

## THE BATRACHIAN RANUNCULI OF THE ORIENT

R. D. MEIKLE

(Royal Botanic Gardens, Kew)

The Oriental species of *Ranunculus* L. subgenus *Batrachium* (DC.) A. Gray present very much the same problems to the taxonomist as the European species. It is true that the number of species involved is rather smaller, but it is the relatively well-marked group of European species—namely *R. fluitans*, *R. circinatus*, *R. baudotii*, *R. tripartitus* and *R. hololeucos*—that is missing, while the difficult complex of Water Buttercups, commonly “lumped” under *R. aquatilis* aggr., is very fully represented. On the whole, the Oriental segregates of *R. aquatilis* correspond very closely to those found in Europe, but there are two outstanding differences between the European and Oriental populations:

(1) Plants with floating leaves are remarkably rare in the Orient.

(2) Many of the Oriental specimens have exceptionally small (less than 1 mm. long) achenes. In Europe *R. trichophyllus* Chaix var. *rionii* (Lagg.) Schinz & Thell. (*R. rionii* Lagg.) alone shows this feature.

The presence or absence of floating leaves seems an established unvarying characteristic, and there are apparently no exceptions to the rule that *R. peltatus* subsp. *sphaerospermus*, *R. aquatilis* subsp. *heleophilus*\* and *R. trichophyllus* do not have floating leaves, even under abnormal conditions. Achene-size is, however, not quite so definite and clear-cut; plants with intermediate-sized achenes are occasionally collected, and there are some grounds for believing that small achenes may be of physiological (or pathological) rather than taxonomic significance. The problem requires experimental study, and, for the moment, care has been taken not to attach too much importance to achene-size as a taxonomic character, though it is often a very striking and distinctive one.

Examination of type-material re-affirms the modern interpretation of *R. aquatilis* L. sens. strict.; it is undoubtedly the plant which earlier authorities have named *R. heterophyllus* Weber, and not the large-flowered, long-peduncled plant which most British authors have named *R. peltatus* Schrank, but which many Continental authorities consider *R. aquatilis* L. The types of *R. peltatus* Schrank and *R. trichophyllus* Chaix have not been seen, and, as regards these two names, the author is relying upon the accuracy of traditional interpretations. *R. peltatus* is, in the author's opinion, quite as distinct from *R. aquatilis* L. (*R. heterophyllus* Weber) as, for example, *R. circinatus* Sibth. or *R. fluitans* Lam., and the present-day tendency to give equal status to *R. radians* Revel, *R. heterophyllus* Weber, *R. peltatus* Schrank, *R. pseudofluitans* Bak. & Foggitt and *R. sphaerospermus* Boiss. & Blanche as subspecies of *R. aquatilis* L. is somewhat misleading. *R. pseudofluitans* and *R. sphaerospermus* are undoubtedly

\* Subsequent examination of the original description of *R. heleophilus* [*R. eleophilus* Arv.-Touv.] shows that, contrary to later opinion, the name was originally applied to plants with and without floating leaves. In the circumstances it may be necessary to find another subspecific epithet for plants of *R. aquatilis* without floating leaves.

close allies of *R. peltatus*, but *R. radians* should be associated (or possibly united) with *R. aquatilis* (*R. heterophyllus*). The distinctions between *R. aquatilis* L. (*R. heterophyllus* Weber) and *R. trichophyllus* Chaix are not always as clear as those between *R. aquatilis* and *R. peltatus*, and it must be admitted that there are occasions when it is difficult to decide where one should assign small-flowered *Batrachia* without floating leaves. The name *R. paucistamineus* Tausch has been rejected for reasons already outlined by Pearsall (B.E.C. Report, viii, 820: 1928)—the name has been the cause of much confusion in the naming of Oriental (and European) material.

Most of the collectings cited have been seen by the author, though occasionally, where the identity of a plant could be ascertained with reasonable certainty, published records have been accepted and added to the list of citations. It is seldom, however, that one can accept *Batrachium* records without the additional evidence of specimens. For the same reason, it has not been possible to make as much use as the author would have wished of Kreczetovicz's detailed study of *Batrachium* in the Fl. U.S.S.R. vii, 335–350 (1937). It is clear that several species found in Russia, and in northern and central Asia are not represented in the Orient, but it is unlikely that the two *Batrachium* populations are quite as distinct as the published records would suggest.

