

SYNOPSIS OF THE GENUS ALYSSUM

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THE FOLLOWING IS A SYNOPSIS of the natural infrageneric groups recognized by the author within the genus *Alyssum* L., of the family Cruciferae. The currently recognized species of *Alyssum* are listed alphabetically, each under its respective section, subsection or series, to provide a convenient source of reference. It is to be noted that sect. *SCLEROPTYCHIS* Boiss. (1867), which includes *Alyssum creticum* L., and sect. *CHRYSITES* Schulz (1933), including *Alyssum sinuatum* L., have been omitted from *Alyssum*. These sections and their component taxa are rather to be referred to *Alyssoïdes* Miller. Section *AURINIA* (Desv.) Koch (1836) has also been omitted from *Alyssum*. *Aurinia* Desv., which includes the common ornamental *Alyssum saxatile* L., is a genus distinct from *Alyssum*.

In my recent paper on *Alyssum* (Jour. Arnold Arb. 45: 57. 1964) may be found citations for the type species and the respective type specimens of most of the infrageneric categories, and also the relevant synonymy. The exclamation mark (!) following the original references to taxa of any rank, indicates that type material of that taxon has been examined.

Alyssum Linnaeus, Sp. Pl. 2: 650. 1753; Gen. Pl. ed. 5. 293. 1754.

LECTOTYPE SPECIES: *Alyssum montanum* L. "Habitat in Helvetia" (LINN no. 828:12).¹ (See Britton & Brown, Ill. Fl. No. U.S. ed. 2. 2: 154. 1913; Hitchcock & Green in Internat. Bot. Congr. Cambridge (England), "Nomenclature-Proposals by British Botanists," 171, 1929). — Willd. Linn. Sp. Pl. ed. 4. 3(1): 459. 1800. — DC. Syst. Nat. 2: 301. 1821; Prodr. 1: 160. 1824. — Meyer in Ledeb. Fl. Alt.

¹ Sheet no. 828:12 in the Linnaean herbarium was determined by Linnaeus as "2 montanum." On the back of this sheet Linnaeus wrote "*Alyssum fruticosum* *Alyssum serpyllifolium* Amm. e Sibirica & Horto Upsal. 185." This, and the entry in Linnaeus's *Hortus Upsaliensis*, 185. 1748, which reads: "Habitat forte in Siberia, mihi enim enata inter plantas ex seminibus Sibiricus," indicate that the specimen of *Alyssum montanum* cultivated in the Botanic Garden at Uppsala was grown from seed presumably sent to Linnaeus by Amman. I feel that it can be safely stated that these seeds were not collected in "Helvetia" (Switzerland), but rather, from somewhere in Russia, although not necessarily from Siberia as that land area is understood today. The "Helvetia" of *Species Plantarum* no doubt stems from Linnaeus's reference to Bauhin's *Historia Plantarum* 2: 928. t. 929. 1650-1651. There is yet another specimen (no. 828:14) of *A. montanum* in the Linnaean herbarium. This specimen was not determined by Linnaeus specifically as *A. montanum*, and as it was not sent by Allioni to Linnaeus until 1757, it could not have served as the basis of the 1753 description. However, that Linnaeus did recognize this specimen as *A. montanum* is shown by the polynomial he wrote on the back of this sheet. This direct quotation from *Hortus Upsaliensis*, 185. 1748, reads: "*Alyssum ramulis suffruticosis diffusis foliis punctatis echinatis*."

3: 53. 1831; in Ledeb. Fl. Ross. 1: 137. 1842. — Grisebach, Spic. Fl. Rum. & Bith. 1: 274. 1843. — Fenzl in Tschihatcheff, Asie Mineure Bot. 1(3): 294, 296. 1860. — Hook. in Benth. & Hook. Gen. Pl. 1: 73. 1862. — Boissier, Fl. Or. 1: 263. 1867; in Buser, Suppl. Fl. Or. 49. 1888. — Ruprecht, Mém. Acad. St.-Petersb. VII. 15(2): 98. 1869. — Nyman, Consp. Fl. Eur. 1: 55. 1878; Suppl. Consp. Fl. Eur. 2: 33. 1889. — Halácsy, Consp. Fl. Gr. 1: 88. 1900. — Busch in Kuznetzov, Busch & Fomin, Fl. Cauc. Crit. 3(4): 552. 1909; in Komarov, Fl. U.R.S.S. 8: 340. 1939. — Hayek, Repert. Sp. Nov. Beih. (Prod. Fl. Balc. 1) 30: 428. 1925. — Post in Post & Dinsmore, Fl. Syr., Pal. & Sinai, ed. 2. 1: 82. 1932. — Bornmüller, Repert. Sp. Nov. Beih. (Symb. Fl. Anat.) 89: 46. 1936. — Schulz in Engler & Prantl, Nat. Pflanzenfam. II. 17b: 490. 1936. — Rechinger f. Fl. Aegaea, 220. 1943. — Grossheim, Fl. Kavkaza, ed. 2. 4: 211. 1950. — Dudley, Jour. Arnold Arb. 45: 57. 1964.

Adyseton Adans. Fam. Pl. 2: 420. 1763 (!). TYPE SPECIES: *Alyssum montanum* L.

Moenchia Roth, Tent. Fl. Germ. 1: 273. 1788 (!). TYPE SPECIES: *Alyssum minus* (L.) Rothm.

Alyssum sect. *Adyseton* (Adans.) DC. Syst. Nat. 2: 302. 1821 (!).

Ptilotrichum Meyer in Ledeb. Fl. Alt. 3: 50. 1831 (!).

Adyseton sect. *Disodontea* G. Don, Gen. Hist. Dichl. Pl. 1: 177. 1831 (!).

LECTOTYPE SPECIES: *Alyssum montanum* L.

Koniga R. Br. sect. *Ptilotrichum* (Meyer) Griseb. Sp. Fl. Rum. & Bith. 1: 278. 1843 (!).

Alyssum sect. *Ptilotrichum* (Meyer) Hook. in Benth. & Hook. Gen. Pl. 1: 74. 1862 (!).

DISTRIBUTION: Widespread European and Asiatic genus, mostly south of 50 degrees latitude, with a center of diversity and the greatest number of species in Turkey.

Plants annual, or biennial, or if perennial then always with sterile shoots and winter rosettes. *Fertile stems* usually densely foliate. *Indumentum* of stellate hairs with few or many, branched or unbranched rays, often sublepidote or lepidote, occasionally with setae or tuberculate hairs. *Leaves* simple, undivided, entire (sparingly dentate only in *A. homalocarpum*), to about 20 mm. long, bases never swollen or persistent. *Inflorescence* racemose, corymbose, paniculate, umbellate, or rarely candelabrifform. *Pedicels* straight and ascending, or divergent and spreading, or flexuose and sigmoid, or deflexed, or arcuate and recurved. *Flower buds* elliptic, longer than broad. *Calyx* elongate. *Sepals* 4, erect, free and monomorphic (or dimorphic and appearing connate because of interlocking indumentum in sect. GAMOSEPALUM), never saccate but often persistent and/or inflated in fruit. *Petals* 4, predominantly yellow, occasionally whitish, or rarely pink-reddish, obovate or spathulate, entire or bilobed, or emarginate or retuse, gradually or abruptly attenuate into claws, occasionally with denticulate claws, and rarely with basal appendages (two species only; *A. pinifolium* and *A. les-*

