

AN APPEAL FOR STABILIZATION OF CERTAIN NAMES IN THE
PROTOZOAN FAMILY TETRAHYMENIDAE (SUBPHYLUM
CILIOPHORA, ORDER HYMENOSTOMATIDA), WITH SPECIAL
REFERENCE TO THE GENERIC NAME *TETRAHYMENA* FURGASON,
1940. Z.N.(S.) 625

By John O. Corliss, Ph.D.¹ (Department of Biological Sciences, University of Illinois at Chicago Circle, Box 4348, Chicago, Illinois 60680) and Ellsworth C. Dougherty, Ph.D., M.D.* (Department of Nutritional Sciences, University of California, Berkeley, California 94720)

I. Introduction:

1. In the past 25–30 years the scientific community has seen an unprecedented growth in research on the physiology (especially biochemistry) of ciliate Protozoa (see the series of volumes by Lwoff, 1951, Hutner and Lwoff, 1955, Hutner, 1964; and also references in Corliss, 1954a, 1965). The most profoundly studied ciliates have been several strains of the species for which the best name, in our opinion, is *Tetrahymena pyriformis* (Ehrenberg, 1830 (: 96)), Lwoff, 1947 (: 103) (syn. *Leucophrys pyriformis* Ehrenberg, 1830). According to recent counts (Corliss, 1954a, 1957, 1965), investigations on the biology of this and a few congeneric species have yielded approximately 1500 published works, of which a majority have been physiologically, as opposed to morphologically, oriented—definitive studies in the latter category having, moreover, been carried out largely in the last decade. The consequence of the historical lag in morphological behind physiological research on *T. pyriformis* and its congeners is that their literature up to the last decade was in a state of taxonomic and nomenclatural chaos, with *T. pyriformis* itself masquerading, in the last 30 to 40 years alone, under at least thirteen names (see Corliss, 1952a, 1953a).

2. It was, in fact, the eruption of work of a physiological nature that made imperative the study of the morphology, taxonomy, and nomenclature of members of the *Tetrahymena*-group,² or family Tetrahymenidae Corliss, 1952 (1952d : 4). The reason for the recency of definitive morphological studies on these (and many other) free-living ciliates—organisms long known with an extensive 19th and 20th century literature—is simply given: techniques adequate to reveal the detailed structure have come into general use only in relatively recent years (see Corliss, 1963). Most of the early descriptions (of the 18th and 19th centuries) were very crude, often insufficient to permit the certain recognition of species—and not infrequently of genera. Comparable difficulties even obtain with certain descriptions of the past few decades. The literature is therefore replete with doubtful names, and nomenclatural problems will doubtless plague the taxonomy of ciliates for some years to come.

¹ Work supported, in part, by National Science Foundation grants to the senior author; we are also indebted to Mrs. Patricia Williams for editorial assistance.

² One of us (J.O.C.) designated this assemblage of ciliates as the "*Colpidium-Glaucoma-Leucophrys-Tetrahymena*", or "C-G-L-T", group in a series of papers (see Corliss, 1950, 1951a, b, 1952a, 1953a), but this is shortened to "*Tetrahymena*-group" in the present paper.

* Deceased 21 December 1965.

3. For over fifteen years, we, the authors, have exchanged views on the nomenclature of the *Tetrahymena*-group. The status of the generic name *Tetrahymena* Furgason, 1940 (: 258), has been of particular concern. Some years ago a thorough-going study of the literature revealed the fact to one of us (Corliss, 1953a : 66) that, contrary to an earlier conclusion (Corliss, 1952a, b), this generic name cannot be used for the species *T. pyriformis* and its congeners under the usual application of the International Code of Zoological Nomenclature. Evaluation of a number of earlier nominal genera yielded evidence that several names antedate *Tetrahymena* as possible, or definite, subjective synonyms thereof. Sharing an interest in preserving the widely used generic name *Tetrahymena*, we decided (Corliss and Dougherty, 1955) to make a joint appeal to the International Commission on Zoological Nomenclature in order to secure this; and, in making a comprehensive nomenclatural survey, we soon found that a conscientious attempt to resolve the problems connected with *Tetrahymena* led us into a veritable labyrinth of taxonomic and nomenclatural difficulties, especially those inherent in the evaluation of a substantial body of early literature extending back into the latter half of the 18th century. Although in the present paper our fundamental concern is with questions of nomenclature, we cannot avoid taking up taxonomic problems as well, some of which are *sub judice* at our present state of knowledge.

4. In finally formulating the present appeal to the International Commission, we hope not only to obtain, ultimately, a ruling resolving crucial problems in the nomenclature of the *Tetrahymena*-group, but also to stimulate other workers in ciliate taxonomy to submit to the International Commission proposals for the appropriate solution of similar nomenclatural problems—namely, those arising wherever changes required under strict application of the Code threaten to upset long-established and/or widely used generic or specific names.

5. Our several years of dealing both with the voluminous older literature, essential to a nomenclatural analysis of the *Tetrahymena*-group, and with the ever-growing modern literature devoted to these organisms, in all phases of their biology, have served to reinforce our major conviction with respect to the nomenclature of the group, and we can accordingly reaffirm the contention of one of us (Corliss, 1953a) that stability and uniformity of nomenclatural usage are best served if the generic name *Tetrahymena* is preserved through the invocation, by the International Commission, of its plenary powers to accomplish this.³

6. Thus, in order to secure the preservation of *Tetrahymena* Furgason, 1940, as a valid generic name with type-species *T. geleii* Furgason, 1940 (subjective junior synonym of *Leucophrys pyriformis* Ehrenberg, 1830), it is necessary to suppress the application of a number of earlier names actually or potentially available for a taxonomic genus to include *T. geleii*. (In the discussion that

³ It may seem strange to workers in some fields that we are hereby appealing for the retention of a name only 27 years old (at the time of submitting this application). Such is eloquent testimony of the fact that a tremendous growth in the literature on these organisms has taken place in but two decades and that, also, knowledge of their nomenclature, which is a reflection of knowledge of their taxonomy, has, until recently, lagged behind the mushrooming studies of their physiology.

follows we refer to this species as *T. pyriformis*, since that is the name by which, in our opinion, it should be known.) The problem is made especially complex by the fact that certain of the nominal genera involved do not have the same type-species as *Tetrahymena* and that for various reasons some workers have expressed disagreement with the view that all these species are congeneric with *T. pyriformis*. The history of *T. pyriformis* provides an excellent example of the problems that can arise in the determination of nomenclaturally correct names for ciliates. Fortunately, the chaos of 25 years ago (and earlier), when this organism was appearing in print under a variety of names, has been largely resolved and the name *T. pyriformis* (or much less often now, *T. gelei*) has been generally adopted. However, we have found, on careful study, that at least two specific names antedating *pyriformis* Ehrenberg, 1830 (: 96) constitute possible subjective senior synonyms of Ehrenberg's specific name. (See, especially, paragraphs 37 and 38). Again, invocation by the International Commission of its plenary powers in this instance to secure *pyriformis* would, we feel, be the best solution.

7. A third important nomenclatural problem in the *Tetrahymena*-group concerns the specific name *patula* as used by Ehrenberg (1830 : 96—in the combination *Leucophrys patula*). It applies to a species congeneric, in our view, with *T. pyriformis*. In this instance, the name *patula* did not originate with Ehrenberg, but with O. F. Müller (1786 : 181), who applied it to a composite species. Details are given in paragraphs 40–45. We again feel that Ehrenberg's usage, which is that universally followed today, should be preserved by the International Commission acting under its plenary powers.

8. Thus we seek from the International Commission, acting under its plenary powers, ruling that will secure three important names—*Tetrahymena* Furgason, 1940, at the generic level, and *pyriformis* Ehrenberg, 1830, and *patula*, *sensu* Ehrenberg, 1830, at the specific level—all as they are generally used today. Logically arising, as well, are certain related actions that the International Commission should, or could, take—suppression of certain names under plenary powers and additions to the appropriate Official Lists and Official Indexes. We believe that all these problems can be satisfactorily resolved by the promulgation of an Opinion by the International Commission.

9. The balance of this paper is therefore divided into three sections: (1) dealing with actions needed to validate the generic name *Tetrahymena* and the specific names *pyriformis* and *patula*; (2) reviewing family-group names involved; and, finally, (3) summarizing our recommendations for the solution of the problems raised. All references to the "international rules" are to the International Code of Zoological Nomenclature (1961).

II. Actions Needed to Validate the Generic Name *Tetrahymena* Furgason, 1940, and the Specific Names *pyriformis* Ehrenberg, 1830, and *patula sensu* Ehrenberg, 1830

10. Species identical, or, in our opinion, definitely or probably congeneric, with *T. pyriformis* have been referred to some twenty nominal genera, which fall into three categories: very early genera without hitherto validly established types; more recent genera with types *not* congeneric with *T. pyriformis* (by the

consensus of current opinion); and more recent genera with types subjectively identical, or congeneric, with *T. pyriformis* (plus *Tetrahymena* itself). At this point the twenty genera in question are appropriately listed, arranged according to the foregoing three categories and chronologically within each category (more complete citations—i.e., including pagination and information on type determination—are to be found in Table I).