#### Key to the Oriental *Batrachia*

1. Floating leaves present:
  2. Achenes 1.5–1.8 mm. long . . . . . 1. *R. peltatus* subsp. *peltatus* var. *peltatus*
  2. Achenes less than 1.5 mm. long . . . . . 1. *R. peltatus* subsp. *peltatus* var. *microcarpus*
1. Floating leaves absent:
  3. Flowers large, 1.5–2.5 cm. or more diam.; peduncles much longer than leaves . . . . . 1a. *R. peltatus* subsp. *sphaerospermus*
  3. Flowers small to medium-sized, 0.5–1.5 cm. diam.; peduncles equalling or shorter than leaves:
    4. Flowers medium-sized, 1–1.5 cm. diam.; peduncles 3–9 cm. long, equalling or a little shorter than leaves:
      5. Achenes 1.5–1.8 mm. long . . . . . 2. *R. aquatilis* subsp. *heleophilus* var. *heleophilus*
      5. Achenes less than 1.5 mm. long . . . . . 2. *R. aquatilis* subsp. *heleophilus* var. *microcarpus*
    4. Flowers small, usually less than 1 cm. diam.; peduncles usually distinctly shorter than leaves:
      6. Achenes 1.5–1.8 mm. long . . . . . 3. *R. trichophyllus* var. *trichophyllus*
      6. Achenes less than 1.5 mm. long . . . . . 3. *R. trichophyllus* var. *rionii*
1. *R. peltatus* Schrank, Baier. Fl. ii, 103 (1789).

A robust plant, with stems often several feet long; submerged leaves 1–5 cm. or more long, normally shortly petiolate or subsessile, with

slender, thread-like, but rather rigid, diverging segments; transitional leaves rarely present; floating leaves usually numerous, long-stalked, generally reniform or semicircular in outline,  $\pm$  hairy below, 1-2.5 cm. or more wide, divided almost half-way into 3(-5) bluntly lobed segments, basal margin of lamina truncate or forming a wide sinus; peduncles usually much longer than the submerged leaves though not infrequently shorter than the floating leaves, tapering slightly from base to apex; flowers often large, with contiguous or overlapping, obovate-cuneate petals 0.8-1 cm. long; receptacle pilose; achenes usually  $\pm$  pilose, sometimes glabrous, 0.8-1.8 mm. long, with a distinctly convex dorsal margin and a rounded or obscurely beaked apex.

subsp. **peltatus**

Syn.: [*R. aquatilis* (non L.) Boiss., Fl. Orient. i, 23 (1867) pro parte; Thiébaud, Fl. Lib.-Syrienne, i, 28 (1936).]

[*R. aquatilis* L. var. *heterophyllus* (non (Weber) DC.) Post, Fl. Pal. ed. 1, 38 (1896), ed. 2, i, 8 (1932); P. Mouterde, Fl. Djebel Druze, 100 (1953).]

? *R. baudotii* Godr. sec. Cosson & Kralik, Cat. Pl. Syr. I (1854).

? *R. paucistamineus* Tausch var. *heterophyllus* Freyn sec. P. Mouterde, Fl. Djebel Druze, 99 (1953).

Floating leaves present.

var. **peltatus**

Achenes 1.5-1.8 mm. long.

TURKEY: Beyşehir, June & July, 1941, *A. Heilbronn* & *M. Başarman* s.n.! ? Also "Bysantio" *Wiedemann* teste *Boissier*; Smyrna, *Balansa* teste *Boissier*.

SYRIA: Homs, *Post*; Hauran, ul-Kafr, herb. *Post*!

PALESTINE: Carmel, *Dinsmore*; Nâ-ûr to Wâdi-sîr in Moab, *Dinsmore*; Mansura, 3,300 ft. alt., 9 May 1911, *Meyers* & *Dinsmore* 1779! N.E. of Jebel Kulayb (?), 20 May 1934, *Dinsmore* 11779!

var. **microcarpus** Meikle, var. nov.

