MATERIALS FOR A FLORA OF TURKEY, XV: ILLECEBRACEAE

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In the following notes, necessitated by the preparation of Volume II of the *Flora of Turkey*, Brummitt (Royal Botanic Gardens, Kew) is responsible for *Herniaria*, and Chaudhri (Institute for Systematic Botany, Utrecht) for *Paronychia*.

Herniaria

(a) *Two new species*

Herniaria pisidica Brummitt, **sp. nov.**

Perennis caulibus circiter 15 cm longis, laxe ramosa, minute scabrida. Folia usque 7 × 2 mm, oblanceolata usque spatulata; margines pilis brevibus prorsum curvatis ciliati; paginae pilis brevibus crispis praeditae vel in foliis paucis glabrae. Flores circiter 1·5 mm longi, globosi, per 2—8 fasciculati vel raro solitarii. Sepala 5, circiter 0·6 mm longa, pilis brevissimis griseis rigide patentibus dense obtecta. Fructus maturus ignotus.

Turkey: Prov. Isparta, distr. Sütçüler, Çimen ova on W side of Sarp Dağ, 1500 m, 28. vii. 1949, *Davis* 15805 (holo. K; iso. E).

Known only from the type collection. *H. pisidica* is probably most closely related to *H. incana* Lam., from which it differs in its more or less globose flowers covered with very short, dense, stiffly spreading hairs.

H. saxatilis Brummitt, **sp. nov.**

Annua vel breviter perennans, caulibus circiter 15–20 cm longis pilis arcuato–deflexis vestitis. Folia magna usque 7–9 × 3·5–4 mm, elliptica vel obovata usque obovato-spatulata; paginae plerumque glabrae sed in foliis juvenilibus interdum sparse hirsutae; margines valde ciliati. Flores circiter 1·5 mm longi, in fasciculis plerumque oppositifoliis dispositi. Sepala 5, circiter 0·6–0·8 mm longa, pilis griseis longis rigidis patentibus obtecta. Fructus in statu maturo sepala excedens, apice rotundatus, stigmate sessili lobis duobus late divergentibus praedito.

Turkey: Prov. Denizli, Babadağ, 2000 m, scree, 23. viii. 1950, *Davis & Heywood, D* 18413 (holo. K; iso. E). Prov. Muğla, Kara Tepe near Seki Yayla, by dry stream bed in Cedretum, 1520 m, 3. viii. 1947, *Davis* 13870 (E; K).

The affinities of *H. saxatilis* are uncertain. In general appearance it resembles somewhat *H. latifolia* Lapeyr. from the Pyrenees and mountains of north and central Spain, but differs from that species markedly in its broadly divergent stigma lobes and arcuate-deflexed stem hairs.

(b) *Possible evidence of hybridisation in Herniaria*

Although *Herniaria* has long been considered a taxonomically difficult genus in which clear distinctions between species are not easily drawn, interspecific hybridisation has never, to the present author's knowledge, previously

been suggested as occurring in the genus. Two heterogeneous gatherings from Turkey now suggest that hybridisation may possibly occur.

(1) TURKEY: Prov. Bitlis, Bitlis Gorge below Tutu, south of Kambos Dağ, 1250 m, open community - stony pasture, 16. viii. 1956, *McNeill* 597 (E; K).

The greater part of this collection—some 12 or more separate plants on the Edinburgh sheet and three on the Kew sheet—is apparently a very dwarf form of *H. glabra* L., the stems not exceeding 4 cm long. These plants are more or less completely glabrous and have the fruit slightly exceeding the sepals, as is typical of *H. glabra*. One single plant on each of the Edinburgh and Kew sheets, however, although having an identical dwarf habit and being almost indistinguishable to the naked eye, has spreading–pubescent stems, strongly ciliate leaves often with hairs also on the surface, ciliate sepals more or less puberulent on their surfaces, and fruits apparently not exceeding the sepals. The strikingly similar general appearance, with abnormally dwarf habit, suggests common ancestry of all plants of the whole collection, and it is possible that the two aberrant hairy plants may be hybrids with another species, perhaps *H. incana* Lam. or *H. hirsuta* L.