(a) *Genera without validly established types*

- (i) *Enchelys* (emendation—by Berthold in Latreille, 1827—of *Enchelis*) Müller, 1773;
- (ii) *Trichoda* Müller, 1773;
- (iii) *Leucophra* Müller, 1780—with its typographical variants (errors)⁴ *Leucopera* Gmelin, 1790, *Leucophora* Goldfuss, 1820, and *Leucophrus* Ehrenberg, 1838;
- (iv) *Leucophrys* Ehrenberg, 1830 (deliberate emendation, hence objective synonym, of *Leucophra*);
- (v) *Acomia* Dujardin, 1841.

(b) *Genera with established types not considered congeneric with T. pyriformis*

- (vi) *Colpoda* (emendation—by Gmelin, 1790—of *Kolpoda*) Müller, 1773 (type *Kolpoda cucullus* Müller, 1773);
- (vii) *Glaucoma* Ehrenberg, 1830 (type *G. scintillans* Ehrenberg, 1830);
- (viii) *Balantidium* Claparède and Lachmann, 1858 (type *Bursaria entozoon* Ehrenberg, 1838);
- (ix) *Colpidium* Stein, 1860 (= 1860a) (type *Paramaecium kolpoda* Losana,⁵ 1829 [emended to *Paramecium Colpoda*, by Ehrenberg, 1838]).

⁴ Gmelin (1790 : 3028) appears to have been the first to use the spelling "*Leucopera*", obviously through typographical error since the correct spelling "*Leucophra*" is to be found in a later section of the same work (: 3902). Ehrenberg (1838 : 31) is apparently responsible for first claiming "*Leucophrus*" Cuvier (1817) as a variant of *Leucophra*. Agassiz (1843 : 7) followed Ehrenberg in this and, in addition, attributed the spelling "*Leucopera*" to "Nemnich" (i.e. Nemnich and Gebauer, 1794 [(presumably) column 388]). Both workers were incorrect. Cuvier (1817 : 92) used the vernacular word "*Leucophres*" in the sense of "the leucophae". A careful check of all sections of the dictionary by Nemnich and his collaborators (Nemnich and Gebauer, 1793a, b, 1794, 1795; Nemnich and Böhme, 1796 [1796–98] a, [1796–98] b, 1798) has failed to reveal the spelling "*Leucopera*" either in the part ("Bd. III") to which Agassiz attributed it, or in later sections. Nemnich consistently used the spelling "*Leucophra*". Possibly Agassiz misread Nemnich and Gebauer's main entry "*Leucophra*" (1794 : column 388) as "*Leucopera*" because, following it, is to be found "*Leucopetalos*", which is obviously out of alphabetical order. (Or, perhaps these errors should all be attributed to Ehrenberg inasmuch as he is recorded as reviewer of Agassiz's cataloging (1843) of certain protozoan genera).

⁵ Ehrenberg (1832c : 114 (also 1832d : 114)) described a species, *Paramaecium* [sic] *kolpoda*, and attributed it to himself without reference to Losana's species, although the latter's monograph is cited in Ehrenberg, 1832. In later works (1834 : 30 [also 1835 : 174], 1837 : 164), Ehrenberg referred to this species by the same name. In his most important monograph (1838 : 352) he emended the spelling to "*Paramecium Colpoda*" and, curiously, gave "*Paramaecium* [sic] *kolpoda*" in the synonymy, although he had not used the spelling "*Paramaecium*" for the genus in any of the works actually cited in 1838, having abandoned it after his monograph of 1830 (also 1832a and 1832b). Study of Losana's and Ehrenberg's descriptions reveals that one cannot say that both authors' "*Param(a)ecium kolpoda*" represent the same species, but such appears possible. Since Ehrenberg's description clearly fits the modern "*Colpidium colpoda*", we feel it best to accept Losana's species and to regard it as having been fixed by Ehrenberg in the sense of the modern species, which could then be cited, *in extenso*, *Colpidium colpoda* (Losana, 1829, *emend.* Ehrenberg, 1838) Stein, 1860.

(c) *Genera with established types considered identical or congeneric with T. pyriformis*

- (x) *Ptyxidium* Perty, 1852 (type *Enchelis ovulum* Müller, 1773);
- (xi) *Saprophilus* Stokes, 1887 (*non* Streubel, 1839—Coleoptera) (type *S. agitatus* Stokes, 1887);
- (xii) *Leucophrydium* Roux, 1899 (type *L. putrinum* Roux 1889);
- (xiii) *Lambornella* Keilin, 1921 (type *L. stegomyiae* Keilin, 1921);
- (xiv) *Paraglaucoma* Kahl, 1926 (type *P. rostrata* Kahl, 1926);
- (xv) *Protobalantidium* Abé, 1927 (type *Balantidium knowlesii* Ghosh, 1925);
- (xvi) *Turchiniella* Grassé and de Boissezon, 1929 (type *T. culicis* Grassé and de Boissezon, 1929);
- (xvii) *Leptoglena* Grassé and de Boissezon, 1929 (type *Balantidium knowlesii* Ghosh, 1929);
- (xviii) *Paraglaucoma* Warren, 1932 (type *P. limacis* Warren, 1932);
- (xix) *Tetrahymena* Furgason, 1940 (type *T. geleii* Furgason, 1940 [subjective junior synonym of *Leucophrys pyriformis* Ehrenberg, 1830]);
- (xx) *Sathrophilus* Corliss, 1960 (= 1960a) (type *Saprophilus agitatus* Stokes, 1887).

11. The foregoing three groups of genera are considered in the following three subsections, which are succeeded by a fourth dealing with the specific names *pyriformis* and *patula*, both of Ehrenberg (1830), and by a fifth and final subsection on *Tetrahymena* itself.

A. *Genera Without Established Types*

12. Inspection of the list under paragraph 10 (a) reveals that, whereas there are five nominal genera, these can apply, under usual application of the Code to but four taxonomic genera, for *Leucophrys* was a deliberate emendation of *Leucophra*, and the type species of one, if validly selected, is *ipso facto* type of the other (Article 69, part a).

13. The fact that four such old genera as *Enchelis* Müller, 1773, *Trichoda* Müller, 1773, *Leucophra* Müller, 1780, and *Acomia* Dujardin, 1841, have no established type species is striking testimony to the still primitive state of ciliate nomenclature. It is obvious that, if types identical, or congeneric, with *T. pyriformis* could be selected for one or more of these genera, then the earliest generic name, so restricted, would be the correct title for the genus including *T. pyriformis*. But such could not be done with either *Trichoda* or *Leucophra*; these two genera, as originally constituted, did not include species that can be recognized as identical, or congeneric, with *T. pyriformis*. Therefore, it follows that, by usual application of the Code, *Leucophrys* likewise cannot enter the picture in this connection. (*Enchelis* and *Acomia* are treated separately in paragraphs 19–21.)

14. Even though *Trichoda* and *Leucophra* cannot affect the status of *Tetrahymena*, we feel that the opportunity to make some disposition of these old generic names should not be neglected. Both constitute long-buried but still-living nomenclatural relics, which could conceivably be disinterred and re-animated, with probable subsequent necessity of their being done to death

once and for all. Study of their originally included species reveals that no useful purpose would be served by our attempting to preserve them through designating, as their types, such species as would then apply to taxonomic genera for which *Trichoda* and *Leucophrys* would be the earliest available names.

15. *Trichoda* Müller, 1773, was originally established with 40⁶ nominal species (Müller, 1773 : 71–96), none of them type by designation or indication; they were listed again in a later publication by Müller (1776 : 206–209). Without going into detail, we may state that, whereas none can be taken as identical, or congeneric, with *T. pyriformis*, several can be identified with reasonable certainty and have subsequently become types of other, later nominal genera.

16. *Trichoda* comes into consideration in connection with members of the *Tetrahymena*-group because: (1) Müller (1786 : 108) added a new species, *T. pirum*, which Ehrenberg (1830 : 96 [see also 1832b : 76]⁷) later tentatively identified as being in part identical with his “new” species *Leucophrys pyriformis*⁸ (see also paragraphs 23 and 28); and in part transferred to the genus *Kolpoda* Müller, 1773 ; (2) Ehrenberg (1830 : 96 [also 1832b : 76 and 1832d : 105]) described a species under the name *Leucophrys patula*⁹ and earlier in the same work (1830 : 62 [also 1832b : 42]), gave the synonymy “*Leucophrys patula*. *Trich. pat. M.*” [= *Trichoda patula* Müller, 1786] and shortly thereafter (Ehrenberg, 1832c : 105 [also 1832d : 105]) “*L. patula* E. ! *Trichoda patula* Müller”, thus eliminating any possible confusion with *Trichoda patella* Müller, 1773 (: 95) (see also paragraphs 17, 40–45) ; and (3) the nominal species *Trichoda pura* Ehrenberg, 1832 (= 1832c : 104 [also 1832d : 104]) and *Trichoda carnum* Ehrenberg, 1832 (= 1832c : 104 [also 1832d : 104]) are, in our opinion, probable synonyms of the species originally described by Ehrenberg under the name *Leucophrys pyriformis*. The best solution to the problem posed by the existence of Müller’s nominal genus would appear to us to be settling on an unrecognizable species as type and thus consignment of the genus to limbo as a *genus dubium*.

