



## When and where were *Xanthidium smithii* W.Archer and *Cosmarium porteanum* W.Archer (*Desmidiaceae*, *Zygnematophyceae*) first described?

Anatoliy Levanets<sup>1</sup> & Michael D. Guiry<sup>2</sup>

<sup>1</sup>Unit for Environmental Sciences and Management, North-West University, Potchefstroom, South Africa (correspondence: [anatoliy.levanets@nwu.ac.za](mailto:anatoliy.levanets@nwu.ac.za))

<sup>2</sup>AlgaeBase, Ryan Institute, University of Galway, Galway, H91 TK33, Ireland

The minutes of the Natural History Society of Dublin record that on Friday evening, February 3, 1860, William Archer (1827–1897), naturalist and librarian at the Royal Dublin Society and later at the National Library, submitted a paper entitled, “Description of a new species of *Cosmarium*, and of a new species of *Xanthidium*” but the minutes of the meeting and Archer’s paper were not published until 1863 (Archer 1863). However, as was often the practice at this time, his results first appeared in 1860 two other journals: *Quarterly Journal of Microscopical Science* (Archer 1860a) and *The Natural History Review and Quarterly Journal of Science* (Archer 1860b). The text of all three publications is identical and contains descriptions of two species then new to science, *Cosmarium porteanum* W.Archer (as ‘*Portianum*’) and *Xanthidium smithii* W.Archer (as ‘*Smithii*’), both of which species are currently accepted taxonomically (e.g. Coesel & Meesters 2007, Brook & al. 2011, Kouwets 2025).

There is considerable confusion as to which publication was appeared first. For example, in Palamar-Mordvintseva (2005: 169 and 397, respectively) the description of *C. porteanum* is stated to be Archer (1860a), and the description of *X. smithii* is stated to be Archer (1863, mistakenly regarded as published in 1860). Similar referencing was made in Coesel & Meesters (2023: 166 and 196, respectively). In the most recent treatment of genus *Cosmarium* (Kouwets 2025: 435) *C. porteanum* was credited to Archer (1860a). Here we present results of an investigation on the dates of the three publications to establish priority in accordance with ICN Arts. 11.5 and 29.1 (Turland & al. 2025).

The publication dates of Archer's 1860 papers were established using the website of the *Journal of Cell Science* (<https://journals.biologists.com/jcs/pages/about#history>), a continuation of *The Quarterly Journal of Microscopical Science*. Digitalized archive materials contain original communications of William Archer (<https://doi.org/10.1242/jcs.s1-8.32.215>) and published in Volume 8, Issue 32, date of publication of which was 1 October 1860. Additionally an abstract states: “... extracted from the ‘*Natural History Review and Quarterly Journal of Science*,’ for July, 1860”. Accordingly, the extract was made from already published journal volume and correct reference of publication for described species is July, 1860.

*Cosmarium porteanum* W.Archer 1860b: 405, pl. XIII [13]: figs 8, 9 (as ‘*Portianum*’) (reproduced here as Figs 1A and 1B).

≡ *Cosmarium porteanum* W.Archer 1860a: 235, pl. XI [11]: figs 8, 9; ≡ *Cosmarium porteanum* W.Archer 1863: 49, pl. I [1]: figs 8, 9.

Note: “*Cosmarium Portianum*” was named for George Porte (1819–1892), a civil engineer and a founder member of the Dublin Microscopical Club. The epithet is still rendered by some authors as “*portianum*”, correctable to “*porteanum*” in accordance with ICN Art. 60.8.

*Xanthidium smithii* W.Archer 1860b: 405, pl. XIII [13]: figs 10-12 (as ‘*Smithii*’) (reproduced here as Figs 1A and 1C).



≡ *Xanthidium smithii* W.Archer 1860a: 238, pl. XI [11]: figs 10-12; ≡ *Xanthidium smithii* W.Archer 1863: 51, pl. I [1]: figs. 10-12.

Note: The description of *Xanthium smithii* was based upon a "... slide marked 'Wareham [Dorset, England], 1849, W.S., kindly lent to me by Professor Harvey' (William Henry Harvey 1811–1866)". Archer (1860a: 238) remarked, "I imagine the initials on the slide ... must be those of the late Professor William Smith." The diatomist Rev. William Smith (1808–1857) was Professor of Natural History at Queen's College, Cork, Ireland (1854–1857). Smith (1854: 10, 12, 15, 29, 45, 46, 57, 71, 81) mentions several diatom taxa from Wareham so there can be little doubt as to the identity of the collector.