Syn.: [*R. aquatilis* L. subsp. *R. confusus* (non *R. confusus* Godr.) Holmboe, Veg. Cypr. 80 (1914).]

Achaeniis minutis, vix 1 mm. longis, glabris vel subglabris, forma typica praecipue differt.

CYPRUS: Paralimni, 1905, *Holmboe* 420; Capo Elea (Elaea) in small puddles on the rocks, *Holmboe* 512; Galatia (Komi Kebir) in ponds, 22 March 1934, *Syngrassides* 1398! Ayios Antonios, Sotira, 400 ft. alt., in a pool on the limestone rocks, 29 Feb. 1952, *Merton* 624! (holo. K); Near Prophitis Elias Monastery, beyond Skylloura, ca. 900 ft. alt., in rock-pools on hard limestone, March 1957, *Merton* 2888!

An extremely depauperate form of *R. peltatus* Schrank, akin to var. *elongatus* (F. Schultz) Freyn, but even more slender and drawn out, with relatively short peduncles, and with minute, glabrous or sub-glabrous achenes. It resembles *R. confusus* Godr. (a form of *R. baudotii* Godr.) in having small flowers, and numerous small,  $\pm$  glabrous achenes, but the

leaves (floating and submerged) match those of *R. peltatus*, and, as explained in the introduction to this paper, the small achenes are of doubtful taxonomic significance. The specimens are apparently growing under very abnormal conditions, and it may be that more typical *R. peltatus* will yet be found in Cyprus.

subsp. **sphaerospermus** (Boiss. & Blanche) Meikle, **comb. nov.**

Syn.: *R. sphaerospermus* Boiss. & Blanche in Boiss., Diagn. 2, v, 6 (1856).

*R. aquatilis* L. var. *sphaerospermus* (Boiss. & Blanche) Boiss., Fl. Orient, i, 23 (1867); Post, Fl. Pal. ed. 1, 38 (1896), ed. 2, i, 9 (1932); Bouloumoy, Fl. du Liban, 8 (1930); Thiébaud, Fl. Lib.-Syr. i, 28 (1936).

*R. aquatilis* L. var. *pantothrix* Blanche sec. Dinsmore in Post, Fl. Pal. ed. 2, i, 9 (1932).

*R. aquatilis* L. subsp. *sphaerospermus* (Boiss. & Blanche) Clapham in Clapham, Tutin & Warburg, Fl. Brit. Isles, 100 (1952).

[*R. circinatus* (non Sibth.) Dinsmore in Post, Fl. Pal. ed. 2, i, 9 (1932).]

[*R. aquatilis* L. subsp. *circinatus* (non Sibth.) Holmboe, Veg. Cypr. 80 (1914).]

[*R. aquatilis* L. var. *submersus* (non Gren. & Godr.) Dinsmore in Post, Fl. Pal. ed. 2, i, 9 (1932).]

Floating leaves absent; submerged leaves (0.5-)1.6-2.6(-6) cm. long, very shortly petiolate, with numerous rather rigid, diverging segments, forming  $\pm$  dense spherical tufts; peduncles (2.5-)3-6(-8) cm. long, often greatly exceeding the leaves; flowers large 1.5-2.5(-3) cm. diam., with broad, obovate petals; achenes minute, about 0.7-1 mm. long, subglobose, glabrous or pilose at apex.

SAMOS: By the ruins of the temple of Hera near Colonna, 12 April 1934, *Rechinger f.* 3962 (as *R. paucistamineus* Tausch)!

CYPRUS: Kouklia, 17 May 1894, *Post*; Kouklia, 1905, *Holmboe* 382; East Mesaoria, Akhyriton, 16 May 1948, *Mavromoustakis s.n.*! Near Engomi (Famagusta), 20 April 1949, *M. C. Casey* in *Casey* 553! Akhyriton reservoir, 21 March 1952, *Merton* 708! Syrianokhori marshes, 28 April 1952, *Merton* 807! North of Pedieos R., 11 May 1955, *Merton* 2263!