⁶ These species were misnumbered by Müller in two places (: 83, 85) so that, on casual checking, one may think there were only 38.

⁷ The works of Ehrenberg have generally been cited in a confused way. This situation has come about by reason of two facts, briefly described as follows. First, four of his monographic studies had double publication: (a) as three separate works (1830, 1832c, 1834): and (b) as parts of four separate issues of the *Physikalische Abhandlungen* in the series *Abhandlungen der Königlich Akademie der Wissenschaften zu Berlin* (thus 1830, pp. 1–20 = 1832a; 1830, pp. 21–108 = 1832b; 1832c = 1832d; 1834 = 1835). Of the four issues in the . . . *Abhandlungen* it should be observed that the first two and the last appeared as separate publications two and one years, respectively, ahead of the corresponding editions in the *Abhandlungen*, whereas the third appeared the same year in both editions (it is also worth noting that the separate editions for the second and fourth, as available to us, have coloured plates which, in the corresponding editions in the *Abhandlungen*, are not coloured; however, the third paper—1832d—in the . . . *Abhandlungen* edition does have coloured plates, just as its corresponding separate publication—1832c). Secondly, the *Abhandlungen* were usually issued (as, for example, those in which several of Ehrenberg’s works appeared) one to three years after the years numbering the volume (the latter being designated by year rather than in numerical sequence). Thus, 1832a = 1829; 1832b = 1830; 1832d = 1831; 1835 = 1833; and 1837 = 1835. Workers have commonly referred only to Ehrenberg’s works in the *Abhandlungen*, ignoring his separate publications, and have used as dates of publication for the genera and species therein those designating the volumes of this series rather than those of actual publication, even though the latter dates are clearly given on the title page of each volume.

⁸ “Das birnförmige Wimperthierchen, *Leucophrys pyriformis*, eine Art, die wahrscheinlich auch unter *Kolpoda pyrum* Müller gehört hat.”

⁹ “Das weite Wimperthierchen, *Leucophrys patula*.”

As type of *Trichoda* Müller, 1773, we therefore select *Trichoda acarus* Müller, 1773 (: 71) an originally included species, unidentifiable in our opinion.

17. *Leucophra* Müller, 1780^{10,11} (: 4), was established without designated or indicated type for three new, nominal species—*L. fluida*, *L. fluxa*, and *L. armilla*. *Leucophra* comes into consideration in connection with the *Tetrahymena*-group because to it, in its emended form (*Leucophrys* of Ehrenberg, 1830),¹² Ehrenberg (1830 : 96) added the new species *Leucophrys pyriformis* (*T. pyriformis*) and also ostensibly transferred from *Trichoda* to *Leucophrys* the nominal species *T. patula* Müller, 1786 (see paragraphs 16, 40–45). As with *Trichoda*, we believe that we may deal best with *Leucophra* by selecting an unrecognizable species as its type—namely *L. armilla* Müller, 1780 (: 4). (This name was most probably applied by Müller inadvertently to a piece of lamellibranch gill unrecognizable as to species.) Thus, *Leucophra*, too, is consigned to limbo.

18. Under the usual application of the Code,¹³ *Leucophrys* Ehrenberg, 1830, automatically follows *Leucophra*.

19. *Enchelis* and *Acomia* require separate treatment because, unlike *Trichoda* and *Leucophra*, each was originally proposed for a group of species including members that can conceivably be regarded as congeneric with *Tetrahymena pyriformis*. Thus, disposing of these nomenclatural relics has an importance here transcending that at issue with *Trichoda* and *Leucophra*, which pose no nomenclatural threat to *Tetrahymena*. With *Enchelis* and *Acomia* our aim must be to preclude any possibility of their being made applicable to the *Tetrahymena*-group.

20. *Enchelis* Müller, 1773, was originally established with 11 nominal species (Müller, 1773 : 34 ff), none of them type by designation or indication. No subsequent worker has selected a type, to the best of our knowledge. Berthold (in Latreille, 1827) emended the spelling of the generic name to *Enchelys*; this correction has been adopted universally. Most of Müller's species have long since been transferred from the genus. Indeed, as characterized in recent times (e.g., see Kahl, 1930 : 96 ff), it represents a distinct group of gymnostome holotrichs far removed from any direct affinities with the *Tetra-*

¹⁰ Ehrenberg (1838 : 311) erroneously attributed *Leucophra* to Müller as of 1776; however, 1776 represents the date of a preliminary monograph entitled *Zoologiae Danicae Podromus . . .*, whereas *Leucophra* actually appeared in fasc. 2 (1780) of plates published under the title *Zoologiae Danicae . . . Icones*. Moreover, Ehrenberg referred to "4 species", but Müller actually named only three species in his 1780 publication, adding the fourth in the text *Zoologia Danica . . .* (1784 : 124), corresponding to the 1780 volumes of plates.

¹¹ The publications of O. F. Müller are almost as confusing as those of Ehrenberg. The part of the former worker's great historical monograph, *Zoologica Danica . . .*, in which appeared the names of interest to us here, had two editions; for the first edition, the plates (1780—under a separate title [see footnote 10]) with two pages of brief legends, appeared before the detailed text (1784), whereas, for the second edition, text and plates appeared simultaneously (1788), so far as we can determine. In each instance in which an organism was figured and named in the first edition of the plates (1780), its name should date from that publication.

¹² Ehrenberg (1830 : 96 [also 1832b : 76]) wrote as follows: "Da der Name *Leucophra* unrichtig gebildet ist, und deshalb von einigen (Goldfuss) *Leucophra* geschrieben wird, was wegen die Absicht des Gründers scheint, so habe ich für gut gehalten, obige Endung anzuwenden".

¹³ Article 67, part i.

hymena-group of hymenostomes. Its historic connection with the main problem under discussion in the present paper is through *E. ovulum* Müller, 1773, type of the genus *Ptyxidium* Perty, 1852 (see paragraph 29). To make certain that the genus *Enchelys* as recognized today is severed completely from such a connection, we hereby select, as its type, the species *Enchelis farcimen* Müller, 1773 (: 34), one of the few originally included species still currently retained in the genus.

21. *Acomia* Dujardin, 1841, was originally established with seven species (Dujardin, 1841 : 382–384), none of them type by designation or indication, and was dropped within forty years of its creation. That it should enter into a discussion of the *Tetrahymena*-group is principally due to Maupas (1883), who listed, as possibly identical with his *Glaucoma pyriformis* (*T. pyriformis*), two species of *Acomia* (*A. inflata* Dujardin, 1841; *A. ovata* Dujardin, 1841), which, although very poorly characterized, are conceivable as congeners of *T. pyriformis*. To avoid any future trouble with this ill-defined and generally forgotten genus, we select, as type, the originally included, and unidentifiable, species *Acomia vitrea* Dujardin, 1841 (: 382), an organism that we consider definitely non-congeneric with the type of the genus *Tetrahymena*.

B. *Genera with Established Types not Considered Congeneric with T. pyriformis*

22. Of the four genera with established types not here considered congeneric with the type of *Tetrahymena*, two—*Colpoda* Müller, 1773, and *Balantidium* Claparède and Lachmann, 1858—are trichostome genera, thus not even in the same ordinal group as *Tetrahymena*; and, the other two—*Glaucoma* Ehrenberg, 1830, and *Colpidium* Stein, 1860—although closely related to *Tetrahymena* in the hymenostome family Tetrahymenidae, are separated from *T. pyriformis* at the generic level. Therefore, all four genera can be dealt with fairly easily here. They come into the present discussion because they have been treated by various investigators as generic vehicles for nominal species that we now recognize as identical, or congeneric, with *T. pyriformis*.

23. The genus *Colpoda* Müller, 1773, *emend.* Gmelin, 1790 [= *Kolpoda* Müller, 1773] has, as its type, *Kolpoda cucullus* Müller, 1773, as selected by Taylor and Furgason, 1938¹⁴—trichostome species, hence clearly not congeneric with *pyriformis*. Of concern to us here, nevertheless, is the ill-defined, small hymenostome species, *Kolpoda pirum* Müller, 1786, which, as already mentioned, was considered by Ehrenberg (1830) to be, in effect, a composite species. Thus, he applied the specific name, in the form “*pyrum*”, to an organism listed by him (: 96) as “*Trichoda pyrum?*”; but he also treated (: 96) Müller’s “*Kolpoda pyrum*” [sic] as possibly having included his own newly created species *Leucophrys pyriformis* (see paragraph 16, footnote 8). After studying the pertinent figures in the works of Müller and Ehrenberg, we realized that *Kolpoda pirum*, *Trichoda pyrum* and *Leucophrys* [(= *Tetrahymena*)] *pyriformis* cannot be unequivocally separated. (Indeed, various 19th century compilations list these

¹⁴ Taylor and Furgason (1938) erroneously attributed to Ehrenberg the selection of type for *Colpoda*. But they themselves are to be credited with this selection since they were the first to state that *cucullus* was the type of *Kolpoda* (*Colpoda*), so far as we have been able to determine.

names as synonyms of one another.) Our recommendations with respect to the specific name *pirum* Müller, 1786, are given in paragraph 38.

