

## Nomenclatural considerations of names associated with the euglenoid flagellate genera *Strombomonas* and *Trachelomonas* (*Euglenaceae*, *Euglenophyceae*) in Australia

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The application of names and the typification of unicellular organisms is problematic, however, the ICN Art. 40.5 (Turland & al. 2018) allows for effectively published illustrations of algae to be used as types where there are “technical difficulties of specimen preservation or if it is impossible to preserve a specimen that would show the features attributed to the taxon by the author of the name.”

Here we investigate the names in the Australian literature associated with the genera *Strombomonas* Deflandre and *Trachelomonas* Ehrenberg and typify these names where necessary, in particular those taxa associated with names created by Playfair (1914, 1915, 1917, 1921) for Australian taxa and used as the basis for other names by Skvortsov (1925–1927) and Deflandre (1924–1930). The use of the names, however, should be understood in context with the history of the ICN at the time (see Nicholson 1991, and especially Sprague 1944: 132). We also present a brief history of euglenoid taxonomy in Australia, biographical accounts of the main players in the early twentieth century, and then provide a nomenclatural and taxonomic account for the taxa reported from Australia.

The literature on euglenoids in Australia is relatively sparse. Taxonomic works on Australian photosynthetic euglenoids are few (Playfair 1915, 1921; Skvortsov 1927). The earliest account of euglenoids in the Australian biota is that of Ehrenberg in his *Mikrogeologie* (1854a, 1854b), the names in which have since been mostly undocumented with respect to Australia. Lazarus (1998: fig. 9) notes that Ehrenberg received collections from many sites in Australia via some well-known collectors such as Johann August Ludwig Preiss (1811–1883). Williams & Huxley (1998) argue that for diatoms, there is no reason to ignore Ehrenberg’s monumental work, so why should it be so for the euglenoids? Floristic information on Australian euglenoids has been gathered in the twentieth century as part of a more extensive study; for example, Strickland (1923, 1924) and Croome & Tyler (1988). In the mid-1990s a checklist of non-marine algae was published by the Australian Biological Resources Study, Canberra (Day & al. 1995) to establish how many taxa of non-marine algae were reported from Australia. Some information published in Day & al. (1995), however, came from unpublished works and unverifiable checklists, and needs to be seen in this context.

Several of key taxonomic works were published in the early twentieth century. George Israel Playfair (1871–1922) was a resident taxonomist of unicellular organisms. He was born in Kent, England, and arrived in New South Wales as a tutor in 1893. His movements around New South Wales are described in an obituary delivered by the then retiring President of the Linnean Society of New South Wales (Waterhouse 1923). Playfair had access to the relevant literature of the period either through his own library<sup>1</sup> or at the Australian Museum, Sydney, an organisation closely allied

<sup>1</sup> Playfair donated his library to the Linnean Society of New South Wales in 1921, see *Proceedings of the Linnean Society of New South Wales* 46(4):531 before he left for New Zealand, where he died in Tauranga October 8<sup>th</sup>, 1922.

to the Royal Botanic Gardens, Sydney and National Herbarium of New South Wales, of which Playfair was an associate.

Playfair followed the higher classifications of organisms in vogue in the early twentieth century. For example, in the introduction to Playfair (1917: 219) he analyses Engler's taxonomic scheme (1896, 1900) and discusses which sections are considered part of the 'Vegetable Kingdom' at the time. Early in the twentieth century *Trachelomonas* was classified with the "Flagellata" (Leadbeater & McCready 2000). This was probably the Flagellata of Haeckel (1894), which was considered by him as a class of "Infusoria" and was not related to plants. Not four years later classification had changed and with it Playfair's treatment of euglenoids:

"In the present paper I have endeavoured to give some account of all those forms of microscopic life found in our waters, which are included under the class Flagellatae of the freshwater Algae." (Playfair 1921: 99)

Playfair (1915: 1) commences his paper with the comment, "Very little attention has been given to this interesting genus of freshwater flagellates". He goes on to discuss the literature that has included the genus and informs the reader of the literature he was unable to access.

"In many cases, unfortunately, the exact European type has not been observed, by me, but only a very similar form, showing however, the specific characteristics sufficiently well for identification. It is indeed through these "very similar forms" that what is truly characteristic and what is not, becomes clearly discernible." Playfair (1915: 2)

Boris Vassilievich Skvortsov (1896–1980; he also published as Skvortzov, Skvortzkov, Skvortsow), born in Warsaw, Congress Poland, then Russian-controlled, was a prolific taxonomist of unicellular organisms. He spent much of his early life (1902–1935) at Harbin, Heilongjiang Province, China (Williams & Reid 2001). During the 33 years he lived in Manchuria, Skvortsov published extensively on microalgae including diatoms, flagellates, other freshwater algae as well as food crops. In 1936, he moved to Brazil and continued to publish articles on freshwater algae (see Williams & Reid 2001 for a full bibliography).

Three papers were published by Skvortsov concerning euglenoid flagellates in the Australian context (Skvortsov 1925, 1927, 1928). None of these includes information explaining to the reader how Skvortsov was making his taxonomic decisions. The bibliography of Skvortsov (1928) is heavily skewed to Russian and eastern European sources even though Skvortsov seemed to be fluent in English.

Georges Victor Deflandre (1897–1973) was born in the Flemish part of Belgium (van Leckwijck 1974). He was a German prisoner-of-war in 1918 and despite his lack of official education was a teacher. He worked in the Cryptogam Laboratory at Museum d'Histoire Naturelle, Paris from 1922. In 1926, he obtained his doctorate from the University of Paris (Deflandre 1926, 1927a). He founded *Annales de Protistologie* in 1928.

In the following compendium, accepted names relevant to the Australian euglenoid flora are listed in bold, followed by the basionym and lectotypification (LT) if appropriate. In most instances a type was not indicated in the original publications and specimens are not available, thus lectotypification is based upon illustrations from the protologue. In his 1915 paper (p. 3), Playfair stated "Localities referred to in this paper; the numbers correspond to samples deposited in the National Herbarium, Sydney." However, these are admixtures (Skinner, pers. comm.) and the same numbers are quoted

for multiple taxa; as such they are unlikely to provide suitable lectotypes. We have elected to designate as lectotypes illustrations from the relevant protologues that conform with the protologues. In some instances, Playfair included only a single illustration, which could be regarded as the holotype (Art 9.1, Note 1). However, as we cannot be certain that Playfair did not use additional specimens in the preparation of his accounts, so we prefer to lectotypify the names (Art 9.1, Note 1, Ex. 2). The same uncertainty applies to later names based upon the Playfair taxa, even if only a single figure is cited (e.g., the combinations proposed by Tell & Conforti 1988) (Art 9.1, Note 1). Note, the epithet '*playfairi*' (as used by Skvortsov, Deflandre and others) is corrected to '*playfairii*' (Art. 60.8).

The nomenclature relating to Playfair's names is something of a minefield, due largely to the actions of Skvortsov (1927), who created numerous new names based upon Playfair taxa, without adopting the earlier Playfair names at the same rank. Many of these are clearly superfluous and illegitimate names (Art. 52.1) and are indicated as such here. In some instances where Playfair had included two or more illustrations, Skvortsov regarded these as separate taxa, again without adopting the Playfair names for any of his supposed new taxa. In these instances, we have lectotypified the Playfair name with one of his illustrations, which then renders the Skvortsov name based upon the same illustration superfluous and illegitimate. Other Skvortsov names based upon Playfair taxa, *pro parte* and by lectotypification now excluding the type, are treated as new names. Whether these are valid taxonomically is beyond the scope of this treatment, but we have primarily adopted the judgements of subsequent workers such as Deflandre (1930). Where Skvortsov changed the rank of a Playfair taxon, again without adopting the Playfair epithet, these are treated as a legitimate renaming at a different rank, as names have no priority outside of the rank in which they were validly published (Art. 11.2). In these instances, the Skvortsov name is treated as a *nomen novum* and the Playfair name a replaced synonym (Art. 6.11). Very rarely, Skvortsov placed a Playfair taxon at a different rank, adopting the Playfair name. While he invariably attributed the name to himself, following Art. 44.1, Ex. 12, these should be treated as a name at a new rank, with the Playfair name as the basionym.

In the following list "LT" indicates the designation of a lectotype in conformity with Arts 9.11 and 9.12.

**1. *Strombomonas acuminata* var. *amphora* (Playfair) Deflandre, *Archive für Protistenkunde* 69: 572, 1930.**

Basionym: *Trachelomonas acuminata* var. *amphora* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 31, pl. V: fig. 3, 1915.

LT: Playfair 1915: pl. V: fig. 3, designated here.

*Trachelomonas zmiewika* var. *curta* Skvortsov (Skvortsov 1927: 616, pl. XVI: fig. 72) is based upon the description and the illustration for *Trachelomonas acuminata* var. *amphora* and is thus an illegitimate name. Deflandre (1927a: 48) retained the Playfair variety in *Trachelomonas* but later transferred it to *Strombomonas acuminata* var. *amphora* (Playfair) Deflandre (1930: 572). Conrad & van Meel (1952: 115) agreed with Deflandre's decision.

Day & al. (1995: 236, 243) cited Playfair (1915, 1921), Skvortsov (1927) as the basis for distributional records of *T. zmiewika* var. *curta* in New South Wales. Entwisle & Nairn (2020) did not list these names.

**2. *Strombomonas chodatii*** (Skvortsov) Deflandre, *Archive für Protistenkunde* 69: 588, 1930.

Basionym: *Trachelomonas chodatii* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 616, pl. XIV: fig. 73, 1927 (as ‘*chodati*’).

[*Trachelomonas urceolata auct non.* A.Stokes: Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 31 pl. V: fig. 4, 1915].

**LT:** Skvortsov 1927: pl. XIV: fig. 73, designated here.

*Trachelomonas chodatii* Skvortsov (1927: 616, pl. XIV: fig. 73) is based upon the description of a presumed un-named form by Playfair (1915: 31, pl. V: fig. 4) of *Trachelomonas urceolata* A.Stokes from Parramatta, New South Wales (collection: 136). Playfair (1921: 134) confirms the presence of his version of *T. urceolata* in the flora with three further collections from Lismore, New South Wales. Deflandre (1927a: 48) discusses *T. urceolata sensu* Deflandre & Playfair which he also separates from *T. urceolata* Stokes (c.f. Deflandre 1926: figs 771 and 782). Skvortsov (1927: pl. XIV, fig. 73) appears to be a redrawing of Playfair (1915: pl. V: fig. 4). Deflandre (1930: 588) made the new combination *S. chodatii* (Skvortsov) Deflandre. Conrad & van Meel (1952: 116) were clearly in agreement.

Day & al. (1995: 237, 244 cf. pp. 235, 236) and Entwisle & Nairn (2020) apparently had not realised the taxonomic change to *Strombomonas chodatii*.

**3. *Strombomonas clavata*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 609, 1930.

Basionym: *Trachelomonas clavata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 18, pl. II: fig. 15, 1915.

**LT:** Playfair 1915: pl. II: fig. 15, designated here.

*Trachelomonas clavata* Skvortsov (1925b: 337, fig. 3) is a later homonym of *T. clavata* Playfair, based upon a different type. Deflandre (1930: 609) proposed the new combination *Strombomonas clavata* with the caveat that this species was an outlier. Conrad & van Meel (1952: 98) did not agree with this decision and reverted to *T. clavata*.

Day & al. (1995: 235, 237) cited Playfair (1915) and Thomasson (1986) as the basis for distributional records of *T. clavata* in Australia with *S. clavata* as the accepted name. Entwisle & Nairn (2020) listed *S. clavata*.

**4. *Strombomonas clavata* var. *subarmata*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 610, 1930.

Basionym: *Trachelomonas clavata* var. *subarmata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 18, pl. II: fig. 16, 1915.

**LT:** Playfair 1915: pl. II: fig. 16, designated here.

Deflandre (1930: 610) expressed some uncertainty regarding this combination, but the name was nonetheless accepted by him. Conrad & van Meel (1952: 98) did not agree with Deflandre’s combination and reverted to *T. clavata* var. *subarmata*.

Day & al. (1995: 235, 237) cited Playfair (1915, 1921), Ling & Tyler (1986) and Thomasson (1986) as the basis for distributional records of this species in Australia with *S. clavata* var. *subarmata* as the accepted name. Entwisle & Nairn (2020) listed *S. clavata* var. *subarmata*.

**5. *Strombomonas cuneata*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 594, 1930.

Basionym: *Trachelomonas cuneata* Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 135, pl. VII: fig. 15, 1921.

LT: Playfair 1921: pl. VII: fig. 15, designated here.

Conrad & van Meel (1952: 122) record *S. cuneata* in Australia. Day & al. (1995: 238) cited Playfair (1921), as the basis for distributional records of this species in Australia with *T. cuneata* as the accepted name. Entwisle & Nairn (2020) did not list the taxon.

**6. *Strombomonas fluviatilis* f. *major*** Yacubson, *Nova Hedwigia* 33: 310, pl. XV: fig. 179, 1980.

HT: Yacubson 1980: pl. XV: fig. 179 (as “*Strombomonas fluviatilis* var. *rugosa* f. *major*” Yacubson).

Ling & Tyler (1986: 62) included a description of *S. fluviatilis* f. *major* from the Alligator River, Northern Territory.

Day & al. (1995: 235) and Entwisle & Nairn (2020) listed this taxon.

As names only have nomenclatural priority in their own rank, writing “*Strombomonas fluviatilis* var. *rugosa* f. *major*” is only relevant taxonomically. *Strombomonas fluviatilis* var. *major* V.Conforti, 1994 is an illegitimate later homonym (Art. 53.3).

**7. *Strombomonas gibberosa*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 595, 1930.

Basionym: *Trachelomonas gibberosa* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 34, pl. V: fig. 16, 17, 18, 1915.

Homotypic synonym: *Trachelomonas schauinslandii* var. *australica* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 617, 1927.

LT: Playfair 1915: pl. V: fig. 16, designated here.

The three figures included in the protologue of *T. gibberosa* by Playfair (1915) were used as the basis for three separate varieties in *Trachelomonas schauinslandii* Lemmermann by Skvortsov (1927). *Trachelomonas schauinslandii* var. *australica* Skvortsov (1927: 617, text-pl.: fig. 3) is based upon the description and the illustration for *Trachelomonas gibberosa* Playfair (*p.p.*, pl. V: fig. 16, *non* 17 = *Trachelomonas schauinslandii* var. *radicans* Skvortsov see sect. 27, 18 = *Trachelomonas schauinslandii* var. *minor* Skvortsov see sect. 27). Skvortsov (1927: test-pl.: fig. 3) appears to be a redrawing of Playfair (1915: pl. V: fig. 16). Deflandre (1927a: 50, 51) maintained both *T. schauinslandii* and *T. gibberosa* and subsequently (Deflandre 1930: 595) made the combination *S. gibberosa*. Conrad & van Meel (1952: 122) were clearly in agreement.

Day & al. (1995: 243) included *T. schauinslandii* var. *australica* as a current New South Wales taxon with Skvortsov (1927) as the reference. Entwisle & Nairn (2020) accepted the correct name as *S. gibberosa*.

**8. *Strombomonas gibberosa* var. *longicollis*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 598, 1930.

Basionym: *Trachelomonas gibberosa* var. *longicollis* Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 135, pl. VII: fig. 16, 1921.

LT: Playfair 1921: pl. VII: fig. 16, designated here.



Playfair (1921) described *Trachelomonas gibberosa* var. *longicollis* from Lismore, New South Wales. The variety was not discussed by Deflandre (1926, 1927a, b) or Skvortsov (1927). Deflandre (1930) transferred the variety to *Strombomonas*.

Day & al. (1995: 239) included *T. gibberosa* var. *longicollis* as a current New South Wales taxon with Playfair (1921) as the reference. Entwisle & Nairn (2020) did not list the varietal name.

**9. *Strombomonas gibberosa* var. *tumida*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 598, 1930.

Basionym: *Trachelomonas gibberosa* var. *tumida* Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 135, pl. VII: fig. 17, 1921.

LT: Playfair 1921: pl. VII: fig. 17, designated here.

Playfair (1921) described *Trachelomonas gibberosa* var. *tumida* from Lismore, New South Wales. The variety was not discussed by Deflandre (1926, 1927a, b) or Skvortsov (1927). Deflandre (1930) transferred the variety to *Strombomonas*.

Day & al. (1995: 239) included *T. gibberosa* var. *tumida* as a current New South Wales taxon with Playfair (1921) as the reference. Entwisle & Nairn (2020) did not list the varietal name.

**10. *Strombomonas girardiana*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 573, 1930.

Basionym: *Trachelomonas urceolata* var. *girardiana* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 32, pl. V: fig. 7, 8, 1915.

Homotypic synonym: *Trachelomonas girardiana* (Playfair) Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 134, 1921.

LT: Playfair 1915: pl. V: fig. 7, designated here.

Heterotypic synonym: *Trachelomonas meisteri* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 618, 1927.

Replaced synonym: *Trachelomonas urceolata* var. *girardiana* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: 32 pl. V: fig. 8, *non* fig. 7, 1915.

LT: Playfair 1915: pl. V: fig. 8, designated here.

Playfair (1915) described *Trachelomonas urceolata* var. *girardiana* from Girard's Hill, Lismore, New South Wales. By 1921 Playfair was convinced that this euglenoid should become known as *Trachelomonas girardiana*. Skvortsov (1927: 616) and Deflandre (1927a: 48) included this species. Deflandre (1930: 572) made the new combination *Strombomonas girardiana* (Playfair) Deflandre. Conrad & van Meel (1952: 116) agreed with this decision.

*Trachelomonas meisteri* (Skvortsov 1927: 618) was a new name based upon *Trachelomonas urceolata* var. *girardiana* Playfair, *p.p.*, (1915: fig. 8, *non* 7) Deflandre (1930: 573) included *Trachelomonas meisteri* as a synonym of *Strombomonas girardiana*. Conrad & van Meel (1952: 116) agreed.

Day & al. (1995: 239, 244) cited Playfair (1915), Skvortsov (1927), May (1988), May & Powell (1986) and an unpublished source as the basis for distributional records of this species in New South Wales and Queensland, with *T. girardiana* as the accepted name. Entwisle & Nairn (2020) listed *T. girardiana*. *Strombomonas girardiana* is the accepted name for this taxon in the Australian flora.

**11. *Strombomonas girardiana* var. *glabra*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 574, 1930.

Basionym: *Trachelomonas girardiana* var. *glabra* Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 134, pl. VII: fig. 10, 1921.

LT: Playfair 1921: pl. VII: fig. 10, designated here.

This variety is based upon the description and illustration for *T. girardiana* var. *glabra*.

Skvortsov (1927) and Deflandre (1926, 1927a) did not include this taxon. Deflandre (1930: 574) proposed the new combination in *Strombomonas* and Conrad & van Meel (1952: 116) agreed with this decision.

Day & al. (1995: 235, 239) cited Playfair (1921) as the basis for distributional records of this species in New South Wales with *S. girardiana* var. *glabra* as the accepted name. Entwisle & Nairn (2020) listed *S. girardiana* var. *glabra*.

**12. *Strombomonas helix*** (Deflandre) *comb. nov.*

Basionym: *Trachelomonas helix* Deflandre, *Bulletin de la Société Botanique de France* 74(2): 286, 1927b.

Replaced synonym: *Trachelomonas spiralis* Playfair, *nom. illeg., non* Skvortsov 1919, *Proceedings of the Linnean Society of New South Wales* 46: 136 pl. VII: fig. 21, 1921.

LT: Playfair 1921: pl. VII: fig. 21, designated here.

Playfair (1921) named *Trachelomonas spiralis* from Botany, New South Wales. He failed to realise that Skvortsov (1919) had used the same name for material from Manchuria (Skvortsov 1919: 98, Pl. I: fig. 1) and Playfair's *T. spiralis* is a later homonym and thus illegitimate. We herein lectotypify *T. spiralis* Skvortsov with the Manchurian element (1919: pl. I: fig. 1), **designated here**. Deflandre (1926: 700) recognised the Skvortsov species from China but did not include the Playfair taxon in his work on *Trachelomonas*. He later (Deflandre 1927b: 286) recognised the Playfair taxon was a different species and proposed the replacement name *Trachelomonas helix* Deflandre. Later again, Deflandre (1930: 606) proposed the new combination *Strombomonas spiralis* for the Playfair taxon, based upon the replaced synonym. However, as *S. spiralis* is based upon an illegitimate name, it is treated as a new name with priority from 1930. The earlier *T. helix* is available for use.

