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ON THE SINO-HIMALAYAN SPECIES OF *SHORTIA*¹ AND *BERNEUXIA*

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EVER since the days of Asa Gray, the genus *Shortia* has been of interest to students of phytogeography². Up to the present, the species of this genus and its close relative *Berneuxia* are known from three isolated regions: eastern North America, Japan and Formosa, and southwestern China (Yunnan, Szechuan, and eastern Tibet). It is with the genera in the last-named region that this paper primarily deals.

Decaisne, in 1873, was the first to describe a species of this alliance from the Sino-Himalayan region, as *Berneuxia thibetica*. In 1888, Franchet transferred *Berneuxia thibetica* to *Shortia*. He apparently thought the similarities between this species and *Shortia* indicated generic identity. After a careful study of available specimens of these two genera, I conclude that Franchet's idea cannot be accepted. With the inclusion of *Berneuxia yunnanensis*, here published as new, species of this genus now number two, the older one being the original species of Decaisne. In *Shortia* there are several species, only one of which, *Shortia sinensis* Hemsley (1901), which is evidently closer to the Ameri-

¹ *Shortia* Torr. & Gray (1842) was actually invalidated by *Shortia* Raf. (1840), and because of this House in 1908 replaced the former by the generic name *Sherwoodia* House. However, *Shortia* Torr. & Gray has been conserved by the special committee authorized by the last International Botanical Congress to act on matters of conservation, and *Sherwoodia* House was rejected; see Kew Bull. 1940: 118. 1940.

² For an interesting summary of the early history of this genus see Jenkins, C. F., Asa Gray and his quest for *Shortia galacifolia*. *Arnoldia* 2: 13-28. pl. 4-7. 1942.

can and Japanese species known at that time than to the other Chinese species just mentioned, is found in the Sino-Himalayan region.

The several species described from Formosa are unfortunately not represented in our herbaria; thus a monographic study of the whole group cannot be undertaken. It is fortunate, however, that many of the species described in these two genera are illustrated by excellent plates.

The American *Shortia galacifolia* Torr. & Gray, the Japanese *S. uniflora* Maxim., and the Chinese *S. sinensis* Hemsley resemble each other in the dentate leaves, one-flowered peduncles, crenate corolla-lobes, and in the stamens and staminodes being arranged in two distinct whorls, the staminodes being inserted below the stamens near the base of the corolla-tube. Widely dispersed as they are, these three species are close enough in their general characters to be put into one subgroup of the genus *Shortia*. The Chinese species, *Shortia sinensis* Hemsley, has oblong-ovate leaves, which differ in shape from those of the other two species mentioned and are closer in this regard to those of the two species of *Berneuxia*, which otherwise is very different.

The several Japanese species originally described under *Schizocodon* Sieb. & Zucc., a genus which was included in *Shortia* by Otto Kuntze and most succeeding authors, may constitute another subgroup under *Shortia*. In the herbaria studied, *Shortia soldanelloides* (Sieb. & Zucc.) Mak. (*Schizocodon soldanelloides* Sieb. & Zucc.) and ***Shortia ilicifolia*** (Maxim.) comb. nov. (*Schizocodon ilicifolius* Maxim. Bull. Acad. Sci. St. Pétersb. **12**: 71. 1868, *Shortia soldanelloides* β *ilicifolia* Mak. Bot. Mag. Tokyo **15**: 150. 1901) are represented. They resemble the species of the group above-mentioned in the dentate leaves, crenate corolla-lobes, and distinct stamens and staminodes, but differ in having the many-flowered peduncles, the flowers spicately arranged, and the staminodes inserted only slightly below the stamens and bearing abortive anthers.

The Formosan species, *Shortia exappendiculata* Hayata, *S. subcordata* Hayata, *S. ritoensis* Hayata, and *S. transalpina* Hayata, which have also been placed in the Section *Exappendiculata* of *Shortia* as well as treated as a separate genus, *Shortiopsis*, by Hayata, are similar to the preceding group except that their

anthers are sessile, their styles undivided, and staminodes absent. These three groups are close enough in their combined vegetative and flowering characters, in my opinion, to be included in the same genus, *Shortia*.