24. The genus *Balantidium*¹⁵ Claparède and Lachmann, 1858, has as its type, *Bursaria entozoon* Ehrenberg, 1838, a species recognized today and clearly not congeneric with the type of *Tetrahymena*. Of concern to us here is the poorly described species *Balantidium knowlesii* Ghosh, 1925, for which two new nominal genera were subsequently created—*Protobalantidium* by Abé (1927) and *Leptoglana* by Grassé and de Boissezon (1929) (see paragraph 29)—and which is quite likely congeneric, possibly identical, with *T. pyriformis*. In recent years, another species of *Tetrahymena* (*T. corlissi* Thompson, 1955) was first recorded as belonging to the genus *Balantidium*¹⁶ (e.g., by Speidel, 1951, 1953).

25. *Glaucoma* Ehrenberg, 1830, was, between the years 1883 and 1940, the the most popular generic vehicle for species now assignable to the genus *Tetrahymena*. This was a consequence of an important work by Maupas (1883), in which he (1) provided a description of *pyriformis* unequivocally identifiable by modern standards and, (2) transferred Ehrenberg's *Leucophrys pyriformis* to the genus *Glaucoma*, an unfortunate decision since, as Corliss (1953a : 67) pointed out, it has been "the cause of much of the subsequent confusion in the history of ciliates in the entire C-G-L-T group". The type species of *Tetrahymena* thus became well known as *G. pyriformis*, often written *G. piriformis*, especially by French physiologists (led by Lwoff). In view of the general state of ciliate taxonomy at the time of Maupas' work, it was, perhaps, not altogether unreasonable, although (in retrospect) most unfortunate, for him to place *T. pyriformis* in the same genus as the well established type of the genus *Glaucoma*, *G. scintillans* Ehrenberg, 1830. However, it is now recognized by modern workers that *G. pyriformis* cannot justifiably be considered congeneric with *G. scintillans*, as pointed out with precision by Furgason (1940). (*G. scintillans* has a number of valid congeners—see Corliss, 1954b.)

26. *Colpidium* Stein, 1860, has been applied as the generic name for several tetrahymenids—in particular, for a number of strains of *Tetrahymena pyriformis*. Such misuse—since *Colpidium* may be considered a valid genus in its own right—has stemmed principally from inadequate descriptions by Stokes (1885, 1886) of his species *Colpidium truncatum* Stokes, 1885, *C. striatum* Stokes, 1886, and *C. putrinum* Stokes, 1886. In our opinion (see also Corliss, 1953b), the first two of these species (also *Tillina campyla* Stokes, 1886) are valid members of the genus *Colpidium*, congeneric with the type *Paramaecium kolpoda* Losana, 1829, emended by Ehrenberg, 1838. They are not, therefore, congeneric with *T. pyriformis*. By contrast, *C. putrinum*—as pointed out by Corliss (1953a)—may be identical with the species *T. pyriformis*; but, since *pyriformis* antedates *C. putrinum*, the latter does not affect the status of the former.

¹⁵ First recognized as belonging to the order Trichostomatida by Fauré-Fremiet (1955); erroneously considered, for many years, a member of the quite dissimilar spirotrichous order Heterotrichida. Fauré-Fremiet's allocation is today widely accepted.

¹⁶ Unfortunately this generic name has been invoked more than once by clinical parasitologists and medical men for any small ciliate found in symbiotic existence in vertebrate tissues—presumably because *Balantidium coli* is the sole ciliate parasite of the human body. Actually, a number of species of *Tetrahymena* are now known to exist as facultative parasites in a wide variety of hosts (see Corliss, 1953a, 1954a, 1960b; Corliss, Smith, and Foulkes, 1962; Thompson, 1958).

C. Genera with Previously Established Types Here Considered
Congeneric, or Identical with *T. pyriformis*

27. In addition to *Tetrahymena*, there are ten nominal genera in this category, of which six have somewhat or very poorly described types, and four have relatively well known types. Species in the latter category are, in our opinion, congeneric, but not identical, with *T. pyriformis*.

28. The six genera that cannot be unequivocally characterized, at least at present, are: *Ptyxidium* Perty, 1852; *Saprophilus* Stokes, 1887; *Protobalantidium* Abé, 1927; *Turchiniella* Grassé and de Boissezon, 1929; *Leptoglana* Grassé and de Boissezon, 1929; and *Sathrophilus* Corliss, 1960.

29. We think that the problem posed by four of these nominal genera (*Ptyxidium*, *Protobalantidium*, *Turchiniella*, and *Leptoglana*) is best dealt with by their unconditional suppression by the International Commission, acting under plenary powers, for purposes of the Law of Priority but not of the Law of Homonymy. *Leptoglana*, as an objective junior synonym of *Protobalantidium* (i.e., with the same type species—*Balantidium knowlesii* Ghosh, 1925), is invalid in any event. *Enchelis ovulum* Müller, 1773, type of *Ptyxidium*¹⁷ is an obscure form, but probably a tetrahymenid. *Balantidium knowlesii* Ghosh, 1925, type of *Protobalantidium* (and *Leptoglana*), and *Turchiniella culicis* Grassé and de Boissezon, 1929, type of *Turchiniella*, are seemingly synonymous with either *T. pyriformis* or *Tetrahymena chironomi* Corliss, 1960, or they represent separate tetrahymenid species (see Corliss, 1960b : 130, 131). If suppressed by the International Commission, these generic names should be placed on the appropriate Official Index and be eliminated as potential senior synonyms of *Tetrahymena*.

30. With *Saprophilus* Stokes, 1887, and *Sathrophilus* Corliss, 1960, the problem of senior synonymy does not arise. *Saprophilus* Stokes, 1887, as a junior of homonym of *Saprophilus* Streubel, 1839 (Coleoptera), cannot affect the status of *Tetrahymena*, nor is it available for its type, *S. agitatus* Stokes, 1887, which was described with certain features that allow us to regard it as an independent species, possibly belonging to a genus separate from *Tetrahymena*. Pending this species' rediscovery and redescription, its generic placement probably must remain undecided, as Holz and Corliss (1956) have already suggested. *Saprophilus* Stokes, 1887, is hereby referred to the appropriate Official Index. The generic name *Sathrophilus* has recently been proposed by Corliss (1960a) to replace *Saprophilus* of Stokes and takes the same species, *Saprophilus agitatus*, as type. Further work is needed to establish *Sathrophilus* as an independent (presumably tetrahymenid) genus or, alternatively, to sink it as a subjective junior synonym of *Tetrahymena*.

31. The four genera with types now adequately known are: *Leucophrydium* Roux, 1899; *Lambornella* Keilin, 1921; *Paraglaucoma* Kahl, 1926; and *Paraglaucoma* Warren, 1932 (*non* Kahl, 1926). Of these, the fourth is a junior homonym of the third and should be referred to the appropriate Official Index. The three nominal genera thus left pose special difficulties. Since their types are

¹⁷ This poorly characterized genus enters our discussion here primarily because of Maupas' (1883) listing its only species as a synonym of his *Glaucoma pyriformis* [= *T. pyriformis*].

congeneric, but not identical, with *T. pyriformis*, their unconditional suppression by the International Commission in favour of *Tetrahymena* would preclude their possible use in the event that future workers were to fragment the genus, as we now conceive it. In other words, if *T. pyriformis* and one or more of the type species of the three genera now under consideration were to be separated at the generic level, the latter would be deprived of now-existing potential generic vehicles. In our opinion, a reasonable alternative would be for the International Commission, under its plenary powers, to suppress the three nominal genera *conditionally*—that is, to direct that, so long as their type species are considered congeneric with *T. pyriformis*, these generic names be suppressed in favour of *Tetrahymena*, but that they remain potentially available if, through future work, separate genera are needed for their type species (and possible congeners).

32. *Leucophrydium* has, as type, the nominal species *L. putrinum* Roux, 1899, which is a junior subjective synonym of the species long known as *Leucophrys patula* Ehrenberg, 1830. *Leucophrydium* is the earliest generic name restricted to a clearly defined species of *Tetrahymena*, as we conceive the latter genus. But great confusion would surely attend any attempt to replace the widely known name *Tetrahymena*, with an obscure one, such as *Leucophrydium*, which has never enjoyed general usage. Yet, conditionally suppressed, it would be potentially available for *Leucophrys patula* if that species were ever generically separated from *T. pyriformis*.

33. *Lambornella* Keilin, 1921, was based on the single (type) species, *L. stegomyiae* Keilin, 1921, which, as originally described, was rather more defective as regards conventional diagnostic features than *Leucophrydium putrinum*. Recently one of us (Corliss, 1960b) has been able to study material that he regards as belonging to *L. stegomyiae* and has concluded that this species is separate from, but congeneric with, *T. pyriformis*. *Lambornella*, conditionally suppressed, could likewise be removed as a threat to *Tetrahymena*, but remain potentially available if a separate genus were needed for its type.

