

CRITICAL NOTES ON EUPHORBIA CHESNEYI (KLOTZSCH & GARCKE) BOISS. AND RELATED SPECIES

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The object of this account is to elucidate the confusion that has surrounded the interpretation of *Euphorbia chesneyi*. Klotzsch and Garcke based *Tithymalus chesneyi* (i.e. *Euphorbia chesneyi*) on the collection made by Colonel Chesney during the latter's Expedition to the Euphrates. However, capsule and seed characters were not included in the description nor is there any information about the exact locality of the gathering; it seems likely to have come from N. Syria or Iraq.

Boissier cited in his *Flora Orientalis* (vol. 4, p. 1118:1879) the following plants under *E. chesneyi*:-

1. In Mesopotamia ad Euphratem, *Chesney* 157 (*Holo.* B; *iso.* G, W, K)
2. Ad Diarbekir, *Kotschy* 232 (also cited in DC. Prodr.)
3. Ad Snoa Fadel deserti ad Palmyram, *Blanche*
4. In argillosis montis Schergi Antilibani, *Kotschy* 532
5. In deserto fluvii Chabur, *Hausknecht*

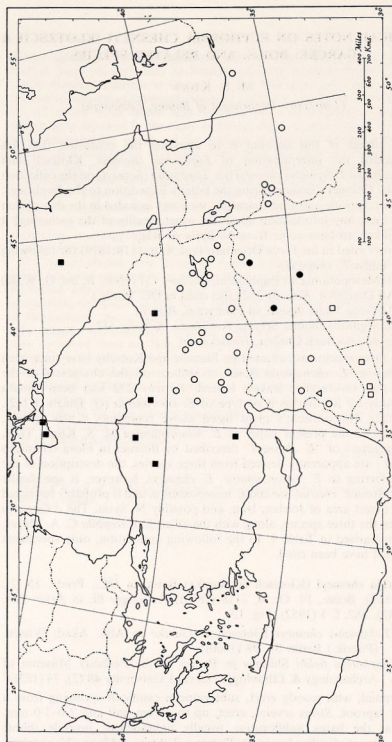
The three specimens collected by Blanche and Kotschy have since been identified as *E. cheiradenia* Boiss. et Hohen. on the characters of the stems and involucellar leaves; indeed, *Kotschy* 232 had been chosen previously by Boissier as a syntype of *E. cheiradenia* (cf. Diagn. 1 (12), 112:1853). Hausknecht's plant listed above represents a new species, described in the present paper as *E. mesopotamica* M. S. Khan. Thus, the characters of "*E. chesneyi*" described by Boissier in *Flora Orientalis* (loc. cit.) are apparently derived from three species, the description of the seed referring to *E. mesopotamica*. *E. chesneyi*, however, is specifically distinct from *E. cheiradenia* and *E. mesopotamica*, and is probably restricted to the desert area of Jordan, Iraq, and possibly N. Syria. The differences between the three species, along with the allied *E. petrophila* C. A. Meyer, are summarised in Table 1. In the following annotation, only specimens examined have been cited.

Euphorbia chesneyi (Klotzsch & Garcke) Boiss. in DC., Prodr. 15 (2), 152 (1862). Boiss., Fl. Or. 4, 1118 (1879); Rechinger fil. in Arkiv Bot. Bd. 2 (5), 382, f. 5 (1952). Fig. 1A.

Syn.: *Tithymalus chesneyi* Klotzsch & Garcke in Abh. Akad. Wissen. (Physik.) Berlin 37, 99 (1860)!

Euphorbia fieldii Shiriaev in Papers of the Peabody Museum of Archaeology & Ethnology, Harvard University 48 (2), 74 (1956)!

Perennial, with woody erect, subterranean caudiculi springing from a woody taproot. Stems several, erect, up to 45 cm. tall and 2.0-3.0 mm. thick at the bases, subflexuose, usually unbranched; juvenile shoots usually absent. *Cauline leaves* 10-22 mm. \times 3-9 mm., oblong-ob lanceolate, usually cartilaginous-denticulate towards apex, glaucous, glabrous when



Map showing the distribution of *Euphorbia chesneyi* and its allies based on the herbarium specimens examined.

■ *E. petrophila*, ○ *E. cheiradenia*, ● *E. mesopotamica*, □ Davis 6449A from Nebk.

mature, rather sparsely arranged, often exceeding the internodes. *Involucral leaves* 4-5, 9-16 mm. \times 6-10 mm., similar to cauline leaves. *Umbellae radii* 2-6(-8), 15-70 mm. long (up to first dichotomy), slender, branched once to several times. *Involucellar leaves* 5-10 mm. \times 5-11 mm., sub-orbicular-rhomboid, coriaceous, cartilaginous-denticulate, acute or mucronate, base rounded, truncate or subcordate. *Cyathia* campanulate, lobes broadly ovate, lacinate, glands more or less semicircular, truncate, margin sometimes slightly eroded or incised, drawn at the corners into short broad blunt horns not longer than the breadth of glands. *Bracteoles* between the male flowers many, usually branched, ciliate. *Capsules* 4-6 mm. \times c. 4 mm., ovoid, trilobed, usually pointed at apex. *Seeds* 2.3-3.0 mm. \times 1.5-2.0 mm., smooth, subquadrate, whitish or light brown, caruncle c. 1 mm., conical. Fl. Apr.-May.

