7. The type-species of certain genera of parasitic Flagellates, particularly Grassi's genera of 1879 and 1881.


eingeg. 21. August 1902.

In a recent study of the literature of the parasitic flagellates of man and animale, considerable difficulty was experienced in following the generic synonymy because authors had failed to designate types for the new genera they proposed. Two papers in particular presented confusion, namely, Grassi's important publications of 1879 and 1881. In order to have a definite basis for certain species with which I was dealing, it became necessary to establish types for the genera in question, and the results are herewith published.

The type-species of *Cimaenomonas*, 1881.

Grassi (1881, p. 141, 154—160) proposed this genus with the diagnosis: "Con un flagello quasi costantemente rivolto all' indietro ed agitantesi sulla superficie del corpo, in modo di far nascere l'idea di un orlo ondeggiantre, o d'una serie di ciglia vibratili." While he mentions several forms as belonging here, he gives only one, namely, *C. brachachorum* (Perty), as a binomial. This species should be taken as type, as it is clear that he had this form particularly in mind. His figures clearly show that he was dealing with either a *Trichomonas* Donné, 1837 or a *Trichomastix* Blochmann, 1884. Blochmann has placed this parasite in the genus *Trichomonas* where it is retained by Doflein, 1901. Bütschli (1884) also takes *Cimaenomonas* as a synonym of *Trichomonas*, and authors generally look upon *Trichomonas* *brachorum* Perty as a *Trichomonas* (see Stein's, 1878, figures).

The type-species of *Dicercomonas* and *Monomorphus*, 1879.

Grassi (1879, p. 446, 448) proposed the genus *Dicercomonas*, 1879, [not Diesing 1856], with the diagnosis "a coda bifida" and divided the group into two subgenera, as follows: *Monomorphus*, 1879, "si presenta sotto una sola forma"; only, hence type species, *M. ranarum*, with "*Hexamita ranarum* Duj." [= *Hexamita intestinalis* Dujardin] as
definite synonym, and with reference to Stein's (1878) figures. This species he retained in 1881 as Dicercomonas intestinalis (Dujardin).

Dimorphus Grassi, 1879 [not Dimorphus Haller, 1878, arachnoid; not Dimorpha Jur., 1807, hymenopteron; Gray, 1840, mollusks; Hodgs., 1841, birds], with Dimorphusmusuris as only, hence type species. This form he eliminated in 1881 as Megastoma entericum [= Lamblia duodenalis].

Thus, by the process of elimination, Hexamita intestinalis Dujardin becomes type of Dicercomonas in addition to serving as type for Monomorphus.

The type-species of Megastoma, 1881.

This genus is based upon Dimorphus muris, hence takes this species (= Lamblia duodenalis) as type.

The type-species of Monocercomonas Grassi, 1879.

Grassi (1879, p. 446—448) proposed the genus Monocercomonas with the subgenera: Monocercomonas, Trichomonas, Retortamonas, and Schedoacercomonas, not designating a type and not including in his list of species any previously designated type-species. It is thus clear that the type of Monocercomonas can best be determined by selecting one of the species of the subgenus Monocercomonas. These species are:

1) Monocercomonas hominis. Grassi's figures in 1881 show that he had Trichomonas confusa Stiles (Trichomonas intestinalis Leuckart (name not available)) in mind.

2) Monocercomonas caviae. Trichomonas caviae Davaine is given as a doubtful synonym, but in 1881 Grassi refers to his own observations, together with Trichomonas caviae, under the genus Cimaenomonas = Tricomonas.

3) Monocercomonas coronellae, with Cercomonas colubrorum as a doubtful synonym. M. coronellae and M. hominis are the only original species of Monocercomonas which he retains in this genus in 1881.

4) Monocercomonas anatis, to which he refers in 1881 as a Cimaenomonas = Tricomonas.

5) Monocercomonas batrachorum, with he transferred in 1881 to the genus Cimaenomonas, giving Trichomonas batrachorum Perty as definite synonym = Tricomonas.

