

# **Taxonomic and nomenclatural notes on desmids I. *Euastrum circulare* Hassall ex Ralfs and *Euastrum sinuosum* Lenormand ex W.Archer (Zygnematophyceae, Desmidiaceae)**

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The taxonomy and nomenclature of desmids is complex and difficult, particularly as the limitation of the Principle of Priority as applied to the “Desmidiaceae s.l. [in the broad sense]” resulted in the setting of the starting point for all desmids as 1 January 1848 and Ralfs (1848) was also set with this notional date of publication (ICN Art. 13.1, Turland & al. 2018). Designations applied to desmids prior to 1 January 1848 are thus devalidated and have no nomenclatural status other than providing taxonomic information.

The name *Euastrum sinuosum* Kützing [Kützing 1849: 174, ‘*Euastrum* (?) *sinuosum*’] is an illegitimate name as it included in synonymy “*Cosmarium crenatum* Ralfs” (Ralfs 1844: 394; Ralfs 1848: 96, pl. XV: fig. 7). Whilst “*Cosmarium crenatum* Ralfs”, 1844 is a devalidated name, it was validated as *Cosmarium crenatum* Ralfs ex Ralfs (Ralfs 1848: 96, pl. XV: fig. 7). *Euastrum sinuosum* Kützing is thus an illegitimate name as it included in synonymy a valid and legitimate name.

The valid name *Euastrum sinuosum* Lenormand ex W.Archer (in Pritchard 1861: 729) was subsequently introduced by William Archer (1830–1897) who included “*E. circulare*  $\beta$  (Rfs.) and “*E. circulare*, var. *Falaisensis* (Bréb.)”. Archer (in Pritchard 1861) was referring to Ralfs (1848: 85–86) in which *Euastrum circulare* Hassall ex Ralfs included “*Euastrum circulare* Hass.” (Hassall 1845: 383, pl. XC: fig. 5) as “ $\alpha$ ” and “*Euastrum sinuosum* Lenormand in herb.”, an unpublished Lenormand name, as “ $\beta$ ”. Ralfs (1848: 86) specifically stated that he had “seen no authentic specimens” of *Euastrum circulare* but said that the figure in his pl. XIV (Ralfs 1848, pl. XIV: fig. 3 a)—shown here in Fig. 1—was “frond as figured by Hassall in Brit. Alg.”, whilst Ralfs (1848, pl. XIV: fig. 3 b) “ $\delta$ ” was of the “Falaise variety”. For fig. c (Ralfs 1848, pl. XIV: fig. 3 c), he merely says “end view”. Hassall (1845a: 383) gives a short description; unfortunately, the illustration in Hassall (1845b: pl. XC: fig. 5), whilst poorly printed in a light-green colour, is identical to Ralfs’s “ $\alpha$ ” as shown in Ralfs (1848, pl. XIV: fig. 3 a) and is more reminiscent of *E. ansatum* Ehrenberg ex Ralfs; however, cell sizes were not given by Hassall, so it is difficult to say anything conclusive about the actual identity of the taxa illustrated by both Hassall (1845: pl. XC: fig. 5) and Ralfs (1848: pl. XIV: fig. 3 a).

Archer (in Pritchard 1861: 729), however, clearly intended to separate *Euastrum sinuosum sensu* Lenormand from *Euastrum circulare* Hassall ex Ralfs and to restrict Ralfs’s (1848: 85–86) concept of this entity to his *Euastrum circulare* “ $\alpha$ ”. However, neither name has been typified under the present-day ICN rules (Turland & al. 2018). Archer (in Pritchard 1861: 729) also listed the name “*Euastrum circulare* var. *C Falesiensis* [sic] Bréb.” which was published by Brébisson (1856: 122) without a description or a figure although he cited Ralfs (1848, pl. XIV: fig. 3 b) and as the citation of a figure is sufficient to validate a name prior to 1908 (Art. 38.9, 38.10), *Euastrum circulare* var. *falesiensis* Brébisson is a valid name. This name however only has priority in its own rank (Art. 11.2).

