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CHLAMYDITES (ASTERACEAE: ASTEREAE) REVIVED

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ABSTRACT

Chlamydites J.R. Drummond of the Tibetan Plateau has included a single species, *C. prainii* J.R. Drummond (= *Aster prainii*). *Wardaster lanuginosus* (= *Aster neolanuginosus*) is regarded here a synonym, as is the Tibetan *Aster hololachnus*, and all are treated as monotypic *Chlamydites*. A lectotype is designated for *A. prainii*. *Aster prainii* has not been included in molecular-phylogenetic analyses but it is hypothesized here to have arisen evolutionarily from near the ancestors of *Aster flaccidus* and *Aster batangensis*.

The dense, white, lanate-villous vestiture of a Himalayan alpine species impressed both J.R. Drummond (1907) and J. Small (1926) to the extent that each, independently, described it as a new species and placed it in a new genus. Emphasizing the hairy disc corollas, Drummond considered his *Chlamydites prainii* to be closely related to the Andean genus *Werneria* or at least to species of Senecioneae. Small recognized the similarity of *Wardaster lanuginosus* to monocephalous alpine species of *Aster* but noted that it differs in its alveolate receptacle and "mucronate anthers." Ling (1985) and Chen et al. (2011) included both among the species of Chinese *Aster* (as *Aster prainii* and *Aster neolanuginosus*).

Aster hololachnus Y. Ling, another densely lanate-villous alpine species similar in its caespitose, monocephalous habit to *A. prainii* and *A. neolanuginosus*, was compared in the protologue to *A. flaccidus*, differing from the latter its vestiture and narrower phyllaries and ray florets. Ling (1985) placed *Aster prainii* and *A. lanuginosus* as *Aster* ser. *Prainiani* but included *A. hololachnus* among species of his ser. *Asteroides*, which also included *A. asteroides*, *A. likiangensis*, *A. flaccidus*, and *A. tsarungensis*. Ling's protologue comparison to *A. flaccidus* was essentially repeated in the entry for *A. hololachnus* by Chen et al. (2011), with no mention of similarity to *A. prainii* or *A. neolanuginosus*.

Aster flaccidus does not form caespitose mats, it is distinct in involucral morphology, and it produces long ray styles characteristic of the newly described genus *Tibetiodes* (Nesom 2020a, 2020b). The Flora of China illustration of *A. prainii* (Ling 1985; Chen et al. 2011) shows the ray style barely extending beyond the corolla tube.

The key of Chen et al. separates *Aster prainii*, *A. neolanuginosus*, and *A. hololachnus* as follows:

a. Pappus 3- or 4-seriate ..... 112. **Aster hololachnus**
a. Pappus 2–4-seriate.
b. Disk corolla tube and limb sparsely villosulous, lobes lanate ..... 107. **A. prainii**
b. Disk corolla tube and limb without long hairs ..... 108. **A. neolanuginosus**

In view of their otherwise strong similarity, these putative differences need to be verified. The difference in involucral morphology does not provide an objective choice and I have not been able to see details of corolla vestiture. *Aster prainii*, *A. neolanuginosus*, and *A. hololachnus* are treated here a single species, emphasizing their unusual habit and vestiture and the apparently compact geography of the populations in Bhutan, southeastern Tibet, and western and southwestern Sichuan. Consistent differences may prove to exist and support a less conservative taxonomy.

The white-lanate taxa key in the Flora of China (Chen et al. 2011) among the species of *Aster* sect. *Alpigeni* because of their basal rosette, solitary heads, and subequal-length phyllaries, but *A. prainii* appears to be morphologically isolated among Asian species, both in its vestiture and extensive system of rhizomes (producing plants in colonial mats). *Aster prainii* has not been included in molecular phylogenetic analyses — its evolutionary position in the Psychrogeton branch of Asterinae (Nesom 2020a) is speculative.

Aster batangensis (= *Geothamnus*; Nesom 2020c) is monocephalous and mat-forming in habit similar to *A. prainii* but differs in its glabrate to sparsely hirsute-strigose vestiture. Its underground system is essentially a branching caudex, the branches woody and often with prominent secondary growth.