Day & al. (1995: 243) cited *T. spiralis* as a current New South Wales taxon with Playfair (1921) as the reference. Entwisle & Nairn (2020) did not include any of the names.

**13. *Strombomonas lanceolata*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 582, 1930.

Basionym: *Trachelomonas lanceolata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 136, pl. VII: figs 19, 20, 1921.

LT: Playfair 1921: pl. VII: fig. 19: designated here.

Heterotypic synonyms: *Trachelomonas dangeardii* Skvortsov, *Arbeiten der Biologischen Sungari-Station / B 1* (2): 75, pl. VI: fig. 16. '1925, 1926'; *Trachelomonas fluviatilis* var. *pascheri* Drezepolski, *Kosmos, Warszawa* 50 (1A): 214, pl. II: fig. 94, 1925.

*Trachelomonas lanceolata* was described by Playfair (1921) from two sites in New South Wales. Earlier, Swirensko (1914: 644, pl. XX) had described and illustrated specimens he attributed to *Trachelomonas fluviatilis* Lemmermann from the Kharkov University Gardens, but his material was subsequently used as the basis of a new species, *Trachelomonas dangeardii* Skvortsov (1925: 75, as 'dangeardi'). Deflandre (1926: 691) used the same epithet for a different *Trachelomonas* species, thus creating a later homonym, but rectified this with the proposal of

*Trachelomonas dangeardiana* Deflandre (1928: 665). Drezepolski (1925: 214) described *Trachelomonas fluviatilis* var. *pascheri* Drezepolski from the Ukraine. Deflandre (1930: 582) included both the Swirenko and Drezepolski material in his newly combined taxon *Strombomonas lanceolata*. Conrad & van Meel (1952: 120) followed Deflandre (1930). Day & al. (1995) included *T. lanceolata* with Playfair (1921) as the reference. Entwisle & Nairn (2020) did not list any of the names.

**14. *Strombomonas longissima* (Pascher) comb. nov.**

Basionym: *Trachelomonas longissima* Pascher, *Archiv für Protistenkunde* 51: 577, text fig. V: 1, 2, 1925.

Replaced synonym: *Trachelomonas caudata* var. *australiana* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 30, pl. V: figs 1, 2, 1915.

Homotypic synonyms: *Trachelomonas myersii* var. *australiana* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 618, 1927; *Strombomonas australiana* (Playfair) Deflandre, *Archive für Protistenkunde* 69: 584, 1930; *Trachelomonas longissima* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 618, 1927, *nom. illeg.*, non Pascher 1925.

**LT:** Playfair 1915: pl. V: fig. 1, designated here.

*Trachelomonas longissima* Pascher (1925) is a legitimate renaming of *Trachelomonas caudata* var. *australiana* Playfair at species level (Pascher's illustrations are a direct copy of Playfair's) and as such is typified by the type of the replaced name. It is the earliest valid species name. Later, Skvortsov (1927) split *T. caudata* var. *australiana* into two taxa: the first was *Trachelomonas myersii* var. *australiana* Skvortsov (1927: 618), which was based upon Playfair's pl. V: fig. 2 and retained Playfair's varietal name (although proposed as a 'var. nov.' by Skvortsov). The second Skvortsov taxon was *T. longissima*, based upon Playfair's pl. V: fig. 1, a new species but a later homonym and illegitimate due the earlier Pascher name. We follow Deflandre (1930) in placing both Skvortsov taxa in a species of *Strombomonas* and not recognising either of the varieties attributed to Australia.

Conrad & van Meel (1952: 119) followed the Deflandre nomenclature. Day & al. (1995: 237, 241) listed *Trachelomonas longissima* and *Trachelomonas myersii* var. *australiana* as current southern Australian taxa with Skvortsov (1927) and Playfair (1915) as the sources. Entwisle & Nairn (2020) cited *S. australiana* as the name of this taxon in reference to the Australian euglenoid flora.

**15. *Strombomonas napiformis* (Playfair) Deflandre, *Archive für Protistenkunde* 69: 590, 1930.**

Basionym: *Trachelomonas napiformis* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 33, pl. V: fig. 10, 1915.

**LT:** Playfair 1915: pl. V: fig. 10, designated here.

Heterotypic synonyms: *Trachelomonas urceolata* var. *zaleskii* Drezepolski, *Kosmos, Warszawa* 50(1A): 223, fig. 103, 1925 (as 'zaleski'); *Trachelomonas tambowika* var. *glabra* Skvortsov *nom. illeg.*

*Trachelomonas napiformis* was described by Playfair from Parramatta, New South Wales. Deflandre (1927a: 46) included the species (as *Trachelomonas*) with *Trachelomonas urceolata* var. *zaleskii* Drezepolski in synonymy (p. 48). Skvortsov (1925: 72) changed the species of the Drezepolski variety and created the *nom. illeg.* *Trachelomonas tambowika* var. *glabra*. Deflandre (1930: 590) made the new combination *Strombomonas napiformis*. Conrad & van Meel (1952: 118) concurred with Deflandre.



Day & al. (1995: 241) cited *Trachelomonas napiformis* as a current New South Wales taxon with Playfair (1915) as the reference. Entwisle & Nairn (2020) did not list the names.

**16. *Strombomonas napiformis* var. *brevicollis*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 591, 1930.

Basionym: *Trachelomonas napiformis* var. *brevicollis* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 135 pl. VII: figs 12–14, 1921.

LT: Playfair 1915: pl. VII: fig. 12, designated here.

*Trachelomonas napiformis* var. *brevicollis* was described by Playfair from Lismore, New South Wales. (Note: Deflandre 1930: 591, text fig. 83 appears to be based upon Playfair pl. vii: fig. 12). Conrad & van Meel (1952: 118) concurred with Deflandre (1930).

Day & al. (1995: 241) cited *T. napiformis* var. *brevicollis* as a current New South Wales taxon with Playfair (1921) as the reference. Entwisle & Nairn (2020) did not list the names.

**17. *Strombomonas ovalis*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 577, 1930.

Basionym: *Trachelomonas urceolata* var. *ovalis* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 31, pl. V: figs 5, 6, 1915.

LT: Playfair 1915: pl. V: fig. 5, designated here.

*Trachelomonas tambowika* var. *australiana* Skvortsov (Skvortsov 1927: 616, text pl. fig. 1) is based upon *Trachelomonas urceolata* var. *ovalis* Playfair (1915: 31, pl. V: figs 5, 6) and is thus an illegitimate name.

Deflandre (1926: 661) indicated that if varieties could be distinguished within the species *T. tambowika* Swirenko, then the variety should be named *Trachelomonas tambowika* var. *ovalis* (Playfair) Deflandre *comb. nov.* “(var. inquir.)”. Deflandre (1930: 577) used the Playfair variety as the basis of *Strombomonas ovalis* (Playfair) Deflandre. Conrad & van Meel (1952: 118) concurred with this taxonomic assessment.

Day & al. (1995) included *T. tambowika* var. *australiana* with both Playfair (1915) and Skvortsov (1927) as references, in New South Wales, and *S. ovalis* with Thomasson (1986) as a reference in the Northern Territory, as current names. Entwisle & Nairn (2020) listed *S. ovalis* but it is a different taxon (see section 33). Only one taxon exists in the Australian flora, *S. ovalis*.

**18. *Strombomonas rotunda*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 593, 1930.

Basionym: *Trachelomonas gibberosa* var. *rotunda* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 35, pl. V: fig. 19, 1915.

Homotypic synonym: *Trachelomonas rotunda* (Playfair) Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 135, 1921.

LT: Playfair 1915: pl. V: fig. 19, designated here.

*Trachelomonas gibberosa* var. *rotunda* was described by Playfair (1915), who then raised the variety to species level as *Trachelomonas rotunda* (Playfair) Playfair (1921). *Trachelomonas forti* nom. illeg. (Skvortsov 1927: 618, text fig. 6) is based upon *Trachelomonas gibberosa* var. *rotunda* Playfair (pl. V: fig. 19). Deflandre (1927a: 50) also includes the Playfair variety but does not discuss the Skvortsov species. Deflandre (1930: 593) subsequently made the combination *Strombomonas rotunda* (Playfair) Deflandre and included the Skvortsov species in synonymy. Conrad & van Meel (1952: 121) were clearly in agreement.

Day & al. (1995: 239, 243) cited *Trachelomonas fortii* as current New South Wales taxa with Skvortsov (1927) and Playfair (1921) as the references. Entwisle & Nairn (2020) did not list any of these names.

**19. *Strombomonas scabra* (Playfair) Tell & Conforti var. *scabra* Nova Hedwigia 46(3/4): 547, 1988.**

Basionym: *Trachelomonas scabra* Playfair var. *scabra*, *Proceedings of the Linnean Society of New South Wales* 40: 28, pl. IV: figs 2, 3, 1915.

LT: Playfair 1915: pl. IV: fig. 2, designated here.

Heterotypic synonym: *Trachelomonas scabra* var. *latior* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 607, pl. XVI: fig. 23, 1927.

Replaced synonym: *Trachelomonas scabra* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: 28, pl. IV: fig. 3, non 2, 1915.

LT: Playfair 1915: pl. IV: fig. 3, designated here.

Tell & Conforti (1988), when transferring *T. scabra* to *Strombomonas*, proposed the new combination based upon the autonym *T. scabra* var. *scabra*. Playfair (1915: 28) created the autonym *Trachelomonas scabra* var. *scabra* when he named *Trachelomonas scabra* var. *longicollis*. Deflandre (1926: 700 ff.) redrew Playfair (pl. IV: fig. 2) as Deflandre (1926: fig. 465) and on p. 700 states '465 (orig.)'. Conrad & van Meel (1952: 66–67) discussed the species and varieties of *T. scabra*. Tell & Conforti (1986) initially made the combination *Strombomonas scabra* (Playfair) Tell & Conforti var. *scabra* without citing the basionym. The combination was validated in Tell & Conforti (1988: 547) with two figures listed.

*Trachelomonas scabra* var. *latior* is based in part on the description and one of the two illustrations for *Trachelomonas scabra* Playfair (1915: 28, pl. IV: fig. 3, non 2). Skvortsov (1927: pl. XIV, fig. 23) appears to be a redrawing of Playfair (1915: pl. IV: fig. 3). Deflandre (1928: 660–661) and Conrad & van Meel (1952: 66) discussed other varieties of *T. scabra* described by Playfair but not var. *latior*.

Day & al. (1995: 243) cited Skvortsov (1927) for *T. scabra* var. *latior* in New South Wales and Playfair (1915) and two unpublished works when discussing the distribution records of *T. scabra* in New South Wales and Queensland which they refer as a synonym of *T. scabra* var. *latior*. Entwisle & Nairn (2020) accepted *T. scabra*.

**20. *Strombomonas scabra* var. *cordata* (Playfair) Tell & Conforti, Nova Hedwigia 46(3/4): 547, 1988.**

Basionym: *Trachelomonas scabra* var. *cordata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 29, pl. IV: fig. 11, 1915.

LT: Playfair 1915: pl. IV: fig. 11, designated here.

Playfair (1915) described *Trachelomonas scabra* var. *cordata* from specimens collected at Lismore, New South Wales, and he later collected further material from the area (Playfair, 1921: 134). *Trachelomonas drezepolskii* var. *conspersa* Skvortsov (1927: 612, pl. XIV: fig. 51) is based upon the description and the illustration for *T. scabra* var. *cordata* and is thus an illegitimate name. Deflandre (1926) discussed the Playfair species (p. 700) and this Playfair variety (p. 701) without reference to Skvortsov and subsequently (Deflandre 1927b: 286) combines *T. scabra* var. *cordata* with *Trachelomonas volvocina* var. *scabra* Playfair under the new species name *Trachelomonas scabratula* Deflandre. Conrad & van Meel (1952: 66 ff) used

the original Playfair *T. scabra* var. *cordata* but with no reference to *T. scabratula*. Tell & Conforti (1986) initially made the combination *Strombomonas scabra* var. *cordata* (Playfair) Tell & Conforti without the basionym. The combination was validated in Tell & Conforti (1988: 547).

Day & al. (1995: 238, 243) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of *Trachelomonas drezepolskii* var. *conspersa* in New South Wales. Entwisle & Nairn (2020) do not list any of these names.

**21. *Strombomonas scabra* var. *elliptica*** (Playfair) Tell & Conforti, *Nova Hedwigia* 46(3/4): 547, 1988.

Basionym: *Trachelomonas scabra* var. *elliptica* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 29, pl. IV: fig. 10, 1915.

LT: Playfair 1915: pl. IV: fig. 10, designated here.

Playfair described this variety from Lismore, New South Wales. Deflandre (1926: 701) included the variety in his account of *Trachelomonas*. Skvortsov (1927: 619) synonymised *T. scabra* var. *elliptica* with *Trachelomonas tuberosa* var. *conspersa* Skvortsov (1925: 67, pl. V: fig. 49<sup>2</sup>), incorrectly adopting the later name. Deflandre (1930: 608) made the combination *Strombomonas tuberosa* var. *conspersa* (Skvortsov) Deflandre. *Trachelomonas scabra* var. *elliptica* was not included as a heterotypic synonym. Conrad & van Meel (1952: 67) included *T. scabra* var. *elliptica* in their account. Tell & Conforti (1986) initially made the combination *Strombomonas scabra* var. *elliptica* (Playfair) Tell & Conforti without the basionym. The combination was validated in Tell & Conforti (1988: 547) who referred only to the single illustration from Playfair.

Day & al. (1995: 243, 244) recorded this variety as being present in New South Wales with the name *T. tuberosa* var. *conspersa* citing both Playfair (1915) and Skvortsov (1927). Entwisle & Nairn (2020) did not list any of the names.

**22. *Strombomonas scabra* var. *longicollis*** (Playfair) Tell & Conforti, *Nova Hedwigia* 46(3/4): 547, 1988.

Basionym: *Trachelomonas scabra* var. *longicollis* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 28, pl. IV: figs 4–6, 1915.

LT: Playfair 1915: pl. IV: fig. 4, designated here.

Heterotypic synonym: *Trachelomonas uniformis* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 607, pl. XVI: fig. 21, 1927.

Replaced synonym: *Trachelomonas scabra* var. *longicollis* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: 28, pl. IV: figs 5, 6, *non* 4, 1915.

LT: Playfair 1915: pl. IV: fig. 6, designated here.

*Trachelomonas uniformis* is based in part on the description and two of the three illustrations for *Trachelomonas scabra* var. *longicollis* Playfair (1915: 28 pl. IV: figs 5, 6, *non* 4). Skvortsov (1927: pl. XIV: fig. 21) appears to be a redrawing of Playfair (1915: pl. IV: fig. 6) since the neck is vertical rather than angled. Deflandre (1926) did not include *T. scabra* var. *longicollis* but the name appears in the figure captions (1927a: 93), although not in the text. Deflandre (1928: 658) commented that Skvortsov should have used the varietal epithet as the species epithet, however Skvortsov is able to use a different epithet at a different rank (ICN Art.: 24 Recommendation

<sup>2</sup> We herein **lectotypify** *T. tuberosa* var. *conspersa* Skvortsov with the Manchurian element (1925 ‘1926’: pl. v: fig. 49), **designated here**.

B2). Tell & Conforti (1986) initially made the combination *Strombomonas scabra* var. *longicollis* (Playfair) Tell & Conforti which was invalid as they did not cite the place of publication of the basionym. The combination was validated in Tell & Conforti (1988: 547) with three figures listed.

This species is recorded as being present in New South Wales by Day & al. (1995: 244) with Skvortsov (1927) as a reference. *T. scabra* var. *longicollis* is recorded for Australia by Conrad & van Meel (1952: 66) with Playfair (1915) as a reference. Day & al. (1995: 243) recorded the taxon as a synonym of *T. uniformis* in New South Wales, Queensland and the Northern Territory, citing Playfair (1915, NSW), McLeod (1975, QLD unpublished) and Thomasson (1986, NT). Entwisle & Nairn (2020) cited *T. scabra* var. *longicollis* for Australia.

Day & al. (1995: 243) did not include the New South Wales record of *Strombomonas scabra* var. *longicollis* for Australia. They did include the Northern Territory specimens cited by Thomasson (1986). *Strombomonas scabra* var. *longicollis* is part of the Australian flora in the Northern Territory (Thomasson 1986) and NSW (Playfair 1915). Day & al. (2009: 74) include the basionym as a cosmopolitan species within *Trachelomonas*.

**23. *Strombomonas scabra* var. *ovata* (Playfair) Tell & Conforti, *Nova Hedwigia* 46(3/4): 547, 1988.**

Basionym: *Trachelomonas scabra* var. *ovata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 28, pl. IV: figs 7, 8, 1915.

LT: Playfair 1915: pl. IV: fig. 8, designated here.

Heterotypic synonym: *Trachelomonas fossa* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 615, pl. XVI: fig. 67, 1927.

Replaced synonym: *Trachelomonas scabra* var. *ovata* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: 28, pl. IV: fig. 7, non 8, 1915.

LT: Playfair 1915: pl. IV: fig. 7, designated here.

Playfair (1915) described *Trachelomonas scabra* var. *ovata* from collections centred around Lismore, New South Wales. *Trachelomonas fossa* Skvortsov is based in part on the description and one of the two illustrations for *Trachelomonas scabra* var. *ovata* (fig. 7, non 8). Skvortsov (1927: pl. XIV, fig. 67) appears to be a redrawing of Playfair (1915: pl. IV: fig. 7). Skvortsov (1927) went on to name two varieties in the species:

- *Trachelomonas fossa* var. *angulata* Skvortsov *nom. illeg.* (1927: 615, pl. XVI: fig. 68) based in part on the description and one of the two illustrations for *Trachelomonas scabra* var. *ovata* Playfair (fig. 8, non 7), and
- *Trachelomonas fossa* var. *playfairii* Skvortsov *nom. illeg.* (1927: 615, pl. XVI: fig. 69) based upon the description and the illustration for *Trachelomonas scabra* var. *scrobiculata* Playfair (see sect. 26).

Deflandre (1926: 700 ff.) discussed the species and varieties of *Trachelomonas scabra* Playfair but did not discuss *T. fossa*. Tell & Conforti (1986) initially made the combination *Strombomonas scabra* var. *ovata* (Playfair) Tell & Conforti without the basionym. The combination was validated in Tell & Conforti (1988: 547) with two figures listed.

Day & al. (1995: 239) cited *T. fossa*, *T. fossa* var. *angulata* and *T. fossa* var. *playfairii* as current New South Wales taxa with Skvortsov (1927) as the reference. Entwisle & Nairn (2020) accepted *T. scabra* var. *ovata*.



**24. *Strombomonas scabra* var. *pygmaea* (Playfair) Tell & Conforti, *Nova Hedwigia* 46(3/4): 548, 1988.**

Basionym: *Trachelomonas scabra* var. *pygmaea* Playfair *Proceedings of the Linnean Society of New South Wales* 40: 29, pl. IV: fig. 21, 1915.

Homotypic synonym: *Trachelomonas kolkwitzii* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 613, pl. XVI: fig. 58, 1927.

LT: Playfair 1915: pl. IV: fig. 21, designated here.

Playfair based *Trachelomonas scabra* var. *pygmaea* on a collection from pool on a grassland at Wyrallah, New South Wales. *Trachelomonas kolkwitzii* Skvortsov is a legitimate renaming at species level, based upon Playfair's description and illustration for *Trachelomonas scabra* var. *pygmaea*. Skvortsov (1927: pl. XIV: fig. 58) appears to be a redrawing of Playfair (1915: pl. IV: fig. 21). Deflandre (1926: 701) and Conrad & van Meel (1952: 67) used the original Playfair taxonomy, but do not explain why they believe this taxon should not have species rank, and neither publication cite Skvortsov (1927). Tell & Conforti (1986) initially made the combination *Strombomonas scabra* var. *pygmaea* (Playfair) Tell & Conforti without indicating the basionym. The combination was validated in Tell & Conforti (1988: 548).