34. *Paraglaucoma* Kahl, 1926, has as type *P. rostrata* Kahl, 1926, which, though clearly non-conspecific with *T. pyriformis*, is just as clearly, in our estimation, congeneric therewith. Other modern workers on the taxonomy of hymenostome ciliates are in full agreement with this view (e.g., Holz and Thompson, 1955; Kazubski, 1958; Kozloff, 1957; Stout, 1954; Thompson, 1958). Practically no one¹⁸ has identified any ciliate as fitting Kahl's (1926) description of *P. rostrata* between the time of its original description and its rediscovery by Corliss (1952c)—a span of 25 years; since that time it has been consistently referred to as *Tetrahymena rostrata*. Again, if conditionally suppressed, *Paraglaucoma* would be removed as a threat to *Tetrahymena* but would remain potentially available for a genus based on its type.

¹⁸ Mugard (1949) erroneously identified one of her strains of "*Glaucoma piriformis*" as belonging to the species "*Paraglaucoma rostrata* Kahl". This mistake was acknowledged by her several years ago in a personal communication to one of us (J.O.C.).

D. *The Species Leucophrys pyriformis Ehrenberg, 1830, and
L. patula Ehrenberg, 1830*

35. The specific names *pyriformis* and *patula* are today almost universally applied to species of *Tetrahymena* and attributed to Ehrenberg (1830). But with both there are nomenclatural problems best resolved, we feel, by formal action of the International Commission.

36. The specific name *pyriformis* Ehrenberg, 1830, by which the nominal type species of *Tetrahymena*, *T. geleii*, is now generically known, would advantageously be protected against possible subjective synonyms, of which we have already discussed *ovulum* Müller, 1773 (as published in the combination *Enchelis ovulum*—see paragraphs 20 and 30) and *pirum* Müller, 1786 (as published in the combination *Kolpoda pirum*—see paragraphs 16 and 23).

37. The nominal species *Enchelis ovulum* Müller, 1773, for which Perty (1852) created the genus *Ptyxidium* and which was later treated by Maupas (1883) as a synonym of his *Glaucoma pyriformis* [= *T. pyriformis*] is, we feel, best suppressed by the International Commission, acting under plenary powers.

38. With respect to the species *Kolpoda pirum* Müller, 1786, it is clear that, although Ehrenberg explicitly separated out *Leucophrys pyriformis* from it, the specific name *pyriformis* Ehrenberg, 1830, is not an objective junior synonym of *pirum* Müller, 1786, which is not in use today as attributed to Müller. The earlier specific name nevertheless remains as a possible *subjective* senior synonym and thus constitutes an embarrassment to the later one. This problem is again best resolved, in our view, by the suppression, under the International Commission's plenary powers, of the specific name *pirum* Müller, 1786.

39. Finally, it would be desirable for the International Commission, once again acting under plenary powers, to direct that no specific name of the many other ill-defined species described prior to *Leucophrys pyriformis* Ehrenberg, 1830, be available for the modern species *T. pyriformis*.

40. The specific name *patula*, *sensu* Ehrenberg, 1830, is beset with a problem more clearly defined than the threat of subjective senior synonymy. Nomenclaturally, *patula* of Ehrenberg descends from the specific name *patula* Müller, 1786 (as published in the combination *Trichoda patula*) which was applied to an organism that, though crudely described and illustrated in the original, can reasonably be taken to have been a spirotrichous ciliate. Ehrenberg (1830), in describing *Leucophrys patula*, considered that he was dealing with Müller's species—at least in part (see paragraph 16, footnote 9). In actual fact, he combined *two* separate species under this name, one a spirotrich (which conceivably could be the same as Müller's species) and the other a holotrich, which, from that time until recently, went by the name *Leucophrys patula*.

41. Certain subsequent workers (notably Stein, 1860b, 1867; Maupas, 1888), recognizing that Ehrenberg combined two species under the name *Leucophrys patula*, sought to solve the problem by restricting this name to the holotrichous form and segregating out the spirotrichous form in a separate genus *Climacostomum* Stein, 1859, in which the specific name *patul(um)* was retained. Although a not unreasonable solution to a complex and vexing

problem, this is inadmissible under the Code.¹⁹ It is evident that under the usual application of the Code, the specific name *patula* is unavailable for the taxonomic species known today as *Tetrahymena*, or *Leucophrys*, *patula*.

42. But the facts just set forth must be reckoned in the context of general usage. A crucial point is that no one has recognized this difficulty in any previous publication. In establishing the genus *Tetrahymena*, Furgason (1940) regarded his new nominal species *T. geleii* as generically distinct from the organism generally called *Leucophrys patula*. Not recognizing the unavailability, under the Code, of *Leucophrys* for the latter species, he accepted this nominal genus, with *L. patula* as type. (So far as we can determine, this was the first actual statement that *L. patula* should be considered as type of the genus *Leucophrys*. However, many workers and compilers, before 1940—and, indeed, since that date—have listed only this species in the genus *Leucophrys*. Thus it has conventionally appeared to be a unispecific genus.) In contrast to Furgason, Corliss (1951a) concluded that *T. geleii* [= *T. pyriformis*] and *L. patula* were congeneric and, recognizing the unavailability of *Leucophrys* for these two species, transferred *L. patula* to *Tetrahymena*. At that time, he had not yet discovered that several other generic names were earlier subjective synonyms of *Tetrahymena*.

43. If *patula* were rejected on nomenclatural grounds, the next (and only other) name available for the taxonomic species in question would be *putrinum* Roux, 1899, as published in the combination *Leucophrydium putrinum*, which is, however, only subjectively synonymous with *Leucophrys patula*. But even this name is not without question. The species *Colpidium putrinum* Stokes, 1886, is probably a member of *Tetrahymena* and possibly a synonym of *T. pyriformis* (see paragraph 26). In any event, it can be seen that the name *putrinum* Roux, 1899, is potentially rejectable on the basis of secondary homonymy if Stokes' species is ever accepted as valid and, at the same time, as definitely belonging to the genus *Tetrahymena*.

44. From the foregoing discussion it is clear that *patula* can be used for the taxonomic species now generally known as *T. patula* only through action of the International Commission under its plenary powers. It is, we think, clearly in the interest of nomenclatural stability to preserve it in the sense of Ehrenberg (1830). But, if this specific name is maintained for the taxonomic species long known as *Leucophrys patula*, and recently as *T. patula*, it cannot be logically validated as from its use by Müller (1786). It may reasonably date, however, from its use by Ehrenberg (1830) with the stipulation that it is to be restricted to the holotrichous ciliate species included by him in his composite *Leucophrys patula*. Under this name the taxonomic species in question was subsequently described with considerable precision by Maupas (1888) and in less detail by certain other authors.

45. We are still left with the problem of what to do with the specific name *patula* of Müller (1786). One cannot reasonably hold that this (spirotrichous) species is identifiable as from its original description by Müller. Moreover,

¹⁹ Article 49 clearly states, "The specific name used in an erroneous specific identification cannot be retained for the species to which the name was wrongly applied, even if the two species in question are in, or are later referred to, different genera".

even today, the nominal species to which the specific name has been, in effect, restricted—*Climacostomum patulum*—is not a definitely recognizable one. It is not the type of the genus *Climacostomum* Stein, 1860 (the status of which we do not feel qualified to pursue further in this communication). We therefore feel that the most satisfactory resolution of this unsettled condition would be for the International Commission, under its plenary powers, to suppress, for the purposes of the Law of Priority but not for those of the Law of Homonymy, the specific name *Trichoda patula* Müller, 1786, and to validate the specific name *Leucophys patula* Ehrenberg, 1830, for the species now generally known as *T. patula*.

E. The Genus *Tetrahymena* Furgason, 1940

46. To the best of our knowledge, all actions calculated to clear the way for the validation of the generic name *Tetrahymena* Furgason, 1940, have now been summarized. We strongly urge that this be done by the International Commission, under its plenary powers, and that *Tetrahymena* be placed on the Official List of Generic Names in Zoology. To realize the first of these ends, it would, perhaps, be sufficient for the International Commission simply to direct, without specific reference, that no earlier generic name shall be substituted for *Tetrahymena*. However, we think greater service is done through the specific enumeration, as has been done by us here, of the nomenclatural and taxonomic problems currently facing workers on the family Tetrahymenidae and through specific action by the International Commission on the basis of present knowledge in the several cases already surveyed.

47. At the same time as *Tetrahymena* is placed on the appropriate Official List, the invalid emendations *Tetrahymen* Mast and Pace, 1946, and *Tetrahymenia* Mugard, 1949,²⁰ surely inadvertent in the second case, should be placed on the Official Index of Rejected and Invalid Generic Names in Zoology. It is true, as Mast and Pace (1946) pointed out, that *Tetrahymena* (from τετρα, combining form for *four*; *a skin, membrane*) is orthographically defective; but this does not permit its correction under the Code.²¹

III. Family-group Names Based on Genera Directly Involved with the *Tetrahymena*-group

48. Family-group names have been based on five of the genera here considered. These names are: Balantidiidae Reichenow in Doflein and Reichenow, 1929; Colpodidae Ehrenberg, 1838; Enchelyidae Ehrenberg, 1838; Leucophryidae Mugard, 1949 (: 171—erroneously attributed by Mugard to Kahl—also given as “Leucophrydae” by Mugard, p. 181); and, most recently, Tetrahymenidae Corliss, 1952.