CHLAMYDITES J.R. Drummond, Bull. Misc. Inform. Kew 1907: 91. 1907. **TYPE**: *Chlamydites prainii* J.R. Drummond

Wardaster J. Small, Trans. Proc. Bot. Soc. Edinburgh 29: 230. 1926. **TYPE**: *Wardaster lanuginosus* J. Small

Aster sect. *Alpigenia* ser. *Prainiani* Ling, Fl. Reipubl. Popularis Sin. 74 (Addendum): 360. 1985. **TYPE**: *Aster prainii* (J.R. Drummond) Y.L. Chen

Perennial herbs, caespitose and mat-forming from a system of branching, non-woody rhizomes; stems, leaves, and involucres tomentose to white-lanate, glandular beneath the tomentum. **Stems** 3–15 cm high, unbranched. **Leaves** basal and cauline, basal in persistent rosettes, spatulate to oblanceolate, margins entire, cauline reduced in size, lanceolate to oblanceolate, not clasping. **Heads** terminal, solitary. **Involucres** broadly campanulate, (15– in *Aster hololachnus*) 24–28 mm wide (pressed); phyllaries 1–2-seriate, subequal, herbaceous, linear-oblong and apically acute, longer than the disc corollas, sometimes loose and spreading; receptacles alveolate. **Ray flowers** 20–50, ligules blue to pinkish, purple, or violet, ligules 10–16 mm long, coiling. **Disc flowers** bisexual, fertile; corollas 6–7 mm long, lobes triangular, erect (without or without hairs, glandular or eglandular); anther thecae without tails, apical appendages broadly lanceolate and prominent. **Achenes** narrowly obovoid, compressed, ca. 3 mm long, 2–4-ribbed, strigose-sericeous, eglandular; pappus of barbellate bristles of unequal length, longest equalling or slightly longer than the disc corollas, innermost weakly clavate apically, outermost series of scales 0.5–1 mm.

1. Chlamydites prainii J.R. Drummond, Bull. Misc. Inform. Kew 1907: 91. 1907. *Aster prainii* (J.R. Drummond) Y.L. Chen, Geol. Ecol. Stud. Qinghai-Xizang Plateau 2: 1314. 1981. **LECTOTYPE** (designated here): **CHINA**. **Xizang**. Kambajong [Khamber Jong], Sep 1903, *Maj. D. Prain s.n.* (BM image, Figs. 1, 2). The protologue also cited *Walton s.n.* (not seen), Aug 1904, from Lhasa.

Wardaster lanuginosus J. Small, Trans. Proc. Bot. Soc. Edinb. 29: 230. 1926. *Aster lanuginosus* (J. Small) Y. Ling in Y. Ling & Y.L. Chen, Fl. Reipubl. Popularis Sin. 74: 234. 1985 [not *Aster lanuginosus* H.L. Wendland in Bartling & Wendland, Beitr. Bot. 2: 9. 1825]. *Aster neolanuginosus* Brouillet, Semple, & Y.L. Chen [nom. nov.], Fl. China 20-21: 625. 2011. **TYPE**: **CHINA**. [**Sichuan**]. West China, Glacier Lake Camp, 28° 5' N, 100° 45' E (W of Muli), high cliffs and boulder screes of slate, 15,000 ft, *F. Kingdon-Ward 4686* (holotype: E image, Fig. 3).

Aster hololachnus Y. Ling ex Y.L. Chen et al., Acta Phytotax. Sin. 19: 88. 1981. **TYPE**: **CHINA**. **Xizang**. Qomolangma [Mt. Everest], Main Rongbuk Glacier, 5350 m, 7 Sep 1959, *Exped. ad montem Qomolangma 640* (holotype: PE image, Fig. 4).

Rocky slopes above snowline, glacier areas; 4200–5400 m. Bhutan, southeastern Tibet (Xizang), western and southwestern Sichuan. Figures 1–12.

