

# Taxonomic Revision and Lectotypification of *Allium* L. sect. *Coerulea* (OMELCZ.) F.O. KHASS.

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**Abstract:** Taxonomic analysis of sect. *Coerulea* (OMELCZ.) F.O. KHASS. revealed its originality. *Allium tatyanae* F.O. KHASS. & KARIMOV is newly described as well as the new section *Rechingeria* F.O. KHASS & TIRKASHEVA. The relationship of the new species to *A. caesium* SCHRENK and *A. oreophiloides* REGEL is discussed. Lectotypification of the section is given.

**Zusammenfassung:** Die taxonomische Analyse der Section *Coerulea* (OMELCZ.) F.O. KHASS. bestätigt ihre Originalität. *Allium tatyanae* F.O. KHASS. & KARIMOV wird neu beschrieben sowie die Section *Rechingeria* F.O. KHASS & TIRKASHEVA. Die Beziehung der neuen Art zu *A. caesium* SCHRENK und *A. oreophiloides* REGEL wird diskutiert. Lectotypifizierung der Section wird durchgeführt.

**Key words:** *Allium*, new species, taxonomy, lectotypification, section, Fergan depression.

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## Introduction

During several collecting missions in Fergan depression 16 new *Allium* species have been described (*A. arkitense* R. M. FRITSCH, *A. chorkessaricum* F. O. KHASS. ET TOJBAEV, *A. chychkanense* R. M. FRITSCH, *A. cisferganense* R. M. FRITSCH, *A. haneltii* F. O. KHASS. ET R. M. FRITSCH, *A. isakulii* R. M. FRITSCH ET F. O. KHASS., *A. kuramense* F. O. KHASS. ET N. FRIESEN, *A. michaelis* F. O. KHASS. ET TOJBAEV, *A. chorkessaricum* F. O. KHASS. ET TOJBAEV, *A. orunbaii* F. O. KHASS. ET R. M. FRITSCH, *A. pangasicum* TURAK., *A. pseudowinklerianum* F. O. KHASS. ET R. M. FRITSCH, *A. rudolfii* TURAK., *A. sharobidinii* F. O. KHASS. ET TOJBAEV, *A. sochense* R. M. FRITSCH ET U. TURAKULOV, *A. spathulatum* F. O. KHASS. ET R. M. FRITSCH, *A. zegericum* F. O. KHASS. ET R. M. FRITSCH and at least 3 species will be described soon. Altogether, 82 *Allium* species (from 245 recorded for Central Asia) are naturally growing here. Thus, this region can be treated as one of the main centres of diversity and speciation. New results on lectotypification of several sections of the super polymorphous subgenus *Allium* are discussed.

## Results and Discussion

Subgenus *Allium* is the largest ones within the genus and nowadays includes at least 400 species occurring on a large area of Northern hemisphere (with 1 species in South Africa - *A. drageanum* KUNTH). There were several sections in the system of DON-KOCH, which were accepted for many years in the 20 century. Starting from P. WENDELBO (1971) and R. KAMELIN (1973) the classification of subgenus heavily changed. The name of type section became *Allium* instead of *Porrum* G. DON ex W. KOCH. As W. STEARN (1978) pointed, section *Scorodon* KOCH with type *A. rubellum* M. BIEB. was nomenclatorically incorrect. Section *Haplostemon* (BOISS.) HALACZY became its synonym. Molecular data showed (FRIESEN et al 2000) that this section (described earlier by W. D. J. KOCH (1837) with type species *A. moschatum* L.) belongs to rhizomatous subgenus *Polyprason* RADIĆ. Initially section *Allium* was revised by B. MATTHEW (1996). Then senior author (KHASSANOV 2000, 200112) suggested new subinfrageneric grouping with 16 sections. Several sections were need in additional studies an lectotypification. Below a new revision of

section *Coerulea* (Omelcz.) F. O. KHASS. is given as well as description of one more original new section.

***Allium* L. section *Coerulea* (Omelcz.) F. O. KHASS.** in M. A. ÖZTÜRK, Ö. SEÇMEN & G. GÖRK (eds.), *Pl. Life S.W. & Central Asia 1: 149* (1996) – ser. *Coerulea* OMELCZ. *Novosti Sist. Vyssh. Nizsh. Rast.* 1976: 53. 1977

**Type:** *A. caeruleum* PALL.

Bulb tunics coriaceous or papyraceous. Spathe persistent. Perianth campanulate, rosy, bluish, whitish or purplish. Tepals fleshy, lanceolate, straight and striking.

**1. *A. caeruleum* PALL.,** *Russ. Reich.* 2:727 (1773) = *A. azureum* LEDEB., *Fl. Alt.* 2: 13 (1830) = *A. viviparum* KAR. et KIR., *Bull. Soc. Imp. Naturalistes Moscou* 14: 852 (1841).

**Type:** „planitie salsuginosa ad Irten inter rupium Beresofka et Septempalatum [Semipalatinsk?]).

Unfortunately the type specimen could not be studied additionally to the wild plants from Central Asia and from numerous living collections. Though EGOROVA (1977) and FRIESEN (1988) mentioned that type specimen is stored in LE. The only specimen of *A. caeruleum* from (probably) Pallas herbarium present in LE bears no geographical notes, and none of the three labels present evidence that this specimen was collected by Pallas. The type specimen of *A. caeruleum* was also not traced in LE as well in K, BM LINN, B, W, MU and MBG.

**Distribution:** S-E European Russia, Aralo-Caspian, Balkhash deserts, Tien-Shan, Pamir-Alay, Dshungaro- Kashgaria, W. Siberia, Mongolia, China.

**Material studied:** TASH - Ustjurt expedition by Institute of Botany, Kasarma nearby chink, № 42, 1956. 06. 17, Nesmejanova; Uzbekistan, Kasansaj town, stony slopes, 1965. 05. 16, M. Prjahin; Kurama range, Chadak valley, Indigan, right bank, 2009. 05. 05, Tojibaev; Babatag mnts., 40 km eastern Ljaljmikar; Beshnau mnts., Besh-Archa, gypsaceous slopes, № 283, 1979. 05. 19, Tsukervannik; LE - Cheljabinsk distr., Troitzky region, 6 km southern Bobrovka, meadows, 7.07.1998, Kulikov; Prope Orsk, 1859, Gutino; Orenburg distr., Novotrotzky region, right bank of Ural river, 18.06. 1964, Gorchakovsky; Volgograd district, 17 km N-W from railway station Elton, right bank of Khara river, 18.06.2000, Mikhajlova; Astrahanj, Elton lake, № 198, 03.06.1925, Iljin, Grigorjev; Saratov distr., village Kamyshny, 23.06.2007, Shilova, Panin; LE – Upper part of Karatal river basin, botton of canyon Kary river, № 649, 02.07.1928, Schipchinsky; Lepsinsk district, canyon of Tarty river, № 692, 15.07.1928, Lipschitz; Semirechensk district, Dzharkent region, n. slope of Ketven mnts., Kirish-saj canyon, № 2277, 19.07.1910, Michelson; Semirechesk district, Chu-Ili nbts, Kashka-su river, 20.06.1914, Titov; cultivated in Olgino, 1904, collected near Mulla-bel, B. Fedtschenko, 1901; Samarkand district, Khairsultan mnt., 10.06.1913, Michelson; Samarkand district, Magian-Marguzar, 19.06.112, Preobrazhensky; Turkestan range, Isfara valley, Puli-Aftobruj river, juniper forrest, № 459, 26.07.1970,

Kamelin; Montes Septentrionalis, Tien-Shan exterior, valle Sunkar-say in mont. Chan-tau, № 335 HFAM, 14.06.26, Drobow; Uzbekistan, near Kasansaj, loamy slopes, 16.05.1965, Prjahin; Uzbekistan, Kojtash mnts., stony slopes, № 229. 20.06.1971, Botschantzev, Kamelin.

**2. *A. caesium* SCHRENK,** *Bull. Phys.-Math. Acad. Petersb.,* № 52, t. 2: 113 (1884).

**Type:** Songarei, ad fluvitur Karaganda, SCHRENK, № 35, 13 July 1842, LE (Fig. 1).

In the first description Schrenk (1884) mentioned „Hab. ad fluvium Karagandy, nec non in collibus versus Dschisdyy-Kingir“.