biacum). *Long filaments* 4, unilaterally or bilaterally winged, free, or rarely connate along wing, usually variously toothed and/or appendaged (or wingless, edentate and unappendaged in sect. PSILONEMA). *Short filaments* 2, winged or wingless, usually furnished with connate or free appendages or teeth. *Nectaries* 4, one at each side of short filaments, erect and peglike, or globose, or triangular, or occasionally lobed. *Anthers* elliptic or triangular, introrse, medifixed, obtuse or acute at apex, tip of filaments occasionally prolonged. *Pistils* sessile on receptacle, or rarely short stipitate. *Styles* of various length, slender or stout, often widely dilated to base, persistent. *Silicles* latiseptate, dehiscent or rarely indehiscent, glabrous, or with monomorphic or dimorphic indumentum, rarely papillose or setose, usually held in the same direction as pedicels (except sect. TETRADENIA), bilocular with conspicuous repla, locules 1-6(-8)-ovulate with placentation nearly apical, or distinctly lateral (sect. MENIOCUS); valves compressed, or equally or unequally inflated. *Seeds* winged or wingless, often mucilaginous.

KEY TO SECTIONS

- A. Annual.
 - B. Silicles always compressed, glabrous, or with simple setae, and/or papillose (never with stellate hairs), locules 2-4(-8)-ovulate with distinctly lateral placentation. 1. Sect. MENIOCUS.
 - B. Silicles always inflated, glabrous, or with monomorphic or dimorphic indumentum, locules always biovulate with nearly apical placentation.
 - C. Filaments always slender, wingless, edentate, and unappendaged; petals scarcely longer than sepals. 2. Sect. PSILONEMA.
 - C. Filaments always stouter, winged, and/or dentate, and/or appendaged; petals always $1/3-1/2$ (or more) longer than sepals. 3. Sect. ALYSSUM p.p.
- A. Perennial, or biennial.
 - D. Locules always uniovulate. 6. Sect. ODONTARRHENA.
 - D. Locules 2-4-ovulate.
 - E. Silicles boat-shaped, valves strongly and unequally inflated (one valve convex, the other prominently concave), held horizontally or erect, in opposite direction to pedicels; racemes candelabriform; plants frequently spinose. 5. Sect. TETRADENIA.
 - E. Silicles various, but never boat-shaped, valves never as strongly and unequally inflated, held in the same direction as the pedicels; inflorescences various, but never candelabriform; plants never spinose.
 - F. Sepals dimorphic, appearing connate because of interlocking indumentum, always persistent in fruit, inner surfaces with indumentum; long filaments always edentate, unappendaged, and closely adjacent, free with overlapping wings, or connate. 4. Sect. GAMOSEPALUM.
 - F. Sepals monomorphic, always free, but often persistent in fruit, inner surfaces glabrous; long filaments usually with teeth and/or appendages, always free, and rarely with overlapping wings. 3. Sect. ALYSSUM p.p.

1. Section **Meniocus** (Desv.) Hook. in Benth. & Hook. Gen. Pl. 1: 74 1862. TYPE SPECIES: *Alyssum linifolium* Steph. ex Willd. — Boiss. Fl. Or. 1: 265, 286. 1867. — Schulz in Engler & Prantl, Nat. Pflanzenfam. II. 17b: 492. 1936. — Nyár. Anal. Acad. Rep. Pop. Rom. Sect. Științe Geol. Geog. Biol. ser. A. mem. 3. 1: 7. 1949.

Meniocus Desv. Jour. Bot. 3: 173. 1814 (!).

DISTRIBUTION: European and Oriental, with maximum representation in Turkey.

Plants annual. *Long filaments* unilaterally winged and toothed. *Short filaments* with free, or basally connate appendages. *Nectaries* globose. *Silicles* dehiscent, glabrous, or with indumentum or simple setae (rarely forked), frequently papillose, locules 2–4(–8)-ovulate with distinctly lateral placentation; valves always compressed. *Seeds* winged or wingless, mucilaginous.

COMPONENT SPECIES:

- A. AUREUM (Fenzl) Boiss. Fl. Or. 1: 286. 1867 (!). Southern and eastern Turkey, Syria, and Israel.
- A. BLEPHAROCARPUM Dudl. & Hub.-Mor. Jour. Arnold Arb. 45: 61. *pl. I*, *figs. 1–13*. 1964.
- A. HETEROTRICHUM Boiss. Diagn. 1(6): 15. 1845 (!). Iran and Kazakhstan.
- A. HUETII Boiss. Fl. Or. 1: 287. 1867 (!). Endemic to Turkey.
- A. LINIFOLIUM Steph. ex Willd. Linn. Sp. Pl. ed. 4. 3(1): 467. 1800 (!). Common in Europe, North Africa, the Levant, Caucasia, Siberia, and east to India. Naturalized in Australia.
- A. MENIOCIDES Boiss. Ann. Sci. Nat. Paris II. 17: 158. 1842 (!). Widespread in the Levant, east to Afghanistan.
- A. STYLARE (Boiss. & Bal.) Boiss. Fl. Or. 1: 287. 1867 (!). Endemic to Turkey.

2. Section **Psilonema** (Meyer) Hook. in Benth. & Hook. Gen. Pl. 1: 74. 1862. TYPE SPECIES: *Alyssum dasycarpum* Steph. ex Willd. — Boiss. Fl. Or. 1: 265, 285. 1867. — Schulz in Engler & Prantl, Nat. Pflanzenfam. II. 17b: 491. 1936. — Nyár. Anal. Acad. Rep. Pop. Rom. Sect. Științe Geol. Geog. Biol. ser. A. mem. 3. 1: 7. 1949.

Psilonema Meyer in Ledeb. Fl. Alt. 3: 50. 1831 (!).

Alyssum subgen. *Tetratrichia* Gay in Cosson, Fl. Atl. 2: 236. 1885 (!). TYPE SPECIES: *Alyssum granatense* Boiss. & Reut.

Alyssum sect. *Eualyssum* subsect. *Hygrochastica* Zohary, Pal. Jour. Bot. Jerusalem Ser. 2(2/3): 161. 1941 (!). TYPE SPECIES: *Alyssum damascenum* Boiss. & Gaill.

DISTRIBUTION: Europe, North Africa, Egypt, Arabia, the Levant, and east to India.

Plants annual. *Filaments* always slender, wingless, edentate, and un-

appendaged. *Nectaries* erect and peglike, or globose. *Silicles* dehiscent, glabrous, or with monomorphic or dimorphic indumentum, held in the same direction as pedicels, and with biovulate locules; valves equally inflated. *Seeds* winged or wingless, mucilaginous.

COMPONENT SPECIES:

- A. *ALYSSOIDES* (L.) L. Syst. ed. 10. 2: 1130. 1759 (!). Widespread in Europe, North Africa, Russia, and east to India. Doubtfully recorded from the Levant. Naturalized in the United States and Canada, and in one locality in Argentina.
- A. *DAMASCENUM* Boiss. & Gaill. Diagn. 3(6): 18. 1859 (!). Syria, Jordan, and Israel.
- A. *DASYCARPUM* Steph. ex Willd. Linn. Sp. Pl. ed. 4. 3(1): 467. 1800 (!). Widespread in eastern Europe, the Levant, Caucasia, and east to India.
- A. *GRANATENSE* Boiss. & Reut. Pugillus, 9. 1852 (!). Spain, Portugal, and North Africa.
- A. *HOMALOCARPUM* (Fisch. & Meyer) Boiss. Fl. Or. 1: 285. 1867 (!). Egypt, Arabia, Iraq, Iran, and Pakistan. Rarely occurring in Syria, Jordan or Israel.