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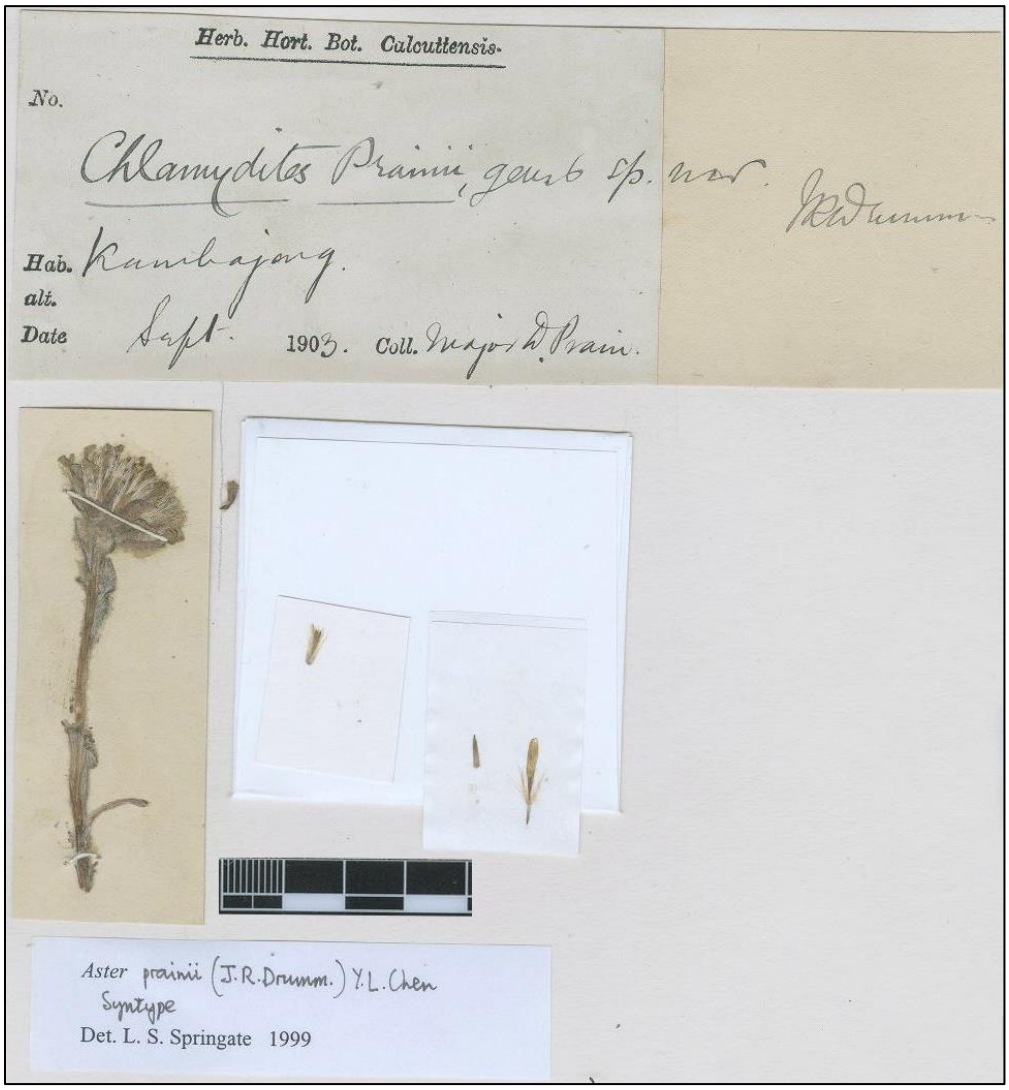

Figure 1. *Chlamydites prainii*. Tibet. Lectotype of *Chlamydites prainii* (BM).

Figure 2. *Chlamydites prainii*. Detail from Fig. 1, lectotype of *Chlamydites prainii*.

