tzu T'ang Kou, No. 598. On moist edges of cultivated fields and in woods. Rather rare.

Height 75 cm.; flowers lemon-yellow.

Prenanthes tatarinowii Maxim. subsp. *macrantha* Stebbins subsp. nov.

A subspecies typical differt foliis pinnatis, segmento terminale 3 partito; involucri longioribus, 12-13 mm. longis; phyllis exterioribus ad 3.5-4 mm. longis.

Differs from typical *P. tatarinowii* in its pinnate leaves, which have two pairs of well-developed lateral lobes, and in its larger involucries, which have relatively long outer bracts (the longest 3.5 to 4 mm. long in subsp. *macrantha*, 1.5 to 3 mm. in the typical form).

Type in the herbarium of the University of California collected by R. C. Ching, No. 913, in partial shade in woods in Shih Men, south of Old T'ao Chou, Kansu, alt. 3,600 to 4,200 meters, August 31, 1923; duplicate in the U. S. National Herbarium. An additional specimen seen is *Rock 14591*, in the Gray Herbarium, collected in a moist meadow and along a stream in "Drakana," in the upper Tebbu country, southern Kansu.

This subspecies is quite distinct from typical *P. tatarinowii* of Hopei and Shansi Provinces in leaf shape and size of involucries, and it occurs at much higher elevations. It probably also has a different chromosome number. Typical *P. tatarinowii*, of which the somatic chromosome number is $2n=16$ (Babcock, Stebbins, and Jenkins, *Cytologia Fujii Jubil. Vol.*, p. 190, 1937), has stomata 25-29 μ long, and its pollen is regular. The stomata of subsp. *macrantha* are 32-36 μ long, while the pollen grains are somewhat irregular in size. Since these characteristics are possessed by the only tetraploid species of *Prenanthes* known, *P. alba*, it is likely that *P. tatarinowii* subsp. *macrantha* is also tetraploid, with the somatic chromosome number $2n = 32$. This might justify its recognition as a species were it not for the fact that one specimen from Hupeh (*Henry 6748*, Gray Herb.), which morphologically resembles typical *P. tatarinowii*, also has stomata and pollen grains that suggest its polyploid condition, while another from Szechwan (*Fang 4344*) has the stomata and pollen of a diploid but resembles subsp. *macrantha* in leaf shape and in habitat. Apparently *P. tatarinowii* in northwestern China consists of a complex of closely interrelated diploid and polyploid forms, which cannot be fully understood until a much larger series of specimens is available than at present.

Saussurea acroura Cummins, Kew Bull. Misc. Inf. 1908: 19. 1908.

First described from western China.

Lower Tu I Kou, No. 959. In woods along partially exposed, clay roadsides. Fairly common.

Height up to 75 cm.; flowers purplish brown.

Saussurea chingiana Hand.-Mazz. Notizbl. Bot. Gart. Berlin 13: 647. 1937.

"Kwa Shan," 60 li south of Lanchow, No. 1035 (type). On exposed, fairly moist clay banks. Rare.

Height 45 cm.; flowers purple.