3. Section **Alyssum**. LECTOTYPE SPECIES: *Alyssum montanum* L.—Boiss. Fl. Or. 1: 264, 274. 1867.—Baumgartner, Beil. Jahresb. Nied.-Öst. Land.-Lehrers. Wien.-Neust. 34: xiv. 1907, *ibid.* 36: 1909; Beil. Jahresb. Kaiser Franz Josef-Land.-Gymn. Oberrealsch. Baden bei Wien 48: 1911.—Schulz in Engler & Prantl, Nat. Pflanzenfam. II. 17b: 491. 1936.—Nyár. Anal. Acad. Rep. Pop. Rom. Sect. Științe Geol. Geog. Biol. ser. A. mem. 3. 1: 7. 1949.

Alyssum sect. *Eualyssum* Griseb. Spic. Fl. Rum. & Bith. 1: 274. 1843. LECTOTYPE SPECIES: *Alyssum montanum* L. (!).

DISTRIBUTION: Europe, North Africa, the Levant, Caucasia, and east to Siberia, Mongolia, and India.

Plants annual, biennial, or if perennial then with sterile shoots and winter rosettes. *Sepals* monomorphic, free, but often persistent in fruit; inner surfaces always glabrous. *Petals* predominantly yellow, occasionally pale, and rarely whitish. *Filaments* free, unilaterally or bilaterally winged, and/or dentate, and/or appendaged. *Nectaries* globose or triangular, occasionally lobed, rarely peglike. *Silicles* dehiscent, glabrous, or with monomorphic or dimorphic indumentum, held in the same direction as pedicels, with biovulate locules; valves equally or unequally inflated. *Seeds* winged or wingless, mucilaginous.

COMPONENT SPECIES:

- A. *AIZOIDES* Boiss. Ann. Sci. Nat. Paris, II. 17: 153. 1842 (!). Endemic to Turkey.
- A. *ARENARIUM* Loisel. Fl. Gall. 2: 401. 1807 (!). Seacoasts of southern France and northern Spain.

- A. ARGYROPHYLLUM* Schott & Ky. Oesterr. Bot. Wochenbl. 7(29): 229. 1857 (!). Endemic to Turkey.
- A. ARMENUM* Boiss. Fl. Or. 1: 278. 1867 (!). Eastern Turkey and the Caucasus.
- A. ARTWINENSE* Busch in Kuznetsov, Busch & Fomin, Fl. Cauc. Crit. 3(4): 566. 1909 (!). Endemic to Lazistan (northeastern Turkey and the adjacent Caucasus).
- A. ATLANTICUM* Desf. Fl. Atl. 2: 71. *t.* 149. 1798. Spain and North Africa.
- A. AURANTIACUM* Boiss. Fl. Or. 1: 276. 1867 (!). Endemic to Turkey.
- A. BORNMUELLERI* Hausskn. ex Degen, Österr. Bot. Zeitschr. 48: 108. 1898 (!). Endemic to Turkey.
- A. BULBOTRICHUM* Hausskn. & Bornm. Mitt. Thür. Bot. Ver. 20: 3. 1909–1905 (!). Endemic to Turkey.
- A. CAESPITOSUM* Baumg. Beil. Jahresb. Nied.-Öst. Land.-Lehrers. Wien.-Neust. 36: 26. 1909 (!). Endemic to Turkey.
- A. CALYCOCARPUM* Rupr. Mém. Acad. St.-Pétersb. VII. 15(2): 103, 291. 1869 (!). The Crimea, Caucasia, northern Iran, and Turkish Kurdistan.
- A. CANESCENS* DC. Syst. Nat. 2: 322. 1821 (!). Siberia, the Himalayas, and Mongolia.
- A. CEPHALOTES* Boiss. Diagn. 3(1): 34. 1853 (!). Endemic to Turkey.
- A. CONTEMPTUM* Schott & Ky. Oesterr. Bot. Wochenbl. 4(22): 177. 1854 (!). Widespread in southern and eastern Turkey, and in the Levant to northern Iran.
- A. CUNEIFOLIUM* Ten. Cat. Pl. Hort. Neap. Append. 58. 1815 (!). Southern Europe.
- A. DENSISTELLATUM* Dudl. Notes Bot. Gard. Edinb. 24: 160. *fig.* 3, *Aa–Ad.* 1962 (!). Endemic to Greece.
- A. DESERTORUM* Stapf, Denkschr. Akad. Wien. Math. Naturw. 51: 302. 1886 (!). Widespread in Europe and Asia. Naturalized in Idaho in the United States.
- A. DIFFUSUM* Ten. Cat. Pl. Hort. Neap. Append. 58. 1815 (!). The Pyrenees, northern Spain, southwestern Alps, and Greece.
- A. DOERFLERI* Degen, Denkschr. Akad. Wien. Math. Naturw. 64: 708. *t.* 2, *figs.* 5*d–f.* 1897 (!). Northern Greece and southern Yugoslavia.
- A. EROSULUM* Gennar & Pestal. Mem. Accad. Sci. Torino, II. 16: 248. 1855 (!). Endemic to Turkey.
- A. FASTIGIATUM* Heywood, Bull. Brit. Mus. Bot. 1: 92. 1954 (!). Endemic to Spain.
- A. FISCHERIANUM* DC. Syst. Nat. 2: 311. 1821 (!). Southeast Russia, and Siberia.
- A. FOLIOSUM* Bory & Chaub. Exped. Sci. Morée, 185. *t.* 23, *fig.* 1. 1832. Greece, Crete, Cyprus, Aegean Islands, and the Mediterranean coast of Turkey.
- A. FULVESCENS* Sibth. & Smith, Prod. Fl. Gr. 2: 13. 1813 (!). Aegean Islands, Cyprus, and the Mediterranean coast of Turkey. Recorded doubtfully from Greece.
- A. HANDELI* Hayek, Beih. Bot. Centr. 45(2): 1928 (!). Endemic to Greece.
- A. HIRSUTUM* Bieb. Fl. Taur. Cauc. 2: 106. 1808 (!). Widespread in southeastern Europe, western Russia, and northern and eastern Turkey.
- A. IDAEUM* Boiss. & Heldr. Diagn. 2(8): 35. 1849 (!). Endemic to Crete.
- A. IRANICUM* Hausskn. ex Baumg. Jahresb. Kaiser Franz Josef-Land.-Gymn.