49. It should, in addition, be mentioned that a family Leucophryens was proposed by Dujardin, 1841, but this is best disregarded because (1) it was a vernacular name, and (2) it was never adopted by subsequent workers as dating from Dujardin's usage.

²⁰ Generally cited, incorrectly, as 1948. This doctoral thesis (Université de Paris) actually was published in the spring of 1949.

²¹ Article 32, c.

50. Under the rules adopted for family names at Copenhagen (International Commission on Zoological Nomenclature, 1953), Leucophryidae (emendation of Leucophrydae) could be used for the taxonomic family including the genus *Tetrahymena*.

51. However, in our opinion, it is undesirable to preserve the name Leucophryidae in place of Tetrahymenidae. The earlier family name has had almost no use. We therefore recommend that Leucophryidae Mugard, 1949, be suppressed in favour of Tetrahymenidae Corliss, 1952, and that the latter name be placed on the Official List of Family-Group Names in Zoology and the former name on the corresponding Official Index of Rejected and Invalid Family-Group Names in Zoology (along with Leucophryens Dujardin, 1841, and Leucophrydae Mugard, 1949).

IV. Recommendations²² for the Solution of the Problems Raised Regarding the Generic Name *Tetrahymena* and the Specific Names *Tetrahymena pyriformis* and *T. patula*

52. Based on the data cited here, we, the authors, request the International Commission on Zoological Nomenclature:

(1) to use its plenary powers:

(a) to suppress the following names for the purposes of the Law of Priority but not for those of the Law of Homonymy:

(i) *Leptoglana* Grassé & de Boissezon, 1929;

(ii) *Protobalantidium* Abé, 1927;

(iii) *Ptyxidium* Perty, 1852;

(iv) *Turchiniella* Grassé & de Boissezon, 1929;

(v) *ovulum* Müller, 1773, as published in the binomen *Enchelis ovulum*;

(vi) *patula* Müller, 1786, as published in the binomen *Trichoda patula*;

(vii) *pirum* Müller, 1786, as published in the binomen *Kolpoda pirum*;

(viii) *pyrum* Ehrenberg, 1830, as published in the binomen *Trichoda pyrum*;

(ix) Leucophryidae Mugard, 1949;

(b) to Rule that the generic name *Tetrahymena* Fergason, 1940, is to be given priority over the generic names *Lambornella* Keilin, 1921, *Leucophrydium* Roux, 1899, and *Paraglaucoma* Kahl, 1926, by any zoologist who considers the type-species of these genera to belong to the same genus-group taxon;

(c) to validate the emendation to *Enchelys* of the generic name *Enchelis* Müller, 1773;

(d) to validate the emendation to *Colpoda* of the generic name *Kolpoda*, Müller, 1773;

²² See also the appropriate columns in Tables I and II, tables which concisely summarize the nomenclatural data on the nominal genera and species involved—some 64 in all.

- (e) to validate the specific name *patula* Ehrenberg, 1830, as published in the binomen *Leucophrys patula*, in spite of the fact that Ehrenberg had no intention of publishing a new specific name;
 - (f) to validate the emendation to *colpoda* of the specific name *kolpoda* (*Paramaecium*) Losana, 1829;
 - (g) to Rule that the specific name *Leucophrys pyriformis* Ehrenberg, 1830, is to be given precedence over any earlier name published for the same species-group taxon;
- (2) to place the following generic names on the Official List of Generic Names in Zoology:
- (a) *Balantidium* Claparède & Lachmann, 1858 (gender: neuter), type species, by monotypy, *Bursaria entozoon* Ehrenberg, 1838;
 - (b) *Colpidium* Stein, 1860 (gender: neuter), type-species, by monotypy, *Paramecium colpoda* Losana, 1829;
 - (c) *Colpoda* Müller, 1773 (gender: feminine), type-species, by designation by Taylor & Furgason, 1938, *Kolpoda cucullus* Müller, 1773;
 - (d) *Enchelys* Müller, 1773 (gender: feminine), type-species, by designation herein, *Enchelis farcimen* Müller, 1773;
 - (e) *Glaucoma* Ehrenberg, 1830 (gender: feminine), type-species, by monotypy, *Glaucoma scintillans* Ehrenberg, 1830;
 - (f) *Tetrahymena* Furgason, 1940 (gender: feminine), type-species, by original designation, *Tetrahymena geleii* Furgason, 1940;
- (3) to place the following specific names on the Official List of Specific Names in Zoology:
- (a) *entozoon* Ehrenberg, 1838, as published in the binomen *Bursaria entozoon* (type-species of *Balantidium* Claparède & Lachmann, 1858);
 - (b) *colpoda* Losana, 1829, as published in the binomen *Paramecium colpoda* (type-species of *Colpidium* Stein, 1860);
 - (c) *cucullus* Müller, 1773, as published in the binomen *Kolpoda cucullus* (type-species of *Colpoda* Müller, 1773);
 - (d) *farcimen* Müller, 1773, as published in the binomen *Enchelis farcimen* (type-species of *Enchelys* Müller, 1773);
 - (e) *scintillans* Ehrenberg, 1830, as published in the binomen *Glaucoma scintillans* (type-species of *Glaucoma* Ehrenberg, 1830);
 - (f) *pyriformis* Ehrenberg, 1830, as published in the binomen *Leucophrys pyriformis*;
 - (g) *patula* Ehrenberg, 1830, as published in the binomen *Leucophrys patula*;
- (4) to place the family-group name TETRAHYMENIDAE Corliss, 1952 (type-genus *Tetrahymena* Furgason, 1940) on the Official List of Family-Group Names in Zoology;
- (5) to place the following generic names on the Official Index of Rejected and Invalid Generic Names in Zoology:

- (a) *Enchelis* Müller, 1773 (Ruled under the plenary powers in (1) (c) above to be an incorrect original spelling for *Enchelys*);
- (b) *Kolpoda* Müller, 1773 (Ruled under the plenary powers in (1) (d) above to be an incorrect original spelling for *Colpoda*);
- (c) *Leptoglena* Grassé & de Boissezon, 1929 (as suppressed under the plenary powers in (1) (a) above);
- (d) *Leucopera* Gmelin, 1790 (an incorrect spelling for *Leucophra* Müller, 1780);
- (e) *Leucophrus* Ehrenberg, 1838 (an incorrect spelling for *Leucophra* Müller, 1780);
- (f) *Leucophrys* Ehrenberg, 1830 (an unjustified emendation of *Leucophra* Müller, 1780);
- (g) *Paraglaucoma* Warren, 1932 (a junior homonym of *Paraglaucoma* Kahl, 1926);
- (h) *Protobalantidium* Abé, 1927 (as suppressed under the plenary powers in (1) (a) above);
- (i) *Ptyxidium* Perty, 1852 (as suppressed under the plenary powers in (1) (a) above);
- (j) *Saprophilus* Stokes, 1887 (a junior homonym of *Saprophilus* Streubel, 1839);
- (k) *Tetrahymen* Mast & Pace, 1946 (an unjustified emendation of *Tetrahymena* Furgason, 1940);
- (l) *Tetrahymenia* Mugard, 1949 (an incorrect spelling for *Tetrahymena* Furgason, 1940).;
- (m) *Turchiniella* Grassé & de Boissezon, 1929 (as suppressed under the plenary powers in (1) (a) above);
- (6) to place the following specific names on the Official Index of Rejected and Invalid Specific Names in Zoology;
 - (a) *kolpoda* Losana, 1829, as published in the binomen *Paramaecium kolpoda* (Ruled under the plenary powers in (1) (f) above to be an incorrect original spelling for *colpoda*);
 - (b) *ovulum* Müller, 1773, as published in the binomen *Enchelis ovulum* (as suppressed under the plenary powers in (1) (a) above);
 - (c) *patula* Müller, 1786, as published in the binomen *Trichoda patula* (as suppressed under the plenary powers in (1) (a) above);
 - (d) *piriformis* of the literature (an incorrect spelling of "*pyriformis*" which has caused considerable, though unnecessary, confusion);
 - (e) *pirum* Müller, 1786, as published in the binomen *Kolpoda pirum* (as suppressed under the plenary powers in (1) (a) above);
 - (f) *pyrum* Ehrenberg, 1830, as published in the binomen *Trichoda pyrum* (as suppressed under the plenary powers in (1) (a) above);
- (7) to place the following family-group names on the Official Index of Rejected and Invalid Family-Group Names in Zoology:
 - (a) LEUCOPHRYIDAE Mugard, 1949 (type-genus *Leucophrys* Ehrenberg, 1830) (as suppressed under the plenary powers in (1) (a) above);
 - (b) LEUCOPHRYENS Dujardin, 1841 (type-genus *Leucophrys* Ehrenberg, 1830) (a vernacular name);

- (c) LEUCOPHRYDAE Mugard, 1949 (type-genus *Leucophrys* Ehrenberg, 1830) (an incorrect original spelling for LEUCOPHRYIDAE).