TURKEY: Lycia, Plain of Xanthus, *Forbes* 17! Lycia, Subaschi Yaila, 16 July 1882, *Stapf*; Vil. Muğla-Antalya, Girdev Göl, 5500 ft. alt., 4 Aug. 1947, *Davis* 13751! Alexandretta, 1888, *Sintenis* 52! Between Aintab and Alexandretta 1910, *Haradjian* 3994 & 4000! Murad Pasha Bridge, Baluk Göl, 1911, *Haradjian* 4194! Iskenderun, Feb. 1942, *M. Başarman* (herb. Istanbul)! Prov. Hatay, Iskenderun-Antakya, west of Amik Göl, ca. 400 ft. alt., 30 April 1957, *Davis & Hedge* (D. 27266!). Vil. Konia, Akscheher, ca. 3000 ft. alt., 22 June 1899, *Bornmüller* 4008! Ereğli, 3200 ft. alt., 5 April 1934, *Balls & Gourlay* B. 642! Adana, Kedirli, 1937, *Gässner* 852 (herb. Ankara)! Adana, 1941 (herb. Istanbul)! Manyas, May 1951, *A. Heilbronn* (herb. Istanbul)! Prov. Antalya, Kumköy, between Antalya and Serik, 5 April 1956, *Davis & Polunin* (D. 25713!). Prov. Mersin, Silifke, 14 April 1956, *Davis & Polunin* (D. 26065!). Prov.



Maraş, near Eloglu, 1200 ft. alt., 4 April 1957, *Davis & Hedge* (D. 27327!). Prov. Maraş, Elbistan, ca. 3600 ft. alt., 6 May 1957, *Davis & Hedge* (D. 27613! & D. 27689!).

SYRIA: Between Tripoli and Alexandretta, in marshes near the sea, *Blanche* s.n. (type of *R. sphaerospermus* Boiss. & Blanche). Near Damascus, May, *Gaillardot* 11! Merdj-Achdar, near Damascus, 13 March 1856, *Gaillardot* 496! Lake of Antioch, 23 March 1930, *Rogers* 0618!

LEBANON: River Letane, Aug. 1830, *H. Christy* s.n.! Yammunah, Tripoli, (Fl. Pal.).

PALESTINE: Jordan, *Aucher-Eloy* 39! Belaad Akkar, 25 March 1865, *Fox* s.n.! Shiloh, Feb. 1867, *Fox* s.n.! Fords of Jordan, Galilee, 5 April 1872, *Hayne* s.n.! Huleh, *Hayne* s.n.! Huleh, *herb. Post*; Huleh, 12 May 1911, *Meyers & Dinsmore* 1354 c! Acre to Tyre, *herb. Post*; ul-Minyah, *herb. Post*; Jaffa, 3 March 1911, *Dinsmore* 3354d! Between Sejera and Ain Aishe, ca. 1800 ft. alt., 8 May 1911, *Meyers & Dinsmore* G. 1354! Mt. Carmel, 17 Feb. 1912, *Meyers* 5354d! Lake Tiberias, ca. 600 ft. alt., 15 May 1913, *Meyers & Dinsmore* 5377 (as *R. circinatus* Sibth.)! Lake Tiberias, 3 Sept. 1941, *Davis* 3808! Haifa (Kishon) 19 March 1932, *Dinsmore* 9827!

IRAQ: Marshy plains of Baquba, 22 April 1920, *Graham* s.n.! Near Baquba, March 1929, *Rogers* 040! Daltawa, 26 May 1932, *Guest* 2445! 3 km. S.E. of Daltawa (Diltaw), 30 March 1948, *Gillett & Rawi* 10209! Suq-as-Shiyukh, *Rustam Exp. Farm.* 3304! Gatt-al-Dwat, near Amara, 22 April 1934, *Field & Yusuf Lazar* 1! Chehala, near Amara, 26 April 1934, *Field & Yusuf Lazar* 40! By old Abassid bridge on main road near Balad, 5 April 1947, *Gillett & Rawi* 6507! Baqubah-Mandali Road, 21 Jan. 1951, *Haines* W. 301! Shahraban, near Maqtadiya, 22 March 1955, *Guest* 13593! 20 km. east of Amara, 21 April 1955, *Rawi* 15038! Hilla, 25 March 1956, *Guest & Mahallal* 15202! Between Hilla and Kifel, 26 April 1956, *Rawi* 20146! Between Basra and Qurna in Basra Liwa, 17 March 1957, *Univ. Herb. Baghdad* 8472! Medara near Qurna, 17 March 1957, *Haines* W. 1054! Qurmat Ali near Basra, 26 March 1957, *Guest, Rawi & Rechinger* f. 17374 (in part)!