- Oberrealsch. Baden bei Wien 48: 9. 1911 (!), non Czerniak. (1924). Widespread in the Levant exclusive of Turkey.
- A. LANCEOLATUM Baumg. *op. cit.* 11 (!). Iran and Afghanistan.
- A. LASSITICUM Hal. Suppl. Consp. Fl. Gr. 2: 10. 1908 (!). Endemic to Crete.
- A. LENENSE Adams, Mém. Soc. Nat. Moscou 5: 110. 1817. Southeastern Russia and Mongolia.
- A. LEPIDOTUM Boiss. Diagn. 1(1): 73. 1842 (!). Endemic to Turkey.
- A. MACROCALYX Cosson & Durand, Bull. Soc. Bot. Fr. 4: 12. 1857 (!). North Africa.
- A. MACROPODUM Boiss. & Bal. Diagn. 3(6): 18. 1859 (!). Endemic to Turkey.
- A. MARGINATUM Steud. ex Boiss. Ann. Sci. Nat. Paris, II. 17: 157. 1842 (!). Widespread in the Levant, exclusive of Turkey, and extending to south-eastern Russia and India.
- A. MINUS (L.) Rothm. Repert. Sp. Nov. 50: 77. 1941. Common in Europe, North Africa, and Asia.
- A. MINUTUM Schlecht. ex DC. Syst. Nat. 2: 316. 1821 (!). Widespread in southeastern and eastern Europe, North Africa, Crete, Cyprus, the Aegean Islands, Turkey, and Syria.
- A. MOELLENDORFIANUM Aschers. ex Beck, Ann. Naturh. Mus. Wien 2: 173. *t.* 2, *figs.* 5-7. 1887 (!). Yugoslavia.
- A. MONTANUM L. Sp. Pl. 2: 650. 1753 (!). Widespread in Europe, mostly south of 50 degrees latitude.
- A. MOURADICUM Boiss. & Bal. Diagn. 3(6): 16. 1859 (!). Turkey and Lebanon.
- A. MUELLERI Boiss. & Buhse, Nouv. Mém. Soc. Nat. Moscou 12: 6. 1860 (!). Russian Armenia, Caucasus, and northern Iran.
- A. MICROPHYLLUM (Meyer) Steud. Nomencl. Bot. ed. 2. 1: 68. 1841 (!). Siberia.
- A. NEVADENSE Wilmott ex Ball & Dudley, sp. nov.² Endemic to Spain.
- A. OCHROLEUCUM Boiss. & Huet, Diagn. 3(5): 36. 1856 (!). Endemic to Turkey.
- A. OVIRENSE Kerner, Sched. Fl. Exsicc. Austro-Hung. 2: 99. 1882 (!). Southeastern Alps and western Yugoslavia.
- A. PERSICUM Boiss. Ann. Sci. Nat. Paris, II. 17: 152. 1842 (!). Iran.
- A. PRAECOX Boiss. & Bal. in Boiss. Fl. Or. 1: 275. 1867 (!). Endemic to Turkey.
- A. PROPINQUUM Baumg. Beil. Jahresb. Nied.-Öst. Land.-Lehrers. Wien.-Neust. 36: 22. 1909 (!). Endemic to Turkey.
- A. PSEUDO-MOURADICUM Hausskn. & Bornm. ex Baumg. *op. cit.* 6 (!). Endemic to Turkey.
- A. PULVINARE Velen. Sitz.-ber. Böhm. Ges. Wiss. Math. Naturw. 33: 30. 1889 (!). The Balkans.

² *Alyssum nevadense* Wilmott ex Ball & Dudley, sp. nov. Holotype, Spain, Sierra Nevada, Almeria, main ridge west of Cerro del Rayo, 25 June 1926, *Wilmott* (BM). Affinis *A. montano* sed habitu humilioris, caulibus minoribus decumbentibus, foliis surculorum steriliū lanceolatis et angustioribus, indumento ex toto valde dense albo-argenteo e pilis stellatis maioribus (0.5-)0.7-1 mm. diametro 5-10 radiatis composito, floribus pallidis minoribus, racemi conferti differt.—Endemic to the Spanish Sierra Nevada.—Sierra Nevada above Minas de Bieres, between Minas de Bieres and Cerro del Rayo, 4 June 1924, *Lofthouse* (BM).

- A. *PURPUREUM* Lag. & Rod. Anal. Ci. Nat. 5: 275. 1802. Endemic to Spain.
- A. *REPENS* Baumg. Enum. Stirp. Transsilv. 2: 237. 1816 (!). Widespread in southern and eastern Europe, the Levant, Caucasia, and rarely extending to Iran.
- A. *ROSTRATUM* Stev. Mém. Acad. St.-Pétersb. 3: 295. *t.* 15, *fig.* 1. 1809 (!). Southeastern Europe and the Caucasus.
- A. *SCARDICUM* Wettst. Bibliot. Bot. 26: 24. 1892 (!). The Balkans.
- A. *SCUTIGERUM* Durand, Bull. Soc. Bot. Fr. 4: 11. 1857. North Africa.
- A. *SMYRNAEUM* Meyer, Bull. Acad. Sci. St.-Pétersb. 7: 132. 1840 (!). Greece, the Aegean Islands, and Turkey.
- A. *SPHACIOTICUM* Boiss. & Heldr. Diagn. 2(8): 35. 1849 (!). Endemic to Crete.
- A. *STAPFII* Vierh. Verh. Zool.-Bot. Ges. Wien 64: 261, *t.* 7, *fig.* 1. 1914 (!). Widespread in southern and eastern Turkey, the Levant, and east to Afghanistan.
- A. *STRIBRNYI* Velen. Fl. Bulg. 640. 1891 (!). The Balkans, Turkey, Syria, and Lebanon.
- A. *STRICTUM* Willd. Linn. Sp. Pl. ed. 4. 3(1): 464. 1800 (!). Widespread in the Levant and Caucasia.
- A. *STRIGOSUM* Banks & Sol. in Russell, Natural Hist. Aleppo 2: 257. 1794 (!). Common in southern and eastern Europe, North Africa, the Levant, and east to Afghanistan.
- A. *SZOWITSIANUM* Fisch. & Meyer, Ind. Sem. Hort. Petrop. 4: 31. 1837 (!). Common throughout the Levant, east to India.
- A. *TAYGETEUM* Heldr. Verh. Zool.-Bot. Ges. Wien 48: 703. 1898 (!). Endemic to Greece.
- A. *TENUIFOLIUM* Steph. ex Willd. Linn. Sp. Pl. ed. 4. 3(1): 460. 1800 (!). Siberia and Mongolia.
- A. *TRICHOCARPUM* Dudl. & Hub.-Mor. Jour. Arnold Arb. 45: 68. *pl.* II, *figs.* 12-22. 1964 (!). Endemic to Turkey.
- A. *TURKESTANICUM* Regel & Schmalh. in Regel, Desc. Pl. Nov. Rar. 6. 1882 (!). Transcaspia, Iran, and Afghanistan.
- A. *UMBELLATUM* Desv. Jour. Bot. 3: 173, 184. 1814 (!). Widespread in the Balkans, Crete, Cyprus, the Aegean Islands, western Turkey, and the Crimea.
- A. *WIERZBICKII* Heuff. Flora 18: 242. 1835 (!). The Banatus region of Yugoslavia and Romania.
- A. *WULFENIANUM* Schlecht. in Willd. Suppl. Enum. Pl. Hort. Berol. 44. 1813. Southeastern Alps.
- A. *XANTHOCARPUM* Boiss. Ann. Sci. Nat. Paris, II. 17: 154. 1842 (!). Widespread in Turkey, the Caucasus, northern Syria, and rarely in Lebanon.
4. Section *Gamosepalum* (Hausskn.) Dudl. Jour. Arnold Arb. 45: 70. 1964. LECTOTYPE SPECIES: *Alyssum lepidoto-stellatum* (Hausskn. & Bornm. ex Hausskn.) Dudl.