Type: ad Euphratem, *Chesney's Expedition to the Euphrates* [1837], No. 157. (Holo. B-n.v.; iso. G! W! K!).

JORDAN: between Amman and Rutbah, 163 km. from Amman towards the East, 27 May 1957, *K. H. Rechinger* 15835; 220-240 km. from Amman towards Rutbah, 27 May 1957, *K. H. Rechinger* 12864; Azraq [El Azraq], c. 570 m., 2 Apr. 1933, *Gunnar Samuelsson* 2827; *ibid.*, 600 m., 4 Apr. 1937, *J. E. Dinsmore* 11819; Jordan, Hunting Aero Survey, Ref. no. 212. IRAQ: 20 miles of Rutbah, 21 Apr. 1933, *Meinertzhagen*; Qaara depression north of Rutba, 5 Apr. 1950, *Henry Field* 67, 69, 72 and 74 (syntypes of *E. fieldii* Shiriaev, GH!).

A plant of desert regions, often amongst basaltic rocks.

K. H. Rechinger (op. cit.), basing his observations on some specimens of *E. chesneyi*, draws attention to a probable occurrence of sexual dimorphism in this species in which the cyathia of the primary dichotomies in certain plants have only male flowers while those of the subsequent dichotomies are hermaphrodite. Although *Meinertzhagen's* specimen from Rutbah shows this condition, it is not present in the other gatherings examined. The illustration of the seed with vermiform wrinkles labelled in *Rechinger's* work as that of *E. chesneyi*, taken from an Iraqi specimen ("zwischen Ana und Dier, 6 May 1894, *Strauss*"), obviously refers to *E. cheiradenia*. The other illustration of a pitted seed in the same figure, said to belong to *E. petrophila* ("Antilibanon, Dohr Abu el Hin, 16 July 1890, *Post* 131") may represent the unidentified taxon from Nebk (cf. the discussion at the end of the present paper).

Dr. *Rechinger* has kindly drawn my attention to *Euphorbia fieldii* recently described from Rutbah in Iraq. The examination of the syntypes indicates that this plant is conspecific with *E. chesneyi* as interpreted here; *E. fieldii* should, therefore, be treated as a synonym of *E. chesneyi*.

E. chesneyi is related to *E. mesopotamica*, but distinguished by its smooth seeds and erect stems.

***Euphorbia mesopotamica* M. S. Khan, spec. nov. Fig. 1B.**

Valde affinis *E. petrophilae* C. A. Meyer sed caulibus procumbentibus foliis caulinis strictis, foliis involucellae coriaceis cartilagineo-denticulatis, seminibus majoribus recedit.

Planta perennis, ex toto pruinoso-puberula. *Radix* ad 10 cm. longa et ad 7 mm. crassa, verticalis, cylindrica, lignosa. *Caules* floriferi pro-

TABLE I

| <i>E. chesneyi</i> | <i>E. mesopotamica</i> | <i>E. petrophila</i> | <i>E. cheiradenia</i> |
|--|--|---|---|
| Stems erect. | Stems procumbent. | Stems ascending. | Stems erect or ascending. |
| Involucellar leaves suborbicular-rhomboid, coriaceous, margin cartilaginous-denticulate. | Involucellar leaves suborbicular-rhomboid, coriaceous, margin cartilaginous-denticulate. | Involucellar leaves semiorbicular-thin, base rounded or truncate, margin entire or eroded. | Involucellar leaves semiorbicular to very broadly ovate, subcoriaceous, base truncate or subcordate, margin entire. |
| Cyathial glands 2-horned, horns simple, glandular margin entire or some times eroded or incised. | Cyathial glands 2-horned, horns simple, slender, glandular margin entire, occasionally pectinate. | Cyathial glands 2-horned, horns simple, usually broad, glandular margin entire. | Cyathial glands 2-horned when young, later with 1 or more accessory horns in between, horns simple or lobed at apex, often broad, glandular margin often pectinate. |
| Seeds 2.3-3.0 mm. long, smooth; caruncle as long as broad or longer than broad, conical. | Seeds 2.0-2.7 mm. long, with many irregularly arranged, shallow pits or punctae; caruncle longer than broad, conico-pyramidal. | Seeds 1.7-2.5 mm. long, with many irregularly arranged, shallow pits or punctae; caruncle broader than long, depressed. | Seeds 2.5-3.0 mm. long, with crowded, deep, vermiform, anastomosing wrinkles; caruncle longer than broad, conical. |
| Desert plant. | Plant of deserts and calcareous substratum. | Plant of calcareous or marly slopes and screes. | Plant of rocky calcareous slopes, steppe, and fallow fields. |
| In Jordan desert, W. Iraq and probably Syria. | In N. Iraq and N.E. Syria. | In S. Russia, Crimea, Caucasus, Armenia and the central part of N. & S. Anatolia. | In E. Anatolia, N. Iraq, Syria and N.W. Iran. |

The distinguishing characters of *E. chesneyi* and its allied species.