Material of *R. peltatus* subsp. *sphaerospermus* from the British Isles differs from the plant described above in having larger achenes, equalling those of *R. peltatus* subsp. *peltatus* in size. Since the type of *R. sphaerospermus* is from the Orient, the British plant should be differentiated, perhaps as a var. of subsp. *sphaerospermus*.

Two Iraq collections, both made in the same area and about the same date, consist of plants so exactly intermediate between *R. peltatus* subsp. *sphaerospermus* and *R. trichophyllus* (which are also found in the locality), that I am persuaded to consider them hybrids between these species:

***R. peltatus* Schrank subsp. *sphaerospermus* (Boiss. & Blanche) Meikle × *trichophyllus* Chaix.**

Floating leaves absent; submerged leaves similar to those of *R. peltatus* subsp. *sphaerospermus* but rather looser and less distinctly tufted; peduncles rather long, distinctly longer than leaves; flowers small to medium-sized, about 0.8–1.4 cm. diam., achenes minute, subglabrous.

IRAQ: Qurmat Ali, near Basra, 26 March 1957, *Guest, Rawi & Rechinger* f. 17374 (in part), 17378!

A third specimen (Medura, near Qurna, 17 March 1957, *Haines W.1051*), is also probably this hybrid, but the material cannot be determined with certainty.

2. *R. aquatilis* L., Sp. Plant. ed. 1, 556 (1753).

Syn.: *R. heterophyllus* Weber in Wigg., Prim. Fl. Holsat. 42 (1780).

*R. aquatilis* L. subsp. *heterophyllus* (Weber) Syme emend.  
Clapham in Clapham, Tutin & Warburg, Fl. Brit. Isles, 98 (1952).

Generally less robust than *R. peltatus*; submerged leaves to 7 cm. or more long, often distinctly stalked, with weak, collapsing segments; transitional, irregularly lacinate, leaves commonly produced; floating leaves usually present, long-stalked; lamina generally suborbicular in outline, divided almost, or occasionally quite, to the base into 3 rather irregularly lobed or toothed segments; basal sinus rather narrow; peduncles rather short, usually not exceeding the floating or submerged leaves, and not markedly tapering towards apex; flowers medium-sized, with contiguous or non-contiguous, obovate-cuneate petals, 0.5–0.8 cm. long; fruiting peduncles often distinctly recurved in the basal half; receptacle pilose; achenes glabrous or hairy, about 1–1.8 mm. long, with a convex, often distinctly keeled dorsal margin, and an acute or slightly beaked apex.

Typical *R. aquatilis* L. (*R. heterophyllus* Weber), with floating leaves, is apparently confined to northern and central Europe, and does not occur in the Mediterranean area, nor in the Orient.

subsp. *heleophilus* (Arv.-Touv.) Rikli in Schinz & Keller, Fl. Schw. ed. 2, ii, 80 (1905); Hegi, Illustr. Fl. Mitt.-Europ. iii, 581 (1912).

Syn.: *R. heleophilus* Arv.-Touv., Essai sur les Plantes de Dauphiné, 19 (1871); Freyn in Halacsy & H. Braun, Nachtr. Nielr., Fl. Nied.-Österr. 148 (1882).

*R. aquatilis* L. var. *heleophilus* (Arv.-Touv.) Beck, Fl. Nied.-Österr. 415 (1890); Aschers. & Graebn., Syn. Mitteleurop. Fl. v, (3), 80 (1935).

*R. aquatilis* L. var. *homoiophyllus* Boenn., Prodr. Fl. Monast. 164 (1824) pro parte.

*R. aquatilis* L. var. *submersus* Gren. & Godr., Fl. Fr. i, 23 (1848) pro parte; Boiss., Fl. Orient. i, 23 (1867) pro parte; Post, Fl. Pal. ed. 1, 38 (1896) pro parte, ed. 2, i, 8 (1932) pro parte.