Gamosepalum Hausskn. Mitt. Thür. Bot. Ver. 11: 73. 1897 (!). — Schulz, Notizbl. Bot. Gart. Berlin 10: 109. 1927; in Engler & Prantl, Pflanzenfam. II. 17b: 494. 1936. — Bornm. Repert. Sp. Nov. Beih. 89: 58, 59. 1936.

DISTRIBUTION: The Levant, with maximum representation in Turkey.

Plants perennial, with sterile shoots. *Sepals* distinctly dimorphic, always persistent, and often inflated in fruit, appearing connate because of interlocking indumentum; inner surfaces with indumentum. *Petals* whitish with purple venation at limb bases, or yellow. *Long filaments* bilaterally winged, edentate and unappendaged, connate, or if free then contiguous with overlapping wings. *Short filaments* with basal, connate appendages or teeth. *Silicles* dehiscent, always with indumentum, held in the same direction as pedicels, and with biovulate locules; valves equally or unequally inflated. *Seeds* narrowly winged or wingless, mucilaginous.

A. Series **Connata** Dudl. Jour. Arnold Arb. 45: 70. 1964 (!). TYPE SPECIES: *Alyssum lepidoto-stellatum* (Hausskn. & Bornm. ex Hausskn.) Dudl.

DISTRIBUTION: Endemic to Turkey.

Long filaments connate. *Indumentum* overall composed of stellate hairs with few, branched rays. *Petals* whitish or pale yellow, with purple venation at limb bases.

COMPONENT SPECIES:

- A. LEPIDOTO-STELLATUM (Hausskn. & Bornm. ex Hausskn.) Dudl. loc. cit. (!). Endemic to Turkey.
- A. PAPHLAGONICUM (Hausskn.) Dudl. op. cit. 71 (!). Endemic to Turkey.
- A. TETRASTEMON Boiss. Ann. Sci. Nat. Paris, II. 17: 153. 1842 (!). Endemic to Turkey.
- A. THYMOPS (Hub.-Mor. & Reese) Dudl. Jour. Arnold Arb. 45: 71. 1964 (!). Endemic to Turkey.

B. Series **Libera** Dudl. op. cit. 72 (!). TYPE SPECIES: *Alyssum baumgartnerianum* Bornm.

Long filaments free, but contiguous with overlapping wings. *Indumentum* overall composed of lepidote hairs with many and branched rays. *Petals* sulphureous, not purple veined.

COMPONENT SPECIES:

- A. BAUMGARTNERIANUM Bornm. in Beil. Baumg. Jahresb. Kaiser Franz Josef-Land.-Gymn. Oberrealsch. Baden bei Wien 48: 16. 1911 (!). Southern Turkey, Syria, Lebanon, Israel, and Iran.
- A. CORNINGII Dudl. Jour. Arnold Arb. 45: 72. pl. III, figs. 1-11. 1964 (!). Endemic to Turkey.
- A. HARPUTICUM Dudl. op. cit. 76. pl. IV, figs. 1-12 (!). Endemic to Turkey.
- A. LYCAONICUM (Schulz) Dudl. op. cit. 79 (!). Endemic to Turkey.
- A. NIVEUM Dudl. op. cit. 78. pl. III, figs. 12-20 (!). Endemic to Turkey.
- A. SULPHUREUM Dudl. & Hub.-Mor. op. cit. 74. pl. IV, figs. 13-26 (!). Southeastern Turkey, and northern Syria and Iraq.

5. Section **Tetradenia** (Spach) Dudley, comb. nov. LECTOTYPE SPECIES: *Alyssum spinosum* L. Sp. Pl. 2: 650. 1753 (!). TYPE: "Alyssum ramis senilibus spiniformibus nudis" (BM — Hort. Cliff. *Alyssum* no. 1).

Konig Adans. sect. *Tetradenia* Spach, Hist. Nat. Vég. Phan. 6: 492.

Plants perennial, often spinose, with sterile shoots and winter rosettes. *Fruiting racemes* candelabriform. *Pedicels* arcuate and recurved. *Petals* white, often pink or reddish. *Long filaments* free, narrowly bilaterally winged, edentate, or with small basal teeth. *Short filaments* with small basal teeth. *Silicles* dehiscent, always glabrous, conspicuously boat-shaped, erect or horizontal, held opposite to the direction of the pedicels, and with biovulate locules; valves strongly and unequally inflated. *Seeds* wingless, not mucilaginous.

COMPONENT SPECIES:

- A. COCHLEATUM Cosson & Durand, Bull. Soc. Bot. Fr. 4: 11. 1857 (!). North Africa.
 A. LAPEYROUSIANUM Jord. Obs. Pl. Nouv. 1: 3. pl. 1, figs. A1–11. 1846. The Pyrenees.
 A. SPINOSUM L. Sp. Pl. 2: 650. 1753 (!). Mediterranean Europe, and North Africa.

6. Section **Odontarrhena** (Meyer) Koch, Synop. Fl. Germ. Helv. 59. 1836. LECTOTYPE SPECIES: *Alyssum tortuosum* Waldst. & Kit. ex Willd. — Hook. in Benth. & Hook. Gen. Pl. 1: 74. 1862. — Boiss. Fl. Or. 1: 263, 267. 1867. — Nyár. Bul. Grăd. Bot. Cluj 7: 1, 65. 1927, *ibid.* 8: 152. 1928, *ibid.* 9: 1. 1929; Repert. Sp. Nov. 27: 392. 1930; Bul. Grăd. Bot. Cluj 9: 69. 1931; Bul. Soc. Științe Cluj 6: 446. 1932; Notizbl. Bot. Gart. Berlin 9: 631. 1932; Bul. Grăd. Bot. Cluj 18: 82. 1938; Anal. Acad. Rep. Pop. Rom. Sect. Științe Geol. Geog. Biol. ser. A, mem. 3, 1: 1. 1949. — Schulz in Engler & Prantl, Nat. Pflanzenfam. II. 17b: 491. 1936.

Odontarrhena Meyer in Ledeb. Fl. Alt. 3: 58. 1831 (!).

DISTRIBUTION: Widespread in Europe and the Levant, east to Siberia and Afghanistan.

Plants perennial, with sterile shoots and winter rosettes, rarely biennial. *Pedicels* rigid, divergent and spreading, or slender, sigmoid and deflexed. *Petals* yellow, usually obovate, rarely with basal appendages. *Long filaments* free, always unilaterally or bilaterally winged, and variously dentate. *Short filaments* always with free or connate appendages, or teeth. *Silicles* dehiscent or indehiscent, glabrous or with indumentum, or rarely papillose, held in the same direction as pedicels or pendulous, and with uniovulate locules; valves equally or unequally inflated, or compressed and undulate

(samaroid and papyraceous in subsect. *Samarifera*). *Seeds* winged or wingless, rarely mucilaginous.

- I. Subsection **Inflata** Dudley, Jour. Arnold Arb. **45**: 79. 1964 (!). TYPE SPECIES: *Alyssum tortuosum* Waldst. & Kit. ex Willd.

Silicles dehiscent; valves equally or unequally inflated, with inconspicuous venation, never undulate. *Pedicels* divergent and spreading.

DISTRIBUTION: Widespread in Europe and the Levant, east to Siberia and Afghanistan.