6) Monocercomonas muris, to which he refers in 1881 as a Cimaenomonas = Tricomonas.

7) Monocercomonas lacertae viridis, to which he refers in 1881 as Heteromita lacertae.

Thus, five species were eliminated by Grassi in 1881, leaving
only *M. hominis* and *M. coronellae*. The former is a *Trichomonas*, to which genus it has been transferred by several authors. This leaves *M. coronellae* as type of *Monocercomonas*.

This ruling by elimination agrees with the action taken by Doflein (1901) in placing this species in *Monocercomonas*.

The type-species of *Monomita*, 1881.

This genus is based upon *Cercomonas muscae-domesticae* Stein, which Kent (1880) took as type of the genus *Herpetomonas* 1880.

The type-species of *Retortamonas*, 1879, and *Plagiomonas*, 1881.

A number of recent authors retain Grassi's (1881) genus *Plagiomonas*, which he based upon the single (hence type) species *P. gryllotalpae*, and to which he gave the diagnosis "In forma di una sorta; estremità posteriore affilata e semplice", while his figures in 1881 show that the anterior extremity possesses two flagella, similar to the condition found in *Bodo*. Doflein (1901) in fact, transfers the species to *Bodo*.

The generic name *Plagiomonas* is not valid, even if the genus is recognized as distinct, for Grassi in 1879 proposed the genus *Retortamonas* with this same species (*gryllotalpae*) as only, hence type, species.

The type-species of *Schedoacercomonasa* Grassi, 1879.

Grassi (1879, p. 446, 448) originally placed here the following species:

1) *Schedoacercomonas gryllotalpae*, which he transferred in 1881 to *Monocercomonas* as *M. insectorum*.
2) *Schedoacercomonas melolonthae*, which he transferred in 1881 to *Monocercomonas* as *M. insectorum*.
3) *Schedoacercomonas caviae*, of which I have failed to find a later mention.
4) *Schedoacercomonas muscae-domesticae*, with *Cercomonas muscae-domesticae* as definite synonym. Kent (1880) made this species type of *Herpetomonas*, and Grassi based upon it the genus *Monomita*, 1881.

Thus, *S. caviae* remains type by elimination, and unfortunately Grassi gave no specific characters for this form. *Schedoacercomonas* therefore rests simply upon the short diagnosis "quasi senza coda", with type in the guinea pig, as indicated by the name *caviae*.

Types of other genera of parasitic flagellates.

In order to settle the question of type-species for certain other genera of parasitic flagellates, attention may be directed to the following:
Asthmatos Salisbury, 1875. Only original, hence, type species, A. ciliaris = Homo sapiens.

Bacterioidomonas Künstler, 1884. Type species, B. sporifera.

Bactroidomonas Künstler, 1884. Contracted form of Bacterioidomonas Künstler, hence takes same species as type.

Bodo Ehrenberg, 1832. Type in doubt. Perhaps Bodo saltans.

The designation of the type species of Bodo is attended with some difficulty. Ehrenberg (1832, p. 38) gives Bodo as a new genus, without a distinct diagnosis, but under the headings "Monadina" "b) caudata", as follows: "Bodo, nov. gen., Monas punctum Gleichen, 4 species". He further mentions (p. 54) Bodo as one of the new genera, »als Frucht dieser Reise«, and states that the same or congeneric species were found in Berlin; then (p. 62) he gives

"Bodo didymus, n. g. Catharinenburg . . 1/800—5/600"
- viridis, al. sp. Smeinogorsk . . . . . 1/500"
- vorticellaris, al. sp. Catharinenburg . . . . . 1/100";

further (p. 67) "Bodo viridis, nov. gen.", and (p. 69) "Bodo didymus, n. g., Bodo vorticellaris al. sp."

In a second paper Ehrenberg (1832, p. 65) defines Bodo as follows: »Körper rund oder länglich, wie Monaden, aber geschwänzt; ohne Augen«. Five species are mentioned and described, namely, B. vorticellaris (in Siberia), B. didymus (in Siberia), B. saltans (in Berlin), B. viridis (in Siberia) and B. socialis (in Berlin and in Detershagen in Mecklenburg).