**Distribution:** Siberia, Central Asia, Dshungaro- Kashgaria, Afghanistan.

**Material studied:** TASH - W. Tien-Shan, Angren river valley, Navgarzansaj, forrest zone, 15.08.1937, Zakirov; W. Tien-Shan, Kurama mnts., Abdzhazsaj, top of the mnt., № 305, 18.07.1935, Lopott; Koshurnikova, Nikitin; W. Tien-Shan, Karzhantau mnts., Mingbulak, near snow, 06.07.1962, Nabiev, Pratorov, Tuljaganova; Tashkent district, pass Kamchik, road to Angren plateau, 07. 08. 1924, Sovetkina; W. Tien-Shan, Ugam range, nearby Khumsan (Keragilsaj), № 38, 08.06.1974, Pratorov; W. Tien-Shan, near Chimgan station, Great Chimgan, 25. 09. 1929, Gomolitzky; Parkent expedition, Aksakata valley, rocks, № 1049, 13.07.1936, Korotkova, Titov; Great Chimgan, 22.08.1924, Gomolitzky; W. Tien-Shan, Chatkal valley, near Brichmulla, left bank of Koksus river, stony slope, № 253, 07.07.1928, Vatolkina; Tashkent district, near Iskander, Ljushenko; W. Tien-Shan, Tashkent Alatau, Kyzylsaj valley, meadows near Shaugalisaj, 03.06.1939, Butkov; Tashkent surroundings, Chirchikstroj, 03.06.1937, Mikhailov; Tashkent surroundings, near Kaplanbek, 26.05.1926, Linczewsky; Tashkent surroundings, near Salar, 05.06.1924, Popov, Vvedensky; Tashkent surroundings, near Bozsu river, № 1004, 09.06.1921, Vvedensky; Uchkurgan district, Dzhida-bulak, № 236, 16.05.1950, Bondarenko, Majlun; Fergan depression, left bank of Gavasaj, Arab mnt., № 502, 25.06.1949, Chevrinidi; Uzbekistan, northern slopes of Turkestan mnt. range, Kattaschver, within juniper forrest, № 8391, 13.07.1960, Korokova, Khamidkhodzhaev; Northern slopes of Turkestan range, Sangzar river, Guralash reserve (Shibarli), 2900-3000 m., № 933, 08.09.1937, Korotkova, Vassilkovskaja; W. Pamiroalay, Bederak, 1400 m., № 92362, 22. 06. 1992, Beshko; Kitab resrve, Novyhunek, 1800 m., № 86, 15.07.1980, Soldatova; Surkhandarja district, Zhetyrly, № 195, 25.05.1964, Ochilov; Surkhandarja district, Machaj, № 173, 15.05.1964, Ochilov; LE – Aktjybe district, Chelkar region, near Kashkarata, 15.06.1956, Junatov, Kuznetzov; Zakaspij district, № 842, 1904, Dubjansky; Turgaj district, Tezbulak basin, 09.06.1914, Spiridonov; Great Barsuk, near Chelkar, 24.06.1930, Gozhev, Graz-Guseva, Mozerov; Betpakdala, Chili-bulak, № 575, 13.06.1935, Mironov, Pazij; Dzhungar Alatu mnts., near Lepsinsk, mnt. Ush-kany, № 98, 30.07.1934, Nikitin; Almaty district, Karoy valley, № 115, 11.06.1926, Titov, Joffe; Zaili Alatau, Issy river, № 231, 05.06. 1915, Abolin; Talas river basin, near Budenovka, pastures, 16.08.1969, № 11-k, Kamelin; Kazakhstan, western Balkhash, Archarly, stony slopes, № 1012, 28.06. 1976, Botschantzev; Kazakhstan, Ulkenburul, near golovachevka

(ear Dzhambul), 1255-a, 10.06.1974, Kamelin; Syrdarja dist., Tashkent region, Biskanu, № 1036, 03.06.1909, Solovjev; Alexander range, Uchbulak, № 1334, 21.05.1909, Michelson; Kazakhstan, Syrdarja Karatau, Minzhelke, № 1594, 06.07.1974, Kamelin; Turkestan, Fergana, Skobelev dist., near Uchkurgan, № 1722, 30.05.1916, Androsow; Turkestan, Fergana, near Osh, 04.06.1905, Transhel; Uzbekistan, Nuratau mnts., Gurdara, № 318, 23.06.1971, Kamelin, Botschantzev; W - Gardez, 2400 m, Koelz 11976; Kataghan: In declivibus borealibus jugi Salang, in juniperetis aridis, 2400 m, Wdb. & Ekb. W-9861.

**3. *A. caesioides* WENDELBO**, Bot. Not. 122: 29 (1969) = *A. litvinovii* DROBOW ex VVED., Opređ. Rast. Sred. Azii 2: 314 (1971).

**Holotype:** Giloit expedition (No. of Hindu Kush), collected Dr. Giles 210, K (Fig. 2).

Unfortunately, *A. litvinovii* was firstly invalidly described in Russian (VVEDENSKY 1935). Nevertheless, VVEDENSKY (1971) published latin description of this species but he was late. Critical study of type material of both species showed that there is no any difference.

**Distribution:** Tien-Shan, N. Pamir-Alay, Afghanistan (Badakhschan).

**Material studied:** TASH - Fergan valley, Andizhon distr., Uchkurgan steppe, 1,5 km S-E from Tajchi, № 344, 06.05.1928, Joffe; Fergan distr., top of the mnt., nearby Iri-su, 14.08.1920, Androsow; Alaj mnts., Kara-kyzyk river valley, Dugava-saj canyon, 5 km upper the mouth, juniper forest, N-W slope, 1800 m., № 109, 22.07.1935, Sovetkina; Northern low mnts. of Alaj range, between Sokh and Shachimardan rivers, Karatanga valley, 05.06.1938, Glybin; Chatkal mnts., Chatkal reserve, Baschkysyksaj, 11.17.1979, Krassovskaja; Chatkal mnts., nearby Sarychelek lake, № 53, 14.07.1962, Pjataeva, Arifkhanova; Fergan depression, Dzhida-daj valley, № 849, 22.05.1952, Arifkhanova, Gringoff.

**4. *A. delicatulum* SIEV. ex SCHULT. et SCHULT.** in J. J. ROEMER & J. A. SCHULTES, Syst. Veg. 7: 1133 (1830) = *A. dolonkarense* REGEL, Trudy Imp. S.-Peterburgsk. Bot. Sada 3, 2: 113 (1875) = *A. willdenowii* KUNTH, Enum. Pl. 4: 452 (1843) = *A. zaissanicum* KOTUCHOV, Turczaninowia, 6, 1: 9 (2003).

**Type:** In Salsuginosis deserti Kirgis cum Plantaginae Salsa, 477, Pallas, LE (Fig. 3-4).

**Distribution:** Aralo-Caspian and Balkhash deserts, N. Tien-Shan, Dshungaro- Kashgaria, W. Siberia, Mongolia, China.

**Material studied:** TASH – Semipalatinsk distr., nearby station Argalak, № 310, 25.06.1928, Iljin, Heinrickson; Leninsk distr., lake Taran-kulj, salty places, № 1111, 03.07.1928, Bljumenthal, Zaprjagaev; Karaganda distr., 25 km northern Chiili-bulak, sandy slopes, № 556, 13.08.1935, Mironov, Pazij; Uzbekistan, Ustjurt Plateau, Shomuradov, 2011; LE – Kazakhstania occidentalis, Aktjubinsk province, near Temir, steppe slopes Bakagarmy, 05.07.1964, Tscherkasova; Ural distr., Temirsky region, step-

pe near Burma, 1908, Bulgakov; Karatjube region, № 304, 23.06.1928, Nikitin; Kazakhstania occidentalis, Aktjubinsk province, prope pagum Temir, 05.07.1964, Cherkasov; Mugodzharj, Alabada river, № 411, 13.06.1927, Russanov; Chelkar, Barsuki sands, Urda, № 1836, 16.06.1927, Spiridonov; Turgay distr., between Orenburg and Saksauljnaja, Kaldzhura station, 14.06.1904, B. Fedtschenko; Akmola distr., Atbasar, Kipchak river, № 52, 27.06.1908, Kopelkin; Zajssan distr., Cherga, salty steppe, 10.06.1914, Sapozhnikov; Kazakh Melkosopchnik, Kokpekty, № 5417, 20.07.1966, Karamysheva et al; Pavlodar distr., west bank of Sarykulj lake, № 943, Tzvelev et al.

**5. *A. elegans* DROBOW**, Sched. Herb. Fl. Ross. 1917: 2790 (1917).

**Type:** Fergan district, Skobelev region, Anchor plot, Arpa ravine, loamy shale slope, in the mid of ravine, 21.05.1916, LE (isotypes TASH, MW, Fig. 5).

**Distribution:** Fergan depression.

**Material studied:** TASH - Fergan distr., Sary-su mnts., № 60912, 13.06.1920, Popov; Turkestan mnts., Dzhintyk valley, rocky slope, № 186947, 16.06.1939, Arifkhanova Sokh valley, Batkent massiff, stony sope, 06.06.1946, Domashevich, Grosvirina; Turkestan mnts., Isfara valley, Myn-Teke, rocky slopes nearby confluence Dzhijtyk, № 294, 04.09.1946, Galkina, Gomolitzky; Osh distr., nearby Kadamzhaj, № 394, 05.06.1949, Sakhobitdinov, Li; Among the road from Fergana town to Akpial valley, stony plain, № 340, 25.05.1954, Arifkhanova; Turkestan mnts., Karatau mnts., 10 km western from Kanibodom town, stony slope, № 87, 25.05.1962, Puchkova, Persianova; Alaj mnts., near settlement Vuadil, № 640, 15.04.1965, Shonazarov; Shachimardan valley, Alaj mnts., Peshkaut valley, tertiary clays, 10.05.1968, Khalkuziev; Shachimardan valley, Alaj mnts., Kyzyltag, 17.07.1968, Khalkuziev; Alaj mnts., right bank of river Sokh, 3 km northern settlement Kshtut, 1300 m, № 841. 10.06.1984, Khalkuziev, Shermatov; Alaj mnts., settlement Yardan, Kyzyltag, № 4, 07.06.2011, Karimov, Tojibaev; LE – Turkestan range, Dzhin valley, Eginzhay, stony slopes, № 162, 16.06.1939, Arifkhanova; Osh dist., Alaj range, 22.05.1968, Adarova; Arslanbob, № 438, 29.05.1916, Lipsky; Kara-Kirgizia, Itelsu, stones, 21.08.1925, Massagetov; Fergan dist., Isfajram river, Karajagach, № 23, 20.06.1931, Lipschitz.

**6. *A. glomeratum* PROKH.**, Izv. Glavn. Bot. Sada SSSR 29: 560 (1930).

**Type:** Kashgaria, pass Kok-Mujnak, loamy slope, № 430, 27.07.1909, Divnogorsky, LE (Fig. 6).

**Distribution:** Pamir, Central Tien Shan, Dshungaro- Kashgaria, Mongolia.

**Material studied:** TASH – Naryn, river Kochkur, Akuchak mnts., rocks, № 330, 12.06.1926, Sovetkina, Uspenskaja; Sarydzjaz valley, Inylchek river, № 81, 07.1939, Korovin; Naryn, Dzhumgol river, № 708, 23.06.1926, Sovetkina, Uspenskaja; Central Tien Shan, Terskey Alatau, Karachukur in Karakolka, 12.08.1959, Rajkova; Naryn pastures, № 1018, 1926, Abolin; LE – Semirechensk dist., Przhevalsk, Inylchek river, Artemisia steppe,

on the stones, 01.08.1912, Sapozhnikov, Schischkin; Right bank of Sarydzhaz river, Kuruksay, 20.07.1964, Pazij; Flora Iliensis, 1886, Krasnov; Terskey Alatau, Chon-Kyzysu river, Karabashkak, subalpine slope, 25.07.1952, Kozhevnikova; Central Tien-Shan, Dzhangart river, № 294; Central Asia, Semorechensk dist., by Naryn river, 16.07.1903, Lipsky; Central Tien-Shan, Achik-tash and Sarydzhaz rivers, № 11, 25.07.1939; Kirgizia, Central Tien-Shan, Uchkul river, 2500 m, 28.07.1972, Grubov; Dzhety-Okuz region, Akshirjak, 1408.1934, Nikitina; Kirgizia, Central Tien-Shan, Sarydzhaz Uchkul rivers, 01.08.1982, Grubov, Popova; Semirechensk dist., Przhevalsk, Sarychag river, stony slope, 02.08.1913, Sapozhnikov.