COMPONENT SPECIES:

- A. ALPESTRE L. Mant. 92. 1767 (!). Central and western Alps.
A. ANATOLICUM Hausskn. ex Nyár. Bul. Grăd. Bot. Cluj **9**: 40. *t. 5 fig. 111*; *t. 6, fig. 46*; *t. 7, fig. 56*; *t. 9, figs. 62 & 63*; *pl. 29*. 1929 (!). Endemic to Turkey.
A. BAICALICUM Nyár. *Ibid.* **18**: 94. *t. V, fig. 11*; *fig. 3, no. 3*, 1939. Siberia.
A. BERTOLONII Desv. Jour. Bot. **3**: 172, 185. 1814 (!). Italy and the north-western Balkans.
A. BORZAEANUM Nyár. Bul. Grăd. Bot. Cluj **6**: 90. 1926 (!). The Balkans and Turkey.
A. BRACTEATUM Boiss. & Buhse, Nouv. Mém. Soc. Nat. Moscou **12**: 18. 1860 (!). Iran and Caucasia.
A. CALIACRAE Nyár. Bul. Grăd. Bot. Cluj **6**: 92. 1926 (!). The Balkans and the Crimea.
A. CALLICHRUM Boiss. & Bal. Diagn. 3(5): 34. 1856 (!). Endemic to Turkey.
A. CHONDROGYNUM Burt. Kew Bull. **1949**. 101. *pl. 4*. 1949 (!). Endemic to Cyprus.
A. CONDENSATUM Boiss. & Hausskn. in Boiss. Fl. Or. **1**: 268. 1867 (!). Turkey, Syria, Lebanon, and Iraq.
A. CONSTELLATUM Boiss. Ann. Sci. Nat. Paris, IV. **2**: 244. 1854 (!). Turkey and Iraq.
A. CORSICUM Duby in DC. Bot. Gall. ed. 2. **1**: 34. 1828 (!). Corsica and Turkey.
A. CORYMBOSOIDES Form. Verh. Nat. Ver. Brünn **34**: 329. 1895. The Balkans.
A. CYPRICUM Nyár. Bul. Grăd. Bot. Cluj **7**: 156. *pl. 17*; *t. 5, fig. 81*; *t. 8, figs. 136–138*. 1927. Cyprus and Turkey.
A. DAVISIANUM Dudl. Jour. Arnold Arb. **45**: 81. *pl. I, figs. 14–22*. 1964 (!). Endemic to Turkey.
A. DISCOLOR Dudl. & Hub.-Mor. *op. cit.* **80**. *pl. V, figs. 1–11* (!). Endemic to Turkey.
A. ERIOPHYLLUM Boiss. & Hausskn. in Boiss. Fl. Or. **1**: 273. 1867 (!). Endemic to Turkey.
A. EUBOEUM Hal. Consp. Fl. Gr. **1**: 93. 1900 (!). Endemic to the Greek island of Euboea.
A. FALLACINUM Hausskn. Mitt. Thür. Bot. Ver. **3–4**: 114. 1893 (!). Greece and Crete.
A. FEDTSCHENKOANUM Busch, Not. Syst. Leningrad **4**: 145. *figs. p. 146*. 1923 (!). Siberia.

- A. FILIFORME* Nyár. Bul. Grăd. Bot. Cluj 9: 35. *t. 5, fig. 79; t. 6, fig. 40; t. 7, f. 49; t. 10, f. 53.* 1929 (!). Endemic to Turkey.
- A. FRAGILLIMUM* (Bald.) Rech. f. Neue Beiträge zur Flora von Kreta, 77. 1943 (!). Endemic to Crete.
- A. GEHAMENSE* Federov, Not. Syst. Geog. Inst. Bot. Tibilisi, fasc. 10: 65. *fig. 4.* 1941 (!). Turkish and Russian Armenia.
- A. HAUSSKNECHTII* Boiss. Fl. Or. 1: 269. 1867 (!). Endemic to Turkey.
- A. HUBER-MORATHII* Dudl. Jour. Arnold Arb. 45: 83. *pl. V, figs. 12-23.* 1964 (!). Endemic to Turkey.
- A. INFLATUM* Nyár. Bul. Grăd. Bot. Cluj 9: 43. *t. 5, fig. 113; t. 6, fig. 41; t. 7, figs. 50 & 51; t. 9, figs. 54-58.* 1929 (!). Iran and the Transcaspian.
- A. LANIGERUM* DC. Syst. Nat. 2: 308. 1821 (!). Iraq and east to Afghanistan.
- A. LIBANOTICUM* Nyár. Bul. Grăd. Bot. Cluj 18: 83. *fig. 1.* 1939 (!). Lebanon.
- A. LONGISTYLUM* (Somm. & Lév.) Grossh. in Grossh. & Schischk. Sched. Herb. Pl. Or. Exsicc. 18. 1924 (!). Turkish Armenia, Caucasia, and the Crimea.
- A. MARKGRAFII* Schulz, Ber. Deutsch. Bot. Ges. 44: 422. *t. VII-VIII, fig. 3.* 1926 (!). Albania and Yugoslavia.
- A. MASMENAEUM* Boiss. Diagn. 3(5): 36. 1856 (!). Endemic to Turkey.
- A. NEBRODENSE* Tineo, Pl. Rar. Sic. Pug. 1: 12. 1817 (!). Sicily.
- A. OBOVATUM* (Meyer) Turcz. Bull. Soc. Nat. Moscou 10: 57. 1837 (!). Southeast Russia, and Siberia.
- A. OBTUSIFOLIUM* Stev. ex DC. Syst. Nat. 2: 305. 1821 (!). The Balkans and Russia.
- A. OXYCARPUM* Boiss. & Bal. Diagn. 3(5): 35. 1856 (!). Endemic to Turkey.
- A. PATERI* Nyár. Bul. Grăd. Bot. Cluj 9: 33. *pl. 26.* 1929 (!). Widespread in Turkey.
- A. PENJWINENSIS* Dudl. Notes Bot. Gard. Edinb. 24: 162. *pl. 7 & fig. 4.* 1962 (!). Northern Iraq.
- A. POLYCLADUM* Rech. f. Phytion 3: 55. 1951. Iran.
- A. ROBERTIANUM* Bernard ex Gren. & Godr. Fl. Fr. 1: 117. 1847 (!). Endemic to Corsica.
- A. SERPYLLIFOLIUM* Desf. Fl. Atl. 2: 70. 1798. Southwestern Europe and North Africa.
- A. SIBIRICUM* Willd. Linn. Sp. Pl. ed. 4. 3(1): 465. 1800 (!). Widespread in the Balkans, Turkey, the Crimea, and Caucasia.
- A. SINGARENSE* Boiss. & Hausskn. in Buser, Suppl. Fl. Or. 49. 1888 (!). Iraq.
- A. SMOLIKANUM* Nyár. Bul. Grăd. Bot. Cluj 9: 43. *t. 4, figs. 70, 71; t. 6, fig. 54; t. 7, figs. 69-71; t. 9, fig. 71; pl. 30, figs. 2 & 3.* 1929 (!). Greece and Albania.
- A. SYRIACUM* Nyár. *Ibid.* 18: 84. *fig. 2.* 1939 (!). Endemic to Turkey.
- A. SZARABIACUM* Nyár. *op. cit.* 97. *fig. 3, 7; t. 5, fig. 12.* Siberia.
- A. TAVOLARAE* Briquet, Prod. Fl. Corse 2: 58. *fig. 1, E; fig. 2, B.* 1913 (!). Mediterranean islands of Tavolara and Sardinia.
- A. TORTUOSUM* Waldst. & Kit. ex Willd. Linn. Sp. Pl. ed. 4. 3(1): 466. 1800 (!). Widespread from eastern Europe to Siberia.
- A. TROODII* Boiss. in Buser, Suppl. Fl. Or. 49. 1888 (!). Endemic to Cyprus.
- A. TURGIDUM* Dudley, Great Basin Naturalist 24: 7. *pl. I, figs. A-E, G-K.* 1964 (!). Iran.