REFERENCES

- ABÉ, T. 1927. Classification of *Balantidium* (preliminary report). *Dobutsugaku Zasshi*, **39** (412) : 191–196. (In Japanese with English notes)
- AGASSIZ, L. 1843. Nomina systematica generum polygastricorum, tam viventium quam fossilium, secundum ordinem alphabeticum disposita, adjectis auctoribus, libris in quibus reperiuntur, anno editionis, etymologia et familiis, ad quas pertinent. Recognovit C. G. Ehrenberg. In *Nomenclator zoologicus*. Fasciculus III. Contincto Hemiptera, Polygastrica et Rotatoria, sumtibus Jent et Gassman, Soloduri, IV + 13 pp.
- BERTHOLD, A. A. *see* Latreille (1827)
- BRESSLAU, E. 1922. Zur Systematik der Ciliatengattung *Colpidium*. *Zool. Anz.*, **55** (1/2) : 21–28
- CLAPARÈDE, E., and LACHMANN, J. 1858. Études sur les Infusoires et les Rhizopodes. *Mém. Inst. nat. genevois* (1857), **5** (3) : 260 pp., 13 pls.
- CORLISS, J. O. 1950. History of bacteria-free ciliates in the *Colpidium-Glaucoma-Leucophrys-Tetrahymena* group. [Abstr.] *Proc. Am. Soc. Protozool.*, **1** : 2
- 1951a. On nomenclature for congeneric ciliates in the *Colpidium-Glaucoma-Leucophrys-Tetrahymena* group. [Abstr.] *Soc. Syst. Zool. News Letter* no. **5** : 9–10
- 1951b. Morphology and systematic status of pure culture strains in the *Colpidium-Glaucoma-Leucophrys-Tetrahymena* group. [Abstr.] *Proc. Am. Soc. Protozool.*, **2** : 11
- 1952a. Comparative studies on holotrichous ciliates in the *Colpidium-Glaucoma-Leucophrys-Tetrahymena* group. I. General considerations and history of strains in pure culture. *Trans. Am. Microscop. Soc.*, **71** (2) : 159–184, tbl. 1, pls. 1–2
- 1952b. Systematic status of the pure culture ciliate known as “*Tetrahymena geleii*” and “*Glaucoma piriformis*”. *Science* **116** (3005) : 118–119
- 1952c. Review of the genus *Tetrahymena*. [Abstr.] *Proc. Soc. Protozool.*, **3** : 3
- 1952d. Characterization of the family Tetrahymenidae nov. fam. (Abstr.) *Proc. Soc. Protozool.*, **3** : 4
- 1953a. Comparative studies on holotrichous ciliates in the *Colpidium-Glaucoma-Leucophrys-Tetrahymena* group. II. Morphology, life cycles, and systematic status of strains in pure culture. *Parasitology*, **43** (1/2) : 49–87, 4 tbls., 11 figs.
- 1953b. Review of the genus *Colpidium* Stein, 1860 (family Tetrahymenidae). [Abstr.] *Proc. Soc. Protozool.*, **4** : 3–4
- 1954a. The literature on *Tetrahymena*: its history, growth, and recent trends. *J. Protozool.*, **1** (3) : 156–169
- 1954b. Review of the genus *Glaucoma* Ehrenberg, 1830 (family Tetrahymenidae). [Abstr.] *J. Protozool.*, **1** (Suppl.) : 1
- 1957. The literature on *Tetrahymena*: 1954 through 1956. [Abstr.] *J. Protozool.*, **4** (Suppl.) : 15–16
- 1960a. The problem of homonyms among generic names of ciliated protozoa, with proposal of several new names. *J. Protozool.*, **7** (3) : 269–278
- 1960b. *Tetrahymena chironomi* sp. nov., a ciliate from midge larvae, and the current status of facultative parasitism in the genus *Tetrahymena*. *Parasitology*, **50** : 111–153
- 1963. Application of modern techniques to problems in the systematics of the Protozoa. *Proc. XVI Int. Cong. Zool.*, Washington, D.C., Aug. 1963, **4** : 97–102
- 1965. *Tetrahymena*, a ciliate genus of unusual importance in modern biological research. *Acta Protozoologica*, **3** (1) : 1–20

- CORLISS, J. O., and DOUGHERTY, E. C. 1955. Consideration of the generic name *Tetrahymena* as a *nomen conservandum*. [Abstr.] *J. Protozool.*, **2** (Suppl.) : 6
- CORLISS, J. O., SMITH, A. C., and FOULKES, J. 1962. A species of *Tetrahymena* from the British garden slug *Milax budapestensis*. *Nature*, **196** : 1008–1009
- CUVIER, G. 1817. Le règne animal distribution d'après son organisation. Bd. IV. 1817. Zoophytes. 5. Classe Infusoires. pp. 89–94
- DUJARDIN, F. 1841. Histoire naturelle des Zoophytes. Infusoires comprenant la physiologie et la classification de ces animaux, et la manière de les étudier à l'aide du microscope. *Lib. Encycl. Roret*, Paris, XII + 684 pp. + [separately bound] 22 pls.
- EHRENBERG, C. G. 1830. Organization, Systematik und geographisches Verhältniss der Infusionsthierchen. Zwei Vorträge, in der Akademie der Wissenschaften zu Berlin gehalten in den Jahren 1828 und 1830. *K. Akad. Wissensch.*, Berlin, 108 pp., 8 pls. [see also Ehrenberg. 1832a, b]
- 1832a. Die geographische Verbreitung der Infusionstierchen in Nord-Afrika und West-Asien, beobachtet auf Hemprich und Ehrenberg's Reisen. *Abhandl. K. Akad. Wissensch.*, Berlin, **1829** (Physikal. Abhandl.) : 1–20 [=pp. 1–20 of : Ehrenberg. 1830]
- 1832b. Beiträge zur Kenntniss der Organisation der Infusorien und ihrer geographischen Verbreitung, besonders in Sibirien. *Ibid.*, **1830** (Physikal. Abhandl.) : 1–88, 8 pls. [=pp. 21–108, 8 pls. of : Ehrenberg. 1830]
- 1832c. Zur Erkenntniss der Organisation in der Richtung des kleinsten Raumes. Zweiter Beitrag. Entwicklung, Lebensdauer und Struktur der Magenthier und Räderthiere, oder sogenannten Infusorien, nebst einer physiologischen Charakteristik beider Klassen und 412 Arten derselben. Druckerei der *K. Akad. Wissensch.*, Berlin, 154 pp., 4 pls. [see also Ehrenberg. 1832d]
- 1832d. Über die Entwicklung und Lebensdauer der Infusionsthier; nebst fernerien Beiträgen zu einer Vergleichung ihrer organischen Systeme. *Abhandl. K. Akad. Wissensch.*, Berlin, **1831** (Physikal. Abhandl.) : 1–154, 4 pls. [see also Ehrenberg. 1832c]
- 1834. Organisation in der Richtung der kleinsten Raumes. Dritter Beitrag. Druckerei der *K. Akad. Wissensch.*, Berlin, [2] + 192 pp., 9 pls. [see also Ehrenberg. 1835]
- 1835. Dritter Beitrag zur Erkenntniss grosser Organisation in der Richtung des kleinsten Raumes. *Abhandl. K. Akad. Wissensch.*, Berlin, **1833** (Physikal. Abhandl.) : 154–336, 9 pls. [=see also Ehrenberg. 1834]
- 1837. Zusätze zur Erkenntniss grossen organischer Ausbildung in den kleinsten thierischen Organismen. *Ibid.*, **1835** (Physikal. Abhandl.) : 151–180, 1 pl.
- 1838. Die Infusionsthierchen als vollkommene Organismen. Ein Blick in das tiefere organische Leben der Natur. Leopold Voss, Leipzig, xviii + [4] + 547 pp. + Atlas : 64 pls.
- FAURÉ-FREMIET, E. 1955. La position systématique de genre *Balantidium*. *J. Protozool.*, **2** (2) : 54–58
- FURGASON, W. H. 1940. The significant cytostomal pattern of the "*Glaucoma-Colpidium* group", and a proposed new genus and species, *Tetrahymena geleii*. *Arch. Protistenk.*, **94** (2) : 224–226, 1 fig., pls. 9–11
- GHOSH, E. 1925. On a new ciliate, *Balantidium knowlesii*, sp. nov., a coelomic parasite in *Culicoides peregrinus*. *Parasitology*, **17** (2) : 189
- GMELIN, J. Fr. 1790. (editor) Linnaeus' *Systema Naturae*. 13th edition (1788–1793). Leipzig, **1**, pt. 6
- GOLDFUSS, G. A. 1820. Handbuch der Zoologie. Erste Abtheilung. Bei Johann Leonhard Schrag, Nürnberg, xxiv + 510 pp.
- GRASSÉ, P. P., and DE BOISSEZON, P. 1929. *Turchiniella culicis* n.g., n. sp. Infusoire parasite de l'hémocoel d'un *Culex* adulte. *Bull. Soc. zool. France*, **54** (3) : 187–191