Later, Ehrenberg (1838) states that the genus was proposed in 1830 [not published until 1832] for four species, and that in 1831 [not published until 1832] a fifth species B. socialis was added, while in his bibliographic references he mentions only three species (B. vorticellaris, B. didymus and B. viridis) for 1830. It would appear therefore that B. saltans was the fourth species he had in mind in 1830. Gleichen's Monas punctum is not accessible to me, but as Ehrenberg refers to this form in 1832, it is possible that this is what he named Bodo saltans in his second paper. In 1838, he adds the species B. grandis, B. intestinalis and B. ranarum.

Diesing (1850, p. 44) proposed the subgenus Eubodo to contain Ehrenberg's species Bodo vorticellaris, B. didymus, B. saltans and B. viridis and referred B. intestinalis and B. ranarum to the subgenus Bodo (Cercomonas). Stein (1878, pl. 2) includes in Bodo, B. saltans Ehrenberg and several other organisms of later date, but he does not designate a type. Kent (1880) places Bodo saltans in the genus Diplo-mastix and takes Bodo intestinalis as type of the genus Bodo, which
he places near Cercomonas. *B. intestinalis* 1838 can not, of course, be taken as type of *Bodo* 1832.

Bütschli (1884) states that there are five or six species in this genus; he figures three species, none of them Ehrenberg's originals, and fails to designate a type. Ludwig (1886) mentions only *Bodo caudatus* (Dujardin), but this is not an original species, hence can not hold as type.

Under these circumstances, especially since I can not obtain Gleichen's reference to *Monas punctum*, the determination of the type is attended with uncertainly. If *Monas punctum* is identical with *Bodo saltans*, I should be inclined to take that as type, especially in view of Stein's (1878) work.

*Cercomonas* Dujardin, 1841. Nine original species. No author appears to have designated a type until Kent (1880) proposed *C. typhicus*, 1880, as such. This designation is clearly inadmissible, as Kent's species was not contained in the original genus. From the work of Stein (1878) and Bütschli (1884) it is probable that either *C. longicauda* or *C. crassicauda* should serve as type. Possibly Ludwig's (1886) work could be interpreted as a selection of *C. crassicauda*.

*Ciliaris* Salisbury, 1868. Only original, hence type, species, *C. bicaudalis*.

*Costia* Leclerq, 1890. Only original, hence type, species, *C. necator* (Henneguy).

*Cryptobia* Leidy, 1846. Only original, hence type, species, *C. helicis*.

*Cryptoicus* Leidy, 1847. *Cryptobia*, 1846, renamed, hence takes same type as *Cryptobia*.

*Cystomonas* R. Blanchard, 1885. Type species, "*Bodo urinarius* Künstler, 1893".

*Dimorpha* Senn, 1901 [not Jur., 1807, hymenopteron; not Gray, 1840, mollusk; not Hodg., 1841, bird]. For *Dimorphus* Grassi, hence, type, *Dimorphus muris*.

*Haematomonas* Mitrophanow, 1883. Two original species. *H. cobitis* here designated as type.

*Hemotomonas* Blanchard, 1888, for *Haematomonas*. This type species, *Haematomonas cobitis*.

*Herpetomonas* Kent, 1880. *H. muscae-domesticae* (Stein, 1878) designated by Kent as type.

*Hexamita* Dujardin, 1841. Three original species. Type, *H. inflata*.
Hexamitus Bütschli, 1884. For Hexamita Dujardin, 1841, hence, type, H. inflata.

Isomita Diesing, 1850. Type, probably Monas Dunali.

Lamblia R. Blanchard, 1888. Type L. intestinalis = L. duodenalis.

Megastoma Schneidemühl, 1898. Misprint for Megastoma Grassi, 1881, hence, type, M. entericum = Lamblia duodenalis.