Day & al. (1995: 240, 243) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of this species in New South Wales. Entwisle & Nairn (2020) did not list any of the names.

**25. *Strombomonas scabra* var. *scrobiculata* (Playfair) Tell & Conforti, *Nova Hedwigia* 46(3/4): 548, 1988.**

Basionym: *Trachelomonas scabra* var. *scrobiculata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 28, pl. IV: fig. 9, 1915.

LT: Playfair 1915: pl. IV: fig. 9, designated here.

Playfair (1915) described *Trachelomonas scabra* var. *scrobiculata* based upon specimens collected at Lismore, New South Wales. As discussed above, Skvortsov (1927) sought to place the variety into his new species *T. fossa*, as *Trachelomonas fossa* var. *playfairii* Skvortsov *nom. illeg.* Deflandre (1926) and Conrad & van Meel (1952) did not include *T. scabra* var. *scrobiculata* in their treatments of *Trachelomonas*. Tell & Conforti (1986) initially made the combination *Strombomonas scabra* var. *scrobiculata* (Playfair) Tell & Conforti without the basionym. The combination was validated in Tell & Conforti (1988: 548) who designated the single illustration and thus the lectotype.

Day & al. (1995: 239, 243) cited *T. fossa* var. *playfairii* as current New South Wales taxa with Skvortsov (1927) as the reference. Entwisle & Nairn (2020) did not include these names.

**26. *Strombomonas schauinslandii* (Lemmermann) Deflandre, *Archive für Protistenkunde* 69: 594, 1930.**

Basionym: *Trachelomonas schauinslandii* Lemmermann, *Hedwigia* 48: 133, pl. 8: fig. 3, 1908.

Heterotypic synonym: *Trachelomonas schauinslandii* var. *minor* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 617, Text pl. fig. 4, 1927.

Replaced synonym: *Trachelomonas gibberosa* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: 34, pl. V: fig. 18, non 16, 17, 1915.

LT: Playfair 1915: pl. V: fig. 18, designated here.

Heterotypic synonym: *Trachelomonas schauinslandii* var. *radicans* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 617, text-pl.: fig. 5, 1927.

Replaced synonym: *Trachelomonas gibberosa* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: 34, pl. V: fig. 17, non 16, 18, 1915.

LT: Playfair 1915: pl. V: fig. 17, designated here.

*Trachelomonas schauinslandii* var. *minor* is based upon the description and illustration for *T. gibberosa* Playfair (1915: 31, pl. V: fig. 18 non 16<sup>3</sup>, 17). Skvortsov (1927: Text pl. fig. 4) appears to be a redrawing of Playfair (1915: pl. V: fig. 18).

*Trachelomonas schauinslandii* var. *radicans* is based upon the description and the illustration for *T. gibberosa* Playfair (1915: 31, pl. V: fig. 17, non 16, 18). Skvortsov (1927: Text pl. fig. 5) appears to be a redrawing of Playfair (1915: pl. V: fig. 17).

Deflandre (1927a: 50, 51) accepted *T. schauinslandii* and *T. gibberosa* as separate species and in Deflandre (1930: 594) he placed the two Skvortsov varieties under the name *Strombomonas schauinslandii* (Lemmermann) Deflandre. Conrad & van Meel (1952: 122) were clearly in agreement.

Day & al. (1995: 243) cited *T. schauinslandii* var. *minor* and *T. schauinslandii* var. *radicans* as current New South Wales taxa with Skvortsov (1927) as the reference. Entwisle & Nairn (2020) accepted *S. schauinslandii* as the correct name for this taxon in Australia.

**27. *Strombomonas triquetra*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 602, 1930.

Basionym: *Trachelomonas triquetra* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 34, pl. V: fig. 15, 1915.

LT: Playfair 1915: pl. V: fig. 15, designated here.

Playfair named *Trachelomonas triquetra* from Parramatta, New South Wales. Deflandre (1927a: 51) includes *T. triquetra* but subsequently makes the combination *Strombomonas triquetra* (Deflandre 1930). Conrad & van Meel (1957: 106) follow this taxonomy.

Day & al. (1995: 244) included *T. triquetra* with Playfair (1915) as a reference for the species in New South Wales. Entwisle & Nairn (2020) did not list any of the names.

**28. *Strombomonas urceolata*** (A.Stokes) Deflandre, *Archive für Protistenkunde* 69: 586, 1930.

*urceolata* was one of the species covered by Conrad & van Meel (1952: 116). Despite the basionym—*Trachelomonas urceolata* A.Stokes having been originally described from Brooklyn, New York, and not including any Australian references, Conrad & van Meel listed Australia as the only locality where the taxon occurred. As stated earlier, section 3, Playfair (1915: 31) was ambivalent about his use of *T. urceolata* although he later (Playfair 1921: 134) confirmed the presence of *T. urceolata*. *S. urceolata* was listed in a table by Thomasson (1986), Day & al. (1995: 235) and Entwisle & Nairn (2020).

**29. *Strombomonas urceolata* var. *elegans*** (Playfair) Deflandre, *Archive für Protistenkunde* 69: 588, 1930.

Basionym: *Trachelomonas napiformis* var. *elegans* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 33, pl. V: fig. 11, 1915.

Homotypic synonym: *Trachelomonas gicklhornii* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 616, text pl.: fig. 2, 1927.

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<sup>3</sup> See sect. 7.

**LT:** Playfair 1915: pl. V: fig. 11, designated here.

*Trachelomonas gicklhornii* is a legitimate renaming at species level, based upon the description and illustration for *T. napiformis* var. *elegans* Playfair (1915: 33 pl. V: fig. 11). Skvortsov (1927: test-pl.: fig. 2) appears to be a redrawing of Playfair (1915: pl. V: fig. 11). Deflandre (1930: 588) included the Playfair variety in *Strombomonas urceolata*. Conrad & van Meel (1952: 117) do not concur with this taxonomic assessment.

Day & al. (1995: 239, 241) included *T. gicklhornii* and *T. napiformis* var. *elegans* with both Playfair (1915) and Skvortsov (1927) as references, in New South Wales. Entwisle & Nairn (2020) included the current name, *S. urceolata* var. *elegans*.

**30. *Trachelomonas abrupta* var. *arcuata*** (Playfair) Deflandre, *Revue Générale de Botanique* 38: 695, 1926.

Basionym: *Trachelomonas australis* var. *arcuata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 20, pl. III: fig. 5, 1915.

**LT:** Playfair 1915: pl. III: fig. 5, designated here.

*Trachelomonas teres* var. *rotunda* Skvortsov (Skvortsov 1927: 608) is based upon the description and the illustration for *Trachelomonas australis* var. *arcuata* and is thus an illegitimate name. Deflandre (1926: 695) referred the Playfair variety to *Trachelomonas abrupta* Swirenko (1914: 638, type locality: Russia).

Conrad & van Meel (1952: 69) indicated *T. abrupta* var. *arcuata* occurred in Australia and Europe. Day & al. (1995: 236, 244) cited Playfair (1915) and Skvortsov (1927) for the locality data concerning the Playfair and Skvortsov varieties. Entwisle & Nairn (2020) did not cite these names.

**31. *Trachelomonas abrupta* var. *splendida*** (Playfair) Deflandre, *Revue Générale de Botanique* 38: 696, 1926.

Basionym: *Trachelomonas australis* var. *splendida* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 20, pl. III: fig. 4, 1915.

**LT:** Playfair 1915: pl. III: fig. 4, designated here.

*Trachelomonas cylindrica* var. *australica* Skvortsov (Skvortsov 1927: 610) was based upon the description and illustration for *Trachelomonas australis* var. *splendida* Playfair (1915) and is thus an illegitimate name.

Conrad & van Meel (1952: 68) included *T. australis* as a synonym of *T. abrupta* but do not include this variety. Day & al. (1995: 236, 238) cited an unpublished source as a record for *T. abrupta* in Queensland and Skvortsov (1927) for *T. cylindrica* var. *australica* in New South Wales. Entwisle & Nairn (2020) listed both earlier varietal names in the Australian flora.

**32. *Trachelomonas armata* f. *inevoluta*** Deflandre, *Revue Générale de Botanique* 38: 689, figs 321, 325, 1926.

Replaced synonym: *Trachelomonas ovalis* Playfair, *Proceedings of the Linnean Society of New South Wales* 39(1): 141, pl. VIII: fig. 4, 1914.

Homotypic synonym: *Trachelomonas hispida* var. *playfairii* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 606, pl. XIV: fig. 19, 1927.

**LT:** Deflandre 1926: fig. 321, designated here.

*Trachelomonas hispida* var. *playfairii* Skvortsov (1927) was based upon *Trachelomonas ovalis* Playfair *nom. illeg.* (1914), a later homonym of *Trachelomonas ovalis* Daday in Pascher & Lemmermann (1913: 150, fig. 285). Deflandre (1926: 647) accepts *T. ovalis* Daday and (Deflandre 1926: 689) synonymises *T. ovalis* Playfair with a new taxon *Trachelomonas armata* f. *inevoluta* Deflandre, the illustration (fig. 321) being an interpretation of Playfair (1914: pl. VIII: fig. 4). Skvortsov (1927: pl. XIV: fig. 19) also appears to be a redrawing of Playfair (1914: pl. VIII: fig. 4). Both *T. hispida* var. *playfairii* and *T. armata* f. *inevoluta* are legitimate replacement names for *T. ovalis* Playfair. We follow the Deflandre taxonomy and regard *T. armata* f. *inevoluta* as the correct name for this taxon.

Playfair (1915, 1921) referred new collections to *T. ovalis*. Day & al. (1995) synonymised the taxon with *Strombomonas ovalis* (Playfair) Deflandre, which has a different type, and referred to Playfair (1914, 1915, 1921). At no time did Playfair consider *T. ovalis* to be synonymous with *Trachelomonas urceolata* var. *ovalis* Playfair, the basionym of *S. ovalis*. Entwisle & Nairn (2020) continued to treat *T. ovalis* as a heterotypic synonym of *S. ovalis*. Conrad & van Meel (1952: 55) agreed with the taxonomic assessment of Playfair (1915) and Deflandre (1926). *Trachelomonas armata* f. *inevoluta* should remain a current taxon in the Australian flora.

**33. *Trachelomonas armata* var. *duplex*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 25, pl. III: fig. 20, 1915.

**LT:** Playfair 1915: pl. III: fig. 20, designated here.

*Trachelomonas armata* var. *duplex* Playfair is based upon a collection from Lismore, New South Wales. Conrad & van Meel (1952: 57) included this variety. Day & al. (1995: 236) cited Playfair (1915, 1921) and Thomasson (1986) for *T. armata* var. *duplex* in New South Wales and the Northern Territory. Entwisle & Nairn (2020) listed the variety in the Australian flora.

**34. *Trachelomonas armata* var. *granulata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 25, pl. III: fig. 18, 1915.

**LT:** Playfair 1915: pl. III: fig. 18, designated here.

*Trachelomonas armata* var. *granulata* Playfair is based upon collections from multiple sites in New South Wales. Deflandre (1926: 692) transferred the variety to *Trachelomonas dangeardiana* (as *Trachelomonas 'dangeardi'* var. *granulata* (Playfair) Deflandre. He later noted the earlier *Trachelomonas dangeardi* Skvortsov and proposed the replacement name *T. dangeardiana* Deflandre (1928: 665). Conrad & van Meel (1952) did not include *T. armata* var. *granulata* in their account or any Australian records of *T. dangeardiana*. Day & al. (1995: 236) cited Playfair (1915) for *T. armata* var. *granulata* in New South Wales. Entwisle & Nairn (2020) did not list the variety in the Australian flora.

**35. *Trachelomonas armata* var. *longispina*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 25, pl. IV: fig. 20, 1915.

**LT:** Playfair 1915: pl. IV: fig. 20, designated here.

*Trachelomonas armata* var. *longispina* Playfair is based upon collections from three sites in New South Wales. Conrad & van Meel (1952: 57) did not include this variety in their account. Day & al. (1995: 236) cited Playfair (1915, 1921) and Thomasson (1986) for *T. armata* var. *longispina* in New South Wales and the Northern Territory. Entwisle & Nairn (2020) listed the variety in the Australian flora.



36. *Trachelomonas armata* var. *sparsigranosa* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 25, pl. III: fig. 19, 1915.

LT: Playfair 1915: pl. III: fig. 19, designated here.

*Trachelomonas armata* var. *sparsigranosa* Playfair is based upon collections from multiple sites in New South Wales. Conrad & van Meel (1952) did not include this variety in their account. Day & al. (1995: 236) cited Playfair (1915) for *T. armata* var. *sparsigranosa* in New South Wales. Entwisle & Nairn (2020) did not list the variety in the Australian flora.

37. *Trachelomonas armata* var. *steinii* Lemmermann, *Abhandlungen herausgegeben vom Naturwissenschaftlichen Verein zu Bremen* 18: 165, 1906.

*Trachelomonas armata* var. *steinii* Lemmermann is based upon a collection from Sumatra. Deflandre (1926: 88) discussed the variety, as did Conrad & van Meel (1952: 56) with an extension of its distribution to Europe. Ling & Tyler (1986: 62) described a taxon they indicate to be this variety. Day & al. (1995: 236) cited Ling & Tyler (1986) and Thomasson (1986) for *T. armata* var. *longispina* in the Northern Territory. Day & al. (2009: 68) indicated that this variety is cosmopolitan. Entwisle & Nairn (2020) listed the variety in the Australian flora.

38. *Trachelomonas australica* (Playfair) Deflandre, *Revue Générale de Botanique* 38: 655, 1926. Basionym: *Trachelomonas hispida* var. *australica* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 21, pl. III: fig. 9, 1915.

LT: Playfair 1915: pl. III: fig. 9, designated here.

*Trachelomonas pelegrina* var. *hispida* Skvortsov (Skvortsov 1927: 608) is based upon the description and the illustration for *T. hispida* var. *australica* and is thus an illegitimate name. Deflandre (1926: 655) made the combination *T. australica* (Playfair) Deflandre based upon the Playfair variety. Deflandre (1926: fig. 246) is a redrawing of Playfair (1915: pl. III: fig. 9).

Conrad & van Meel (1952: 43) cited the species *T. australica* as part of the Australian euglenoid flora. Day & al. (1995: 236) cited Thomasson (1986) for locality data concerning the Northern Territory for *T. australica*. Entwisle & Nairn (2020) indicated that *T. australica* is part of the Australian flora.

39. *Trachelomonas australica* var. *granulata* (Playfair) Deflandre, *Revue Générale de Botanique* 38: 696, 1926.

Basionym: *Trachelomonas hispida* var. *granulata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 21, pl. III: figs 11, 12, 1915.

LT: Playfair 1915: pl. III: fig. 12, designated here.

*Trachelomonas pelegrina* var. *elongata* Skvortsov. (Skvortsov 1927: 608) is based upon the description and the illustrations for *Trachelomonas hispida* var. *granulata* Playfair and is thus an illegitimate name. Deflandre (1926: 655) included the variety within *T. australica*. Conrad & van Meel (1952: 43) followed Deflandre. Day & al. (2009: 61) included *Trachelomonas australica* var. *granulata* (Playfair) Deflandre as part of the Australian flora.

40. *Trachelomonas australis* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 19, pl. III: fig. 2, 1915.

Homotypic synonym: *Trachelomonas teres* var. *australica* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 608, pl. XVI: fig. 31, 1927.

**LT:** Playfair 1915: pl. III: fig. 2, designated here.

*Trachelomonas teres* var. *australica* Skvortsov (1927) is based upon the description and the illustration for *Trachelomonas australis*. Skvortsov (1927: pl. XIV: fig. 31) appears to be a redrawing of Playfair (1915: pl. III: fig. 2). Deflandre (1926: 695) regarded *T. australis* as a taxonomic synonym of *T. abrupta*.

Conrad & van Meel (1952: 68) retained *T. australis* as a heterotypic synonym of *T. abrupta* and indicated that the latter species is part of the euglenoid flora of Australia but provided no reasoning for their decision. Day & al. (1995: 236) cited Playfair (1915), an unpublished thesis, and Skvortsov (1927) for the locality data concerning *T. australis* and *T. teres* var. *australica*. They also cited (Day & al. 1995: 236) an unpublished work for locality data for *T. abrupta*. Entwisle & Nairn (2020) supported both *T. abrupta* and *T. australis* as accepted names. At the present time, there appears to be records for two entities in Australia but whether these entities represent a single taxon or not is presently difficult to determine. Day & al. (2009: 72) appeared to support continued separation of the two species.

**41. *Trachelomonas australis* var. *conica*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 20, pl. III: fig. 6, 1915.

**LT:** Playfair 1915: pl. III: fig. 6, designated here.

*Trachelomonas nobilis* var. *australica* Skvortsov (Skvortsov 1927: 613) is based upon the description and the illustration for *Trachelomonas australis* var. *conica* and is thus an illegitimate name. Deflandre (1926) places the Playfair species *Trachelomonas australis* into *Trachelomonas abrupta* (p. 695) but specifically excludes the two Playfair varieties *Trachelomonas australis* var. *conica* and *Trachelomonas australis* var. *subdenticulata*<sup>4</sup> Playfair (p. 696). Conrad & van Meel (1952) did not include the Playfair taxa in reference to Australia.

Day & al. (1995: 236, 241) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of *T. nobilis* var. *australica* in New South Wales. Entwisle & Nairn (2020) did not list these names.

**42. *Trachelomonas bacillifera*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 22, pl. III: fig. 13, 1915.

**LT:** Playfair 1915: pl. III: fig. 13, designated here.

*Trachelomonas bacillifera* Playfair is based upon collections from multiple sites in New South Wales. Deflandre (1926: 655) and Conrad & van Meel (1952: 42) include the species in their accounts. Day & al. (1995: 236) cited Playfair (1915, 1921) and Thomasson (1986) for *T. bacillifera* in New South Wales and the Northern Territory. Entwisle & Nairn (2020) listed the species in the Australian flora.

**43. *Trachelomonas bacillifera* var. *globosa*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 132, pl. VII: fig. 3, 1921.

**LT:** Playfair 1921: pl. VII: fig. 3, designated here.

*Trachelomonas bacillifera* var. *globosa* Playfair is based upon collections from Brisbane, Queensland. Deflandre (1926, 1927a) and Conrad & van Meel (1952) did not include the variety in their accounts. Day & al. (1995: 237) cited Playfair (1921) for *T. bacillifera* in New South

<sup>4</sup> See section 118.

Wales, although Playfair did not indicate any other collections. Entwisle & Nairn (2020) listed the variety in the Australian flora.

- 44. *Trachelomonas bacillifera* var. *minima*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 22, pl. III: fig. 15, 16, 1915.

LT: Playfair 1915: pl. III: fig. 15, designated here.

*Trachelomonas bacillifera* var. *minima* Playfair is based upon collections from numerous locations in New South Wales. Playfair (1921: 132) listed further collections. Deflandre (1926: 655) and Conrad & van Meel (1952: 43) included the variety in their accounts.

Day & al. (1995: 237) included Playfair (1915, 1921) as references for the distribution of this variety in New South Wales. Entwisle & Nairn (2020) did not list the variety in the Australian flora.

- 45. *Trachelomonas bacillifera* var. *ovalis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 22, pl. III: fig. 14, 1915.

LT: Playfair 1915: pl. III: fig. 14, designated here.

*T. bacillifera* var. *ovalis* was described by Playfair based upon New South Wales material from numerous collections.

Day & al. (1995: 237, 239) considered *T. bacillifera* var. *ovalis* to be a synonym of *Trachelomonas hispida* (Perty) F. Stein, citing Playfair (1915, 1921) Ling & Tyler (1986), May (1988) and May & Powell (1986), but did not discuss the reasons for this opinion. Not one of the references cited by Day & al. (1995) synonymised *T. hispida* and *T. bacillifera* var. *ovalis*. Playfair (1921: 132) and Deflandre (1926: 651, 655) each treated *T. hispida* and *T. bacillifera* var. *ovalis* as separate taxa. Conrad & van Meel (1952: 42, 48) included both taxa as part of the Australian flora. Entwisle & Nairn (2020) did not list *T. bacillifera* var. *ovalis* as part of the Australian flora.