Anissimova’s (2017: 1438, pl.: figs d, e) SEM study of the cell structure and cell wall ornamentation of *E. sinuosum* Lenormand ex W.Archer confirms the independence of this taxon as

a species. The characteristic depressions at the apex of the inflations and lobes are not found in any other species of the genus, with the exception of two: *E. aboense* Elfving and *E. jenneri* W.Archer (in Pritchard, 1861) both of which are poorly known and require further study.

*Euastrum sinuosum* Lenormand ex Archer, however, is an illegitimate later homonym and requires a new name as no correct name exist for this taxon as far as we can establish. No type seems to exist for *Euastrum circulare* Hassall ex Ralfs, 1848 and a lectotype (iconotype) is here designated:

*Euastrum circulare* Hassall ex Ralfs

Original description: Ralfs (1848: 85–86, pl. XIV: fig 3 a)

**Lectotype (here designated):** Ralfs, pl. XIV: fig 3 a, 1848. Reproduced here in Fig. 1.

Syntype localities: Britain (England, Scotland). No precise localities are given by Ralfs although Hassall (1845: 383) mentioned a single English locality “High Beech”, currently known as High Beach in Essex, on the western fringes of Epping Forest, about 11 miles NE of London.

Distribution: Only known for certain from Britain. Reports from France, Germany, Romania, and Uruguay and Australia require confirmation.

Note: This taxon was first described under the devalidated designation “*Euastrum circulare* Hassall” *nom. inval.* by Hassall (1845a: 383; 1845b: pl. XC: fig. 5), who gives a short description; unfortunately, the drawing given by Hassall is sketchy and although repeated by Ralfs (1848: pl. XIV: fig. 3 a) its identity is unclear, particularly as cell sizes are not given by Hassall, it is difficult to say anything about the actual identity of Hassall’s taxon.

*Euastrum neosinuosum*, *nom. nov.*

Replaced synonym: *Euastrum sinuosum* Lenormand ex W.Archer (in Prichard, 1861: 729), *nom. illeg.*, *non Euastrum sinuosum* Kützinger, 1849, *nom. illeg.*

Description: W.Archer (in Prichard, 1861: 729).

Synonym: *Euastrum circulare* var. *falesiensis* [sic] Brébisson, 1856: 122.

**Lectotype (Iconotype) here designated:** Ralfs pl. XIV: fig. 3 b, 1848. Reproduced here in Fig. 1.

Paratypes (Iconotypes): Ralfs pl. XIII: fig. 5 a, b, 1848. Reproduced here in Fig. 2.

Type locality; Falaise, Normandy, France.

Distribution: Britain, France.