**7. *A. lasiophyllum* Vved.,** Byull. Sredne-Aziatsk. Gosud. Univ. 19: 125 (1934).

**Type:** Prope Tekess, Krasnov, № 24, LE (Fig. 7).

**Distribution:** N. Tien-Shan.

**Material studied:** W. Zaili Alatau, Sjugaty-Serektas, Uzunbulak, stones, 12.06.1955, Goloskokov; Zaili Alatau, Sjugaty canyon, 02.06.1937, Goloskokov; E. Zaili Alatau, Sjugaty Kokpek, stones, 15.06.1955, Goloskokov.

**8. *Allium tatyanae* F. O. KHASS. et F. KARIM., sp. nov.**  
(*Coerulea* (OMELCZ.) F. O. KHASS.).

**Holotype:** Uzbekistan, Fergan depression, Namangan district, Yangikurgon and Ungur mountains, N 41 24 58.88 E 71 43 49.09, 1239 m.s.l., Karimov, Batoshev, 28. 04.2011, TASH (Fig. 8 - 9).

**Diagnosis:** Differ ab *Allio caesio* tepalis coerulescentibus lanceolatis et foliis quam scapus longitudinalis. Differ ab *Allio caesioides* scapi glabri, tepalis minoribus.

Species named after Dr. habil. Tatyana Shulkina (Missouri Botanical Garden).

**Description:** Bulbs globose, 0.5-1 cm wide, with bulblets. Outer tunics blackish-purple, subcoriaceous. Scape single, 15-20 cm long, twice shorter than leaves. Leaves 2-3, fistular, 2-3.5 mm width, subglobose, glaucose. Spathe bipartite, persistent. Inflorescence semiglobose, few-flowered. Pedicels greenish, 7 - 12 mm long, with bracts. Perianth narrowly campanulate, bluish in the upper part with green midvein. Tepals lanceolate, keen, 3-4 mm long, bluish, smooth. Filaments basally connate without cilia, nearly twice shorter than tepals, outer ones narrowly triangular, inner ones shortly tricuspidate in the middle. Anthers violet. Style included.

**Distribution:** W. Tien-Shan, Fergan depression (northern low mountains).

**9. *A. oreophiloides* REGEL,** Trudy Imp. S.-Peterburgsk. Bot. Sada 3, 2: 114 (1875).

**Holotype:** Between summerhouse Dzhetykchy and Schturowsky glacier, O. Fedtschenko, LE (Fig. 10).

There are 2 specimens collected by Olga Fedtschenko separated in type collection of Komorov's Institute. In the first description 2 different localities were cited: "Habitat Turkestanicae in provincia Kokania et in valle Sarawschansk". We choose as a holotype the specimen collected near Schturowsky glacier (upper Sarawschan) with drawing of the tepals and filaments. The second specimen consists of 2 plants with 2 labels (from 2 different locations) from Zarawschan valley.

**ssp. *oreophiloides***

**Distribution:** Central Tien-Shan, Pamir-Alay, Afghanistan.

**Material studied:** TASH - Turkestan mnts., Dzhizzak forestry, Kashka-su, 11.07.1958, Gordova; Turkestan mnts., Guralash reserve, Dzhandar-saj, on the rocks, № 440. 15.07.1947, Nazarenko; Shachimardan valley, Alaj mnts., Mashalang canyon, dry slopes, 27.08.1967, Khalkuziev; Shachimardan valley, Alaj mnts., near Yardan settlement, Kyzkurgan (Khurdzhuntau), dry slopes, alpine zone, 02.08.1967, Khalkuziev; W - Badakhshan: Ad laevum Shiva, Ldtob. 713; Golestan, Lindh. 747.

**ssp. *salangense* WENDELBO,** in Fl. Iran. 76: 25 (1971).

**Type:** In declivibus australibus jugi Salang, 3280-3300 m., 3. VIII, 1967, Reching, 37095, W (isotypes E, K, MUN, Fig. 11).

**Distribution:** Afghanistan.

**10. *A. renardii* REGEL,** Trudy Imp. S.-Peterburgsk. Bot. Sada 6: 521 (1880).

**Holotype:** Iter Turkestanicum. Ik Talas-Tschoty - Talas, Regel, August, 1876, LE (Fig. 12).

This species has been treated by VVEDENSKY (1935) as synonym of *A. caesium*, but it clearly differs by its whitish tepals and filaments.

**Distribution:** W. Tien-Shan.

**Material studied:** TASH - Ugam range, Nauvalisay, subalpine slope, 12.06.1992, Muzaffarova; Chatkal range, Babajtag, 20.07.1989, Maltzev;

**11. *A. sharobitdinii* F. O. KHASS. et TOJIBAEV,** Stapfia 97: 27 (2010).

**Type:** S-W Tien Shan Occidentalis, montes Kuramensis, Chadaksay, Gainlisay, S-E slope, juniper forrests, N 41 06 51.7 E 70 36 57.4, 2169 m. s. l., 28.0.2009, TOJIBAEV, TASH (isotype LI, Fig. 13).

**Distribution:** Uzbekistan, W. Tien-Shan, Kurama mnts.

**12. *A. ophiophyllum* Vved.,** Trudy Sredne-Aziatsk. Gosud. Univ. Ser. 8b, Bot. 3: 8 (1928).

**Type:** Montes Meridionales: Sogdiano-transoxanae. Ad declivia

argilloso-arenosa gypsacea, elevationis Chaudak-tau haud procul a pago Dzharkurgan, fl. 30.04.1928, Vvedensky, TASH (isotypes K, W, MBG, LE, MW Fig. 14).

**Distribution:** Uzbekistan, Western Pamir-Alay.

**Material studied:** TASH – Bajssun mnts., Aktash, by the road Aktash-Sherabad, gypsaceous slopes, № 269, 24.05.1972, Nabiev et al.; Gypsaceous slopes nearby station Kelif, 21.04.1930, Vvedensky; Sherabad valley, Khaudaktau, gypsaceous slopes, № 78, 22.05.1927, Vvedensky; Surkhandarja distr., Uchkyzyl mnts., near Termez, № 281, 01.05.1928, Vvedensky; Sarawschan distr., near Duljdur, № 3/91, 31.05.1926, Popov; Near Bekbudi (Kongurtag mnts.), sands, № 117, 13.05.1928, Linczevsky; Zijaatdin-Zerabulak mnts, between Zijaatdin and Kermine, 28.04.1962, Pjataeva; Gypsaceous slopes near Guzar, № 2к, 23.04.1935, Lepeschkin; Surkhandarja distr., Dzharkurgan, near Zang, 05.04.1931, Lihacheva; Surkhandarja distr., near Aktash, 08.05.2012, Khassanov, Al-Shehbaz.

**13. *A. gillii* WENDELBO**, Biol. Scr. 10, 3: 176 (1959) = *A. scabrum* GILLI, Feddes Rep. Spec. Nov. Regni Veg. 56: 146 (1954), nom. illeg.

**Holotype:** O-Afghanistan, bel Kabul, scher Darwasah, Schuttrinnen, zwischen, Hornblendefelsen, beim Tob, 1840 m, № 190, 07.06.1950, GILLI, W (Fig. 15).

**Distribution:** Central Afghanistan.

**Material studied:** MBG - 3 miles up Bamian road from main Kabul-Salang road, 5800 ft; sunny rocky scree slopes and ledges, 0291, 13 May 1971, Gibbons, MBG 3228010; KU – Kabul, 25 km E Tangi-Gharu, upper part, 1750 m, № 2819, 28.05.1968, Freitag; Gulbagh, № 70, 27.05.1950, Neubauer; 3 km noerdlich Gulbahar, Panschirschlucht, 23.05.1969, Breckle; Kabul: Ostseite des Paghman Gebirges, Umgebung von Khushak, № 10134, 08.06.1973, Anders; Prov. Kabul: Paghman-Gebirge, unterstes Chap-Darrah, ca. 9 km oberhalb Paghman, № 18162, 30.05.1970, Podlech.

**14. *A. svetlanae* VVED. ex FILIM.**, Bot. Mater. Gerb. Inst. Bot. Akad. Nauk Uzbeksk. 20: 40 (1982).

**Holotype:** Nuratau mnts., Ustjuk-saj, disturbed granitic rocks, № 87, 12.07.1956, Vvedensky, TASH (Fig. 16).

**Distribution:** Uzbekistan, W. Pamir-Alay, Nuratau mnts.

Very rare species growing in the upper part of Aktau mnts.

**15. *A. aemulans* PAVLOV**, Vestn. Akad. Nauk Kazaks.S.S.R. 11 (116): 88 (1954).

**Type:** Prov. Almaatensis, montes Tschu-Iliensis, loc. Kopalysaj, in summo monticulo lapidoso, 29.05.1952, lf. et fr. immat leg., M. Bajtenov, AA (isotype MW, Fig. 17).

**Distribution:** W.Tien-Shan, Chu-Ili mnts.

**Material studied:** TASH - Chu-Ili mnts., way out of Anarkhaj canyon, to the plain of the northern part of mountain system,

tertiary reddish low mnts., 27.06.1968, Puchkova (TASH).

Erroneously in the first description author indicated of *A. scrobiculatum* as the closest taxa. As a matter of fact, it is very closed to *A. caesium*, but differs by the pitted outer tunics and form of tepals.