- 46. *Trachelomonas botanica*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 9, pl. I: fig. 9, 1915.

LT: Playfair 1915: pl. I: fig. 9, designated here.

*Trachelomonas botanica* Playfair is known from a single collection from Botany, New South Wales. Deflandre (1926, 1927a, 1927b, 1928) did not include this taxon. Conrad & van Meel (1952: 61) included the species. Day & al. (1995: 237) cited Playfair (1915) for New South Wales. Entwisle & Nairn (2020) did not list the species in the Australian flora.

- 47. *Trachelomonas botanica* var. *borealis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 130, pl. VI: fig. 16, 1921.

LT: Playfair 1921: pl. VI: fig. 16, designated here.

*Trachelomonas botanica* var. *borealis* Playfair is known from a single collection from Lismore, New South Wales. Deflandre (1926, 1927a, 1927b, 1928'1927') and Conrad & van Meel (1952) did not include this taxon. Day & al. (1995: 237) cited Playfair (1915) for New South Wales. Entwisle & Nairn (2020) did not list the species in the Australian flora.

- 48. *Trachelomonas botanica* var. *granulosa*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 9, 1915.

*Trachelomonas botanica* var. *granulosa* Playfair is based upon a single collection from Botany, New South Wales. No illustration was provided by Playfair for this variety, and in the absence of a specimen the name is impossible to typify. Deflandre (1926, 1927a, 1927b, 1928) and Conrad & van Meel (1952) did not include this taxon. Day & al. (1995: 237) cited Playfair (1915) for New South Wales. Entwisle & Nairn (2020) did not list the species in the Australian flora.

- 49. *Trachelomonas botanica* var. *minor*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 10, pl. I: fig. 10, 1915.

**LT:** Playfair 1915: pl. I: fig. 10, designated here.

*Trachelomonas botanica* var. *minor* Playfair is based upon a single collection from Auburn, New South Wales. Deflandre (1926, 1927a, 1927b, 1928) and Conrad & van Meel (1952) did not include this taxon. Day & al. (1995: 237) cited Playfair (1915) for New South Wales. Entwisle & Nairn (2020) did not list the species in the Australian flora.

- 50. *Trachelomonas bulla* var. *australis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 11, pl. I: fig. 13, 1915.

**LT:** Playfair 1915: pl. I: fig. 13, designated here.

*Trachelomonas lacustris* var. *australis* Skvortsov (Skvortsov 1927: 612) is based upon the description and the illustration for *Trachelomonas bulla* var. *australis* and is thus an illegitimate name. Deflandre (1926: 705–706) combined the concept of Playfair (*T. bulla* var. *australis*) and *Trachelomonas lacustris* Skvortsov (1925b: 340, type locality: Harbin, Manchuria) *non* Drezepolski into a new species *Trachelomonas ampulliformis* Deflandre *nom. illeg.*, a later homonym of *Trachelomonas ampuliformis* [*sic*] Roll. Later, Deflandre (1927b: 287) proposed the replacement name *Trachelomonas vas* for this taxon. As this name is ultimately based upon two taxa from separate continents, different hemispheres, and vastly different climates, we prefer to retain the Playfair name for the Australian element. In line with this, we herein lectotypify *T. vas* Deflandre with the Manchurian element (the illustration in Skvortsov, 1925b: pl. V: fig. 25).

Conrad & van Meel (1952: 77) included the Playfair name as a synonym of *Trachelomonas vas* Deflandre. Day & al. (1995: 237, 240) cited Playfair (1915, 1921) and Skvortsov (1927, var.) as the basis for distributional records of *T. lacustris* var. *australis* in New South Wales. Entwisle & Nairn (2020) did not list any of these names. Day & al. (2009: 78) included Australia in their distribution for *Trachelomonas vas*, with Playfair (1915) as the reference.

- 51. *Trachelomonas cactacea*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 18, pl. II: fig. 17, 1915.

**LT:** Playfair 1915: pl. II: fig. 17, designated here.

*Trachelomonas cactacea* Playfair is based upon a single collection from the Botanic Gardens, Sydney (adjacent to the New South Wales Herbarium), New South Wales. Deflandre (1926: 646) and Conrad & van Meel (1952: 81) included the species. Day & al. (1995: 237) cited Playfair (1915) for New South Wales. Entwisle & Nairn (2020) did not list the species in the Australian flora.

- 52. *Trachelomonas cervicula*** A.Stokes, *Proceedings of the American Philosophical Society* 28: 75, fig. 11, 1890.

Homotypic synonym: *Trachelomonas volvocina* var. *cervicula* (A.Stokes) Lemmermann, *Die Süßwasserflora Deutschlands, Österreichs und der Schweiz*. 146, 1913.



Heterotypic synonym: *Trachelomonas varians* Deflandre, *nom. illeg.* *Bulletin de la Société Botanique de France* 71: 1124, pl. X: figs 6, 7, 1924.

Replaced synonym: *Trachelomonas volovocina* var. *subglobosa* Lemmermann, *Die Süßwasserflora Deutschlands, Österreichs und der Schweiz*. 146, 1913.

Heterotypic synonym: *Trachelomonas volovocina* var. *pascheri* Drezepolski, *Rozprawy i Wiadomosci z Muzeum im. Dzieduszyckich* 7/8 [1921-22]: 4, 14, pl. I: fig. 14, 1923.

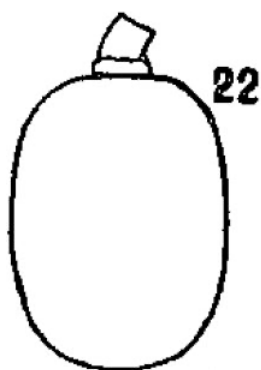
*Trachelomonas varians* Deflandre was an intended renaming at species level of *Trachelomonas volovocina* var. *subglobosa* Lemmermann (Pascher & Lemmermann 1913: 146); however, Deflandre also included *Trachelomonas volovocina* var. *cervicula* (A.Stokes) Lemmermann in synonymy (basionym: *T. cervicula* A.Stokes), which has priority, and thus *Trachelomonas varians* Deflandre is an illegitimate name as it included in synonymy a name that should have been adopted. *Trachelomonas subglobosa* Playfair (1915: 35) was in existence and so Deflandre raised the taxon with the new name *T. varians*. He later (Deflandre 1926: 525) included a further synonym *Trachelomonas volovocina* var. *pascheri* Drezepolski. Conrad & van Meel (1952: 24) included *T. varians* in their monograph with solely a European distribution.

Playfair (1915: 19) recorded two specimens which he referred to *T. volovocina* var. *cervicula* at Auburn, New South Wales. Skvortsov (1927: 619) listed this record at the end of his monograph under *T. cervicula* without a distribution record. Day & al. (1995: 237) listed *T. cervicula* as present in New South Wales. Entwisle & Nairn (2020) did not include the taxon in their list.

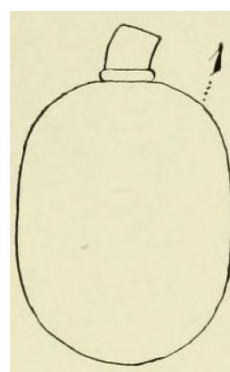
**53. *Trachelomonas crebea* var. *australica*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 607, pl. XVI: fig. 22, 1927.

LT: Skvortsov 1927: pl. XVI: fig. 22, designated here (Fig. 1).

*Trachelomonas crebea* var. *australica* is based upon the description and the illustration for *Trachelomonas euchlora* ‘forma’ Playfair (1915: 15, pl. III: fig. 1, our Fig. 2). Skvortsov (1927: pl. XIV: fig. 22) appears to be a redrawing of Playfair (1915: pl. III: fig. 1, see illustration above). Deflandre (1928: 658) commented that Skvortsov had not considered his description of *Trachelomonas playfairii* Deflandre (sect. 102). Conrad & van Meel (1952: 64) described the species but not the variety and did not include Australia in the distribution. *T. crebea* var. *australica* was included by Day & al. (1995: 238), but the varietal name was not listed by Entwisle & Nairn (2020). *T. crebea* var. *australica* is a valid name that has been lost from listings of the Australian euglenoid flora.



**Fig. 1.** *Trachelomonas crebea* var. *australica*  
Skvortsov 1927: pl. XVI: fig. 22.



**Fig. 2.** *Trachelomonas euchlora* ‘forma’  
Playfair 1915: pl. III: fig. 1.

**54. *Trachelomonas conica*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 17, pl. II: figs 8, 9, 1915.

Homotypic synonym: *Trachelomonas obtusa* var. *glabra* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 613, pl. XVI: fig. 57, 1927.

LT: Playfair 1915: pl. II: fig. 9, designated here.

*Trachelomonas obtusa* var. *glabra* Skvortsov (1927) is based upon the description and illustration for *Trachelomonas conica* Playfair (1915: 17, pl. II: fig. 9, *non* 8). Skvortsov (1927: pl. XVI: fig. 57) appears to be a redrawing of Playfair (1915: pl. II: fig. 9). The autonym *Trachelomonas conica* var. *conica* was created in 1915 when Playfair created the name *Trachelomonas conica* var. *granulata* Playfair (1915: 17 pl. II: fig. 10). Deflandre (1926: 649) and Conrad & van Meel (1952: 88) discussed the species *Trachelomonas conica* and the var. *granulata*, without reference to Skvortsov.

Day & al. (1995: 237, 241) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of *Trachelomonas obtusa* var. *glabra* in New South Wales, they also included an unpublished record from Queensland. Entwisle & Nairn (2020) listed *Trachelomonas conica* as part of the Australian flora.

**55. *Trachelomonas conica* var. *granulata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 17, pl. II: fig. 10, 1915.

LT: Playfair 1915: pl. II: fig. 10, designated here.

Deflandre (1926: 649) and Conrad & van Meel (1952: 88) discussed the status of *T. conica* var. *granulata*.

Day & al. (1995: 237) cited Playfair (1915) as the basis for distributional records of *T. conica* var. *granulata* in New South Wales. Entwisle & Nairn (2020) did not list the variety as part of the Australian flora.

**56. *Trachelomonas conica* var. *ovata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 17, pl. II: fig. 12, 1915.

LT: Playfair 1915: pl. II: fig. 12, designated here.

*Trachelomonas orenburgica* var. *crenulaticollis* Skvortsov (1927: 614, as ‘*orenburgika*’) is based upon the description and the illustration for *T. conica* var. *ovata* and is thus an illegitimate name. Deflandre (1926: 652) synonymised the Playfair variety with *Trachelomonas polonica* Drezepolski. Conrad & van Meel (1952: 48) followed Deflandre but did not include Australia in their distribution for *T. polonica*.

Day & al. (1995: 237, 241) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of *T. orenburgica* var. *crenulaticollis* in New South Wales. Entwisle & Nairn (2020) did not list any of these names. It is unclear whether *T. conica* var. *ovata* and *T. polonica* are the same taxon but since Conrad & van Meel (1952) did not include Australia in their distribution of *T. polonica*, it may be prudent to retain *T. conica* var. *ovata* for Australian representatives.

**57. *Trachelomonas ehrenbergii*** R.A. Townsend & Huisman, *nom. nov.*

Replaced synonym: *Trachelomonas coronata* Playfair, *nom. illeg.*, *Proceedings of the Linnean Society of New South Wales* 46: 132, pl. VI: figs 29, 30, 1921, *non Trachelomonas coronata*

Ehrenberg, *Mikrogeologie* 20, pl. XXXV.A [35.A]: fig. 10, 1854b, nec *Trachelomonas coronata* Swirenko, *Archiv für Hydrobiologie und Planktonkunde* 9: 363, pl. 19: fig 18, 1914.

LT: Playfair 1921: pl. VI: fig. 29, designated here.

Etymology: named for Christian Gottfried Ehrenberg (1795–1876).

*Trachelomonas coronata* was described by Playfair for material collected from Lismore, New South Wales. Ehrenberg (1854a: 234, 237) first used the binomial *Trachelomonas coronata* for an organism found in ‘sandy moss soil’ from the ‘Bosjesmannsland’ the then Dutch Cape Colony (presently incorporated into South Africa). Ehrenberg (1854a: 242, 246, 251) regarded this taxon as a ‘form’ of *Trachelomonas laevis* as *T. laevis*  $\beta$  *coronata*, with a South African distribution and later (p. 303) with a Chilean distribution. Ehrenberg (1854b, pl. XXXV.A [35.A]: fig. 10 (our Fig 3) validated the name with the type locality ‘Bergmehl als Schminke der Feuerländer, Amerika, Süd-Spitze’ and an illustration (Ehrenberg 1854b: 20, legend plate 35 A<sup>5</sup>). Ehrenberg (1856: 79) includes *Trachelomonas coronata* for New Jersey, USA.

*Trachelomonas coronata* Swirenko, a later homonym and therefore illegitimate name, is discussed by Deflandre (1926: 526) and Conrad & van Meel (1952: 34).

Day & al. (1995: 237) cited Playfair (1921) as the basis for distributional records of *T. coronata* Playfair in New South Wales. Entwisle & Nairn (2020) did not list this name.

*Trachelomonas coronata* Playfair requires a new name, above, as it is a later homonym and therefore illegitimate name of *Trachelomonas coronata* Ehrenberg.

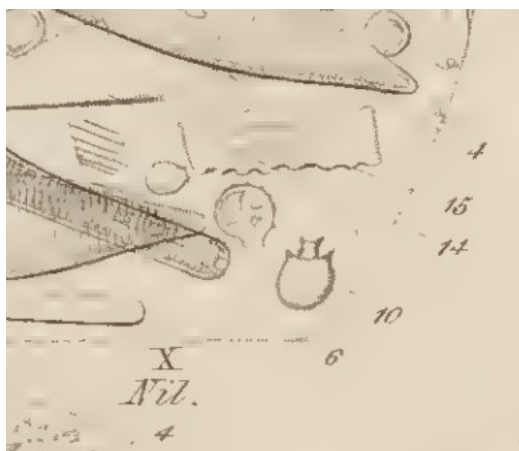


Fig. 3. *Trachelomonas coronata* Ehrenberg 1854: pl. XXXV: fig. 10.

58. *Trachelomonas coronetta* (Playfair) Deflandre, *Bulletin de la Société Botanique de France* 74(2): 286, 1927b.

Basionym: *Trachelomonas volvocina* var. *coronetta* Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 130, pl. VI: fig. 14, 1921.

LT: Playfair 1921: pl. VI: fig. 14, designated here.

Playfair (1921) named this variety based upon collections from Lismore, New South Wales. The variety was not discussed by Deflandre (1926, 1927a) but he did subsequently raise the variety to species level (1927b). Conrad & van Meel (1952) did not discuss this taxon.

<sup>5</sup> Possibly representing a fossil.

Day & al. (1995: 245) listed *T. volvocina* var. *coronetta* with Playfair (1921) as a reference. Entwisle & Nairn (2020) did not list either of the names.

**59. *Trachelomonas crassata* var. *collaris*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 606, pl. XVI: fig. 14, 1927.

Replaced synonym: *Trachelomonas oblonga* var. *australiana* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: pl. I: figs 17, 21, non 18, 19, 20, 1915.

LT: Playfair 1915: pl. I: fig. 21, designated here.

Heterotypic synonym: *Trachelomonas subglobosa* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 35, pl. V: fig. 21, non fig. 20, 1915.

LT: Playfair 1915: pl. V: fig. 21, designated here.

Skvortsov used two non-type illustrations of *T. oblonga* var. *australiana* Playfair (1915: pl. I: figs 17, 21) and a single illustration of *Trachelomonas subglobosa* Playfair (1915: 35, pl. V: fig. 21) in the protologue of *Trachelomonas crassata* var. *collaris*. Skvortsov (1927: pl. XVI: fig. 14) appears to be a redrawing of Playfair (1915: pl. I: fig. 21) since the curve is angled to the left rather than to the right.

*T. crassata* var. *collaris* was recorded as being present in New South Wales by Day & al. (1995: 237) with Skvortsov (1927) as a reference. Entwisle & Nairn (2020) recorded *T. oblonga* var. *australiana*, but the context is unclear.

**60. *Trachelomonas crassata* var. *oblonga*** (Playfair) Deflandre, *comb. nov.*

Basionym: *Trachelomonas granulosa* var. *oblonga* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 19, pl. II: fig. 20, 1915.

LT: Playfair 1915: pl. II: fig. 20, designated here.

*Trachelomonas crassata* var. *granulata* Skvortsov (Skvortsov 1927: 606) was based upon the description and illustration of *T. granulosa* var. *oblonga* and is thus an illegitimate name. Deflandre (1926: 697) included *T. granulosa* var. *oblonga* as a ‘*species inquirenda*’; he later (1927b: 658) argued that Skvortsov (1927) should not have proposed a new varietal epithet. This is formally proposed here.

Day & al. (1995: 237) accepted *T. crassata* var. *granulata* as the name for the taxon in the New South Wales flora with Skvortsov (1927) as the reference. Conrad & van Meel (1952: 72) and Entwisle & Nairn (2020) did not cite either varietal name.

**61. *Trachelomonas crassata* var. *rotunda*** (Playfair) Deflandre, *comb. nov.*

Basionym: *Trachelomonas pusilla* var. *rotunda* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 12, pl. I: fig. 26, 1915.

LT: Playfair 1915: pl. I: fig. 26, designated here.

*Trachelomonas crassata* var. *hyalina* Skvortsov (1927: 606) was based upon the description and illustration of *T. pusilla* var. *rotunda* and is thus an illegitimate name. Deflandre (1927a: 77) placed this variety in a list of excluded taxa. He then (Deflandre 1927b: 658) argued that Skvortsov should have made a simple *comb. nov.* and not a new varietal name. This has not formally been completed and is proposed here.

Day & al. (1995: 237) accepted *T. crassata* var. *hyalina* as the name for the taxon in the New South Wales flora with Skvortsov (1927) as the reference. Entwisle & Nairn (2020) did not cite either variety.



**62. *Trachelomonas cylindrica* var. *decollata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 13, pl. I: fig. 30, 1915.

**LT:** Playfair 1915: pl. I: fig. 30, designated here.

Deflandre (1926: 648) discussed *Trachelomonas cylindrica* var. *decollata* and was followed by Conrad & van Meel (1956: 83).

Day & al. (1995: 238) cited *T. cylindrica* var. *decollata* and the reference Playfair (1915) as the basis for distributional records in New South Wales. Entwisle & Nairn (2020) listed the variety.

**63. *Trachelomonas cylindrica* var. *punctata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 13, pl. I: fig. 31, 1915.

**LT:** Playfair 1915: pl. I: fig. 31, designated here.

Deflandre (1926: 648) synonymised *Trachelomonas cylindrica* var. *punctata* Playfair with *T. lacustris* Drezepolski, *nom. illeg.* described by Drezepolski (1925, *Kosmos, Warszawa* 50(1A): 217 [262 French], [pl. II] ryc. [fig.] 67) from Poland.

Deflandre (1926: 648) discussed *Trachelomonas lacustris* and argued incorrectly (1928: 658) that *Trachelomonas lacustris* Skvortsov (1925b: 340, fig. 23) was the latter homonym. It is clear from the dates of the publications in question that the Skvortsov protologue has precedence (see Table 1). We herein lectotypify *T. lacustris* Skvortsov with the Manchurian element (1925b: fig. 23 designated here, reproduced in Sowerby 1930: 217, pl. XLII).

**Table 1.** Dates of publication and evidence for priority for publications of Skvortsov and Drezepolski

Reference	Dated	Evidence
Skvortzov, B.V. (1925b)	June 1925	Skvortzov, B.V. (1925); Williams & Reid 2001
Drezepolski (1925)	Late 1925, early 1926	Poland Museum Library imprint on issue, date September 20, 1926

Conrad & van Meel (1952: 84) followed the taxonomy of Deflandre (1926). Clearly, *T. lacustris* Drezepolski requires a new name.

Day & al. (1995: 238) cited *T. cylindrica* var. *punctata* and referenced Playfair (1915) as the basis for distributional records in New South Wales. Entwisle & Nairn (2020) did not list any of these names.

**64. *Trachelomonas dangeardiana* var. *glabra*** (Playfair) Deflandre, *Bulletin de la Société Botanique de France* 74: 692, 1926 (as ‘dangeardi’)

Basionym: *Trachelomonas armata* var. *glabra* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 24, pl. III: fig. 17, 1915.