? *R. paucistamineus* Tausch in Flora, xvii, 525 (1834) pro parte.

Floating leaves absent, otherwise resembling *R. aquatilis* L. var. *aquatilis* \*.

var. *heleophilus*

Achenes about 1.5–1.8 mm. long.

TURKEY: Çubukdere [near Ankara], 1935, *Krause* 4726! Huseyin Gazi near Ankara, 1938, *Gässner* 979 (herb. Ankara)! Altımovia deresi, April 1950, *A. Heilbronn* s.n. (herb. Istanbul)! Prov. Kirsehir, Mucur—Kayseri,

\* But see footnote on p. 13.

17 June 1954, *Davis* 21792! Prov. Izmir, Torbali-Ephesus, 22 March 1956, *Davis & Polunin* (D. 25152!). Prov. Muğla, Kizilyaka, between Muğla and Köyceğiz, 26 March 1956, *Davis & Polunin* (D. 25404!). Prov. Niğde, Aksaray, ca. 3000 ft. alt., 2 April 1957, *Davis & Hedge* (D. 26313!). Prov. Kars, Haçuvan, between Kars and Ardahan, ca. 5700 ft. alt., 30 June 1957, *Davis & Hedge* (D. 30455B!). Prov. Kars, Yağmurlu Dağ, Sarikamış and Karaorgan, ca. 6000 ft. alt., 7 July 1957, *Davis & Hedge* (D. 30722!). Tatvan, Aug. 1939, *M. Başarman* s.n. (herb. Istanbul!) Prov. Bitlis, Pelli, 7300 ft. alt., 8 July 1954, *Davis & Polunin* (D. 22564). PERSIA: Prov. Kerman, near Lalesa on the lower slopes of Mt. Kuh Talebar, ca. 9000 ft. alt., 12 July 1892, *Bornmüller* 2011!

var. *microcarpus* Meikle, var. nov., acheniis minutis, 1-1.5 mm. longis, plerumque glabris, vel subglabris, varietate typica praecipue differt.

TURKEY: Prov. Muğla, Marmaris-Emecik, 25 March 1956, *Davis & Polunin* (D. 25358!). Prov. Diyarbakir, north slope of Karacadağ, between Siverek and Diyarbakir, ca. 3300 ft. alt., 19 May 1957, *Davis & Hedge* (D. 28301 holo. K.) Prov. Urfa, Siverek, west foot of Karacadağ between Siverek and Diyarbakir, ca. 3000 ft. alt., 19 May 1957, *Davis & Hedge* (D. 28324!).

SYRIA: Antilebanon, 3 Oct. 1860, *Hooker & Hanbury* s.n.!

PERSIA: Tak, Bostan, 4700 ft. alt., 27 March 1929, *Cowan & Darlington* 308!

AFGHANISTAN: Kabul, April 1880; *Collett* c. 2.!

In addition to the above are numerous specimens, which, lacking mature achenes, cannot be referred with certainty to either of the two varieties mentioned above, these are:

TURKEY: Thymbra, in Kalifatli-Asmak, 31 March 1883, *Sintenis* 152b! Kantonia, between Mundanya and Brusa, 200 ft. alt., 2 April 1934, *Balls & Gourlay* B.618! Nurgana, Gaziantep, 2800 ft. alt., 25 April 1934, *Balls & Gourlay* 838! Karanlik Sokak, ca. 450 ft. alt., 2 Feb. 1936, *Tengwall* 85! Prov. Bitlis, Kotum—Kamer, 24 Aug. 1954, *Davis & Polunin* (D. 24580!). Prov. Bursa, Apolyont Göl, 21 March 1956, *Davis & Polunin* (D. 25137!). Prov. Denizli, Acipayam Ovasi, ca. 2400 ft. alt., 4 April 1956, *Davis & Polunin* (D. 25607!). Prov. Maraş, Mehmet Bey, north of Göksun, ca. 4000 ft. alt., 4 May 1957, *Davis & Hedge* (D. 27591!).

SYRIA: Zahlah, 20 April 1875, *Post* 819!

IRAQ: "Mesopotamia", 1888, *Sintenis* 178! Khormal, ca. 2000 ft. alt. 22 April 1947, *Rawi* 8924!