**16. *A. taciturnum* VVED.**, (handwriting) Opred. Rast. Sred. Azii 2: 314 (1971).

**Holotype:** locus notialis incognitus. Verisimiliter planta e valle fl. Karavschin (Pamoroalaj) oriunda, TASH (Fig. 18).

**Distribution:** N. Pamir-Alay.

This species was imperfectly known because of inexact collecting location. There is a handwriting made by Dr. T. Adylov who mentioned that this herbarium specimen was gifted by somebody to Alexej Vvedensky without any label with collecting details. Second specimen of *A. taciturnum* from the same locality was found by senior author in LE.

**Material studied:** LE - north slope of Turkestan range, middle part of river Mishu (system of Karavschin river), southern stony slope tot he river, 2100 m., № 259, 05.07.1937, Aphanasjev.

**17. *A. eremoprasum* VVED.**, Not. Syst. Herb. Hort. Petrop. v. 92 (1924).

**Type:** Prov. Samarcand, distr. Kattakurgan, ad declivia saxosa elevationis Zerabulak prope pagum Kochkarly, fl. et fr. imm., 29.05.1925, Popov, TASH (isotype K, LE, Fig. 19).

**Distribution:** W. Pamir-Alay.

This species looks like *A. gillii* but clearly differs by the form and size of the tepal. One more interesting and unusual for this section character is scrobiculated bulblets (the same tunics has *A. taciturnum* and *A. aemulans*).

**Material studied:** TASH – Zarawschan distr., mnts. Nearby village daran-tut western from Zerabuak, № 320, 1926.05.27, Popov; Pamiroalaj, Nuratau range, Aktau mnts., near village Charhan, № 1627, 1963.05.29, Khajdarov; Samarkand distr., Nuratau region, Khanberhana, stony slope, Makarchuk; Nuratau region, Aktau mnts., pass Tikalyk, 1600 m., 14.06.1951, Gorokhova; Samarkand distr., Kattakurgan, Zerabuak, Kochkarly, 1925.05.29, Popov; Aktau mnts., Dzhezman canyon, rocks, 24.04.1996, Khassanov, Fritsch; LE – Nuratau range, Aktau mnts., slope between Tutaksay and Ljangan, № 70, 09.06.1931, Neustrueva-Knorring, Tzvetkova).

The last 3 species have unusual scrobiculated bulblets typical for section *Eremoprasa* (KAMELIN) F. O. KHAASSANOV & R. M. FRITSCH ET N. FRIESEN, but all 8 species (KHAASSANOV & MEMARIANI 2006) belonging to this section have corrugated and split outer tunics. One more original species from Afghanistan has been carefully studied during the last 20 years and the best decision was to separate one more monotypic section.

**Key to species**

- |  |   |    |
|--|---|----|
| 1. Bulblets scrobiculated  |   | 2  |
| – Bulblets glabrous or absent  |   | 4  |
| 2. Inflorescence umbellate, lax  | <i>A. eremoprasum</i> VVED.                             |    |
| – Inflorescence globose or semiglobose, dense  |   | 3  |
| 3. Flowers rosish. Tepals longer than 6-7 mm lg.   | <i>A. taciturnum</i> VVED.                              |    |
| – Flowers bluish up to 7 mm lg. Tepals up to 5 mm lg.  | <i>A. aemulans</i> PAVLOV                               |    |
| 4. Stems always shorter than leaves  |   | 5  |
| – Stems always longer than leaves  |   | 7  |
| 5. Flowers bluish, leaves 2-4 mm wide  | <i>A. tatyanae</i> F.O. KHASS. & F. KARIM.              |    |
| – Flowers rosy, leaves 1-2 mm wide   |   | 6  |
| 6. Leaves glabrous rarely pilose, pedicels without bracts  | <i>A. oreophiloides</i> ssp. <i>oreophiloides</i>       |    |
| – Leaves pilose, pedicels with bracts  | <i>A. oreophiloides</i> ssp. <i>salangense</i> WENDELBO |    |
| 7. Inner filaments simple edenticulated  |   | 8  |
| – Inner filaments denticulated   |   | 13 |
| 8. Leaves twisted  | <i>A. ophiophyllum</i> VVED.                            |    |
| – Leaves straight  |   | 9  |
| 9. Inflorescence lax, pedicels more than 25 mm lg. Flowers white   | <i>A. elegans</i> DROBOW                                |    |
| – Inflorescence dense, pedicels 10-20 mm lg. Flowers whitish (later pinkish) or rosy                           |   | 10 |
| 10. Leaf vagina dense pilosed  | <i>A. lasiophyllum</i> VVED.                            |    |
| – Leaf vagina glabrous   |   | 11 |
| 11. Pedicels equal to purplish tepals  | <i>A. glomeratum</i> PROKH.                             |    |
| – Pedicels 2-3 times longer than pinkish tepals  |   | 12 |
| 12. Bulbs solitary, pedicels equal, tepals 7 mm lg., pinkish   | <i>A. svetlanae</i> VVED.                               |    |
| – Bulbs dual, pedicels unequal (outer shorter than inner ones), tepals 4-6 mm lg., whitish-greenish later rosy | <i>A. delicatulum</i> SIEV.                             |    |
| 13. Flowers white with green or dark modvein   |   | 14 |
| – Flowers blue white with modvein of he same color   |   | 16 |
| 14. Leaves coarsed or pilosed, pedicels 4-6 times longer than tepals   | <i>A. gillii</i> WENDELBO                               |    |
| – Leaves glabrous, pedicels 2-3 times longer than tepals   |   | 15 |
| 15. Filaments longer than tepals   | <i>A. scharobitdinii</i> F.O.KHASS. & TOJIBAEV          |    |
| – Filaments shorter than tepals  | <i>A. renardii</i> REGEL                                |    |
| 16. Inner filaments denticulated in the upper (4/5) part. Tepals purple  | <i>A. caesiodes</i> WENDELBO                            |    |
| – Inner filaments denticulated in the middlle part . Tepals blue   |   | 17 |
| 17. Leaves triangular, inner filaments denticulated in the basal (2/5) part                                    | <i>A. caeruleum</i> PALL.                               |    |
| – Leaves semicylindrical, inner filaments denticulated in the upper (3/5) part                                 | <i>A. caesium</i> SCHRENK                               |    |

***Rechingeria* F. O. KHASS. & TIRKASHEVA sect. nov.**

Bulbuli bialati, tepala magnifica (12-13 mm lg.), antherae apice mucronatae, ovarium minute verruculosum.

**Type:** *A. rechingeri* WENDELBO, ACTA HORTI GOTHOB. 28: 28 (1966)., Bamian, hill on the west side of Shibar pass, dry slopes, flowers white with brownish-purple stripes, 3000 m, № 4207, 14.07.1962, Hedge & Wendelbo, BG (Fig. 20), isotype E.

This new monotypical section probably belongs to subgenus *Allium*, but it could be allied also to monotypic section *Vvedenskya* KAMELIN (with type species *A. kujukense* VVED). This species early was included into section *Haplostemon* BOISS. (VVEDENSKY 1935) and KAMELIN (1973) placed it into subgenus *Melanocrommyum* (WEBB ET BERTHEL.). Later on molecular data showed it's original higher position on subgeneric level (FRIESEN et al 2000). WENDELBO (1971) included it into sect. *Allium* s. l. due to unique morphology of (double-wing) bulblets and large sizes of tepals.

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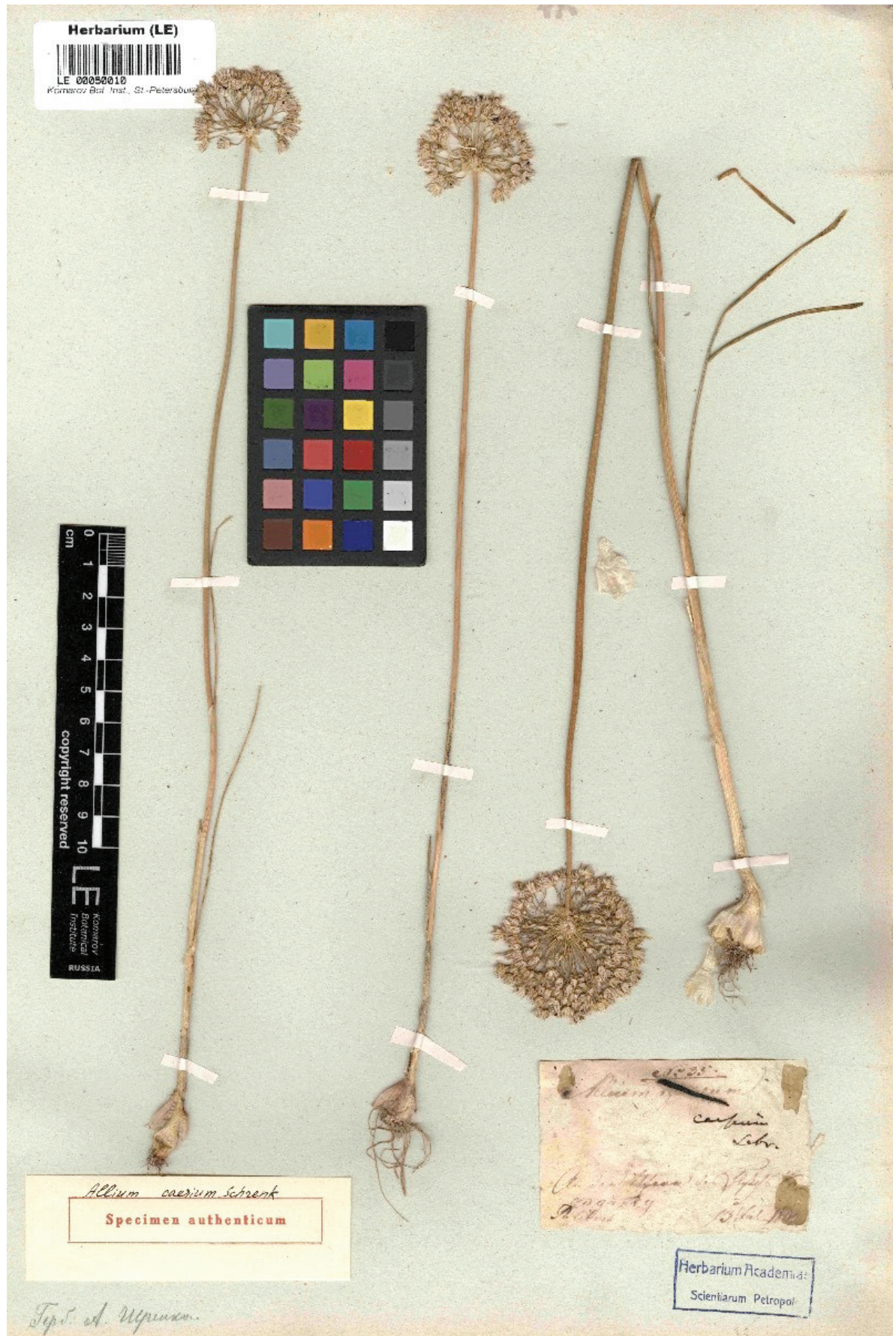