**LT:** Playfair 1915: pl. III: fig. 17, designated here.

*Trachelomonas dangeardiana* var. *glabra* is based upon *Trachelomonas armata* var. *glabra*, a variety collected from multiple locations in New South Wales. Deflandre (1926) placed the variety within his species *T. dangeardiana*. Conrad & van Meel (1952) did not include this taxon in their monograph.

Day & al. (1995: 236, 238) listed the taxon as present in New South Wales. Entwisle & Nairn (2020) included the taxon in their list.

**65. *Trachelomonas dubia* var. *granulosa* (Playfair) Skvortsov** *Berichte der deutsche botanischen Gesellschaft* 44(9): 609, 1927.

Basionym: *Trachelomonas pulcherrima* var. *granulosa* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 14, pl. I: fig. 41, 1915.

LT: Playfair 1915: pl. I: fig. 41, designated here.

Deflandre (1926: 648) indicated that *T. pulcherrima* var. *granulosa* is not part of this species and Deflandre (1928: 660) indicated that this entity should be a variety of *Trachelomonas lacustris* Drezepolski and even states “var. *granulosa* (Playf.) Defl. comb. nov.” but then followed that with “(var. inquir.)”, which invalidates the name (Art. 36.1).

Conrad & van Meel (1952) did not include this taxon in their monograph. Day & al. (1995: 238, 242) cited Playfair (1915) and Skvortsov (1927) for the locality data concerning the two varietal names. Entwisle & Nairn (2020) did not cite any of these varietal names.

**66. *Trachelomonas elegantissima* (West) Playfair,** *Proceedings of the Linnean Society of New South Wales* 40: 32, 1915.

Basionym: *Dinobryon elegantissimum* West, *Journal of the Linnean Society, Botany* 39: 82, text fig 10k, 1909.

Homotypic synonym: *Trachelomonas caudata* var. *elegantissima* (West) Playfair, *Proceedings of the Linnean Society of New South Wales* 37: 546, 1913 (excluding material at hand; see *T. elegantissima* var. *ovata*)

LT: West 1909: text fig. 10k, designated here.

Playfair (1913: 546–547) recorded *Trachelomonas caudata* var. *elegantissima* from the Paramatta River, New South Wales, whereas West’s original material came from the Yan Yean Reservoir near Melbourne, Victoria. Playfair later raised the variety to a species, stating (Playfair 1915: 32) “... there are too many points of difference for this form to be conveniently arranged as a variation of *Tr. caudata* (Ehr.) Stein. I have therefore made it a separate type.” This taxon is possibly not a euglenoid.

Deflandre (1927a: 75) excluded the taxon from his monograph. Conrad & van Meel (1952) did not include the taxon. Day & al. (1995: 237, 238) cited Playfair (1913, 1915, 1921) for New South Wales (they do not include Victoria). Entwisle & Nairn (2020) listed the species in the Australian flora.

**67. *Trachelomonas elegantissima* var. *ovata* Playfair,** *Proceedings of the Linnean Society of New South Wales* 40: 32, pl. V: fig. 9, 1915.

[*Trachelomonas caudata* var. *elegantissima* auct. non (West) Playfair: *Proceedings of the Linnean Society of New South Wales* 37: 546, pl. LVII: fig. 11, 1913]

LT: Playfair 1915, pl. V: fig. 9, designated here.

Playfair (1913) collected *Trachelomonas caudata* var. *elegantissima* from the Paramatta River, New South Wales, which he later (1915) raised to species. Playfair (1915: 32) wished to distinguish the Sydney catchment variety from the Melbourne catchment variety. He did this by providing a new name for the Sydney catchment variety, *T. elegantissima* var. *ovata*. The Melbourne catchment variety being attached to the autonym (sect. 66).

Deflandre (1927a: 75) excluded the taxon from his monograph. Conrad & van Meel (1952) did not include the taxon. Day & al. (1995: 237) cited Playfair (1915) for New South Wales. Entwisle & Nairn (2020) did not list the variety in the Australian flora.

**68. *Trachelomonas elliptica*** (Playfair) Deflandre, *Bulletin de la Société Botanique de France* 74: 286, 1927b.

Basionym: *Trachelomonas ampullula* var. *elliptica* Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 131, pl. IV: fig. 26, 1921.

**LT:** Playfair 1921: pl. IV: fig. 26, designated here.

*Trachelomonas elliptica* is based upon *Trachelomonas ampullula* var. *elliptica* from Lismore, NSW. Deflandre (1927b) raised the variety to species rank, which appears to have been missed by many later botanists. Conrad & van Meel (1952) did not include this taxon in their monograph. Day & al. (1995) and Entwisle & Nairn (2020) did not include the taxon in their lists.

**69. *Trachelomonas euchlora*** var. *playfairii* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 609, pl. XVI: fig. 38, 1927 (as ‘*Playfairii*’).

[*Trachelomonas oblonga* auct. non Lemmermann: Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 11, pl. I: figs 14, 16, non 15, 1915].

**LT:** Skvortsov 1927: pl. XVI: fig. 38, designated here.

*Trachelomonas euchlora* var. *playfairii* is based upon part of the description and the illustration for *Trachelomonas oblonga* Lemmermann (Playfair 1915: 11 pl. I: figs 14, 16, non fig. 15). Skvortsov (1927: pl. XVI: fig. 38) appears to be a redrawing of Playfair (1915: pl. I: fig. 16). Deflandre (1928: 658) indicated that Skvortsov had created a later homonym but we have yet to discover the earlier name. Conrad & van Meel (1952: 63) listed *T. oblonga* in Australia. Day & al. (2009: 47) indicated *T. oblonga* is cosmopolitan.

Day & al. (1995: 238, 241) cited Playfair (1915, 1921) and Skvortsov (1927) and an unpublished work as the basis for distributional records of *T. euchlora* var. *playfairii* in New South Wales and Queensland. Entwisle & Nairn (2020) listed *T. oblonga* as part of the Australian flora. Without an in-depth taxonomic and genomic study, the actual placement of this entity cannot be determined.

**70. *Trachelomonas eurystoma*** var. *klebsii* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 30, pl. IV: fig. 14, 1915.

**LT:** Playfair 1915: pl. IV: fig. 14, designated here.

*Trachelomonas striata* var. *simplex* Skvortsov (Skvortsov 1927: 614) is based upon the description and the illustration for *Trachelomonas eurystoma* var. *klebsii* and is thus illegitimate. Deflandre (1926: 698) accepted *Trachelomonas eurystoma* var. *klebsii* as a variety. Conrad & van Meel (1952: 42) also employed the original Playfair taxonomy.

Day & al. (1995: 239, 242, 244) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of this variety in New South Wales. On page 242, Day & al. indicated that there is a relationship between the Playfair variety and *Trachelomonas reticulata* G.A.Klebs and gave Skvortsov as the reference. This is incorrect; however, Playfair (1915: 30) discussed this possible synonymy. Entwisle & Nairn (2020) did not list any of these names.

**71. *Trachelomonas eurystoma* var. *parva*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 131, pl. VI: fig. 28, 1921.

**LT:** Playfair 1921: pl. VI: fig. 28, designated here.

Playfair described this variety based upon a single collection from Lismore New South Wales. The variety is not included by Deflandre (1926, 1927a, b), Skvortsov (1927) or Conrad & Van Meel (1956).

Day & al. (1995: 239) cited Playfair (1921) when they include the variety. Entwisle & Nairn (2020) did not list the variety.

**72. *Trachelomonas eurystoma* var. *producta*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 29, pl. IV: fig. 13, 1915.

**LT:** Playfair 1915: pl. IV: fig. 13, designated here.

*Trachelomonas reticulata* var. *australica* Skvortsov (1927: 614) is based upon the description and the illustration for *Trachelomonas eurystoma* var. *producta* and is thus an illegitimate name. Playfair stated that this variety represents a new name for *Trachelomonas eurystoma* F.Stein (1883: pl. XXII: fig. 36). Deflandre (1926: 698) accepted *Trachelomonas eurystoma* var. *producta* as a variety, stating that this variety is indeed different from the typical variety. Conrad & van Meel (1952: 42) also used the Playfair taxonomy.

Day & al. (1995: 239, 242) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of this species in New South Wales. Entwisle & Nairn (2020) did not list any of these names.

**73. *Trachelomonas fukiensis* var. *australica*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 612, pl. XVI: fig. 55, 1927.

[*Trachelomonas cylindrica* auct. non Ehrenberg: Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 13, pl. I: fig. 28, 1915].

**LT:** Skvortsov 1927: pl. XVI: fig. 55, designated here.

*Trachelomonas fukiensis* var. *australica* is based upon the description and illustration for *Trachelomonas cylindrica* auct. non. Ehrenberg *sensu* Playfair (1915: 13, pl. I: fig. 28 [non 29]). Skvortsov (1927: pl. XIV: fig. 55) appears to be a redrawing of Playfair (1915: pl. I: fig. 28). Deflandre (1926: 648) discussed the Playfair material without reference to Skvortsov. Conrad & van Meel (1952) did not include this taxon in reference to Australia. The nominal variety *T. cylindrica* var. *cylindrica* was automatically created (Art. 26.3) in 1915 when Playfair created the name *Trachelomonas cylindrica* var. *decollata* Playfair (1915: 13, pl. I: fig. 30). It is doubtful however, that Playfair's 'sensu' version of *T. cylindrica* represents the autonym.

Day & al. (1995: 238, 239) cited Playfair (1915) and Skvortsov (1927) and unpublished sources as the basis for distributional records of the Skvortsov taxon in New South Wales, Queensland and Victoria. Entwisle & Nairn (2020) incorrectly listed the Ehrenberg species as part of the Australian flora. The name for this taxon in Australia is *Trachelomonas fukiensis* var. *australica*.



**74. *Trachelomonas gracilis*** (Playfair) Deflandre, *Bulletin de la Société Botanique de France* 74: 286, 1927b.

Basionym: *Trachelomonas ampullula* var. *gracilis* Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 131, pl. VI: fig. 25, 1921.

LT: Playfair 1921: pl. VI: fig. 25, designated here.

*Trachelomonas gracilis* is based upon *Trachelomonas ampullula* var. *gracilis*, described originally from Guildford, New South Wales. Deflandre (1927b) raised the variety to species rank, which seems to have been overlooked by some authors. Conrad & van Meel (1952) did not include this taxon in their monograph.

Day & al. (1995: 239) listed the name but did not provide an authority. Entwisle & Nairn (2020) did not include the taxon in their list.

**75. *Trachelomonas granulata*** Ehrenberg, *Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin* 1841: 425, 1843. [Non *Trachelomonas granulata* Svirenko *Travaux de la Société des naturalistes à l'Université Impériale de Kharkow* 46: 82, 87, pl: I [1]: figs 10, 11, 19, 1913, ≡ *Strombomonas granulata* (Svirenko) Fott & Komárek, *Preslia* 32: 136, 1960.]

*Trachelomonas granulata* Ehrenberg is based upon a collection by J.W. Bailey (1811–1857) in 1842 from Wrentham, Massachusetts (Ehrenberg 1843: 354). Ehrenberg (1854a: 8) includes *T. granulata* for the Plantagenet Shire<sup>6</sup> from a collection made by J.A.L. Preiss (1811–1883). Deflandre (1926: 702) and Conrad & van Meel (1952: 95) included the latter homonym in their monographs. Fott & Komárek (1960: 136) made the combination *Strombomonas granulata* based upon the later homonym. Day & al. (1995) and Entwisle & Nairn (2020) did not include *T. granulata* in their lists.

**76. *Trachelomonas granulosa*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 18–19, pl. II: fig. 18, 1915.

Homotypic synonym: *Trachelomonas kelloggii* var. *australiana* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 605, pl. XVI: fig. 12, 1927.

LT: Playfair 1915: pl. II: fig. 18, designated here.

Deflandre (1926: 697) included *T. granulosa* as a ‘*species inquirenda*’. *Trachelomonas kelloggii* var. *australiana* Skvortsov (1927: 605) was based upon the description and illustration of *T. granulosa*. Skvortsov (1927: pl. XVI: fig. 12) appears to be a redrawing of Playfair (1915: pl. II: fig. 18). Deflandre (1928: 658) proposed the combination *Trachelomonas kelloggii* var. *granulosa* (Playfair) Deflandre, however this is an illegitimate name as Skvortsov’s var. *australiana* is the earliest available name at this rank.

Conrad & van Meel (1952: 72), Day & al. (1995: 239, 240) and Entwisle & Nairn (2020) revert to the species *T. granulosa* as the accepted name for this taxon in the Australian flora. Day & al. (2009: 74) indicated that *T. granulosa* is found worldwide.

**77. *Trachelomonas hesperia*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 134, pl. VII: fig. 11, 1921.

LT: Playfair 1921: pl. VII: fig. 11, designated here.

<sup>6</sup> At the time of collection, the Shire of Plantagenet, Western Australia was centered on the town of Albany (Taylor 1860: 11)

*Trachelomonas hesperia* was described by Playfair from Perth Water (Swan River), Western Australia. The species was not discussed by Deflandre (1926, 1927 a, b) or Skvortsov (1927). Deflandre (1930: 558) discussed this species among others and indicated that it is more closely related to taxa within the *Dinobryaceae*.

Day & al. (1995: 239) included *T. hesperia* with Playfair (1921) as a reference and New South Wales as a distribution, despite Playfair not including an eastern Australian distribution. Entwisle & Nairn (2020) listed the name.

**78. *Trachelomonas hexangulata*** Svirenko, *Archiv für Hydrobiologie und Planktonkunde* 9: 646, pl. XX: figs 23–25, 1914.

Heterotypic synonym: *Trachelomonas ampullula* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 17, pl. II: fig. 6, 1915.

LT: Playfair 1915: pl. II: fig. 6, designated here.

*Trachelomonas ampullula* was described by Playfair for New South Wales. Deflandre (1927a: 29) subsequently realised the taxon was conspecific with *Trachelomonas hexangulata* and Conrad & van Meel (1952: 90) agreed with this decision.

Day & al. (1995) did not include *T. hexangulata*. Entwisle & Nairn (2020) listed the name.

**79. *Trachelomonas hexangulata* var. *major*** (Playfair) Deflandre, *Revue Générale de Botanique* 38: 29, 1927a.

Basionym: *Trachelomonas ampullula* var. *major* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 17 pl. II: fig. 7, 1915.

LT: Playfair 1915: pl. II: fig. 7, designated here.

*Trachelomonas hexangulata* var. *playfairii* Skvortsov (Skvortsov 1927: 614) is based upon the description and the illustration for *T. ampullula* var. *major* and is thus an illegitimate name. Deflandre (1927a: 29) subsequently made the combination *T. hexangulata* var. *major* and Conrad & van Meel (1952: 90) agreed with this decision.

Day & al. (1995: 236, 239) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of *T. hexangulata* var. *playfairii* in New South Wales. Entwisle & Nairn (2020) did not list any of these names.

**80. *Trachelomonas hispida* var. *rectangularis*** Schröder, *Forschungsberichte aus der Biologischen Station zu Plön* 5: 50, I[1]: fig. 8, 1897.

Playfair (1915: 21) noted this taxon from three sites in New South Wales. Skvortsov (1927: 610) transferred the variety to *Trachelomonas cylindrica* but in doing so created an illegitimate name, *Trachelomonas cylindrica* var. *playfairii* as the Schröder name had priority at the varietal level. Deflandre (1927a: 75) placed *T. hispida* var. *rectangularis* in a list of taxa excluded from *Trachelomonas*. The variety is not included in the account of Conrad & van Meel (1952).

Day & al. (1995: 238, 240) accepted the Skvortsov name for this variety in the New South Wales flora with Skvortsov (1927) as the reference, whereas Entwisle & Nairn (2020) accepted the Schröder name.

**81. *Trachelomonas intermedia* var. *elegans*** (W. Conrad) Skvortsov, *Arbeiten der Biologischen Sungari-Station* / B 1 (2): 25, 1925.

[*Trachelomonas bacillifera* var. *minima* auct. non Playfair: *Proceedings of the Linnean Society of New South Wales* 40: 22, pl. II: fig. 16 non 15, 1915]. *Trachelomonas bacillifera* var. *minima* Playfair, s.s. is treated above (see section 44).

Skvortsov (1927: 619) synonymised *T. bacillifera* var. *minima* Playfair, p.p. (1915: fig. 16, non 15) with *Trachelomonas intermedia* var. *elegans*. Day & al. (1995: 240) accepted the Skvortsov record, whereas Entwisle & Nairn (2020) did not include this variety.

**82. *Trachelomonas intermedia* var. *fusca*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 605, pl. XVI: fig. 8, 1927.

[*Trachelomonas intermedia* auct. non P.A. Dangeard: Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 9, pl. I: fig. 5, 1915].

LT: Skvortsov 1927: pl. XVI: fig. 8, designated here.

*Trachelomonas intermedia* var. *fusca* is based upon the description given by Playfair (1915: 9, pl. I: fig. 5) of *Trachelomonas intermedia* P.A. Dangeard. Skvortsov (1927: pl. XVI: fig. 8) appears to be a redrawing of Playfair (1915: pl. I: fig. 5).

The most recent study of *T. intermedia* in Australia, Scott & Prescott (1958), followed Playfair (1915) in stating that the species was present in Arnhem Land (Northern Territory). Conrad & van Meel (1952: 61) did not include *T. intermedia* var. *fusca* or Australian material in their distribution for *T. intermedia*. The northern Australian distribution was not acknowledged by Entwisle & Nairn (2020) although it was included by Day & al. (1995: 240), who referred the record to *T. intermedia* var. *fusca*. Therefore, Day & al. (1995: 240) determined Skvortsov (1927) to be correct and included the Northern Territory specimens.

It should be acknowledged that there is a species record in Australia for *T. intermedia* made by Scott & Prescott (1958) and there appears to be at least one record for northern New South Wales of the variety. Day & al. (2009: 50) indicated that *T. intermedia* is a cosmopolitan species.

**83. *Trachelomonas intermedia* var. *levis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 9, pl. I: figs 6–8, 1915.

LT: Playfair 1915: pl. I: fig. 6, designated here.

Heterotypic synonym: *Trachelomonas laevis* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 619, 1927, *nom. illeg.*, non *Trachelomonas laevis* Ehrenberg, 1843.

Replaced synonym: *Trachelomonas intermedia* var. *levis* Playfair, p.p., *Proceedings of the Linnean Society of New South Wales* 40: 9, pl. I: fig. 8, non 6, 7, 1915.

LT: Playfair 1915: pl. I: fig. 8, designated here.

Playfair (1915) describes this variety from four sites in New South Wales. Deflandre (1926: 589) places the variety in synonymy with *Trachelomonas dybowskii* Drezepolski (1923: 5, 15) and observed that Playfair's variety does not relate to *Trachelomonas oblonga* Lemmermann (1899: 344). Skvortsov (1927: 619) elevated the variety to species level (as *laevis*) using only fig. 8 of the protologue. This is a later homonym of *Trachelomonas laevis* Ehrenberg (1843: 425). On the same page Skvortsov apparently agreed with Deflandre that the remaining figures were allied to *T. dybowskii*. Conrad & van Meel (1952: 63) place both *T. intermedia* var. *levis* and *T. dybowskii* in *T. oblonga*. More recent northern hemisphere taxonomic accounts have kept *T. dybowskii* and

*T. oblonga* separate (see Guiry & Guiry 2021).

Day & al. (1995: 238, 240) accepted the Drezepolski and Skvortsov species names for this variety in the New South Wales flora with Skvortsov (1927) as the reference. Entwisle & Nairn (2020) use the Lemmermann species name.

**84. *Trachelomonas intermedia* var. *subglobosa*** (Playfair) Deflandre, *Bulletin de la Société Botanique de France* 74(4): 658, 1928.

Basionym: *Trachelomonas granulosa* var. *subglobosa* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 19, pl. II: fig. 19, 1915.

LT: Playfair 1915: pl. II: fig. 19, designated here.