(2) TURKEY: Prov. Antalya, N foot of Ak Dağ, 1830 m, turfy flat hollow (S of Geyik Dağ), 30. viii. 1947, *Davis* 14649 (K); *ibid.*, *D* 14649b (E).

The three plants on the Edinburgh sheet and the smaller of the two on the Kew sheet appear to be *H. glabra*, and *Davis* 14652 (K) and 14653 (E), from the same locality, appear to be the same. The second plant on the Kew sheet, however, although very similar in general appearance, has ciliate leaves and flowers looking quite unlike those of *H. glabra*, the sepals being ciliate and puberulent. This plant is quite unlike any other seen from Turkey, or elsewhere, and it is tempting to suggest again that this might be a hybrid of *H. glabra* with some other species.

(c) *A new locality for Herniaria olympica Boiss.*

Apart from a perhaps doubtful record from Ali Botus in Bulgaria (F. Hermann in *Feddes Repert.* 37: 214, 1937), *H. olympica* has previously been recorded only from Uludağ (Mt. Olympus). It was, however, recently collected by M. Coode and B. M. G. Jones on Ak Dağ, some 100 km further south.

TURKEY: Prov. Kütahya, distr. Simav, Ak Dağ, 1900–2100 m, 19 vi 1965, *Coode & Jones* 2707 (E).

(d) *An anomalous collection from south-western Turkey*

TURKEY: Prov. Anatlya, Antalya, v 1938, *Başarman* (ISTF).

This specimen cannot confidently be referred to any known species of *Herniaria*. It is perhaps most similar to *H. olympica* among Turkish species, having glabrous leaves with ciliate margins and sepals with long stout hairs. It differs in habit, however, the leaves appearing almost fascicled, and most peculiarly in the flowers varying from 4- to 6-merous. No opinion is here offered as to the status of this remarkable plant.

(e) *Anomalous plants resembling H. hirsuta L.*

Material from around Istanbul, which has been usually referred to *H.*

hirsuta, shows a remarkable range of variation. Certain plants appear to be biennial or weakly perennial, tend to have very broad and conspicuous stipules, and are generally less hirsute, especially on the leaf surfaces, than is usual in *H. hirsuta*. This species is generally fairly uniform throughout its extensive range, and further investigation of these plants around Istanbul is desirable. Among the more extreme variants are the following specimens:

TURKEY-IN-EUROPE: Rumeli Hisar, 13. iv. 1905, Herb. B.V.D. Post (G). San Stefano—Floria, 15. v. 1907, *Aznavour* in Herb. Post (G).

? TURKEY-IN-EUROPE: Sazak tepe civari, 18. viii. 1951, *Ismail Akbaş* (E).

TURKEY-IN-ASIA: Halki (École theologique), 19. vi. 1904, *Aznavour* in Herb. Post (G).

Another remarkable collection, from southern Turkey just north of the Syrian border, is probably allied to *H. hirsuta*:

TURKEY: Prov. Gaziantep, distr. Nisib, Nisib—Birecik, c. 5 km from the Euphrates, 400 m, edge of field on marly soil, 14. v. 1957, *Davis & Hedge*, *D* 27953 (E; K).

This is an annual with a slender tap-root and prostrate stems up to 8 cm long with short alternating lateral branches (similar in habit to *H. hirsuta*); stems with very short spreading hairs; leaves up to 10 × 2 mm, ± spathulate, glabrous; flowers 1–1·2 mm long, in small, rather inconspicuous, few-flowered clusters; stamens 2; sepals 5, markedly unequal with two (not adjacent) about 1½–2 times as long as the others, with few rather short hairs at the margins and usually at the apex, puberulous elsewhere; fruit not known. It would have appeared to be clearly specifically distinct from *H. hirsuta* were it not for one further collection from Iraq, Baghdad, 8 km Hillak road, 27 ii 1955, *Wheeler Haines* 103 (E), which is strikingly similar in general appearance and leaf shape, but tends much more towards *H. hirsuta* in having hairs on the leaves (especially at the margins) and on the sepals. The relationships of both these plants to *H. diandra* Bunge, Del. Sem. Hort. Dorpat. 1837: vii (1937), described from Turkestan, and of that species to *H. hirsuta*, require further investigation.