Berneuxia is found only in the Sino-Himalayan region. The inflorescence is many-flowered like that of some of the species of *Shortia*, but here the flowers are more numerous and tend to be umbellately or subumbellately instead of spicately arranged. *Berneuxia* also differs from *Shortia* in that both the leaves and the corolla-lobes are entire and the stamens and staminodes are united into a ring, which is inserted near the base of the rather short corolla-tube. The corolla and stamens are not known for the new species of *Berneuxia* here described, but in other general characters this species conforms with the characters of the genus. It may be mentioned that Drude, in Engl. & Prantl, Nat. Pflanzenfam. 4(1): 83–84. 1879, and Diels, in Bot. Jahrb. 50: Suppl. 304–339. 1914, retained both *Schizocodon* and *Berneuxia* as generically distinct from *Shortia*. In my opinion, *Schizocodon* is congeneric with *Shortia*, but *Berneuxia* is sufficiently characterized to be considered as a distinct genus.

An enumeration of the species of *Shortia* and *Berneuxia* of the Sino-Himalayan region is given below. The specimens cited are deposited in the Gray Herbarium. This study was made possible through a grant from the Milton Fund of Harvard University to Dr. E. D. Merrill, of the Arnold Arboretum, to assist him in working up the extensive collections of botanical material received within the past few years from various parts of China.

SHORTIA SINENSIS Hemsley in Hook. Ic. Pl. 27: t. 2624. 1901. *Sherwoodia sinensis* House, Torreyia 7: 233. 1907.—CHINA: Yunnan: Mengtze, southeastern mountains, A. Henry 11490 (type coll.; not seen).

This species is apparently known only from the original collection. No isotype has been located in American herbaria.

BERNEUXIA THIBETICA Decaisne, Bull. Soc. Bot. France 20: 159. 1873. *Shortia thibetica* Franch. Nouv. Arch. Mus. Nat. Paris II. 10: 54. t. 13 B. 1887, Pl. David. 2: 92. t. 13 B. 1888. *Shortia Davidi* Franch. op. cit. t. 13 B.—CHINA: Szechuan: without precise locality, A. Henry 7976; Pien-shen Hsien, F. T. Wang 22774, April 25, 1931, herb in thickets, alt. 2300 m., fl. white; west of Kuan Hsien, F. T. Wang 2086, May 1930, herb,

on grassy slopes, alt. above 3500 m., fl. white; O-pien Hsien, *T. T. Yü* 648, May 5, 1932, herb, in woods, leaves bright green above, white beneath, fl. white. Sikang: near Tachienlu, *A. E. Pratt* 749, at 9000–13500 feet. Yunnan: mountains above Tseku and Tseh-chung, Mekong-Salwin watershed, *J. F. Rock* 8795, May 19, 1923, on boulders; Mekong-Salwin Divide, Bila, *T. T. Yü* 19031, June 13, 1938, a perennial herb, 2–4 ins., upon precipitous rocks, alt. 3700 m., fl. white, common; Salwin-Kiukiang Divide, Swagchiang, *T. T. Yü* 22968, Nov. 5, 1938, herb, rare, in bamboo thickets, alt. 2800 m., fruit grayish brown; northwestern Likiang, Lutien, *R. C. Ching* 20544, May 29, 1939, plant 6 in. high, in mixed forests, fl. white; northwestern Likiang, Tse-ku on the Yangtze bank, *R. C. Ching* 20589, June 1, 1939, plant 6 in. high, in mixed forests, fl. white. Also known from eastern Tibet (Decaisne l. c.), and western Szechuan (Hand.-Maz. Symb. Sin. 7: 801. 1936).