*Trachelomonas intermedia* var. *pulchra* Skvortsov (Skvortsov 1927: 604) was based upon the description and illustration of *T. granulosa* var. *subglobosa* Playfair and is thus an illegitimate name. Deflandre (1926: 590) indicated that the varieties described by Skvortsov (1927) under this species cannot be separated based upon their descriptions and included *T. granulosa* var. *subglobosa* as a ‘*species inquirenda*’ (1926: 697). Deflandre corrected the nomenclature with the name *T. intermedia* var. *subglobosa* (Playfair) Deflandre (1928: 658).

Day & al. (1995: 240) accepted the Skvortsov name for this variety in the New South Wales flora with Skvortsov (1927) as the reference. Conrad & van Meel (1952: 70) and Entwisle & Nairn (2020) used the basionym as the accepted name without comment.

**85. *Trachelomonas laevis*** Ehrenberg, *Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin* 1841: 425, 1843.

Ehrenberg (1843) described *Trachelomonas laevis* based upon collections provided to him from Andover, Mass. USA (p. 349) Boston, Mass. USA (p. 350). He also possibly included a collection from Quito, Columbia (p. 309), although by p. 390 Ehrenberg had included the Quito material in the taxon. Ehrenberg (1854a) recorded *Trachelomonas laevis* for three sites in Australia: Van Diemen’s Land (Tasmania) collected by Adolph (Abraham) Schayer prior to him returning to Germany in 1842 (McFarlane 2010); Preiss collections from Princess Royal Harbour (Albany) and Plantagenet (Great Southern Region, Western Australia) (p. 8) and a Franz Wilhelm Sieber (1789–1844) collection from Port Jackson (Sydney), New South Wales (p. 9; via the Kunth Herbarium 1842<sup>7</sup>).

**86. *Trachelomonas lismorensis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 26, text fig. 5, 1915.

LT: Playfair 1915: text fig. 5, designated here.

Playfair (1915) described this species from Lismore, New South Wales. Deflandre (1926: 585) includes the species as does Conrad & van Meel (1952: 19). Conrad & van Meel include *Trachelomonas lismorensis* var. *mirabilis* Playfair whereas Deflandre (1926: 585) keeps the latter variety separate, acceding to Playfair who indicates they may not be the same species (Playfair 1921: 133).

Day & al. (1995: 240) indicated that *T. lismorensis* is the accepted name of this species in New South Wales and the Northern Territory, citing Playfair (1915) and Ling & Tyler (1986). The latter reference (p. 62) however states that the material they have is from ‘somewhere between *T.*

<sup>7</sup> Sieber was collecting around Port Jackson in 1823 (George 2009)



*lismorensis* and *T. lismorensis* var. *biseriata* Playfair'. Entwisle & Nairn (2020) listed *T. lismorensis*.

**87. *Trachelomonas lismorensis* var. *biseriata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 27, text fig. 7, 1915.

**LT:** Playfair 1915: text fig. 7, designated here.

Playfair (1915) described this variety from Lismore, New South Wales and later (Playfair 1921: 133) from further sites in the state. Deflandre (1926: 585) included the variety as do Conrad & van Meel (1952: 19).

Day & al. (1995: 240) indicated that *T. lismorensis* var. *biseriata* is the accepted name for this variety in New South Wales. Entwisle & Nairn (2020) do not include the variety.

**88. *Trachelomonas lismorensis* var. *inermis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 27, pl. III: fig. 21, 1915.

**LT:** Playfair 1915: pl. III: fig. 21, designated here.

Playfair (1915) described this variety from three sites in New South Wales. Deflandre (1926: 523) questioned whether *T. lismorensis* var. *inermis* should be included with *Trachelomonas volvocina* var. *compressa* Drezepolski but later Deflandre (1926: 585) included the variety in his account of *Trachelomonas*. Playfair (1915) had commented that at rest this taxon can appear similar to *Trachelomonas volvocina* Ehrenberg. Skvortsov (1927: 619) synonymised the variety with *Trachelomonas depressa* Svirenko (1915: 127). Conrad & van Meel (1952: 19) included *T. lismorensis* var. *inermis* in their account.

Day & al. (1995: 238, 240) indicated that *T. depressa* is the accepted name for records of this species in New South Wales citing Skvortsov (1927). They also list *T. volvocina* var. *compressa* (p. 245) based upon an unpublished work. Entwisle & Nairn (2020) listed *T. volvocina* var. *compressa*.

**89. *Trachelomonas lismorensis* var. *mirabilis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 27, text-fig. 6, 1915.

**LT:** Playfair 1915: text-fig. 6, designated here.

Playfair (1915) described this variety from Lismore, New South Wales and later (Playfair 1921: 133) from further sites in the state. Deflandre (1926: 585) included the variety.

Day & al. (1995: 240) indicated that *T. lismorensis* var. *mirabilis* is the accepted name this variety in New South Wales. Entwisle & Nairn (2020) do not include the variety.

**90. *Trachelomonas lismorensis* var. *oblonga*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 27 pl. III: fig. 22, 1915.

**LT:** Playfair 1915: pl. III: fig. 22, designated here.

*Trachelomonas flava* var. *australica* Skvortsov (Skvortsov 1927: 612, pl. XVI: fig. 50) is based upon the description and the illustration for *T. lismorensis* var. *oblonga*; the name is illegitimate as *Trachelomonas lismorensis* var. *oblonga* Playfair was a valid and legitimate name. Conrad & van Meel (1952: 19) follow the taxonomy of Playfair.

Day & al. (1995: 239, 241) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of *T. flava* var. *australica* in New South Wales. Entwisle & Nairn (2020) do not list any of these names.

- 91. *Trachelomonas oblonga* var. *attenuata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 12, pl. I: figs 22, 23, 1915.

**LT:** Playfair 1915: pl. I: fig. 22, designated here.

*Trachelomonas proxima* var. *lismorensis* Skvortsov (Skvortsov 1927: 612, pl. XVI: fig. 53) is based upon the description and the illustration for *Trachelomonas oblonga* var. *attenuata* and is thus illegitimate. Deflandre (1926) discusses the Playfair species (p. 588) and this Playfair variety (p. 589 under var. *attenuata*). Conrad & van Meel (1952) did not include this taxon in their treatise.

Day & al. (1995: 241, 242) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of *T. proxima* var. *lismorensis* in New South Wales. Entwisle & Nairn (2020) do not list any of these names.

- 92. *Trachelomonas oblonga* var. *australica*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 12, pl. I: figs 17–21, 1915.

**LT:** Playfair 1915: pl. I: fig. 20, designated here.

Heterotypic synonyms: *Trachelomonas wermelii* var. *paludosa* (Skvortsov) Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 43: 307, 1925a.

*Trachelomonas wermelii* var. *paludosa* (Skvortsov) Skvortsov 1925a: 307 was described based upon *Trachelomonas volvocina* var. *paludosa* Skvortsov (1917: 66, pl. IV: fig. 18). Skvortsov (1927: 618) states that *T. wermelii* var. *paludosa* is equivalent to *Trachelomonas oblonga* var. *australica* Playfair (1915: 12, pl. I: fig. 20, non figs 17–19, 21). Deflandre (1926: 589) discussed *T. oblonga* var. *australica* and later (Deflandre 1927a: 78) updated the description of the variety.

*Trachelomonas wermelii* Skvortsov is an illegitimate name as Skvortsov included *Trachelomonas longicollis* Wermel (1924) as *Trachelomonas wermelii* var. *longicollis* (Wermel) Skvortsov. Wermel's epithet *longicollis* has priority at the species level.

Conrad & van Meel (1952) did not include *Trachelomonas wermelii* var. *paludosa* in their monograph. They did however include *Trachelomonas oblonga* var. *australica* (p. 63).

*Trachelomonas wermelii* var. *paludosa* is recorded as being present only in New South Wales by Day & al. (1995) with Skvortsov (1927) as a reference, whereas Entwisle & Nairn (2020) stated the correct name is *Trachelomonas oblonga* var. *australica*.

- 93. *Trachelomonas oblonga* var. *scabra*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 12, pl. I: fig. 24, 1915.

Homotypic synonym: *Trachelomonas planctonica* var. *scabra* (Playfair) Skvortsov *Berichte der deutsche botanischen Gesellschaft* 44(9): 605, 1927

**LT:** Playfair 1915: pl. I: fig. 24, designated here.

*Trachelomonas planctonica* var. *scabra* (Skvortsov 1927: 605) was based upon the description of *T. oblonga* var. *scabra*. Deflandre (1926: 589) indicated that the Playfair variety was not part of *T. oblonga* but did not indicate where the variety should be placed. Conrad & van Meel

(1952: 70) synonymised *T. oblonga* var. *scabra* with *Trachelomonas incertissima* Deflandre, while commenting that this latter species is insufficiently described. *T. incertissima* has not been associated with the Australian euglenoid flora.

Day & al. included the taxon as *T. planctonica* var. *scabra* (1995: 241, 242, as ‘planktonica’) and Entwisle & Nairn (2020) did not list any of the names associated with this entity. Using the name *T. incertissima* for an entity in the Australian flora based upon the nomenclatural history provided here would not be sensible and until the matter is further clarified the name *Trachelomonas oblonga* var. *scabra* Playfair should be used.

**94. *Trachelomonas ovalis* var. *lata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 10, 1915.

*Trachelomonas kelloggii* var. *laevis* Skvortsov (Skvortsov 1927: 605) was based upon the description of *T. ovalis* var. *lata* and is thus an illegitimate name. Deflandre (1927a: 76) placed this variety in a list of excluded taxa.

There was no illustration in the protologue upon which to typify the name. Day & al. (1995: 241) accepted *Trachelomonas kelloggii* var. *laevis* for a taxon in the New South Wales flora with Skvortsov (1927) as the reference. Entwisle & Nairn (2020) did not list any of the names associated with this entity.

This taxon, if it exists, appears to have been described once (Playfair 1915) for quite possibly a single individual collected at Lismore, New South Wales. The name reoccurs in the literature based only upon the initial description. As there are no clear distinguishing features in the protologue, *T. ovalis* var. *lata* should be regarded as a name of uncertain application.

**95. *Trachelomonas ovalis* var. *minor*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 10, pl. I: fig. 12, 1915.

LT: Playfair 1915: pl. I: fig. 12, designated here.

Playfair (1915) described this variety from Lismore, New South Wales. Deflandre (1927a: 76) specifically exclude the variety from his discussion, as did Conrad & van Meel (1952).

Day & al. (1995: 240) indicated that *T. ovalis* var. *minor* was the accepted name of this variety in New South Wales. Entwisle & Nairn (2020) did not include the variety.

**96. *Trachelomonas ovalis* var. *scrobiculata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 10, 1915.

This taxon appears to have been described once (Playfair 1915) for quite possibly a single individual collected at Lismore, New South Wales. The name recurs in the literature based only upon the initial description. There are no distinguishing features in the protologue and no illustration to serve as a type, *T. ovalis* var. *scrobiculata* is a name of uncertain application. Deflandre (1927a: 76) specifically excluded the variety from his discussion, as did Conrad & van Meel (1952).

Day & al. (1995: 241) accepted *T. ovalis* var. *scrobiculata* for the variety in the New South Wales flora with Playfair (1915) as the reference. Entwisle & Nairn (2020) did not include the variety.

**97. *Trachelomonas paucispinosa*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 133, pl. VII: fig. 6, 1921.

**LT:** Playfair 1921: pl. VII: fig. 6, designated here.

This species was described by Playfair from Lismore, New South Wales. The species was not included in the accounts of Deflandre (1926, 1927a, 1927b, 1928) or Conrad & van Meel (1952).

Day & al. (1995: 242) accepted *T. paucispinosa* in the New South Wales flora with Playfair (1921) as the reference. Entwisle & Nairn (2020) did not include the species.

**98. *Trachelomonas pelegrina*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 608, pl. XVI: fig. 27, 1927.

Replaced synonym: *Trachelomonas australis* var. *obesa* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 19, pl. III: fig. 3, 1915.

Homotypic synonyms: *Trachelomonas abrupta* var. *obesa* (Playfair) Deflandre, *Revue Générale de Botanique* 38: 692, 1926; *Trachelomonas obesa* (Playfair) Deflandre nom. illeg. *Bulletin de la Société Botanique de France* 74(4): 658, 1928'1927'

**LT:** Playfair 1915: pl. III: fig. 3 designated here.

*Trachelomonas pelegrina* is a legitimate renaming at species level, based upon the description and the illustration for *Trachelomonas australis* var. *obesa* Playfair (1915). Deflandre (1926) had earlier made the combination *Trachelomonas abrupta* var. *obesa* (Playfair) Deflandre. Deflandre (1928: 658) used this Skvortsov example to argue that the available epithet 'obesa' should have been used for the species name and in doing so made the combination *Trachelomonas obesa* (Playfair) Deflandre, an illegitimate name. *T. obesa* is a homotypic synonym of *Trachelomonas pelegrina*.

Conrad & van Meel (1952: 68) referred the basionym to *T. abrupta* var. *obesa* without reference to *T. pelegrina* or *T. obesa*. Day & al. (1995: 242) cited Skvortsov (1927) for the locality data for *T. pelegrina* without reference to Conrad & van Meel (1952). Entwisle & Nairn (2020) did not cite any of the names listed in this section. Deflandre believed that this taxon deserved species rank, and that case, *T. pelegrina* should be used for this taxon in an Australian context.

**99. *Trachelomonas pepo*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 611, pl. XVI: fig. 46, 1927.

Replaced synonym: *Trachelomonas volzii* var. *australis* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 15, pl. II: fig. 2, 1915.

**LT:** Playfair 1915: pl. II: fig. 2, designated here.

*Trachelomonas pepo* is a valid and legitimate name at the species level, based upon the description and the illustration for *Trachelomonas volzii* var. *australis* Playfair (1915: 15, pl. II: fig. 2). Skvortsov (1927: pl. XIV: fig. 46) appears to be a redrawing of Playfair (1915: pl. II: fig. 2). Deflandre (1927a: 27) included a discussion of the species and varieties of *Trachelomonas volzii* Lemmermann as did Conrad & van Meel (1952: 79 ff). In both cases they did not discuss *Trachelomonas pepo*.

Day & al. (1995: 242, 245) cited Skvortsov (1927) for *T. pepo* in New South Wales. Entwisle & Nairn (2020) did not list these taxa.

**100. *Trachelomonas planctonica*** var. *australica* (Playfair) Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 605, 1927.

Basionym: *Trachelomonas oblonga* var. *australica* Playfair, p.p., *Proceedings of the Linnean Society of New South Wales* 40: 12, pl. I: figs 18, 19, non 17, 20, 21, 1915.



LT: Playfair 1915: pl. I: fig. 19, designated here.

*Trachelomonas planctonica* var. *australica* (Playfair) Skvortsov (1927: 605) was based, in part, on the description and two of the five illustrations of *Trachelomonas oblonga* var. *australica* in Playfair (1915). Skvortsov (1927: pl. XVI: figs 9, 10) appear to be redrawn versions of Playfair (1915: pl. I: figs 18, 19) [Skvortsov fig. 9 is Playfair fig. 19; Skvortsov fig. 10 is Playfair fig. 18]. As Skvortsov (1927) reused Playfair's varietal name, rather than proposing a new name (which he did in most other situations) it is apparent that he regarded figs 18 and 19 as representative of the type.

Day & al. (1995: 242, as 'planktonica') included this taxon as a current name. Entwisle & Nairn (2020) reverted to the basionym as the current name. They therefore clearly infer that all five figures in the description of *T. oblonga* var. *australica* are included. This is clearly in conflict with *Trachelomonas crassata* var. *collaris* and *Trachelomonas wermelii* var. *paludosa* (both based upon Playfair's taxon, in part), which they also listed as part of the Australian flora.

101. *Trachelomonas playfairii* Deflandre, *Bulletin de la Société Botanique de France* 71: 1125, pl. X [10]: figs 14, 15, 1924.

LT: Deflandre 1924: pl. X [10]: fig. 14, designated here (Fig. 4).

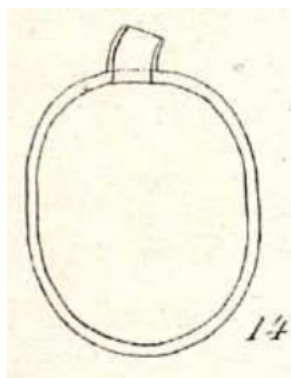


Fig. 4. *Trachelomonas playfairii* Deflandre 1924: pl. X [10]: fig. 14

*Trachelomonas playfairii* is a new name for *Trachelomonas euchlora* 'forma' Playfair (1915: 15). Deflandre (1928: 658) commented that Skvortsov had not considered his description of this species when describing *T. crebea* var. *australica* (see No. 54, above). The problem is that Deflandre, while accepting that Playfair's taxon was not an example of *T. euchlora*, described *T. playfairii* without the basal ring at the base of the curved neck as described by Playfair (cf. Playfair 1915: 15, pl. III: fig. 1 and Deflandre 1924: 1125, pl. X [10]: figs 14, 15) and therefore excluded *T. euchlora* 'forma' Playfair from *T. playfairii*. Deflandre (1927a: 32) discussed *T. playfairii* with figs 580–582 and the synonymy *Trachelomonas euchlora* 'forma' Playfair. Later in Deflandre (1927a: 95) four figures are included (579–582). Of the four figures 579–582, only figure 579 represents that of Playfair pl. III: fig. 1 with both a basal ring and curved neck but was not included with the text (p. 32) of *T. playfairii*.

Note: Frenguelli (1935: 37) made the combination *Clericia playfairii* (Deflandre) Frenguelli for fossil material.

Conrad & van Meel (1952: 62) indicated that *T. playfairii* is part of the Australian euglenoid flora. Day & al. (1995: 242) and Entwisle & Nairn (2020) listed *T. playfairii* (but see discussion below for *Trachelomonas pulcherrima* var. *lismorensis*).

**102. *Trachelomonas pulcherrima*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 13, pl. I: figs 32, 33, 1915.

**LT:** Playfair 1915: pl. I: fig. 33, designated here.

Homotypic synonym: *Trachelomonas regularis* var. *glabra* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 611, pl. XVI: fig. 47, 1927.

Heterotypic synonym: *Trachelomonas dubia* var. *australiana* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 609, pl. XVI: fig. 36, 1927.

Replaced synonym: *Trachelomonas pulcherrima* Playfair, *p.p.*, *Proceedings of the Linnean Society of New South Wales* 40: 13 pl. I: fig. 32, non 33, 1915.

**LT:** Playfair 1915: pl. I: fig. 32, designated here.

*Trachelomonas regularis* var. *glabra* Skvortsov (1927: 611, pl. XVI: fig. 47) is based upon the description and one of two illustrations for *Trachelomonas pulcherrima* (fig. 33, non 32). Skvortsov (1927: pl. XIV: fig. 47) appears to be a redrawing of Playfair (1915: pl. I: fig. 33). Deflandre (1926: 647) discussed *T. pulcherrima* and numerous varieties, he made no further comment regarding this Skvortsov name.

*Trachelomonas dubia* var. *australiana* Skvortsov (1927: 609, pl. XVI: fig. 36) is based upon the description and one of two illustrations for *T. pulcherrima* Playfair (1915: fig. 32 non fig. 33). Skvortsov (1927: pl. XVI: fig. 36) appears to be a redrawing of Playfair (1915: pl. I: fig. 32). Deflandre (1926: 647) discussed *T. pulcherrima* and numerous varieties, he made no further comment regarding this Skvortsov name.

Conrad & van Meel (1952: 59) indicated *T. pulcherrima* is part of the euglenoid flora of Australia. Day & al. (1995: 238, 242) cited Skvortsov (1927) for the locality data concerning his varieties; they do not include the species *T. pulcherrima* but do include its varieties. Entwisle & Nairn (2020) list *T. pulcherrima* as the accepted name.

**103. *Trachelomonas pulcherrima* var. *latior*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 13, pl. I: figs 34, 35, 1915.

**LT:** Playfair 1915: pl. I: fig. 34, designated here.

Playfair (1915) described this variety from two sites in New South Wales. Deflandre (1926: 647) included the variety in his account of *Trachelomonas*. Skvortsov (1927: 619) created *Trachelomonas dubia* var. *glabra*, an illegitimate name based upon *T. pulcherrima* var. *latior* Playfair.

Day & al. (1995: 238, 242) cited Playfair (1915) and accepted the Skvortsov variety as part of the New South Wales flora. Entwisle & Nairn (2020) did not list any of these names.