Archer, W. (1860a). Description of a new species of *Cosmarium*, and of a new species of *Xanthidium*. *Quarterly Journal of Microscopical Science* 8: 235–239, Plate XI [11].

Archer, W. (1860b). Description of a new species of *Cosmarium*, and of a new species of *Xanthidium*. *The Natural History Review and Quarterly Journal of Science* 7: 403–406, Plate XIII [13].

Archer, W. (1863). Description of a new species of *Cosmarium*, and of a new species of *Xanthidium*. *Proceedings of the Natural History Society of Dublin* 3: 49–52, plate I [1].

Brook, A.J., Williamson, D.B. & John, D.M. (2011). Phylum Chlorophyta. Suborder Desmidiineae. In: *The freshwater algal flora of the British Isles*. An identification guide to freshwater and terrestrial algae. Second edition. (John, D.M., Whitton, B.A. & Brook, A.J. Eds), pp. 636-741. Cambridge: Cambridge University Press.

Coesel, P.F.M. & Meesters, K.[J.] (2023). Desmids of the Lowlands. 2<sup>nd</sup> revised & extended edition. pp. [1]–424, 21 figures, 136 plates. Zeist: KNNV Uitgeverij.

Kouwets, F.A.C. (2025). *European flora of the desmid genus Cosmarium*. Part 1: Text. Part 2: Plates. pp. [i]–x, [1]–761 [Part 1], [i]–x, [1]–307 [Part 2], 1 map, 9 figures [Part 1], 1 map, 188 plates [Part 2]. Rotterdam: 24Bookprint.

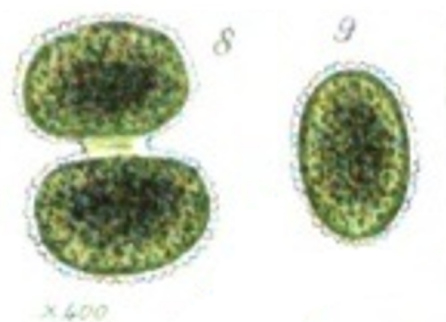
Palamar-Mordvintseva, G.M. (2005). Algae flora of continental water bodies of Ukraine. Desmids. Vol. 1, part 1 (ed. P.M. Tsarenko). Kyiv, Naukova Dumka Publishing house: 572 pp. [in Ukrainian: Паламар-Мордвинцева Г.М. (2005). Флора водоростей континентальних водойм України. Десмідієві водорості. Десмідієві. Вип. 1, ч. 2; за ред. П.М. Царенка. Київ: Наукова думка. 572 с.].

Smith, W. (1856). A synopsis of the British Diatomaceae; with remarks on their structure, functions and distribution; and instructions for collecting and preserving specimens. The plates by Tuffen West. In two volumes. Vol. II. pp. [i]–xxix, 1-107, pls 32-60, 61-62, A-E. London: John van Voorst, Paternoster Row.

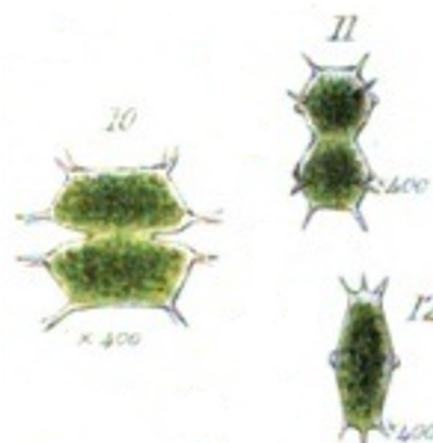
Turland, N.J., Wiersema, J.H., Barrie, F.R., Gandhi, K.N., Gravendyck, J., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Klopfer, R.R., Knapp, S., Kusber, W.-H., Li, D.-Z., May, T.W., Monro, A.M., Prado, J., Price, M.J., Smith, G.F. & Zamora Señoret, J.C. editors (2025). International code of nomenclature for algae, fungi, and plants (2025 Edition Madrid Code) Regnum Vegetabile Volume 162. pp. [i]–xlvii, 1-303. Chicago & London: The University of Chicago Press.



A



B



C

**Fig. 1. *Cosmarium porteanum* W.Archer and *Xanthidium smithii* W.Archer.** Fig. 1A. Plate XIII published in *The Natural History Review and Quarterly Journal of Science* 7, 1860. Fig. 1B. Original drawing of *Cosmarium porteanum* W.Archer (from Archer 1860b); Fig. 1C. Original drawing of *Xanthidium smithii* W.Archer (from Archer 1860b).