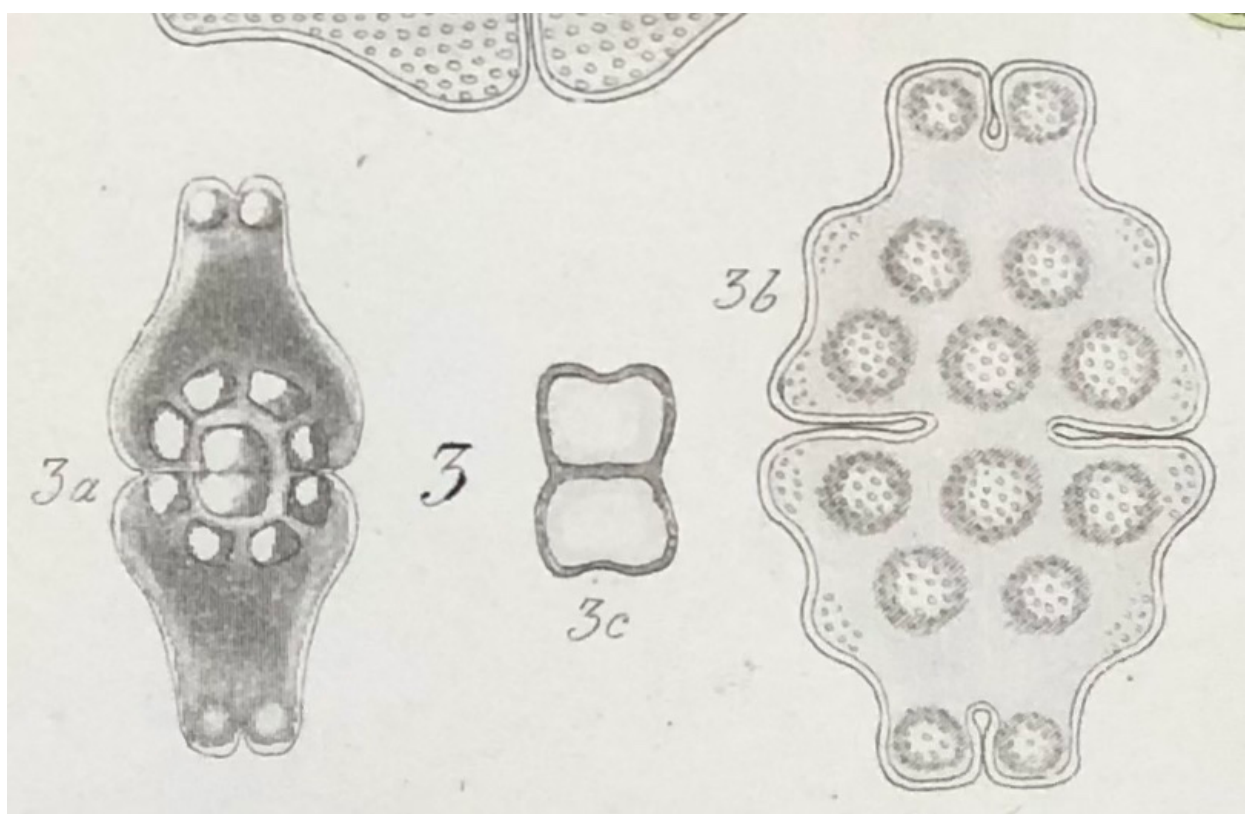
Note: Ralfs (1848: 85–86) listed un-named designations “β” (from Dolgelley, Ambleside, Weston Bogs, all in England) and “δ” (Falaise, France). These are similar in form and clearly represent *E. sinuosum* Lenormand ex W.Archer. Archer (in Pritchard 1861: 729), crediting Lenormand with the name, commented: “Mr. Ralfs unites this and the two preceding as three varieties of *E. circulare* (Hass.). They seem, however, to be quite as distinct as any other species [of *Euastrum*] described, not only in external outline, but also in the distribution of the superficial inflations.” Archer (1861) referred Ralfs’s “γ” (Fig. 2) to a distinct species, *Euastrum jenneri* Archer, a name agreed to be taxonomically correct by several authorities. We believe that Ralfs’s “α” is quite different in form and shape from varieties “β” and “δ” and is probably referable to *E. circulare* Hassall ex Ralfs.