Fig. 1: Type of *A. caesium*





Fig. 2: Holotype of *A. caesioides*



Fig. 3: Type of *A. delicatulum*



Fig. 4: Inflorescens of *A. delicatulum* (Ustjurt Plateuo, 2011)

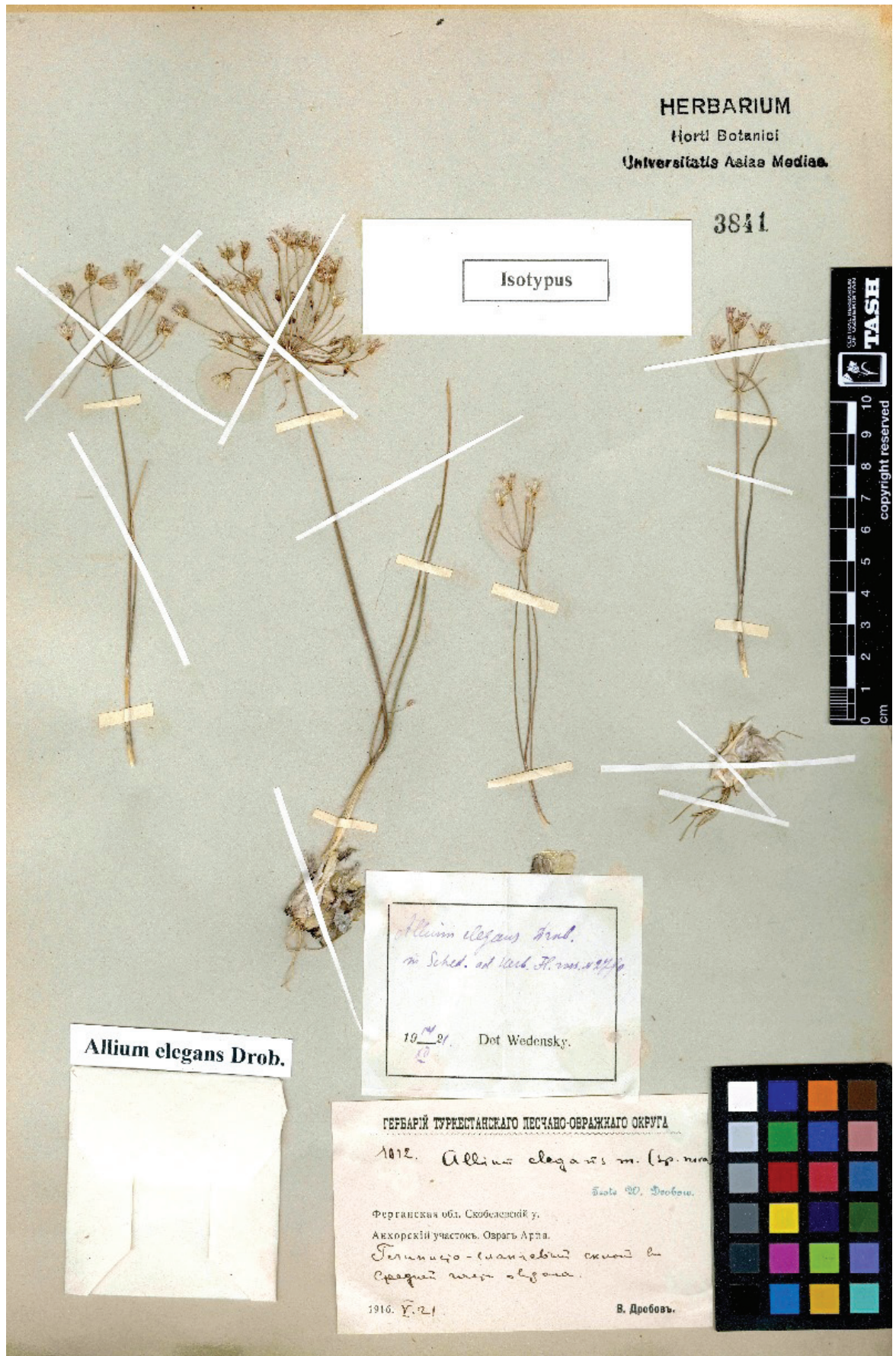


Fig. 5: Type of *A. elegans*

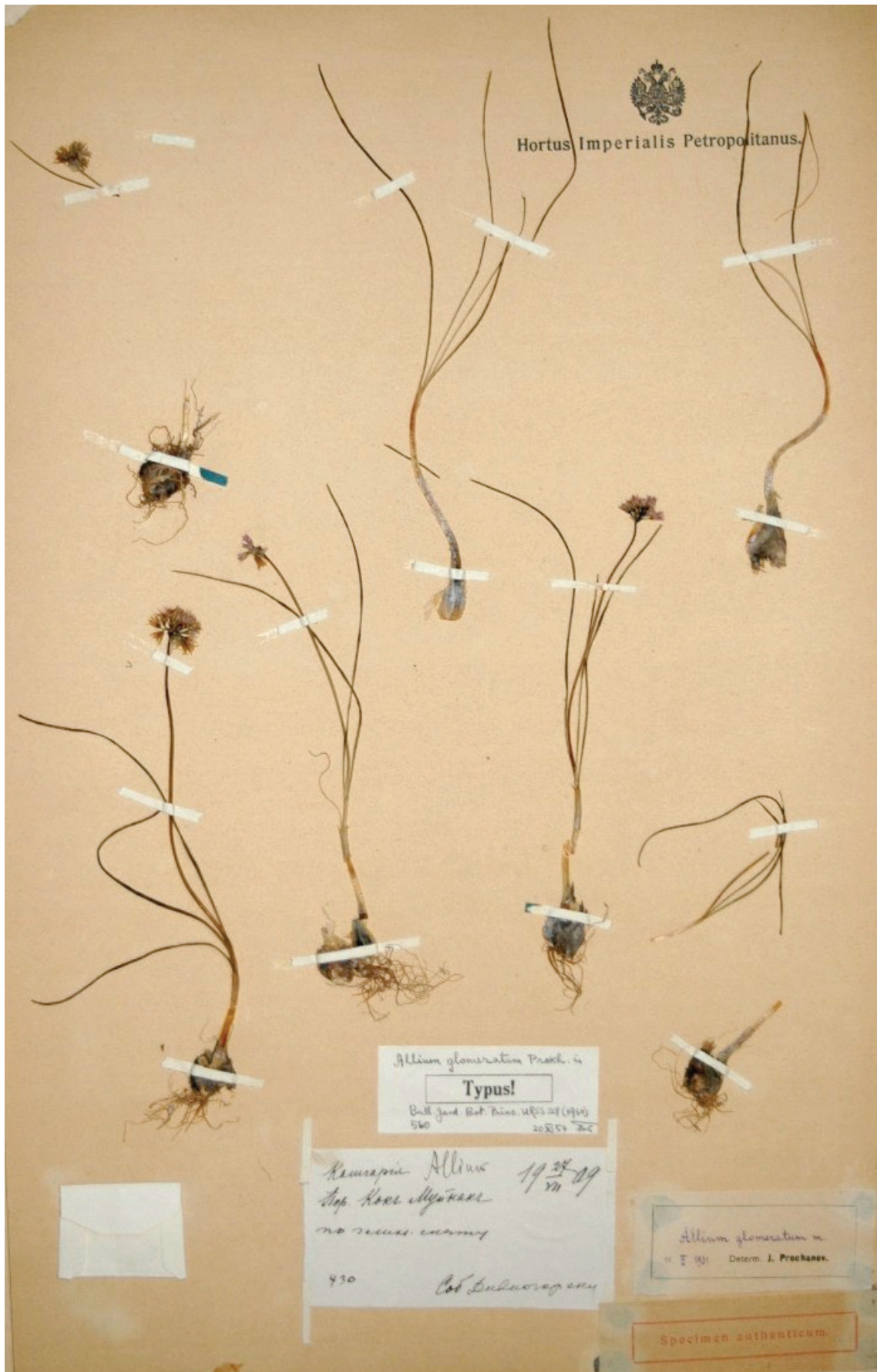


Fig. 6: Type of *A. glomeratum*