BERNEUXIA yunnanensis sp. nov. Herba perennis subcaulis ubique glabra, caudice incrassato; foliis coriaceis glabris ovatis longe petiolatis, absque petiolo ad 3.2 cm. longis, 1.7 cm. latis, apice late obtusis, basi cuneatis, margine integris revolutis, supra virescentibus, subtus pallidioribus, nervis lateralibus utrinsecus 4, venis tertiariis supra leviter impressis subtus subconspicuis; petiolis alatis, ad 3 cm. longis; inflorescentiis gracilibus longe pedunculatis, ad 18 cm. longis, circiter 10–15-floris, floribus spicatis, superioribus subumbellatis, pedicellis hirtellis, 0.6–1.2 cm. longis, basi bracteatis, bracteis oblongis acuminatis circiter 5 mm. longis persistentibus, bracteolis 1 vel 2 medium pedicelli versus, lanceolatis acuminatis circiter 4 mm. longis, persistentibus; calyce 5-partito, lobis fere liberis ovatis, 4–5 mm. longis, 2.5 mm. latis, rigidis scariosis longitudinaliter striatis persistentibus; corolla staminibusque non visis; ovario triloculari multiovulato, stylo persistente 1 mm. longo, stigmatibus distincte 3-lobato.—CHINA: Yunnan: Salwin-Kiukiang Divide, Natahtzu, *T. T. Yü* 20803 (TYPE), Oct. 20, 1938, a casual, perennial herb, alt. 3600 m., under trees or upon shaded rocks, fruit purplish red, calyx persistent.

This species is a close relative of *Berneuxia thibetica* Dec., differing in the smaller leaves with shorter petioles and relatively broader blades. These are always ovate, with a more or less broadly obtuse apex, while in *B. thibetica* the leaves are usually oblong-obovate, and with an obtuse to acute or acuminate apex. The inflorescence of the new species is more or less spicate, with the uppermost flowers somewhat umbellately arranged; in *B. thibetica* the flowers are definitely umbellate. Moreover, in the latter species the peduncle equals or only slightly exceeds the

length of the leaves, while in the new species it is about three times as long as the leaves.

All the specimens on the two available sheets of the type collection are rather mature, approaching fruiting condition and without corollas and stamens. In the field note, it is mentioned that the collection included a flowering specimen (*T. T. Yü* 19384), but no flowers are present in our material. As the characters on the material at hand are sufficient to indicate that a new species is represented, and since there is little prospect of receiving any further shipments of specimens from China in the near future, it appears desirable to name and describe the plant without further delay.

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TARAXACUM IN ARCTIC CANADA (EAST OF 100° W.)

GUSTAF HAGLUND

(Introduction by ARTHEME DUTILLY, O. M. I.)

In the course of my first seven successive botanizing trips to the Canadian Arctic, I collected a number of specimens of *TARAXACUM*. In 1938 I was accompanied by Rev. Maximilian Duman, O.S.B., who also collected a few in the same region.

A synopsis of the localities, dates of collections, and collection numbers, follows:

- 1—Arctic Alaska
- 2—Arctic Bay, Baffin Isl., N. W. T., Lat. 73° 5' N., Long. 83° 40' W., Silurian-Lower Palaeozoic, 12-9-36.
- 3—Baker Lake, N. W. T., Lat. 64° 30' N., Long. 97° ?' W., Archaean, 11-8-36, 2-9-37, 31-7-38.
- 4—Bernard Harbor, Lat. 68° 46' N., Long. 114° 50' W., 20-8-34.
- 5—Cape Barrow, Arctic Sea, Alaska.
- 6—Cape Dorset, Baffin Island, N. W. T., Lat. 64° N., Long. 76° W., Archaean and (?) precambrian granite, gneiss, 25-8-36.
- 7—Chesterfield Inlet, Hudson Bay, N. W. T., Lat. 63° 20' N., Long. 90° 42' W., Archaean, 31-7-36, 21-8-37, 16-8-28.
- 8—Churchill, Man., Hudson Bay, N. W. T., Lat. 58° 46' N., Long. 94° 10' W., Lower Palaeozoic, 23-7-36, 8-8-38.



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