PERSIA: Terhrnar (?), Luristan, 8000 ft. alt., Feb. 1868, *Haussknecht* s.n.! Asterabad, Bender Ges, 4 Feb. 1901, *Sintenis* 1422! Lar Valley, 40 miles north-east of Teheran, ca. 7000 ft. alt., 10 Aug. 1943, *Trott* 811!

AFGHANISTAN: Kabul, 5650 ft. alt., 16 March 1935, *Hay* 51, 7! Charasia, 5650 ft. alt., 22 April 1935, *Hay* 44! Begrami, 5650 ft. alt., 5 Nov. 1935, *Hay* 471!

Many authorities use the names *homoiophyllus* Boenn. or *submersus* Gren. & Godr. for conditions of *R. aquatilis* without floating leaves, but both are objectionable on the grounds that they were originally used to

include submerged forms of *aquatilis* and *peltatus*—in fact many of the earlier authorities used the epithets *heterophyllus* and *homoiophyllus* as descriptive terms rather than as names, employing them simply to distinguish all those Batrachians which have floating leaves from those which have not.

3. **R. trichophyllus** Chaix in Villars, Hist. Pl. Dauphiné, i, 335 (1786); Boiss., Fl. Orient. i, 23 (1867) excl. var.  $\beta$  *tripartitus*; Post, Fl. Pal. ed. 1, 38 (1896), ed. 2, i, 9 (1932).

Syn.: *Batrachium trichophyllum* (Chaix) van den Bossche, Prodr. Fl. Bat. 7 (1850); V. Krecz. in Fl. U.S.S.R. vii, 340 (1937).

*Ranunculus paucistamineus* (? Tausch) Rechinger f., Fl. Aegaea, 194 (1943) pro parte.

*R. aquatilis* L. subsp. *R. paucistamineus* (? Tausch) Holmboe, Veg. Cypr. 80 (1902).

*R. drouetii* F. Schultz ex Gren. & Godr., Fl. Fr. i, 24 (1847).

*Batrachium divaricatum* (Schrank) Schur, En. Pl. Trans. 12 (1866); V. Krecz. in Fl. U.S.S.R. vii, 340 (1937).

A rather slender plant; submerged leaves to about 6 cm. long, subsessile or shortly stalked, with slender diverging or collapsing segments; floating leaves absent; peduncles usually shorter than leaves, not distinctly tapering; flowers small; petals generally non-contiguous, narrowly obovate-cuneate, 0.3–0.5 cm. long; fruiting peduncle distinctly recurved; receptacle pilose; achene glabrous or hairy, about 0.7–1.8 mm. long, with a convex, often distinctly keeled dorsal margin, and an acute or shortly beaked apex.

#### var. *trichophyllus*

Achenes glabrous or hairy, about 1.5–1.8 mm. long.

CHIOS: Kardhamyla, 3 June 1939, *Platt* 534!

CYPRUS: Vatili, 1905, *Holmboe* s.n.

TURKEY: Prov. Muğla, distr. Fethiye, Xanthus, 29 March 1956, *Davis & Polunin* (D. 25454!). Prov. Antalya, Aksu, 6 April 1956, *Davis & Polunin* (D. 25693!). Prov. Antalya, distr. Akseki, Manavgat—Akseki, below Erenkaya, ca. 2000 ft. alt., 8 April 1956, *Davis & Polunin* (D. 25776!). Prov. Urfa, distr. Siverek, north slope of Karacadağ between Siverek and Diyarbakir, ca. 3700 ft. alt., 19 May 1957, *Davis & Hedge* (D. 28321). Erzeroum, *Zohrab* 776! Szanschak Gümüşchkane, Dibsissgvell, 28 June 1894, *Sintenis* 6061!

LEBANON: Near Nab-al-Sunnin, 5000 ft. alt., 2 June 1952, *Mooney* 4469!

PALESTINE: Kurretra to Susa, 11 April 1927, *Meyers & Dinsmore* 5700!

PERSIA: Demawend, in the Lar valley, about 7300 ft. alt., 14 July 1902, *J. & A. Bornmüller* 6014!

var. ***rionii*** (Lagger) Schinz & Keller, Fl. Schw. 192 (1900).