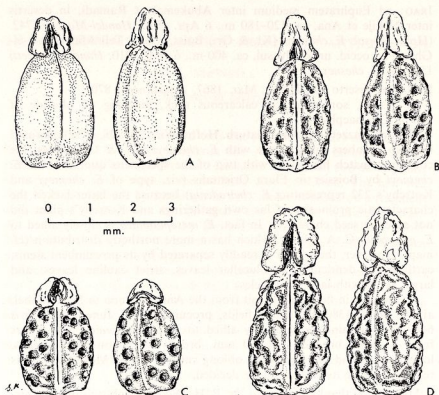


FIG. 1. Illustration of seeds (ventral and dorsal view) of:
A, *E. chesneyi*. B, *E. mesopotamica*. C, *E. petrophila*. D, *E. cheiradenia*.

cumbentes, saepe 3-10, subflexuosi, 7-30 cm. longi et 1-2 mm. lati, inferne simplices, surculis hornotinis brevibus commixti, superne saepe ramis floriferis, foliis quam internodiis longioribus. *Folia caulina* mediana 7-17 mm. \times 2-6 mm., sessilia, oblongo-oblancoolata vel oblongo-spathulata, stricta, subcoriacea, integra vel supra medium scabrida, obtusa vel mucronata. *Folia involucri* 4-5, elliptica vel late elliptica vel obovata, 5-14 mm. \times 7-11 mm. *Radii umbellae* 3-5, 1-3 cm. longi (quoad radii primarii), semel vel bis 2-3-fidi. *Folia involucellae* (primariae) 5-10 mm. \times 7-11 mm., suborbiculari-rhomboidae, coriacea, cartilagineo-denticulata, libera. *Cyathia* 2.5-3.0 mm. longa, campanulata, lobis late ovatis, laciniatis, glandulis (in sicco) atropurpureis, late trapeziformibus, truncatis, breviter bicornutis (cornubus glandulae latitudini multo brevissimis) vel interdum margine toto pectinatis. *Bracteolae* inter flores masculos ramosae ciliatae. *Capsula* c. 1 mm. longa, conico-trilobata, coccis obtuse carinatis pruinosis; styli 1.5-2.0 mm. longi ad apicem versus semel bifidi ad basin coaliti. *Semen* 2.0-2.7 mm. \times 1.2-1.6 mm., sub-tetragono-oblongum, griseum vel flavescens, irregulariter et leviter multifoveolato-punctatum; caruncula c. 1 mm. longa, conico-pyramidalis. Fl. Mar.-Jun.

IRAQ: ad Euphratem medium inter Abukemal et Ramadi, in desertis inter Nahije et Ana, ca. 120-180 m., 6 Apr. 1910, *Handel-Mazzetti* 742. (Holo. W-sub *E. chesneyi* (Kl. & Gr.) Boiss.); inter Tell Afar et Ain-el-Ghasal ad occid. urbis Mossul, ca. 400 m., 6 June 1910, *Handel-Mazzetti* 1345 (as *E. chesneyi*).

SYRIA: in deserto fl. Chabur, Mar. 1867, *Haussknecht* 870.

In deserts, sometimes on calcareous rock, reaching an altitude of 400 m. Chamaephyte.

Handel-Mazzetti (in Ann. Naturh. Hofm. Wien 26, 138, 1912) confused his two numbers cited above with *E. chesneyi* (Kl. & Gr.) Boiss. He could not match his plants with two of the specimens quoted under *E. chesneyi* by Boissier in Flora Orientalis (viz. type of *E. chesneyi* and Kotschy's 232 representing *E. cheiradenia*) because the latter lacked the characteristic pruinosity of his own gatherings and Kotschy's plant did not agree in seed characters. In fact, *E. mesopotamica* is closely allied to *E. petrophila* C. A. Meyer, which has a more northerly distribution (cf. map). However, the former is readily separated by its procumbent stems, cartilaginous-denticulate involucellar leaves, strict cauline leaves, and larger seeds with larger caruncles.

A specimen in flower and fruit from the Anti-Lebanon in Syria (Sahel, above Nebk, 1380 m., fallow fields, procumbent, 21 June 1943, *Davis* 6449A) is certainly very closely allied to *E. mesopotamica*, but differs from it in its broader (1.7-2.0 mm. broad) more compressed seeds, longer stems and more pointed, oblong cauline leaves. More material is required before its status can be decided.

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