**104. *Trachelomonas pulcherrima* var. *ovalis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 14, pl. I: fig. 36, 1915.

**LT:** Playfair 1915: pl. I: fig. 36 designated here.

*Trachelomonas regularis* var. *australiana* Skvortsov is an illegitimate name (Skvortsov 1927: 611) based upon the Playfair description and the illustration for *Trachelomonas pulcherrima* var. *ovalis*.

Conrad & van Meel (1952) did not include *T. pulcherrima* var. *ovalis* in their monograph. Day & al. (1995: 242) cited Playfair (1915) and Skvortsov (1927) and accepted the Skvortsov variety as part of the New South Wales flora. Entwisle & Nairn (2020) did not list any of these names.

**105. *Trachelomonas pulcherrima* var. *lismorensis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 14, pl. I: figs 39, 40, 1915.

**LT:** Playfair 1915: pl. I: fig. 39, designated here.

*Trachelomonas playfairii* Skvortsov (Skvortsov 1927: 611) is a later homonym of *Trachelomonas playfairii* Deflandre (1924: 1125, pl. X [10]: figs 14, 15) and is thus an illegitimate name. Skvortsov based the name on *Trachelomonas pulcherrima* var. *lismorensis*. A discussion of *T. playfairii* Deflandre appears above (see sect. 102 above).

Conrad & van Meel (1952: 60) listed *T. pulcherrima* var. *lismorensis* as being part of the Australian euglenoid flora. Day & al. (1995: 242) and Entwisle & Nairn (2020) have incorrectly referred *T. pulcherrima* var. *lismorensis* to *Trachelomonas playfairii* Deflandre. The current name for this taxon is *T. pulcherrima* var. *lismorensis*. It is found in New South Wales (Playfair, 1915) and Queensland (Ling & Tyler, 1986 as *T. playfairii*, a different taxon nomenclaturally).

**106. *Trachelomonas pulcherrima* var. *minor*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 14, pl. I: figs 37, 38, 1915.

**LT:** Playfair 1915: pl. I: fig. 37, designated here.

Playfair used two New South Wales collections for the protologue and later recollected the variety (Playfair 1921). *Trachelomonas oblonga* var. *australica* Skvortsov (Skvortsov 1927: 608) is a later homonym of *T. oblonga* var. *australica* Playfair and is thus an illegitimate name. Skvortsov based the variety on one of two illustrations of *Trachelomonas pulcherrima* var. *minor* Playfair (1915: 14, pl. I: fig. 38, non fig. 37). This latter homonym is not used with respect to taxa in the Australian euglenoid flora. Deflandre (1926: 647) and Conrad & van Meel (1952: 60) included *T. pulcherrima* var. *minor* in their accounts.

Day & al. (1995: 242) cited Playfair (1915, 1921) as the basis for distributional records of *T. pulcherrima* var. *minor* in New South Wales. Entwisle & Nairn (2020) do not list the variety.

**107. *Trachelomonas punctata*** (Playfair) Conrad & van Meel, *Mémoires du Musée Royal d'Histoire Naturelle de Belgique* 124: 31, 1952.

Basionym: *Trachelomonas volvocina* var. *punctata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 9, pl. I: fig. 2, 1915.

**LT:** Playfair 1915: pl. I: fig. 2, designated here.

Playfair described *Trachelomonas volvocina* var. *punctata* from two sites in New South Wales. Skvortsov created a later homonym *Trachelomonas volvocina* var. *punctata* Skvortsov and thus an illegitimate name (1917: 66). Deflandre (1926: 524) included *T. volvocina* var. *punctata* Playfair in his account of the genus *Trachelomonas*. Conrad & van Meel (1952) elevated *T. volvocina* var. *punctata* Playfair to species level.

Day & al. (1995: 245) cited Playfair (1915) and unpublished data as the basis for distributional records of *T. volvocina* var. *punctata* in eastern Australia. Entwisle & Nairn (2020) listed *T. volvocina* var. *punctata*

**108. *Trachelomonas pusilla*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 12, pl. I: fig. 25, 1915.

**LT:** Playfair 1915: pl. I: fig. 25, designated here (unknown locality in New South Wales).

Playfair described this species from four sites in New South Wales. Deflandre (1926: 590) and Conrad & van Meel (1952: 75) included the species in their account of the genus.

Day & al. (1995: 242) cited Playfair (1915) and an unpublished thesis as the basis for distributional records of *T. pusilla* in Australia. Entwisle & Nairn (2020) listed the Playfair species as part of the Australian flora.

**109. *Trachelomonas pusilla* var. *punctata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 12, pl. I: fig. 27, 1915.

**LT:** Playfair 1915: pl. I: fig. 27, designated here.

*Trachelomonas ovoides* var. *australiana* Skvortsov (Skvortsov 1927: 612), was based upon the description and the illustration of *T. pusilla* var. *punctata* Playfair and is thus an illegitimate name. Deflandre (1926) discusses the Playfair species (p. 590) and this Playfair variety (p. 591). Conrad & van Meel (1952: 75) used the original Playfair taxonomy.

Day & al. (1995: 241) cited Skvortsov (1927) as the basis for distributional records of *T. ovoides* var. *australiana* in New South Wales and (p. 242), Playfair (1915) and Thomasson (1986) as the basis for distributional records of this taxon in New South Wales and the Northern Territory. Entwisle & Nairn (2020) listed the Playfair variety as part of the Australian flora.

**110. *Trachelomonas recticollis*** Deflandre, *Revue Générale de Botanique* 38: 703, pl. 23: figs 483, 484, 1926.

Replaced Synonym: *Trachelomonas euchlora* var. *minor* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 16, pl. II: figs 4, 5, 1915.

**LT:** Playfair 1915: pl. II: fig. 4, designated here.

*Trachelomonas recticollis* is a legitimate renaming at species level of *Trachelomonas euchlora* var. *minor* Playfair. Deflandre (1926: 703) includes two figures, fig. 483 and fig. 484, that are redrawn from Playfair (1915: pl. II: figs 4, 5). *Trachelomonas robusta* Skvortsov (1927: 606) was based upon *Trachelomonas euchlora* var. *minor*. The Skvortsov name is illegitimate as it is a later homonym of *Trachelomonas robusta* Svirenko (1914: 636, pl. 19: fig. 17, see also Deflandre 1928: 658).

Conrad & van Meel (1952: 23) indicated that *T. recticollis* is part of the Australian euglenoid flora.

**111. *Trachelomonas richmondiae*** (Playfair) Deflandre, *Revue Générale de Botanique* 38: 656, 1926.

Basionym: *Trachelomonas conica* var. *richmondiae* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 17, pl. II: fig. 11, 1915.

**LT:** Playfair 1915: pl. II: fig. 11, designated here.

*Trachelomonas rivularis* var. *australiana* Skvortsov (Skvortsov, 1927: 614) is based upon the description and the illustration for *Trachelomonas conica* var. *richmondiae* and is thus an illegitimate name. Deflandre (1926: 656) raised the Playfair variety to species level as



*Trachelomonas richmondiae* (Playfair) Deflandre. Conrad & van Meel (1952: 87) and Guiry & Guiry (2020) concur with this decision.

Day & al. (1995: 237, 243) cited Playfair (1915), Skvortsov (1927) and an unpublished source as the basis for distributional records of *T. rivularis* var. *australica* in New South Wales and Queensland. Entwisle & Nairn (2020) did not list any of these names.

**112. *Trachelomonas sessilis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 33, pl. V: fig. 12, 1915.

LT: Playfair 1915: pl. V: fig. 12, designated here.

Playfair (1915) described *Trachelomonas sessilis* based upon specimens collected at Parramatta, New South Wales. Deflandre (1927a: 77) specifically excludes the species from his account of *Trachelomonas* and Conrad & van Meel (1952) did not include the species in their treatment of *Trachelomonas*.

Day & al. (1995: 243) cited *T. sessilis* as current New South Wales taxon with Playfair (1915) as the reference. Entwisle & Nairn (2020) did not include the species.

**113. *Trachelomonas sessilis* var. *elegans*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 34, pl. V: fig. 14, 1915.

LT: Playfair 1915: pl. V: fig. 14, designated here.

Playfair (1915) described *Trachelomonas sessilis* var. *elegans* based upon specimens collected at Guildford, New South Wales. Deflandre (1927a: 77) specifically excluded the variety from his account of *Trachelomonas* and Conrad & van Meel (1952) did not include the variety in their treatment of *Trachelomonas*.

Day & al. (1995: 243) cited *T. sessilis* var. *elegans* as current New South Wales taxon with Playfair (1915) as the reference. Entwisle & Nairn (2020) did not include the variety.

**114. *Trachelomonas sessilis* var. *minima*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 34, pl. V: fig. 13, 1915.

LT: Playfair 1915: pl. V: fig. 13, designated here

Playfair (1915) described *Trachelomonas sessilis* var. *minima* based upon specimens collected at Parramatta, New South Wales. Deflandre (1927a: 77) specifically excluded the species from his account of *Trachelomonas* and Conrad & van Meel (1952) did not include the species in their treatment of *Trachelomonas*.

Day & al. (1995: 243) cited *T. sessilis* var. *minima* as current New South Wales taxon with Playfair (1915) as the reference. Entwisle & Nairn (2020) did not include the variety.

**115. *Trachelomonas splendida*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 132, pl. VII: fig. 1, 1921.

LT: Playfair 1921: pl. VII: fig. 1, designated here.

Playfair (1921) described *Trachelomonas splendida* based upon specimens collected at Lismore, New South Wales. Deflandre (1926, 1927a) and Conrad & van Meel (1952) did not include the species in their treatment of *Trachelomonas*.

Day & al. (1995: 243) cited *T. splendida* as current New South Wales taxon with Playfair (1921) as the reference. Entwisle & Nairn (2020) did not include the species.

- 116. *Trachelomonas striata*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 613, pl. XVI: fig. 61; 1927.

LT: Skvortsov 1927: pl. XVI: fig. 61, designated here.

*Trachelomonas striata* is based upon the description and the illustration for *Trachelomonas eurystoma forma* Playfair (1915<sup>8</sup>: 29, pl. IV: fig. 12). Playfair states that this ‘taxon’ is equivalent to *Trachelomonas eurystoma* F. Stein (1878: pl. XXII: fig. 35). Skvortsov (1927: pl. XVI: fig. 61) appears to be a redrawing of Playfair (1915: pl. IV: fig. 12). Deflandre (1926: 697–698) discusses *Trachelomonas eurystoma* and concedes that the Stein concept differs from the Playfair concept (cf. pl. 22: figs. 418, 419, 424). Conrad & van Meel (1952: 41) included Australia under the distributional records for *T. eurystoma*.

Day & al. (1995: 238, 243) cited Playfair (1915) and Skvortsov (1927) as the basis for distributional records of the Skvortsov species in New South Wales. Entwisle & Nairn (2020) reverted to the concept of Stein as part of the Australian flora with *T. striata* as a synonym. Deflandre (1926) should be followed, and the Australian taxon should be separated from the northern hemisphere taxon—as *T. striata*—until further research determines that the two are conspecific.

- 117. *Trachelomonas subdenticulata*** (Playfair) W. Conrad, *Mémoires du Musée Royal d'Histoire Naturelle de Belgique* 124: 87, 1952.

Basionym: *Trachelomonas australis* var. *subdenticulata* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 20, pl. III: fig. 7, 1915.

LT: Playfair 1915: pl. III: fig. 7, designated here.

*Trachelomonas teres* var. *salebrosa* Skvortsov. (1927: 609) is based upon the description and the illustration for *Trachelomonas australis* var. *subdenticulata* Playfair and is thus an illegitimate name.

Conrad & van Meel (1952) indicated the species is endemic to Australia. Day & al. (1995: 236, 244) cited Playfair (1915), Skvortsov (1927) and Thomasson (1986) for the locality data concerning the species and the synonymous varieties. Entwisle & Nairn (2020) supported the Conrad species as the accepted name for this taxon.

- 118. *Trachelomonas superba*** Swirenko, *Archiv für Hydrobiologie und Planktonkunde* 9: 642, pl. XX [20]: figs 1, 2, 1914.

Day & al. (1995: 244) cited Ling & Tyler (1986: 63) who described material of this species from one billabong in the Northern Territory, Thomasson (1986, table) and an unpublished work for the locality data. Entwisle & Nairn (2020) listed this species as being part of the Australian flora.

- 119. *Trachelomonas sydneyensis*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 22–23, pl. IV: fig. 15, 16, 1915.

Homotypic synonym: *Trachelomonas mirabilis* var. *sydneyensis* (Playfair) Skvortsov (1927: 609)

<sup>8</sup> Note: Skvortsov (1927: 613) gave the reference as “Playfair 1925”.

**LT:** Playfair 1915: pl. IV: fig. 15, designated here.

Conrad & van Meel (1952: 46–47) listed *T. sydneyensis* and the varieties in Australia and other parts of the world. Since the most recent taxonomic treatment of *Trachelomonas* in New South Wales was Playfair (1921), who did include *T. hispida* (*ibid* p. 132) but did not indicate that *T. hispida* and the varieties of *T. sydneyensis* were related, we believe that typification of the species and varieties of *T. sydneyensis* would be prudent. There appears to be four taxa in Australia: *T. sydneyensis* var. *sydneyensis*, *T. sydneyensis* var. *minima*, *T. sydneyensis* var. *obesa* and *T. sydneyensis* var. *oblonga*.

*T. mirabilis* var. *sydneyensis* was recorded as being present in Australia by Day & al. (1995: 241, 244) with Skvortsov (1927), Playfair (1915) and Thomasson (1986, table) as references. Entwisle & Nairn (2020) recorded *T. sydneyensis*.

**120. *Trachelomonas sydneyensis* var. *minima*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 23, pl. IV: fig. 18, 1915.

**LT:** Playfair 1915, pl. IV: fig. 18, designated here.

*Trachelomonas superba* var. *sydneyensis* Skvortsov (Skvortsov 1927: 605) is an illegitimate name as it was based upon the description and illustration of *T. sydneyensis* var. *minima* Playfair. Deflandre (1926: 654; 1927b: 658) discusses this variety.

Day & al. (1995: 244) accepted *T. superba* var. *sydneyensis* as the correct name for the taxon in the New South Wales flora with Skvortsov (1927) as the reference. Conrad & van Meel (1952: 47) used *T. sydneyensis* var. *minima* as the accepted name, without explanation. Entwisle & Nairn (2020) did not cite either name.

**121. *Trachelomonas sydneyensis* var. *obesa*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 23, pl. IV: fig. 19, 1915.

**LT:** Playfair 1915: pl. IV: fig. 19, designated here.

*Trachelomonas hispida* var. *lismorensis* Skvortsov (Skvortsov 1927: 607) was based upon the description and illustrations of two varieties, *Trachelomonas sydneyensis* var. *obesa* and *Trachelomonas sydneyensis* var. *oblonga* and is thus illegitimate. Skvortsov (1927: pl. XVI: fig. 20) appears to be a redrawing of a Playfair figure (Playfair 1915: pl. IV: fig. 19). Deflandre (1926: 654) discussed both varieties of *T. sydneyensis* separately.

Conrad & van Meel (1952: 46–47) listed *T. sydneyensis* and the varieties in Australia and other parts of the world. *T. hispida* var. *lismorensis* was recorded as being present in New South Wales by Day & al. (1995: 240, 244) with Skvortsov (1927) and Playfair (1915) as references. Entwisle & Nairn (2020) did not list this variety.

**122. *Trachelomonas sydneyensis* var. *oblonga*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 23, pl. IV: fig. 17, 1915.

**LT:** Playfair 1915: pl. IV: fig. 17, designated here.

*Trachelomonas hispida* var. *lismorensis* Skvortsov (Skvortsov 1927: 607) was based upon the description and illustrations from two varieties *Trachelomonas sydneyensis* var. *obesa* and *Trachelomonas sydneyensis* var. *oblonga* (see discussion above) and is thus illegitimate.

Conrad & van Meel (1952: 46–47) listed *T. sydneyensis* and the varieties in Australia and other parts of the world. *T. hispida* var. *lismorensis* was recorded as being present in Australia by Day

& al. (1995: 240, 244) with Skvortsov (1927), Playfair (1915) and Thomasson (1986, table) as a source. Entwisle & Nairn (2020) recorded *T. sydneyensis* var. *oblonga*.

**123. *Trachelomonas teres*** Maskell, *Transactions and Proceedings of the New Zealand Institute* 20: 7, pl. I: fig. 7, 1888.

Playfair (1921: 130) described this species from Lismore. Day & al. (1995: 244) with Playfair (1921) as a reference included the species for New South Wales. Entwisle & Nairn (2020) did not list the species.

**124. *Trachelomonas verrucosa* var. *australiana*** Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 44(9): 604, pl. XVI: fig. 1, 1927.

**LT:** Skvortsov 1927: pl. XVI: fig. 1, designated here.

*Trachelomonas verrucosa* var. *australiana* Skvortsov was based upon the description given by Playfair (1915: 28, pl. IV: fig. 1) of *Trachelomonas verrucosa* A. Stokes. Skvortsov (1927: pl. XVI: fig. 1) appears to be a redrawing of Playfair (1915: pl. IV: fig. 1). Playfair (1915: 28) was uncertain of the placement of his entity as *T. verrucosa*. Deflandre (1928: 658) believed that Playfair was indicating a forma but Playfair did not provide a name. Conrad & van Meel (1952) did not consider this entity.

Day & al. (1995: 244) used the unpublished work of McLeod (1975) to include Queensland in the distribution of *T. verrucosa*. By typifying the Skvortsov name with his illustration, which is a direct copy of Playfair (1915: pl. IV: fig. 1) we have stabilized the nomenclature of this taxon. In this case it appears unwise to synonymise *T. verrucosa* var. *australiana* and the northern hemisphere taxon *T. verrucosa*, as done by Entwisle & Nairn (2020).

**125. *Trachelomonas verrucosa* var. *granulosa*** (Playfair) Conrad & van Meel, *Mémoires du Musée Royal d'Histoire Naturelle de Belgique* 124: 31, 1952.

Basionym: *Trachelomonas volvocina* var. *granulosa* Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 9, pl. I: fig. 3, 1915.

**LT:** Playfair 1915: pl. I: fig. 3, designated here.

Playfair (1915) described this variety from two sites in New South Wales. Deflandre (1926: 525) discussed the variety. Conrad & van Meel (1952) made the new combination *Trachelomonas verrucosa* var. *granulosa*.

Note: The new combination *Clericia volvocina* var. *granulosa* (Playfair) Frenguelli was made in Frenguelli (1936: 260) for fossil material.

Day & al. (1995: 245) cited Playfair (1915) the distribution of *T. volvocina* var. *granulosa* in New South Wales. Entwisle & Nairn 2020 did not list any of the names.

**126. *Trachelomonas volvocina*** (Ehrenberg) Ehrenberg, *Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin* 1833: 315, 1834.

Playfair (1915: 8) recorded this taxon as being common in his collections at many sites in New South Wales. The species had previously been listed as being present in Queensland by Bailey (1898) based upon samples sent to Europe (Schmidle 1896). Note: Frenguelli (1935: 35) made the combination *Clericia volvocina* (Ehrenberg) Frenguelli for fossil material.



Day & al. (1995: 244) listed *T. volvocina* in every Australian state except Western Australia based upon lists. It appears that Roger Croome had produced unpublished SEM images of the species that were used for identification purposes (Baker & al., 1985). The description by Playfair (1915) is the only description of this species in Australia. Entwisle & Nairn (2020) listed the species.

**127. *Trachelomonas volvocina* var. *pellucida*** Playfair, *Proceedings of the Linnean Society of New South Wales* 39(1): 141, pl. VIII: fig. 3, 1914.

Homotypic synonym: *Trachelomonas volvocina* f. *pellucida* (Playfair) Deflandre, *Revue Générale de Botanique* 38: 522, 1926.

**LT:** Playfair 1914: pl. VIII: fig. 3, designated here.

Playfair (1914) recorded this variety from Lismore, New South Wales and later (1915: 8) from the Sydney area. Deflandre (1926: 522) relegated the variety to a form.

Note: Orlando (1966: 15) includes this variety in the synonymy of *Clericia volvocina* (Ehrenberg) Frenguelli.