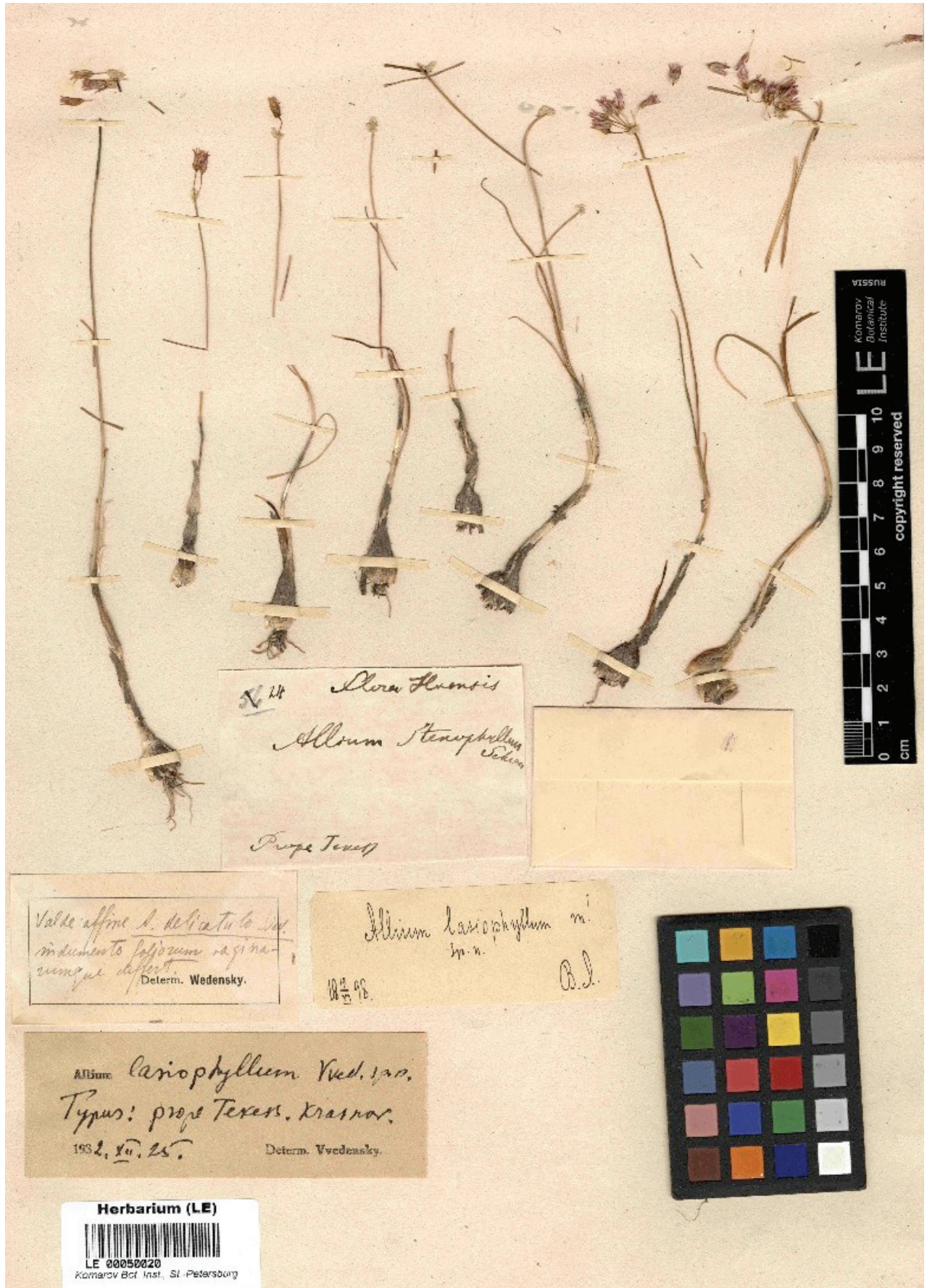


Fig. 7: Type of *A. lasiophyllum*



Fig. 8: Holotype of *A. tatyanae*



Fig. 9: Plant of *A. tatyanae*



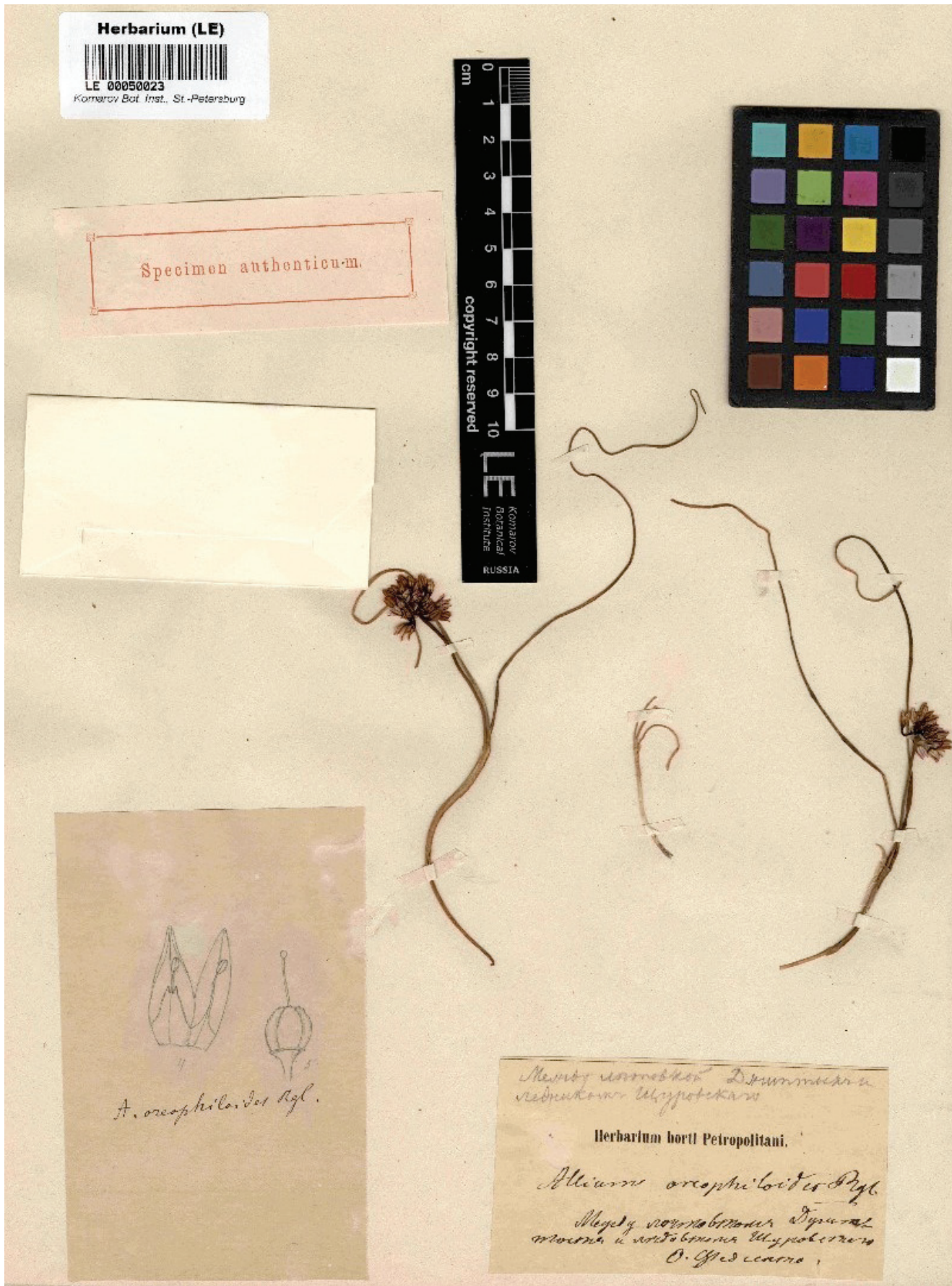


Fig. 10: Holotype of *A. oreophiloides*



Fig. 11: Type of *A. oreophiloides* ssp. *salangense*