- Saussurea graminea** Dunn var. *ortholepis* Hand.-Mazz. Medd. Bot. Trädg. Göteborg 12: 339. 1938.
Ch'ia Ch'ing Kou, No. 948 (type). On steppes. Rare.
Height 10 cm.; flowers purple, faintly fragrant.
- Saussurea japonica** (Thunb.) DC. Ann. Mus. Hist. Nat. (Paris) 16: 203. 1810.
First described from Japan.
Ni Ma Lang Kou, No. 747; Ch'ia Ch'ing Kou, No. 939, in part. Gregarious, on exposed, moist steppes or along roadsides. Common.
Height 30 cm.; flowers purple, fragrant.
- Saussurea kansuensis** Hand.-Mazz. Notizbl. Bot. Gart. Berlin 13: 648. 1937.
First described from Rock's and Ching's Kansu collections.
Upper Ch'ia Ch'ing Kou, No. 854. On steppes. Common.
A spreading plant, 12 cm. high; flowers purple, very fragrant.
- Saussurea katochaete** Maxim. Bull. Acad. Sci. St. Pétersb. 27: 491. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 251. 1881).
First described from Przhevalski's Kansu collections.
La Chi Tzu Shan, No. 700. On exposed, moist, gravelly bottoms of gorges. Common.
Height 10 cm.; flowers deep purple.
- Saussurea likiangensis** Franch. var. *siningensis* Hand.-Mazz. Medd. Bot. Trädg. Göteborg 12: 336. 1938.
La Ch'ung Kou, No. 634 (type). In dense clumps or tufts, on shaded slopes. Fairly common.
Height 75 cm.; flowers deep purple.
- Saussurea otophylla** Diels, Bot. Jahrb. Engler 36, Beibl. 82: 109. 1905.
First described from Shensi.
Malisoondo, No. 890; Shih Men, No. 924. In woods or on steppes. Rare.
Height up to 1.2 meters; flowers purplish.
- Saussurea parviflora** (Poir.) DC. var. *cuspidata* Hand.-Mazz. Medd. Bot. Trädg. Göteborg 12: 316. 1938.
First described from Shansi.
La Chi Tzu Shan, No. 710. On exposed, moist, grassy slopes. Common.
Height up to 60 cm.; flowers purplish.
- Saussurea phaeantha** Maxim. Bull. Acad. Sci. St. Pétersb. 27: 489. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 248. 1881).
First described from Przhevalski's Kansu collections.
La Chi Tzu Shan, Nos. 688, 704. On exposed, moist steppes. Common.
Height up to 45 cm.; flowers deep purple.
- Saussurea runcinata** DC. var. *dentata* Ledeb. Fl. Ross. 2: 663. 1846(?).
First described from Dahuria.
Ho Lan Shan, No. 1077. Along clay roadsides.
Height 60 cm.; flowers pink.
- Saussurea stella** Maxim. Bull. Acad. Sci. St. Pétersb. 27: 490. 1882 (Mél. Biol. Acad. Sci. St. Pétersb. 11: 249. 1881).
First described from Przhevalski's Kansu collections.
Ni Ma Lang Kou, No. 744. On exposed, moist steppes. Common.
A rosette form, 7 cm. high.
- Saussurea superba** Anthony, Notes Bot. Gard. Edinburgh 18: 212. 1934.
First described from Yunnan.
Upper Ch'ia Ch'ing Kou, No. 873. On steppes. Common.
Height 15 cm.; flowers purple, very fragrant.

Saussurea ussuriensis Maxim. Mém. Acad. Sci. St. Pétersb. Sav. Étrang. 9: 167. 1859.

First described from northern China.

Ch'ia Ch'ing Kou, No. 939, in part. Along exposed, clay roadsides. Common. Height 30 cm.; flowers purplish, fragrant.

saussurea sp.

Lung Hua, No. 783. In partially shaded woods. Common.

Flowers purplish.

Scorzonera austriaca Willd. Sp. Pl. 3: 1498. 1800.

First described from Europe.

Shui Mo Kou, Ho Lan Shan, No. 105; Ho Lan Shan, No. 1152. Along exposed, dry roadsides. Rare.

Height up to 30 cm.; flowers lemon-yellow.

Scorzonera capito Maxim. Bull. Acad. Sci. St. Pétersb. 32: 491. 1888 (Mél.

Biol. Acad. Sci. St. Pétersb. 12: 733. 1886).

First described from Przhevalski's and Potanin's Mongolia collections.

Pei Ssu Kou, No. 114. In dry clay or gravelly soil along exposed roadsides. Common.

Height 20 cm.; flowers yellow.

Scorzonera divaricata Turcz. Bull. Soc. Nat. Moscou 5: 200. 1832.

First described from Mongolia.

Hsi Yeh Kou, No. 169; Yao Chieh, No. 255. On exposed, dry, clay cliffs. Rare.

Height up to 45 cm.

Scorzonera mongolica Maxim. Bull. Acad. Sci. St. Pétersb. 32: 492. 1888.

First described from Mongolia.