- II. Subsection **Compressa** Dudley, Jour. Arnold Arb. **45**: 86. 1964.
TYPE SPECIES: *Alyssum murale* Waldst. & Kit.

DISTRIBUTION: Southern and eastern Europe, and the Levant.

Silicles dehiscent; valves compressed or rarely subinflated, $\pm$ undulate, and always conspicuously nerved.

- A. Series **Integra** Dudley, Jour. Arnold Arb. **45**: 86. 1964 (!). TYPE SPECIES: *Alyssum murale* Waldst. & Kit.

DISTRIBUTION: Italy, the Balkans, Cyprus, Turkey, Spain, and Jordan.

Silicles entire, without marginal wings. *Pedicels* rigid and spreading.

COMPONENT SPECIES:

- A. **AKAMASICUM** Burtt, Kew Bull. **1949**. 100. *pl.* 3. 1949 (!). Endemic to Cyprus.
A. **ARGENTEUM** All. Miscell. Taur. **5**: 73. 1774. Italy.
A. **CASSIUM** Boiss. Diagn. **2(8)**: 34. 1849 (!). Turkey and northern Syria.
A. **JANCHENII** Nyár. Preslia **5**: 109. *fig. 1*. 1927 (!). Albania.
A. **MURALE** Waldst. & Kit. Pl. Rar. Hung. **1**: 5. *t. 6*. 1799 (!). Europe and the Levant.
A. **SUBSPINOSUM** Dudl. Notes Bot. Gard. Edinb. **24**: 160. *pl. 6*. 1962 (!). Jordan.
A. **TENIUM** Hal. Consp. Fl. Gr. **1**: 93. 1900 (!). Greece.

- B. Series **Crenulata** Dudley, series nov. TYPE SPECIES: *Alyssum crenulatum* Boiss. Diagn. **2(8)**: 33. 1849 (!). Holotype, Turkey, D6: Prov. Hatay, in collibus ad radices meridionales jugi Cassii (Akra dağ) in via inter Latakieh et Suadie, June (May–July) 1846, *Boissier* (G).

DISTRIBUTION: Greece, Turkey, and north Syria.

A serie *Integra* siliculis marginibus alatis crenulatis pedicello capillari flexuoso deflexo suffultis differt.

COMPONENT SPECIES:

- A. **CILICICUM** Boiss. & Bal. Diagn. **3(5)**: 34. 1856 (!). Endemic to Turkey.
A. **CRENULATUM** Boiss. Diagn. **2(8)**: 33. 1849 (!). Turkey and north Syria.
A. **GIOSNANUM** Nyár. Bul. Grăd. Bot. Cluj **7**: 127. *t. 3, figs. 52 & 53; t. 5, fig. 78; t. 8, fig. 102; t. 10, figs. 129–132*. 1927 (!). Endemic to Turkey.
A. **HELDREICHII** Hausskn. Mitt. Thür. Bot. Ver. **3–4**: 113. 1893 (!). Greece.
A. **PTEROCARPUM** Dudley, nomen novum. *Alyssum elatum* Boiss. & Heldr. Diagn. **2(8)**: 33. 1849 (!) — *non* Kreutzer, Anthochron. Pl. Eur. Med. **99**, 215. 1840. Lectotype, Turkey. C3: Prov. Antalya, ad rupes portus Tcherali (Çirali) (in campis sterilibus au pied des Montagnes, près du portus), 13 May 1845, *Heldreich* 620 (G); isoelectotypes (BM, E, GH, HM, K, OXF, W). Endemic to Turkey.

III. Subsection **Samarifera** Dudl. Jour. Arnold Arb. **45**: 88. 1964. TYPE SPECIES: *Alyssum samariferum* Boiss. & Hausskn.

Triplopetalum Nyár. Magyar Bot. Lap. **24**: 97, fig. p. 98; t. 1, 1-14. 1925 (!). — Schulz in Engler & Prantl, Nat. Pflanzenfam. II. **17b**: 492. 1936.

DISTRIBUTION: Lesbos, Turkey, and north Syria.

Silicles indehiscent, samaroid, papyraceous, undulate, pendulous, always compressed. *Pedicels* slender, flexuose, and deflexed. Seeds mucilaginous.

COMPONENT SPECIES:

- A. CARICUM Dudl. & Hub.-Mor. Jour. Arnold Arb. **45**: 89. pl. II, figs. 1-11. 1964 (!). Endemic to Turkey.
- A. DUBERTRETI Gombault, Mém. Soc. Bot. Fr. **33**: 4. 1952. Endemic to Turkey.
- A. FLORIBUNDUM Boiss. & Bal. Diagn. **3**(5): 33. 1856 (!). Endemic to Turkey.
- A. LESBIACUM (Candargy) Rech. f. Fl. Aegaea, 226. 1943. Endemic to the Greek island of Lesbos.
- A. PELTARIOIDES Boiss. Ann. Sci. Nat. Paris II. **17**: 158. 1842 (!). Endemic to Turkey.
- A. PINIFOLIUM (Nyár.) Dudl. Jour. Arnold Arb. **45**: 92. 1964 (!). Endemic to Turkey.
- A. SAMARIFERUM Boiss. & Hausskn. in Boiss. Fl. Or. **1**: 272. 1867 (!). Turkey and north Syria.
- A. TRAPEZIFORME Bornm. ex Nyár. Anal. Acad. Rep. Pop. Rom. Sect. Științe Geol. Geog. Biol. ser. A, mem. **3**, **1**: 83. t. 1, fig. 1; t. 6, figs. 4-6. 1949 (!). Endemic to Turkey.
- A. VIRGATUM Nyár. Bul. Grăd. Bot. Cluj **7**: 115. pl. 10, t. 4, figs. 60-62; t. 6, fig. 61; t. 7, fig. 92. 1927 (!). Endemic to Turkey.