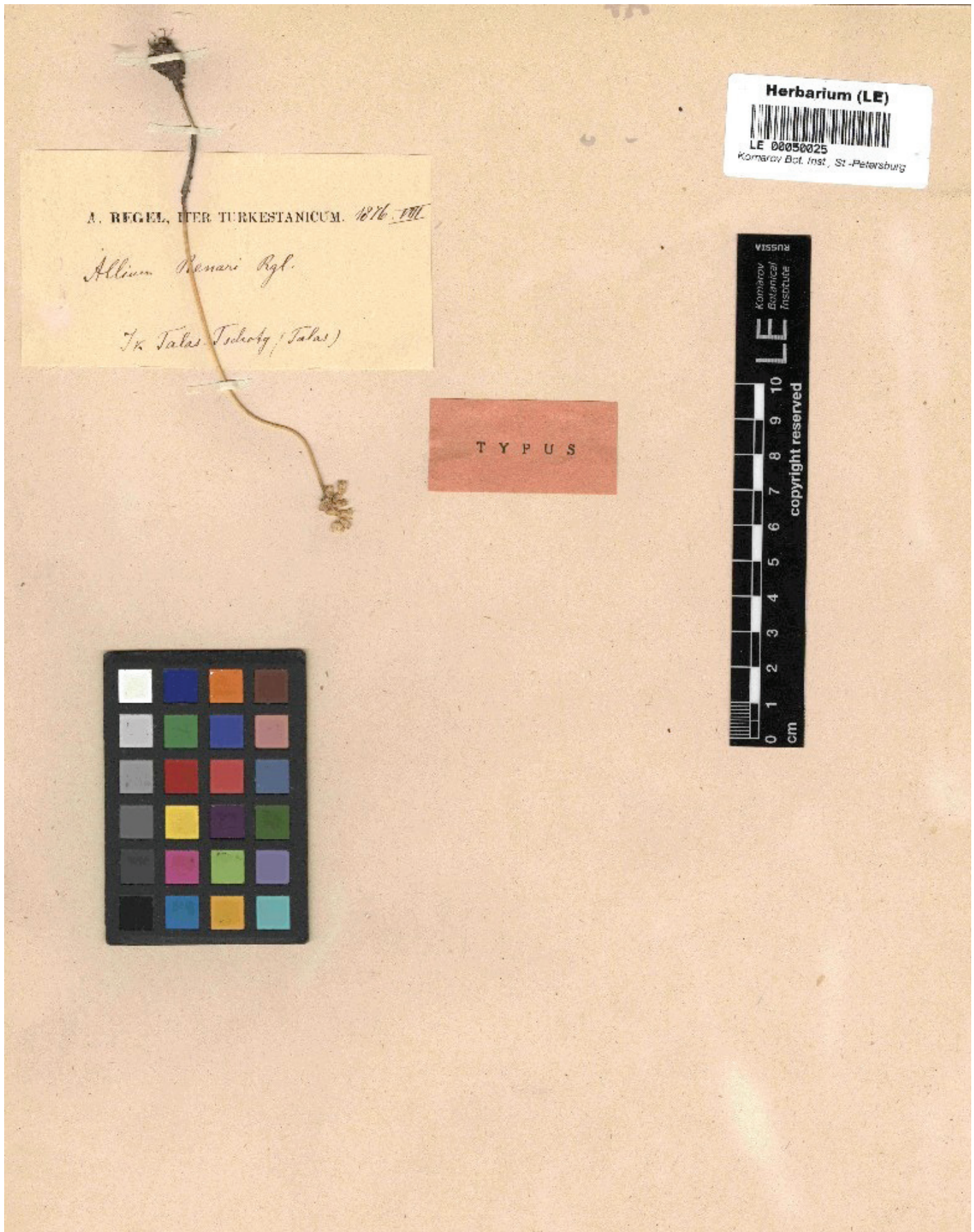


Fig. 12: Holotype of *A. renardii*

Fig. 13: Type of *A. ophiophyllum*

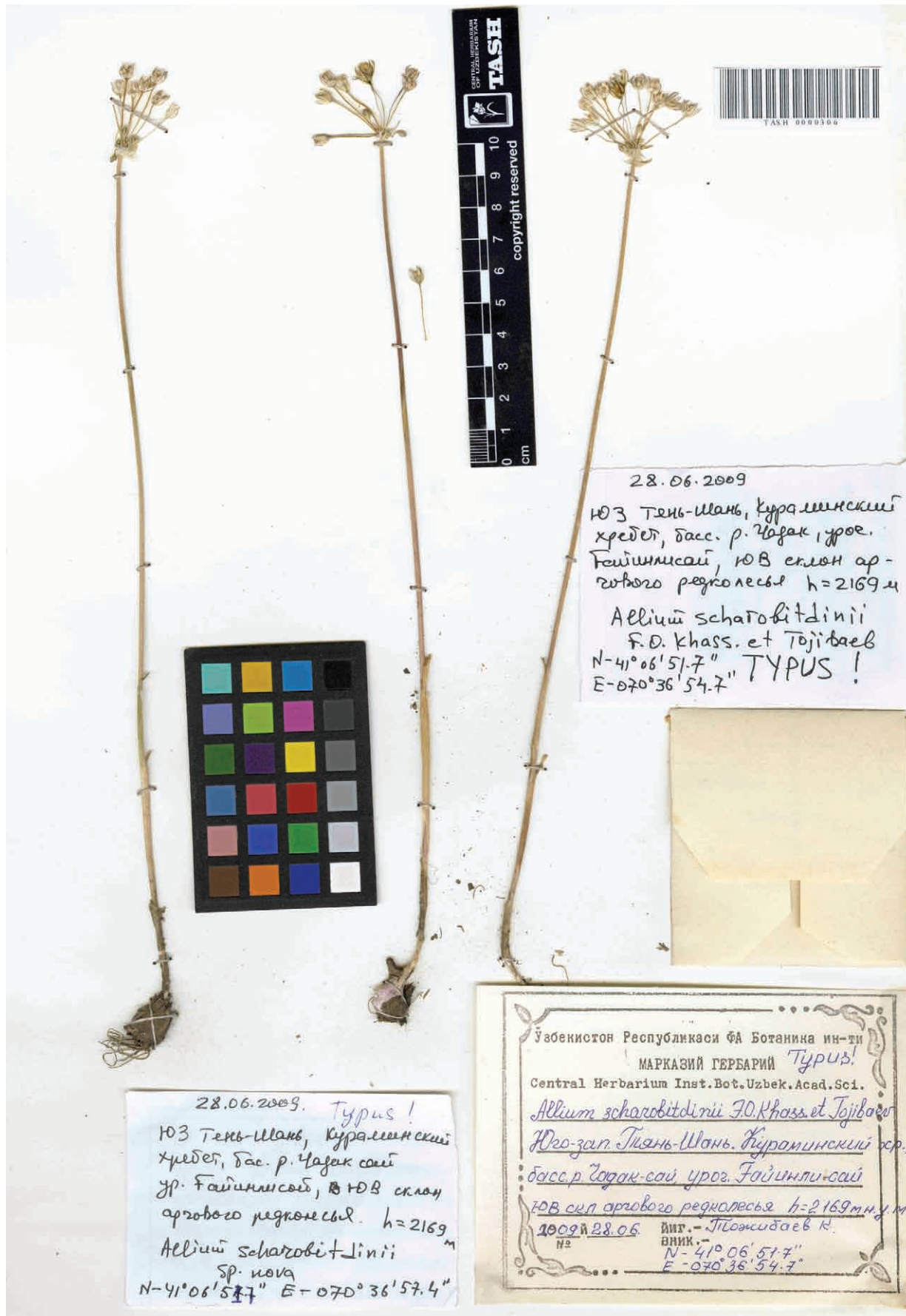


Fig. 14: Type of *A. sharobitdinii*

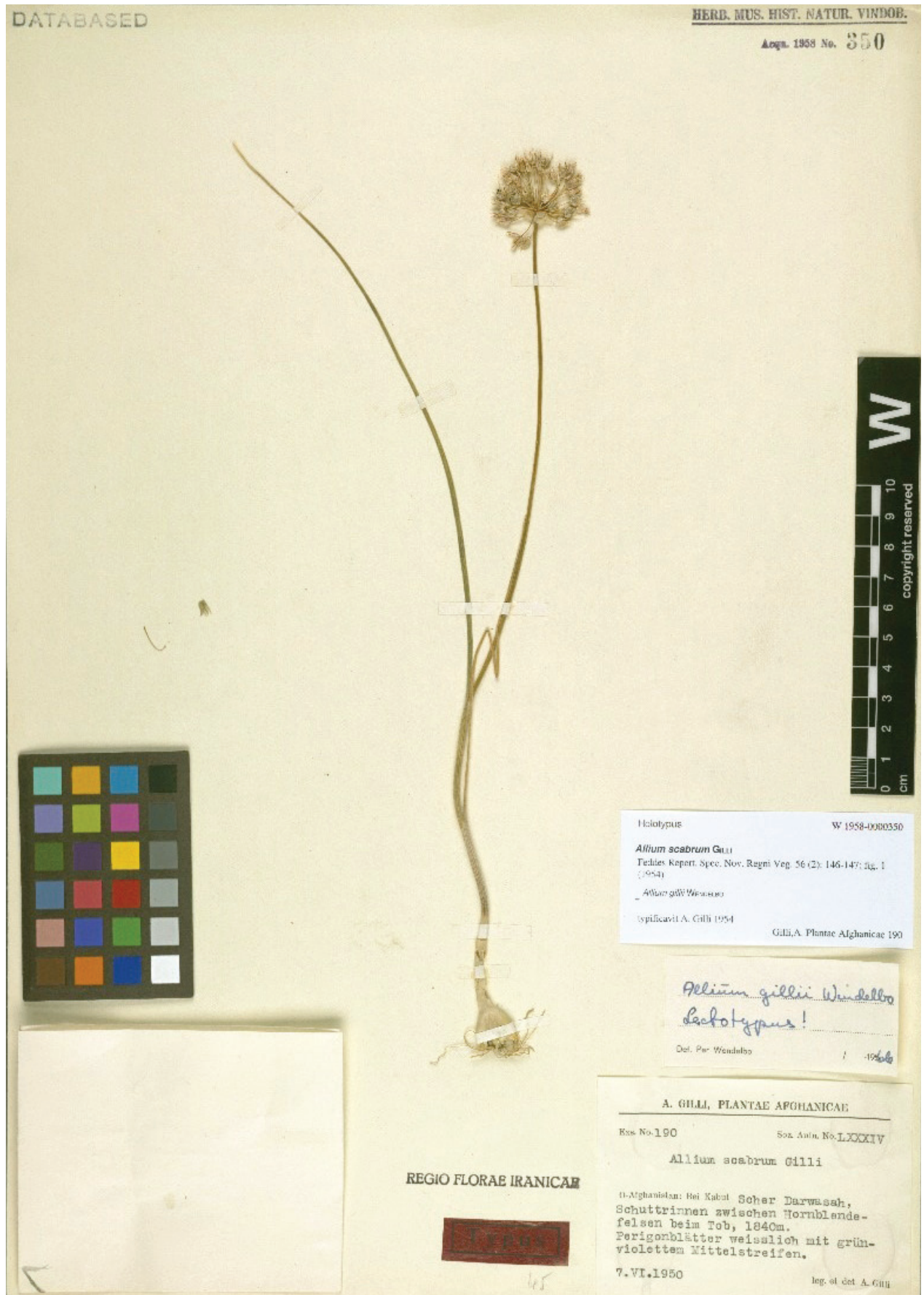


Fig. 15: Holotype of *A. gillii*

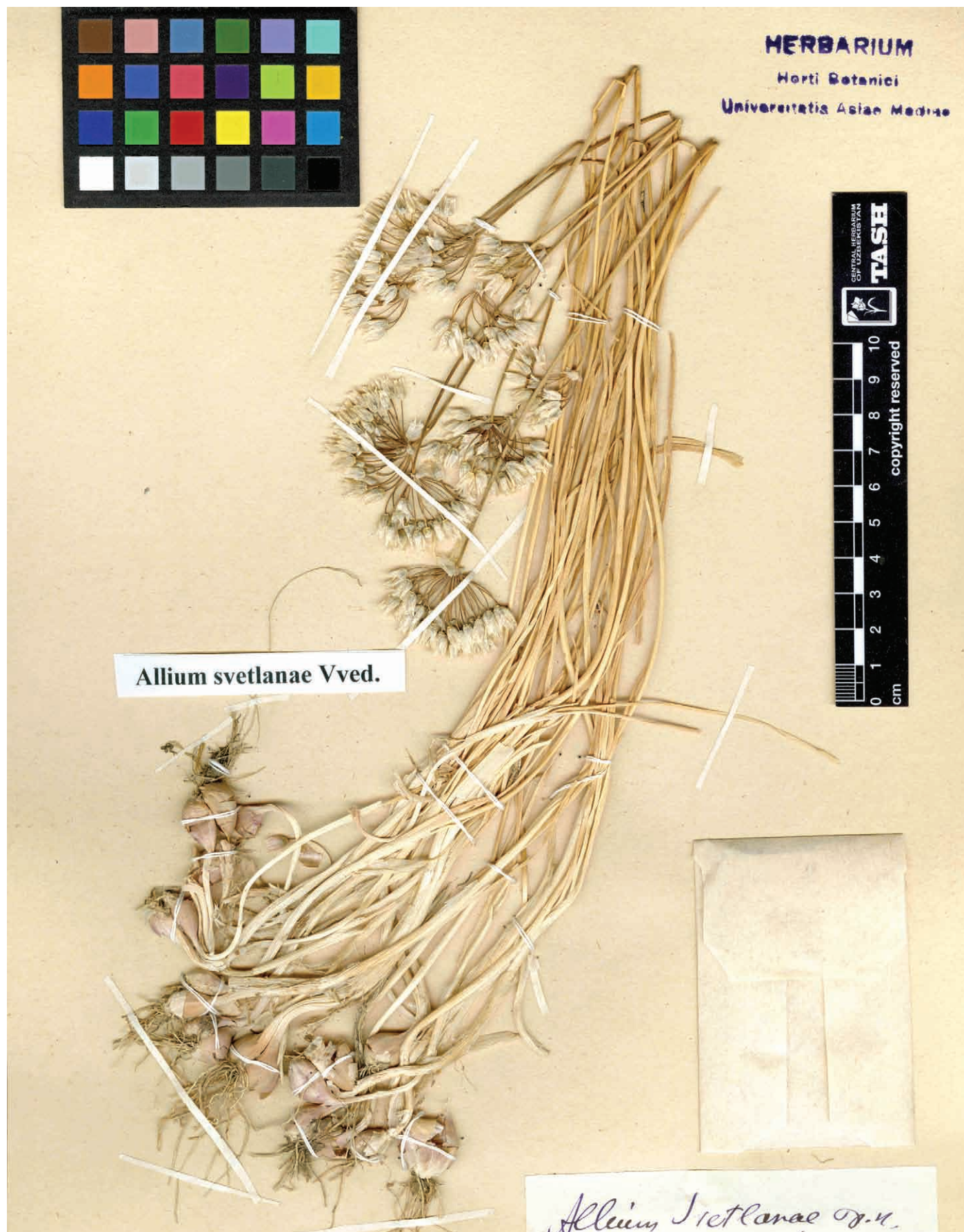