Hsin Ch'eng, north of Ningsia, No. 209. On hard, dry, clay slopes. Rare.

Flowers yellow.

Scorzonera sp.

Nan Ssu Kou, No. 137. In a dry, exposed desert of coarse sand and gravel. Common.

Flowers yellow.

Senecio argunensis Turcz. Bull. Soc. Nat. Moscou 20²: 18. 1847.

First described from Dahuria.

Shang Hsin Chuang, No. 683. In dense patches, along exposed, moist roadsides. Common.

Height up to 1 meter; flowers orange to yellow, with a greenish-yellow disk.

Senecio kaschkarowi C. Winkl. Act. Hort. Petrop. 14: 152. 1895.

First described from Szechwan.

La Chi Tzu Shan, No. 723. Scattered, on exposed, moist clay banks. Common.

Height 75 cm.; flowers yellow.

Senecio nemorensis L. Sp. Pl. 870. 1753, sens. lat.

First described from Germany and Siberia.

Ho Lan Shan, No. 1097. On wet land, most commonly along edges of fields. Common.

Height 60 cm.; flowers dull lemon-yellow.

Senecio roborowskii Maxim. Bull. Acad. Sci. St. Pétersb. 27: 487. 1882 (Mél.

Biol. Acad. Sci. St. Pétersb. 11: 245. 1881).

First described from Przhevalski's Kansu collections.

Upper Shui Mo Kou, near Lien Ch'eng, No. 387. In woods.

Height 50 cm.

Senecio thianschanicus Regel & Schmalh. Act. Hort. Petrop. 6: 311. 1880.

First described from Tien Shan.

T'ien T'ang Ssu, No. 563. Beside streams, on gravelly bottoms of gorges. Rare.

Height 45 cm.; flowers yellow, aromatic.

Senecio winklerianus Hand.-Mazz. Symb. Sin. 7: 1123. 1936 (based on *S. acerifolius* C. Winkl. Act. Hort. Petrop. 13: 9. 1893).

First described from Potanin's Szechwan and Kansu collections.

Shih Men, No. 930. In dense *Picea* and *Abies* forests. Very common.

Height 45 cm.; flowers lemon-yellow.

Serratula centauroides L. Sp. Pl. 820. 1753.

First described from Siberia.

Yao Chieh, No. 281; Hsi Mi Yai, No. 489. Along dry, exposed, clay roadsides, and stream banks. Common.

Height up to 1.3 meters; flowers purplish.

Sonchus brachyotus DC. Prodr. 7: 186. 1838.

First described from the Altai Mountains and Dahuria.

Yao Chieh, No. 276; middle Tu I Kou, No. 965. In cultivated fields and along roadsides. Fairly common.

Height up to 60 cm.; flowers yellow.

Sorosaris hookeriana (C. B. Clarke) Stebbins subsp. *erysimoides* (Hand.-Mazz.) Stebbins, Mem. Torrey Club 19³: 46, fig. 11, *i-l.* 1940.

First described from Szechwan, Shensi, Kansu (Ching's collection), Tsing Hai, Sikang, Yunnan, and Tibet.

La Chi Tzu Shan, No. 707. On partially shaded, very moist steppes. Common, scattered.

Height up to 35 cm.; flowers yellow; fruit deep green.

Stereosanthus sp.

Tai Hua, No. 552. Common, in woods.

Height 45 cm.; flowers purplish.

Taraxacum calanthodium Dahlst. Medd. Bot. Trädg. Göteborg 2: 150. 1926.

First described from Szechwan.

La Ch'iong Kou, No. 625. On partially shaded, grassy slopes. Common.

Height up to 67 cm.; flowers yellow.

Taraxacum dissectum Ledeb. Fl. Ross. 2: 814. 1846 (?).

First described from eastern Siberia.

Wang Yeh Fu, No. 35; Ha La Hu Kou, No. 62; Wang Te Lin Kou, No. 83. On exposed, dry or moist, gravelly valley bottoms, often in patches. Common.

Flowers bright yellow, fragrant. This plant is eaten locally.