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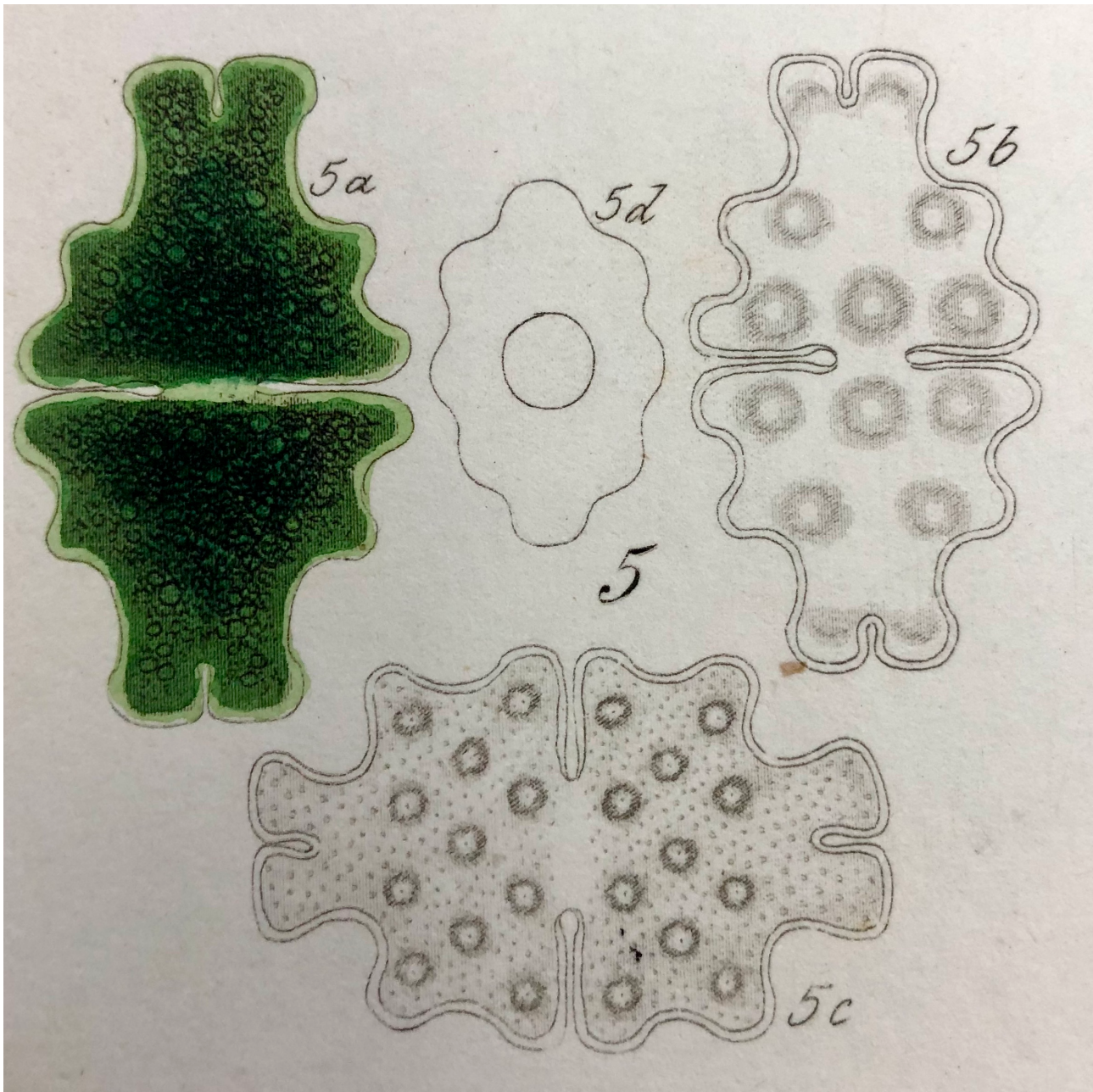
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**Fig. 1.** *Euastrum circulare* Hassall ex Ralfs as illustrated by Ralfs (1848: pl. XIV: fig. 3 a-c). Ralfs's fig. 3 a (*Euastrum circulare* Hassall ex Ralfs *sensu stricto*) was redrawn from Hassall (1845, pl. XC: fig. 5); Ralfs's fig. 3 b is "δ". Falaise Brébisson" [Normandy, France]; fig. 3 c is "end view" but it is unclear of which taxon.





**Fig. 2.** *Euastrum circulare* Hassall ex Ralfs as illustrated by Ralfs (1848: pl. XIII: fig. 5 a-d). Ralfs's fig. 5 a is "frond of  $\beta$ "; fig. 5 b is "end view"; fig. 5 c "empty frond of  $\gamma$ " and is currently referred to *Euastrum jenneri* W.Archer; fig. 5 d "transverse view".