Fig. 16: Type of *A. svetlanae*



Fig. 17: Isotype of *A. aemulans*



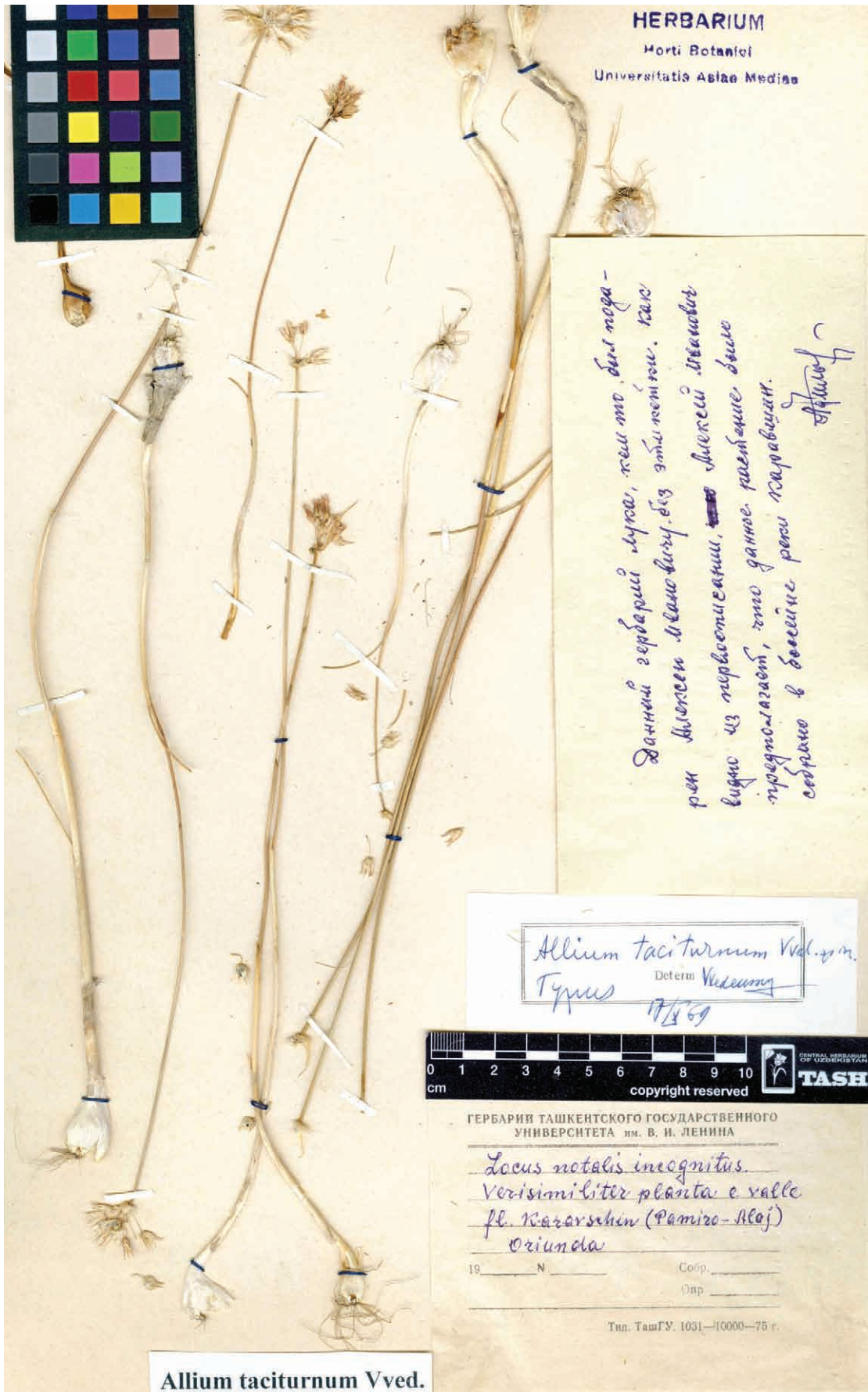


Fig. 18: Holotype of *A. taciturnum*

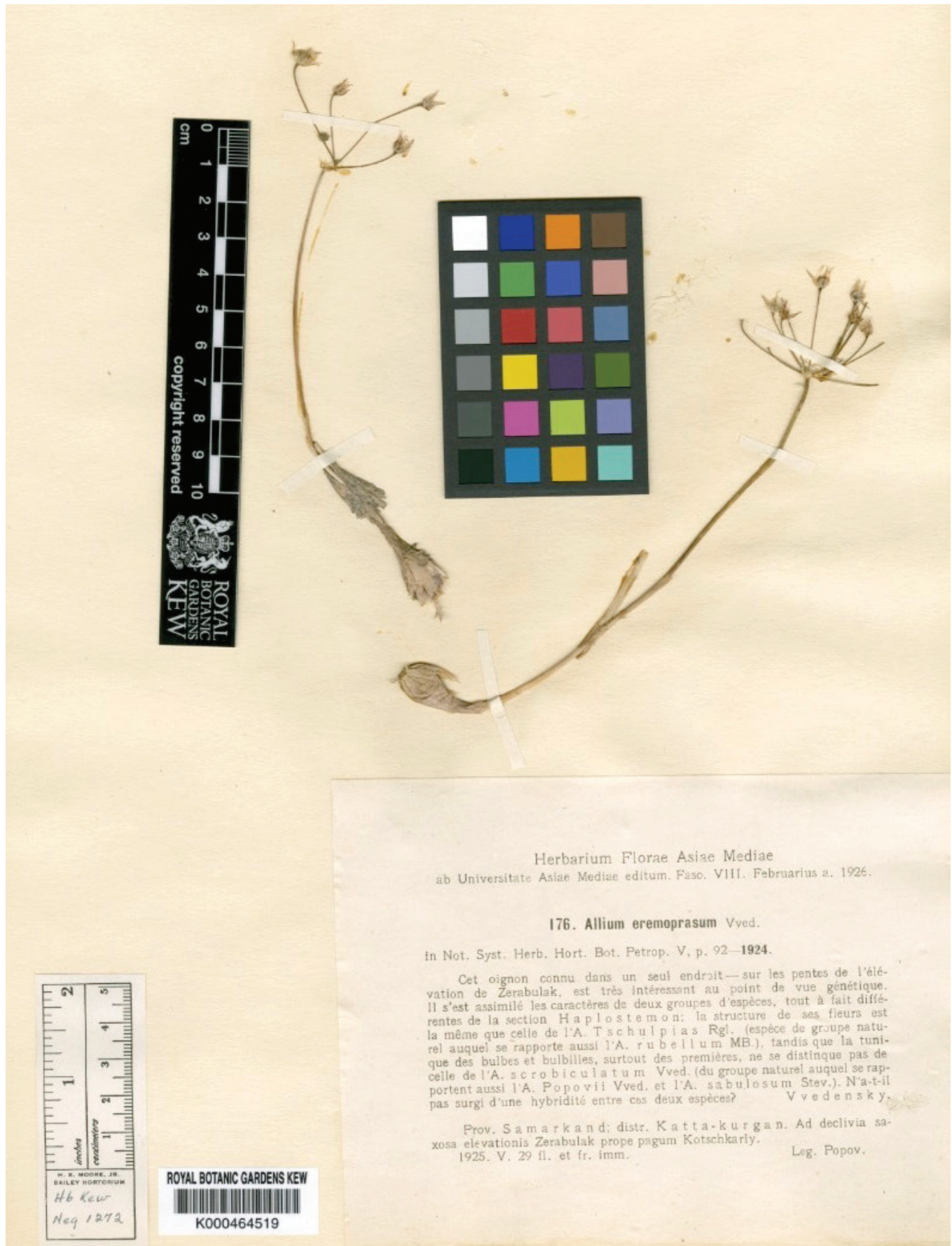
Fig. 19: Type of *A. eremoprasum*



Fig. 20: Type of *A. rechingeri*

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