SPECIES NON SATIS NOTAE

- A. *americanum* Greene, Pittonia **2**: 224. 1892 (!). The Yukon in North America. Porsild (Rhodora, **41**: 239. 1939 and Natl. Mus. Canada Bull. **121**: 202. 1951) accepts this species as the only indigenous American representative of the genus. Following Porsild, Anderson, in his *Flora of Alaska*, 267. 1959, lists *Alyssum americanum*. However, although Hultén (Lunds Univ. Årksskr. II. Sect. 2. **41**(1): 886. 1945) maintains the binomial, he claims that it agrees exactly with Siberian plants which have been known by a number of authors as "*A. alpestre*" or "*A. sibiricum*." In 1939, Busch applied a *nomen novum*, *A. biovulatum* (see below), to refer to the Siberian plants; but if the plants from the Yukon and Siberia are conspecific, *A. americanum* is an earlier name and must be used. Busch (1939) states that his *A. biovulatum* is a new name for that which he described, discussed, and illustrated in detail as *A. sibiricum* in his *Flora Siberiae et Orientis Extremi* **6**: 550-552. 1931. In this work Busch cites as a synonym of "*A. sibiricum*," *Odontarrhena obovata* Meyer (= *Alyssum obovatum* (Meyer) Turcz.). If in fact, *A. americanum*, *A. biovulatum*, and *A. obovatum* are the same species, *A. obovatum* must be used as the correct

epithet. I have examined the holotype and isotypes of *A. americanum*, which agree in most characters with material of *A. obovatum*. I feel, however, that the question of whether the name *A. americanum* should be maintained for an indigenous outlier of an entirely Old World genus should be left open until more specimens (as *A. obovatum*, or *A. biovulatum*, or "*A. sibiricum*") from the Kamchatka and Yakutsk provinces in Siberia have been carefully compared with the plants from the Yukon.

- A. antiatlanticum* Emb. & Maire, Bull. Soc. Hist. Nat. Afr. Nord 23: 165. 1932. North Africa. This plant is put in sect. PSILONEMA because the petals are only slightly longer than the sepals and the glands are erect and peglike. The fruits, however, are described as being cochleate and glabrous, and the plant is a suffrutescent perennial. Perennials are, to date, unknown in sect. PSILONEMA, as are fruits similar to those of *A. spinosum* or *A. cochleatum* (both in sect. TETRADENIA). In the diagnosis of *A. antiatlanticum* it is stated that the species is allied to *A. cochleatum* and *A. montanum* (sect. ALYSSUM). As type material of *A. antiatlanticum* has not been examined, it is impossible from the description to say whether it is a good species or possibly a synonym of another, such as *A. cochleatum*.
- A. biovulatum* Busch in Komarov, Fl. U.R.S.S. 8: 346. 1939. Siberia. See notes above under *A. americanum*.
- A. brughieri* Colla, Herb. Pedem. 1: 142. 1833. Italy. No judgement can be made about this name without examination of the type in hb. Biroli (ro). In the description, however, Colla allies it to *A. argenteum*, of which it may well be a synonym.
- A. costei* Sennen & Pau, Bull. Acad. Geog. Bot. 18: 453. 1908. Spain. According to the description, this plant is related to *A. lapeyrousianum* (sect. TETRADENIA), of which it may be a synonym. However, until the type material is studied, it is not possible to place this name in the correct section.
- A. djurdjurae* Chod. Bull. Soc. Bot. Fr. 36: 19. 1889. North Africa. This species is assigned to sect. ALYSSUM, but is described as being morphologically intermediate between *A. atlanticum* (sect. ALYSSUM) and *A. serpyllifolium* (sect. ODONTARRHENA). The characters noted in the description appear to agree with *A. atlanticum*, but before examining the type material no judgement should be made.
- A. emarginatum* Zahl ex Vis. Fl. Dalm. 3: 117. 1852. Yugoslavia. It is claimed that this species is intermediate between the perennial *A. montanum* and the annual "*A. campestre*" (= *A. minus*). The fruits are described, however, as being glabrous. Type material must be examined before a decision is made concerning the application of this name.
- A. embergeri* Quezél, Bull. Soc. Sci. Nat. Maroc 31: 254. 1951. North Africa. According to the description this plant is allied to *A. montanum* and *A. flahaultianum* (see below), but it is impossible to tell from the description alone whether it should be maintained as a distinct species. The description appears to fit *A. atlanticum*.
- A. filifolium* Wahlenb. in Berggren, Resor. i. Europa och Österländerna Bih.

- 2: 54. 1826. ? Asia Minor. The original reference for this name has not been seen; however, an account of Jacob Berggren's journey, by Wahlenberg, appeared in *Isis von Öken* 21: 971-1006. 1828. There is on page 990 of this work a description of *A. flifolium* by Wahlenberg. Although in *Index Kewensis* 1: 97. 1895, this plant is cited from Asia Minor, Wahlenberg states that it was collected by Berggren [one g] in "Morgenland." Until the type is studied (SBT) the name should not be used. The description in *Isis von Öken* could apply to any annual with glabrous fruits in *Alyssum*.
- A. flahaultianum* Emb. Bull. Soc. Sci. Natur. Maroc 15: 199. 1935. North Africa. This plant is described as a perennial in sect. ALYSSUM, allied to *A. serpyllifolium* (sect. ODONTARRHENA), having rose colored flowers, glabrous subcochleate fruits, and few-fruited racemes, characters which seem to apply better to *A. cochleatum* (sect. TETRADENIA). Judgement must be reserved, however, until the type material has been seen.
- A. globosum* Grossh. Izv. Azerbaidzh. Fil. Ak. Nauk. S.S.S.R. 5: 74. 1939. Caucasus. The original publication of this species is apparently unavailable in the United States or Great Britain, so application of the name must wait.
- A. hakaszki* Nyár. Anal. Acad. Rep. Pop. Rom. Sect. Științe Geol. Geog. Biol. ser. A. mem. 3. 1: 32. 1949. Siberia. See *A. subbaicalicum* below. This species is described as being "sp. trans. n. = *A. microphyllum-obovatum*" and may be a synonym of either.
- A. heideri* Kroch. Suppl. Fl. Silesia 4(2): 168. 1823. Germany. The information in the description of this plant is inadequate to place it in any section of *Alyssum*.
- A. "muricatum mihi vel tuberculatum"* Kit. Linnaea 32: 498. 1863. Hungary. Kitaibel evidently could not make up his mind as to an appropriate specific epithet for this taxon, and supplied two names. Although he allies it to *A. sibiricum*, the description of this annual compares favorably to *A. alyssoides*. However, a decision should not be made until the type material has been examined.
- A. odoratum* Colla, Herb. Pedem. 1: 141. 1833. Italy. There are no species of *Alyssum* with scented flowers as this specific epithet suggests. It is impossible to tell from the description, and without examining the type specimen (ro, hb. Bellardi), whether the name applies to *Alyssum* or if it should be referred to another genus, for example, *Lobularia* (*Lobularia maritima*, the "Sweet Alyssum" having highly scented flowers).
- A. subbaicalicum* Nyár. Anal. Acad. Rep. Pop. Rom. Sect. Științe Geol. Geog. Biol. ser. A. mem. 3. 1: 18. 1949. Siberia. The holotype of this species was collected in Siberia in the district Hakaszki. It is probably synonymous with *A. hakaszki*, but the descriptions being inadequate, do not offer much assistance. Of interest is that the type of *A. subbaicalicum* was collected by Golubincev, and is deposited in the University of Tomsk herbarium (ТК). One of the specimens cited as *A. hakaszki* (see above) was also collected by Golubincev, deposited in the same herbarium, and may well be a duplicate. *Alyssum subbaicalicum* is described as being "sp. trans. n. = *A. baicalicum-microphyllum*" and may be a synonym of either taxon, both of which are apparently good species.



Dudley, T. R. 1964. "Synopsis of the Genus *Alyssum*." *Journal of the Arnold Arboretum* 45(3), 358–373. <https://doi.org/10.5962/p.185685>.

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