PARONYCHIA

The following new taxa are additional to those described by the author in *Acta Bot. Neerl.* 15(1): 193–208 (1966).

Sect. *Paronychia* (*Aconychia* Fenzl)

Paronychia arabica (L.)DC. in Lam., Encycl. 5: 24 (1804)

subsp. **euphratica** Chaudhri, **subsp. nov.**

A subsp. *arabica* sepalis ± coriaceis marginibus membranaceis fascia mediana olivacea angustioribus differt.

Herba ± ascendens, ramificans. Folia olivacea, ad 12 × 2 mm, anguste oblonga, marginibus induratis et ciliatis provisa. Stipulae ovato-lanceolatae, foliis saepe multo breviores. Glomeruli 5–10 mm diam., dense congesti,

partes alteras occultantes. Flores 2·25–2·5(–3) mm. Sepala subcoriacea, dorso valde pubescentia, marginibus membranaceis fascia mediana olivacea ± angustioribus; arista 0·5 mm. Fl. 6. Eroded hills.

TURKEY: Prov. Erzincan, Kemaliye (Elgin), Salachlü, in collibus nudis, 25 vi 1890, *Sintenis* 2763 (holo. JE). Prov. Sivas, in monte Göl-dagh, vi 1893, *J. Bornmüller* 3290 (JE).

Sect. *Anoplonychia* Fenzl

P. anatolica Czeczott in Acta Soc. Bot. Pol. 9 (1–2): 34 (1932)

subsp. **balansae** Chaudhri, **subsp. nov.**

A subsp. *anatolica* caulibus radicibus adventitiis provisis, floribus majoribus, fructu sepala aequante differt.

Herba prostrata, laxe caespitose, basi lignosa et efoliosa. Radices adventitiae conspicuae. Folia 3·5–4·5 × 1–1·5 mm, oblanceolato-spathulata, obtusa, pubescentia vel puberulentia, saepe recurva. Stipulae lanceolatae, foliis paulo breviores. Glomeruli 7–10, terminales et distincti. Flores 3–3·5 mm, adpresso-pubescentes. Sepala subaequalia, lanceolata, acuta, apiculato-penicillata. Fructus sepala aequans; styli exserti.

TURKEY: Prov. Izmir, sommet du Tmolus occid. Yaila de Bozdagh, 23 vii 1854, *Balansa* 374 bis (as *P. chionaea* Boiss.) (holo. G; iso. S); Bozdağ, vi 1946, *Başarman*.

P. adalia Chaudhri, **sp. nov.**

Affinis *P. caricae* Chaudhri et *P. mughlaei* Chaudhri, sed glomerulis minoribus, foliis confertis elliptico-obovatis, saepe recurvis, stipulis aliquantum longioribus distinguitur.

Herba laxe caespitosa, basi lignosa. Folia elliptico-obovata, ad 3·5 × 2 mm, adpresso-pubescentia, conferta recurvaque. Stipulae lanceolatae, folia saepe aequantes vel superantes. Glumeruli 5–6 mm, terminales, pauciflori, ± inconspicui. Bracteae 3·5–4 × 2–3 mm, late ovatae vel sub rotundatae, flores superantes. Flores 2–2·5 mm, ± pubescentes. Sepala subaequalia, exteriora paulo longiora, ± spathulata vel anguste oblonga et obtusa, interiora ± elliptico-oblonga subacuta vel subobtusa, omnia concava.

TURKEY: Prov. Antalya; distr. Antalya, Susuzdağ, c. 1900 m, 28 v 1963, *F. Sorger* T-63-35-34 (holo. Hb. Sorger, Linz); Çevizli to Akseki, 1150 m, *H. Demiriz* 4546.

P. carica is characterised by its distinctly unequal, erect to connivent sepals; *P. mughlaei* possesses densely pilose stems and leaves, and densely pilose-villose flowers. *P. adalia*, on the other hand, has subaequal sepals and ± pubescent stems, leaves and flowers, besides having much smaller glomerules.