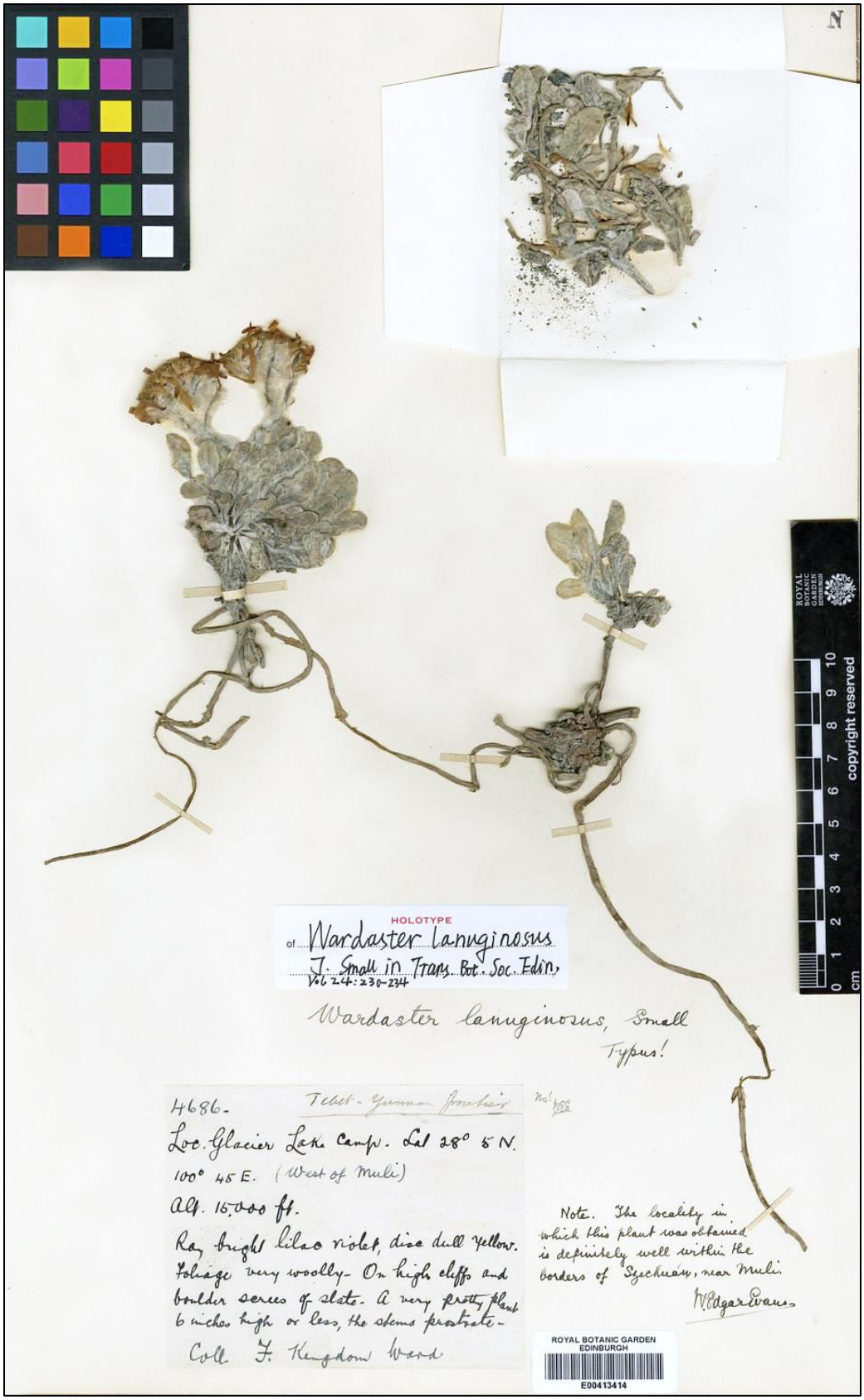

Figure 3. *Chlamydites prainii*. Southwestern Sichuan. Holotype of *Wardaster lanuginosus* (E).

Figure 4. *Chlamydites prainii*. Tibet, Mt. Everest region. Holotype of *Aster hololachnus* (PE).

Figure 5. *Chlamydites prainii*. Tibet. *Sino-Japanese expedition team T691* (PE).

Figure 6. *Chlamydites prainii*. Tibet, Near Lhasa. *Ludlow & Sherriff 8993* (E).

Figure 7. *Chlamydites prainii*. Tibet. *Zhang Yongtian Lang Kaiyong 2061* (PE 300201).

Figure 8. *Chlamydites prainii*. Tibet. *Zhang Yongtian Lang Kaiyong 2061* (PE 300202).

Figure 9. *Chlamydites prainii*. Bhutan, *Ludlow, Sherriff, & Hicks 19764* (E).

Figure 10. *Chlamydites prainii*. Western Sichuan, *Boufford et al. 42295* (P). See Figure 12.

Figure 11. *Chlamydites prainii*. Western Sichuan. Detail from Fig. 10, *Boufford et al. 42295* (P).

Figure 12. *Chlamydites prainii*. Western Sichuan, W of the city of Litang, ca. 4500 meters. Photo by Jipei YUE, 26 July 2010. Website: Biodiversity of the Hengduan Mountains and adjacent areas of south-central China. *Boufford et al. 42295* collected at this site (see Figs. 10, 11).