Monas Müller, 1773. Three original species: M. termo and M. lens eliminated by Diesing, 1850, to Monas (Mastichemonas), and M. mica placed by Diesing, 1850, in the typical subgenus Monas (Eumonas). Accordingly, unless some author earlier than 1850 has made some other disposition, it appears that M. mica must be taken as the type by elimination.

Both Kent (1880) and Bütschli (1884) appear to have overlooked this fact. Kent (1880, p. 233—234) inferentially designated Monas Dallingeri Kent, 1880, as type of Monas; he transferred M. termo to Oikomonas and M. lens to Heteromita.

Monadacomonas R. Leuckart, 1856. Probably a lapsus for Monocercomonas.

Ocomonas Hartwig, 1901. Only, hence type, species, O. flagellatum coli.

Paramecioides Grassi, 1881. Only, hence type, species, P. costatum = Trypanosoma rotatorium.

Paramecioides Laveran & Mesnil, 1901, for Paramecioides. Takes Paramecioides costatum as type.

Polymastix Bütschli, 1884. Only original, hence type, species, P. melolonthae (Grassi, 1881).

Saenolophus Leuckart, 1863. Only original, hence type species, S. Eberthi (Leuckart, 1864).

Trichomas Neumann, 1892. Misprint for Trichomonas 1838, hence, type species Trichomonas vaginalis.

Trichomastix Blochmann, 1884 (not Vollenhoven, 1878, hymenopteron). Only original, hence type species, T. lacertae.

Trichomastix Railliet, 1893. For Trichomastix Blochmann, 1884, hence type, T. lacertae.

Trichomonas Ehrenberg, 1838. For Trichomonas, 1837, hence type, T. vaginalis.

Trichomonas Veterinarian, Lond., 1899. For Trichomonas, 1838, hence type, T. vaginalis.

Trichomonas Donné, 1837. Only original, hence type species, T. vaginalis.

Tripanosoma Lanessan, 1882, for Trypanosoma. Takes Trypanosoma rotatorium as type.
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Tripanomonas Balbiani, 1888, a confusion between Trypanomonas and Trichomonas, takes same type as Trypanomonas (Trypanomonas colitis).

Trypanosoma Doellein, 1901, misprint for Trypanosoma. Takes Trypanosoma rotatorium as type.

Trypanomonas Danilewsky, 1885. Contains type of an older genus, Trypanomonas ranarum = Trypanosoma rotatorium, hence takes this same species as type.

Trypanosoma Gruby, 1843. Only original, hence type, species, Trypanosoma sanguinis = Try. rotatorium.

Trypanosome Buffard & Schneider, 1900, for Trypanosoma. Takes Trypanosoma rotatorium as type.

Trypanosomes Laveran, 1895, for Trypanosoma. Takes Trypanosoma rotatorium as type.

Trypanosomum Chauvrat, 1896, for Trypanosoma. Takes Trypanosoma rotatorium as type.

Undulina Lankester, 1871. Only original (hence type) species, U. ranarum = Trypanosoma rotatorium.

II. Mittheilungen aus Museen, Instituten etc.

1. Erste Versammlung nordischer Naturforscher und Ärzte in Helsingfors
7.—12. Juli 1902.


Section VI. Zoologie.


Dienstag den 8. Juli. Vorsitzender Herr Dr. V. Bianchi (St. Petersburg). Vorträge der Herren Dr. L. Ribbing (Stockholm) über die Homodynamie der Extremitäten bei höheren Vertebraten, Dr. Erik Nordenskiöld (Helsingfors), Demonstration eines im Besitz des Entomologischen Museums in Helsingfors befindlichen, reich illustrierten Manuscripts über die Acariden, welches im Anfang des vorigen Jahrhunderts von dem Gutsbesitzer Frans Diedrik Wasastjerna verfaßt ist, Cand. mag. C. With (Kopenhagen) über eine interessante Acaride, Prof. O. M. Reuter (Helsingfors) über die Gesetzmäßigkeit im Abändern der Zeichnungen bei Hemipteren und ihre Bedeutung für die Systematik.