Syn.: *R. rionii* Lagger in Flora, xxxi, 48 (1848).

*Batrachium rionii* (Lagger) Nyman in Bot. Notis. 1852, 98 (1852);

V. Krecz. in Fl. U.S.S.R. vii, 346 (1937).



*Ranunculus aschersonii* Freyn in Bot. Centralbl. vi, Beil. no. 26, 13 (1881).

*R. trichophyllus* Chaix var. *aschersonii* (Freyn) Muschler, Manual Fl. of Egypt, i, 366 (1912).

Achenes minute, less than 1 mm. long, very numerous, usually glabrous or almost so.

CYPRUS: Syrianokhori, 30 March 1935, *Syngrassides* 776! An abnormal specimen, doubtfully determined.

TURKEY: Ankara, Huangöe, May 1939, *Krause* 5379 (herb. Ankara)! Ankara, Çubukdere, 1939, *Krause* 5505 (herb. Ankara)!

IRAQ: Near Dara, Assyria, March 1867, *Haussknecht* s.n.! Shaiba, 23 Aug. 1919, *Watson* s.n.! Qurmat Ali, near Basra, 14 Feb. 1947, *Gillett & Rawi* 5975! Baghdad, Washhash, 4 March 1955, *Haines* W. 356! Baghdad, pond on Damascus Road, near Mansur, 19 April 1956, *Guest* 15331! Huwair near Qurna, Basra Liwa, 17 March 1957, *Dept. of Bot. Univ. Herb. Baghdad* 8488! Medaina near Qurna, 17 March 1957, *Haines* W. 1053! Basra, 21 March 1957, *Haines* 1055! Near Basra between Maqil and Kibasi or Chibais, 22 March 1957, *Guest, Rawi & Rechinger* f. 16751! Qurmat Ali near Basra, 26 March 1957, *Guest, Rawi & Rechinger* f. 17376!

PERSIA: Foot of Mt. Sabst-Buschon near Schiras, 24 May 1842, *Kotschy* 410! Kurdistan, Wheherisus, July 1867, *Haussknecht* s.n.! In Kirmanhah stream, W. Persia, Sept. 1867, *Haussknecht* s.n. (a form approaching var. *trichophyllus*)! Ovan Doulekuhek stream, 9 May 1885, *Stapf* 1037! Khorassan, 29 Aug. 1885, *Aitchison* 815! (also recorded by Aitchison from the basin of the Harut R. and in the Badghis, in the Kushk stream); Northern Persia, Kudum, 1882, *Pichler* s.n.! Baquba, 18 March 1929, *Cowan & Darlington* 154! Zabul, March 1936, *Miss E. Daly* S. 7!

BALUCHISTAN: Streams at Kuppur and Khozdar, *Stocks* 733!

AFGHANISTAN: Mookloor, Kabul, etc., 1838-40, *Griffith* 24! Kuram distr., 5000 ft. alt., 10 July 1880, *Aitchison* 311!

EGYPT: Ain Helwah, 5 April 1876, *Ascherson*! Kafr Hariwan near Fayum, 12 March 1880, *Schweinfurth* 121! Tamieh at Fayum, 30 March 1880, *Schweinfurth* 49! Medinet-el-Fayum, March 1904, *Muschler* s.n. Rosetta, March 1906, *Muschler* s.n.! Helwan, by the Nile, March 1906, *Muschler* s.n.!

The following specimens are without achenes, and cannot be assigned with certainty to either of the two varieties of *R. trichophyllus* Chaix:

TURKEY: Armenia, 1867, *Calvert & Zohrab* s.n.!

PERSIA: Between Mesched and Herat, Aug. 1858, *Bunge* s.n.! 5 miles north of Ushnu, 5500 ft. alt., 31 May 1929, *Cowan & Darlington* 1434! Lahijan, Guilan, 1937, *Miss N. Lindsay* 787!

Almost all the material cited above has rather flaccid leaves and small flowers, and would probably be named *R. drouetii* by some botanists. I find, however, that all the characters used to separate *R. drouetii* from *R. trichophyllus* break down on closer examination, and do not feel that the two can be satisfactorily distinguished, even at varietal level.