Day & al. (1995: 245) cited Playfair (1914, 1915) for the distribution of *T. volvocina* var. *pellucida* in New South Wales. Entwisle & Nairn (2020) did not list any of the names.

**128. *Trachelomonas volvocina* var. *planktonica*** [*sic*] Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 129, pl. VI: fig. 12, 1921.

**LT:** Playfair 1921: pl. VI: fig. 12, designated here.

Playfair (1921) described this variety from two capital city water supplies: Brisbane, Queensland and Sydney, New South Wales. The variety was not included by Deflandre (1926, 1927a) or by Conrad & van Meel (1952).

Day & al. (1995: 245) cited Playfair (1921) for the distribution of *T. volvocina* var. *planktonica* in New South Wales; they do not include Queensland despite Brisbane being in the protologue. Entwisle & Nairn 2020 did not list the variety.

**129. *Trachelomonas volvocina* var. *pustulosa*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 130, pl. VI: fig. 15, 1921.

**LT:** Playfair 1921: pl. VI: fig. 15, designated here.

Playfair (1921) described this variety from two sites in New South Wales. The variety was not included by Deflandre (1926, 1927a) or by Conrad & van Meel (1952). Frenguelli (1932: 24, pl. II: fig. 10) named a new fossil, *Trachelomonas pustulosa* Frenguelli. Thus, the subsequent combination *Trachelomonas pustulosa* (Playfair) Huber-Pestalozzi (Huber-Pestalozzi 1955: 267) based upon *Trachelomonas volvocina* var. *pustulosa* Playfair is a later homonym and thus illegitimate.

Day & al. (1995: 245) cited Playfair (1921) concerning the distribution of *T. volvocina* var. *pustulosa* in New South Wales. Entwisle & Nairn (2020) did not list any of the names.

**130. *Trachelomonas volvocina* var. *scabra*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 129, pl. VI: fig. 14, 1921.

**LT:** Playfair 1921: pl. VI: fig. 14, designated here.

Playfair (1921) described this variety from Guildford, now a suburb of Sydney, New South Wales. The variety was not included by Deflandre (1926, 1927a); however, Deflandre (1927b) did include this variety in his species *T. scabratula*. Conrad & van Meel (1952) did not discuss *T. volvocina* var. *scabra*.

Day & al. (1995: 245) cited Playfair (1921) for the distribution of *T. volvocina* var. *scabra* in New South Wales. Entwisle & Nairn 2020 did not list the variety.

**131. *Trachelomonas volzii* var. *cylindracea*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 15, pl. II: fig. 21a, b, 1915.

LT: Playfair 1915: pl. II: fig. 21a, designated here.

Playfair initially described *Trachelomonas volzii* var. *cylindracea* from two sites close to Sydney, New South Wales. He (Playfair 1921: 131) subsequently found the variety at Lismore, New South Wales. Skvortsov (1927) regarded the two Playfair illustrations to represent two separate varieties in *Trachelomonas paludosa*, neither of which retained Playfair's varietal name. *Trachelomonas paludosa* var. *annulata* Skvortsov (Skvortsov 1927: 610) was based upon the description and the illustration for *T. volzii* var. *cylindracea* Playfair (1915: 19 pl. II: fig. 21b, non 21a) and is thus illegitimate. Skvortsov (1927: pl. XVI: fig. 41) appears to be a redrawing of Playfair (1915: pl. II: fig. 21b). *Trachelomonas paludosa* var. *sydneyensis* Skvortsov (Skvortsov 1927: 610) was based upon the description and the illustration for *Trachelomonas volzii* var. *cylindracea* Playfair (1915: 19 pl. II: fig. 21a, non fig. 21b) and is also illegitimate. Skvortsov (1927: pl. XVI: fig. 42) appears to be a redrawing of Playfair (1915: pl. II: fig. 21a). Deflandre (1927a: 27) included a discussion of the species and varieties of *Trachelomonas volzii* Lemmermann, as did Conrad & van Meel (1952: 79 ff). Both authors retained the variety *T. volzii* var. *cylindracea* Playfair.

Day & al. (1995: 245) cited Playfair (1915) for the distribution of *T. volzii* var. *cylindracea* in New South Wales. Entwisle & Nairn 2020 did not list any of the names.

**132. *Trachelomonas volzii* var. *intermedia*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 15, pl. II: fig. 3, 1915.

LT: Playfair 1915: pl. II: fig. 3, designated here.

Playfair (1915) initially described *Trachelomonas volzii* var. *intermedia* for material from Botany, now a suburb of Sydney, New South Wales. *Trachelomonas varians* Skvortsov (Skvortsov 1927: 611) is a later homonym of *Trachelomonas varians* Deflandre (1924: 1124) and is thus illegitimate. The Skvortsov name was based upon the description and illustration of *T. volzii* var. *intermedia* Playfair (Playfair 1915: 19, pl. II: fig. 3). Skvortsov (1927: pl. XVI: fig. 45) appears to be a redrawing of Playfair (1915: pl. II: fig. 3). Deflandre (1927a: 27) included a discussion of the species and varieties of *Trachelomonas volzii* Lemmermann, as did Conrad & van Meel (1952: 79 ff). Both authors retained the variety *T. volzii* var. *intermedia* Playfair

Day & al. (1995: 245) cited Playfair (1914, 1915) for the distribution of *T. volzii* var. *intermedia* in New South Wales. Entwisle & Nairn (2020) did not list any of these names.

**133. *Trachelomonas volzii* var. *pellucida*** Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 14, pl. II: fig. 1, 1915.

LT: Playfair 1915: pl. II: fig. 1, designated here.

Playfair (1915) described *Trachelomonas volzii* var. *pellucida* from Botany, now a suburb of Sydney, New South Wales. He (Playfair 1921: 131) subsequently found the variety at Lismore, New South Wales. Deflandre (1927a: 27) discussed the variety as did Conrad & van Meel (1952: 79).

Day & al. (1995: 245) cited Playfair (1915) for the distribution of *T. volzii* var. *pellucida* in New South Wales. Entwisle & Nairn (2020) did not list the variety.

**134. *Trachelomonas volzii* var. *sulcata*** Playfair, *Proceedings of the Linnean Society of New South Wales* 46: 131, pl. VI: fig. 23, 1921.

LT: Playfair 1921: pl. VI: fig. 23, designated here.

Playfair (1921) described *Trachelomonas volzii* var. *sulcata* from Botany, now a suburb of Sydney, New South Wales. Deflandre (1926, 1927a) and Conrad & van Meel (1952: 79) did not discuss this variety.

Day & al. (1995: 245) cited Playfair (1921) for the distribution of *T. volzii* var. *sulcata* in New South Wales. Entwisle & Nairn (2020) did not list the variety.

#### Names appearing in unsubstantiated lists or unpublished works

**135. *Strombomonas acuminata* var. *deflandreana*** W. Conrad, *Mémoires du Musée Royal d'Histoire Naturelle de Belgique* 124: 115, pl. XV: fig 10, 1952.

*Strombomonas acuminata* var. *deflandreana* was described (as ‘*deflandriana*’) by Conrad (1952) with a description and illustration, but no locality. The diagnostic characters that separate this variety from the other three varieties are not clear. Thomasson (1986) listed the name in a table for the Northern Territory and Day & al. (1995: 235) included the name in their list. Entwisle & Nairn (2020) listed the name as ‘*S. acuminata* var. *delandeanana*’ [sic].

**136. *Strombomonas deflandrei*** (Y.V. Roll) Deflandre, *Archive für Protistenkunde* 69: 575, 1930.

This name was listed in a table by Thomasson (1986), Day & al. (1995: 235) and Entwisle & Nairn (2020). This taxon is originally described from the Ukraine.

**137. *Strombomonas fluviatilis*** (Lemmermann) Deflandre, *Archive für Protistenkunde* 69: 580, 1930.

This name was listed by Entwisle & Nairn (2020) without explanation. This taxon does not appear elsewhere in the Australian literature.

**138. *Strombomonas scabra* var. *labiata*** (Teiling) Tell & Conforti, *Nova Hedwigia* 46(3/4): 547, 1988.

This name was listed in Appendix 2 by Sullivan & al. (1988) without a description [as *Trachelomonas scabra* var. *labiata* (Teiling) Huber-Pestalozzi]. Day & al. (1995: 243) and Entwisle & Nairn (2020) included *T. scabra* var. *labiata*.

**139. *Strombomonas maxima*** (Skvortzov) Deflandre, *Archive für Protistenkunde* 69: 583, 1930.

This name was listed in a table by Thomasson (1986), Day & al. (1995: 235) and Entwisle & Nairn (2020). This taxon was originally described from Manchuria, China (as *Trachelomonas maxima* Skvortsov)

**140. *Strombomonas tambowika*** (Swirenko) Deflandre, *Archive für Protistenkunde* 69: 583, 1930.

This name was listed in a table by Thomasson (1986), Day & al. (1995: 235) and Entwisle & Nairn (2020). This taxon was originally described from Russia.

**141. *Trachelomonas allia*** Drezepolski, *Kosmos, Warszawa* 50(1A): 211, 1925.

This name was listed in a table by Thomasson (1986), Day & al. (1995: 236) and Entwisle & Nairn (2020). This taxon was originally described from eastern Poland and is described as ‘subcosmopolitan’ by Day & al. (2009: 60).

**142. *Trachelomonas armata*** (Ehrenberg) F.Stein, *Der Organismus der Infusionsthier* expl. pl. XXIII [23]: figs 37, 38, 1878.

This name was listed initially for Victoria by Strickland (1923). It was subsequently listed in ecological studies in NSW by May & Powell (1986) and May (1988). *T. armata* was listed in a table by Thomasson (1986) for the Northern Territory. Day & al. (1995: 236) and Entwisle & Nairn (2020) list the name. Day & al. (2009: 66) indicate that this species is cosmopolitan. At no time has the taxon been given even a brief description in the Australian literature.

**143. *Trachelomonas armata* var. *longa*** Deflandre, *Revue Générale de Botanique* 38: 691, figs 332, 333, 337, 1926.

This name was included in a table by Thomasson (1986), Day & al. (1995: 236) and Entwisle & Nairn (2020). This taxon is originally described from France.

**144. *Trachelomonas bacillifera* f. *sparsispina*** Deflandre, *Bulletin de la Société Botanique de France* 71: 1126, pl. X: fig 5, 1924.

*T. bacillifera* f. *sparsispina* was listed in a table by Thomasson (1986), Day & al. (1995: 237) and Entwisle & Nairn (2020). This taxon was originally described from France.

**145. *Trachelomonas bulla*** F.Stein, *Der Organismus der Infusionsthier* III (1): expl. pl. XXII [22]: figs 41, 42, 1878.

*T. bulla* was listed in Appendix 2 by Sullivan & al. (1988) without description. Day & al. (1995: 237) and Entwisle & Nairn (2020) included this species.

**146. *Trachelomonas charkowiensis*** Swirenko, *Travaux de la Société des naturalistes à l'Université Impériale de Kharkow* 46: 82, 87, pl. II: fig. 5: 1913.

*T. charkowiensis* was listed Day & al. (1995: 237) based upon a list of names produced by a group of local New South Wales naturalists. Entwisle & Nairn (2020) did not list this taxon. This taxon was originally described from Russia.

**147. “*Trachelomonas cliffordi*”** McLeod, *nom. inval.* 1975.



This invalid designation was listed Day & al. (1995: 237) based upon information from a doctoral thesis, which is not an effective means of publication, and a description, type or illustration was not provided by Day & al. (1995). Entwisle & Nairn (2020) did not list this taxon.

- 148. *Trachelomonas dangeardiana*** Deflandre, *Bulletin de la Société Botanique de France* 74(4): 665, 1928.

*T. dangeardiana* was listed in a table by Thomasson (1986), Day & al. (1995: 238) and Entwisle & Nairn (2020). This is a new name for *Trachelomonas dangeardii* Deflandre (1926: 691) *non* *Trachelomonas dangeardii* Skvortsov (1925: 75, pl. VI: fig. 16). *Trachelomonas dangeardii* Deflandre was originally described from Russia and Manchuria, China.

- 149. *Trachelomonas dastuguei*** Balech, *Anales del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia"* 41: 293, pl. VII: fig. 1; pl. XV: fig. 230, 1944.

This name was listed in a table by Thomasson (1986), Day & al. (1995: 238) and Entwisle & Nairn (2020). It was originally described from several localities in Argentina.

- 150. *Trachelomonas dubia*** Svirenko, *Archiv für Hydrobiologie und Planktonkunde* 9: 638, pl. XIX: fig. 20: 1914.

This name was listed, but not described, by Noble & Happey-Wood (1987), Day & al. (1995: 238) and Entwisle & Nairn (2020).

- 151. *Trachelomonas duplex*** (Deflandre) Couté & Tell, *Algological Studies* 122: 76, 2006.  
Basionym: *Trachelomonas hispida* var. *duplex* Deflandre, *Revue Générale de Botanique* 38: 652, pl. 17: figs 224–226, 1926.

*T. duplex* was listed by Day & al. (1995: 240, under the basionym) as per Thomasson (1986). Entwisle & Nairn (2020) did not list the taxon.

- 152. *Trachelomonas elegans*** W.Conrad, *Annales de Biologie Lacustre* 8: 202, pl. I: fig. 5, 1916.

This name was listed by Day & al. (1995: 238) and Entwisle & Nairn (2020) based upon an unpublished study and no further details have been published.

- 153. “*Trachelomonas ensifera* var. *slateri*”** McLeod, *nom. inval.* 1975

This invalid designation was listed Day & al. (1995: 238) based information from on a doctoral thesis, which was not effectively published. It was not provided with a description, type or illustration by Day & al. (1995) or Entwisle & Nairn (2020) and remains invalid.

- 154. *Trachelomonas euchlora* var. *similis*** (A.Stokes) Playfair, *Proceedings of the Linnean Society of New South Wales* 40: 16, 1915.  
Basionym: *Trachelomonas similis* A.Stokes, *Proceedings of the American Philosophical Society* 28: 76, fig. 12, 1890.

*T. euchlora* var. *similis* (as *T. similis* A.Stokes, with a type from New Jersey) was listed by Day & al. (1995: 243) and Entwisle & Nairn (2020) based upon a work by a group of local naturalists. No descriptions or illustrations were provided.

**155. “*Trachelomonas hexangulata* var. *repanda*” McLeod, *nom. inval.***

This invalid designation was listed by Day & al. (1995: 239) based upon information from a doctoral thesis, which was not effectively published, and was not provided with a description, type or illustration in Day & al. (1995). Entwisle & Nairn (2020) do not list this taxon.

**156. *Trachelomonas hispida* var. *coronata* Lemmermann, *Die Süßwasserflora Deutschlands, Österreichs und der Schweiz. Heft 2*: 150, 1913.**

This name was listed by Day & al. (1995: 240) and Entwisle & Nairn (2020) based upon an unpublished work. Day & al. (2009: 54) discuss this variety, however they did not include Australia in the distribution. Lemmermann (1913: 150) did not specify a type locality in Germany.

**157. *Trachelomonas horrida* T.C.Palmer, *Proceedings of the Academy of Natural Sciences of Philadelphia* 57: 674, pl. XLI: fig. 6, 1905.**

This name was listed by Day & al. (1995: 240) and Entwisle & Nairn (2020) based upon a work by a group of local naturalists. No description or illustration was provided.

**158. *Trachelomonas intermedia* P.A.Dangeard, *Le Botaniste* 8: 231, text-fig. 42, 1902.**

Deflandre (1926: 590) included Playfair (1915) in his discussion of this taxon (described from an unknown locality in Europe, probably France) but did not include Australia in the distribution. *T. intermedia* was listed by Day & al. (1995: 240) as a synonym of *T. intermedia* var. *fusca* (sect. 82).

**159. *Trachelomonas klebsii* Deflandre, *Revue Générale de Botanique* 38: 652, 1926.**

This name was listed in a table by Thomasson (1986), Day & al. (1995: 240) and Entwisle & Nairn (2020).

**160. *Trachelomonas lagenella* F.Stein, *Der Organismus der Infusionsthierie* : expl. pl. XXII: figs 14–16. 1878.**

This name was listed by Shepard & al. (1918), Day & al. (1995: 240) and Entwisle & Nairn (2020).

**161. *Trachelomonas megalacantha* A.M.Cunha *Memorias do Instituto Oswaldo Cruz* 6: 172, pl. 24: fig. 5, 1914.**

This name, with a type locality in Brazil, was listed in a table by Thomasson (1986), Day & al. (1995: 241) and Entwisle & Nairn (2020) without further details.

**162. *Trachelomonas megalacantha* var. *crenulatocollis* Bourrelly, in Bourrelly & Manguin, *Algues d'eau douce de la Guadeloupe et dépendances: recueillies par la Mission P. Allorge en 1936*: 184, pl. XXIII: figs 322, 323, 1952.**

This name was listed in a table by Thomasson (1986), Day & al. (1995: 241) and Entwisle & Nairn (2020) without further details.

**163. *Trachelomonas obovata* f. *klebsiana*** (Deflandre) T.G.Popova, *Flora plantarum cryptogamarum URSS. Vol VIII*: 154, 1966.

This name (as ‘var. *klebsiana*’) was listed by Day & al. (1995: 241) and Entwisle & Nairn (2020) based upon an unpublished study.

**164. *Trachelomonas planctonica* f. *longicollis*** (Skvortsov) T.G.Popova, *Flora plantarum cryptogamarum URSS. Vol VIII*: 172, 1966.

Basionym: *Trachelomonas planctonica* var. *longicollis* Skvortsov, *Berichte der deutsche botanischen Gesellschaft* 43: 312, text-figs 7, 8, 1925

*Trachelomonas planctonica* f. *longicollis* (as var. *longicollis*) was listed in Appendix 2 by Sullivan & al. (1988) without description. Day & al. (1995: 242) and Entwisle & Nairn (2020) include this taxon (as var. *longicollis*).

**165. *Trachelomonas planctonica* f. *oblonga*** (Drezepolski) T.G.Popova, *Flora plantarum cryptogamarum URSS. Vol VIII*: 171, 1966.

Basionym: *Trachelomonas planctonica* var. *oblonga* Drezepolski, *Rozprawy i Wiadomosci z Muzeum im. Dzieduszyckich* 7/8 [1921–22]: 6, 15, pl. I: fig. 14, 1923.

*T. planctonica* f. *oblonga* (as var. *oblonga*) was listed by Day & al. (1995: 242) and Entwisle & Nairn (2020) based upon an unpublished work.

**166. “*Trachelomonas princeps*”** Ehrenberg *nom. inval.* *Mikrogeologie*: 8, 13, 1854a.

This name included by Ehrenberg on two pages listing collections in the Plantagenet area of Western Australia. No description or illustration accompanied the name and it would not seem to have appeared in any subsequent Ehrenberg publication.

**167. “*Trachelomonas pulcherrima* var. *playfairiana*”** McLeod *nom. inval.* 1975.

This invalid designation was listed Day & al. (1995: 242) based upon information from on a doctoral thesis that was not effectively published and was a *nomen nudum* in Day & al. (1995). Entwisle & Nairn (2020) listed this name also as a *nomen*.

**168. *Trachelomonas spectabilis*** Deflandre, *Revue Générale de Botanique* 38: 687, pl. 19: figs 284–285, 1926.

This name, with a type locality in Venezuela, was listed in a table by Thomasson (1986), Day & al. (1995: 243) and Entwisle & Nairn (2020).

**169. *Trachelomonas superba* var. *spinosa*** Prescott, *Farlowia* 1: 370, pl. 4: fig. 13, 1944.

This name, with a type locality in Poland, was listed in a table by Thomasson (1986), Day & al. (1995: 244) and Entwisle & Nairn (2020).

**170. *Trachelomonas volvocina* var. *compressa*** Drezepolski, *Kosmos, Warszawa* 50(1A): 224, 265, fig. 2, 1925.

This name, with a type locality in Poland, was listed by Day & al. (1995: 245) and Entwisle & Nairn (2020) based upon an unpublished study.

Note: the new combination *Clericia volvocina* var. *compressa* (Drezepolski) Frenguelli was made in Frenguelli (1935: 37) for fossil organisms.

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