- HOLZ, G. G. (Jr.), and CORLISS, J. O. 1956. *Tetrahymena setifera* n. sp., a member of the genus *Tetrahymena* with a caudal cilium. *J. Protozool.*, 3 (3) : 112-118
- HOLZ, G. G. (Jr.), and THOMPSON, J. C. (Jr.). 1955. The axenic cultivation of *Tetrahymena* (*Paraglaucoma*) *rostrata* (Kahl) Corliss. [Abstr.] *J. Protozool.*, 2 (Suppl.) : 13
- HUTNER, S. H., editor. 1964. *Biochemistry and Physiology of Protozoa*, vol. III. Academic Press, New York
- HUTNER, S. H., and LWOFF, A., editors. 1955. *Biochemistry and Physiology of Protozoa*, vol. II. Academic Press, New York
- INTERNATIONAL CODE OF ZOOLOGICAL NOMENCLATURE adopted by the XV International Congress of Zoology, London, July 1958. 1961. London
- INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE. 1953. Copenhagen Decisions on Zoological Nomenclature. Additions to, and Modifications of, the Règles Internationales de la Nomenclature Zoologique. ed. by F. Hemming. London. i-xxix and pp. 1-135
- KAHL, A. 1926. Neue und wenig bekannte Formen der holotrichen und heterotrichen Ciliaten. *Arch. Protistenk.*, 55 (2) : 197-438, figs. A-F₄
- 1930. 1. Allgemeiner Teil und Protostomata in Teil Urtiere oder Protozoa. I: Wimpertiere oder Ciliata (Infusoria) pp. 1-180, figs. 1-22
- KAZUBSKI, S. L. 1958. *Trichia lubomirskii* Slós. (Helicidae), a new host of *Tetrahymena limacis* (Warren, 1932) Kozloff, 1946 (Ciliata) and *Zonitoides nitidus* Mull. (Zonitidae), a new host of *T. rostrata* (Kahl, 1926) Corliss, 1952, in Poland. *Bull. Acad. polonaise Sci.*, 6 (6) : 247-252, 9 figs.
- KEILIN, D. 1921. On a new ciliate: *Lambornella stegomyiae* n.g., n.sp. parasite in the body cavity of the larvae of *Stegomyia scutellaris* Walker (Diptera, Nematocera, Culicidae). *Parasitology*, 13 (3) : 216-224, 6 figs.
- KOZLOFF, E. N. 1946. The morphology and systematic position of a holotrichous ciliate parasitizing *Deroceras agreste* (L.). *J. Morphol.*, 79 (3) : 445-465, 2 pls.
- 1957. A species of *Tetrahymena* parasitic in the renal organ of the slug *Deroceras reticulatum*. *J. Protozool.*, 4 (2) : 75-79, 14 figs.
- LATREILLE, P. A. 1827. Famille natur. du règne animal, expos. suce et dans un ordre analyt. 2 edit. Paris. 1825 (i wahrsch. 1824). Deutsch Uebersetzung v. A. A. Berthold. Weimar. 1827
- LOSANA, M. 1829. De animalculis microscopicis seu infusoriis. Sectio secunda. *Mem. R. Accad. Sci. Torino*, 29 (Class. Sci. Fis. e Mat.) : 1-48, 2 pls.
- LWOFF, A. 1947. Some aspects of the problem of growth factors for protozoa. *Ann. Rev. Microbiol.* 1 : 101-114
- editor. 1951. *Biochemistry and Physiology of Protozoa*, vol. I. Academic Press, New York
- MAST, S. O., and PACE, D. M. 1946. The nature of the growth-substance produced by *Chilomonas paramecium*. *Physiol. Zool.*, 19 (3) : 223-235, 2 figs.
- MAUPAS, E. 1883. Contribution à l'étude morphologique et anatomique des infusoires ciliés. *Arch. zool. exptl. et gén.* (sér. 2), 1 : 427-664, pls. xiv-xxiv
- 1888. Recherches expérimentales sur la multiplication des infusoires ciliés. *Arch. zool. exptl. et gén.* (sér. 2), 6 : 165-227, pls. ix-xii
- MUGARD, H. 1949. Contribution à l'étude des infusoires hyménostomes histiophages. *Ann. Sci. nat., Zool. et Biol. animale* (1948) s. 3, 10 (2) : 171-269, 1 pl.
- MÜLLER, O. F. 1773. Vermium terrestrium et fluviatilium, seu animalium infusorium, helminthicorum et testaceorum, non marinorum, succincta historia. Vol. 1, pt. 1. Heineck et Faber, Havniae et Lipsiae, [30] + 135 pp.
- 1776. Zoologiae Danicae prodromus, seu animalium Daniae et Norvegiae indigenarum characteres, nomina, et synonyma imprimis popularium. Typis Hallageriis, Havniae, xxxii + 274 pp.
- 1780. Zoologiae Danicae seu animalium Daniae et Norvegiae rariorum ac minus notorum icones. Typis Mart. Hallageri, Havniae, Fasciculus secundus. [pp. 3]-4, pls. 41-80

- MÜLLER, O. F. 1784. *Zoologia Danica, seu animalium Daniae et Norvegiae rariorum ac minus notorum, descriptiones et historia*. Vol. 2. in Bibliopolio J. G. Mülleri-ano, Lipsiae, vi + [1] + 124 pp.
- 1786. *Animalcula infusoria fluviatilia et marina, quae detexit, systematice descripsit et ad vivum delineari curavit Otho Fridericus Müller*. Typis Nicolai Mölleri, Havniae, [6] + LVI + 367 pp., 50 pls.
- 1788. *Zoologia danica, seu animalium Daniae et Norvegiae rariorum ac minus notorum, descriptiones et historia*. Vol. 2 (4) + 56 pp., pls. XLI–LXXX. (= Müller 1780 + 1784)
- NEMNICH, P. A., and BÖHME, A. F. 1796. *Allgemeines Polyglotten-Lexicon der Naturgeschichte*. Wörterbucher der Naturgeschichte in der deutschen, holländischen, danischen, schwedischen, englischen, französischen, italienischen, spanischen und portugiesischen Sprache. Lieferung V. Gedruckt von Conrad Muller, Hamburg, [4] + columns [1]–946 [= 478 pp.]
- and — [1796–98]a.²³ *Ibid.*, Lieferung VI . . . , [2] + columns [949]–1056 [= 108 pp.]
- and — [1796–98]b.²³ *Ibid.*, Lieferung VII . . . , [2] + columns [1056]–1508 [= 452 pp.]
- and — 1798. *Ibid.*, Lieferung, VIII . . . , [1] + columns [1509]–2108 [= 300 pp.]
- NEMNICH, P. A., and GEBAUER, J. J. 1793a. *Allgemeines Polyglotten-Lexicon der Naturgeschichte mit Erklärenden Anmerkungen*. Catholicon. Erste Abtheilung. Naturgeschichte, Bd. [= Lieferung] I. Gedruckt von Conrad Muller, Hamburg, [16] + columns [1]–839 [= 420 pp.]
- and — 1793b. *Ibid.*, Bd. [= Lieferung] II . . . , columns [840]–1684 [= 422 pp.]
- and — 1794. *Ibid.*, Bd. [= Lieferung] III . . . , columns [1]–740 [= 370 pp.]
- and — 1795. *Ibid.*, Bd. [= Lieferung] IV . . . , columns [741]–1592 [= 426 pp.]
- PERTY, E. 1852. *Zur Kenntniss Kleinster Lebensformen nach Bau, Funktionen, Systematik, mit Specialverzeichniss der in der Schweiz beobachteten*. Jent and Reinert, Bern. 228 pp.
- ROUX, J. 1899. *Observations sur quelques Infusoires ciliés des environs de Genève avec la description de nouvelles espèces*. *Rev. suisse zool.*, 6 (3) : 557–636, pl. 13
- SPEIDEL, C. C. 1951. The occurrence of *Balantidium* as a lethal parasite in the toad tadpole. [Abstr.] *Anat. Rec.*, 111 (3) : 583
- 1953. Invasion of tadpole tissues by the ciliated protozoon *Balantidium*. [Abstr.] *Anat. Rec.*, 117 (3) : 594–595
- STEIN, F. (RITTER VON). 1859. *Der Organismus der Infusionsthier nach eigenen Forschungen in systematischer Reihenfolge bearbeitet*. Leipzig.
- 1860a. Hr. Stein hielt hierauf einen Vortrag über die bisher unbekannt gebliebene *Leucophrys patula* Ehbh. und über zwei neue Infusoriengattungen *Gyrocoris* und *Lophomonas*. *Stiz.-ber. K. Bohm. Gesellsch. Wissensch. Prag.*, 1860 (Januar-Juni [= pt. 1]) : 44–50
- 1860b. Hr. Stein sprach über die Eintheilung der holotrichen Infusionsthier und stellte einige neue Gattungen und Arten dieser Ordnung auf. *Ibid.*, 1860 (Juli–December [= pt. 2]) : 56–62
- 1867. *Der Organismus der Infusionsthier nach eigenen Forschungen in systematischer Reihenfolge bearbeitet*. II. Leipzig. 355 pp.
- STOKES, A. C. 1885. Some new Infusoria from American fresh waters. *Ann. Mag. Nat. Hist.* (ser. 5), 15 : 437
- 1886. Some new Infusoria from American fresh waters. *Ann. Mag. Nat. Hist.* (ser. 5), 17 (XCVIII) : 98–112, pl. I
- 1887. Notices of new fresh-water Infusoria. *Proc. Am. Philos. Soc.*, 24 (126) : 244–255, 1 pl.

²³ Exact dates for Lieferungen VI and VII could not be determined despite exhaustive effort.

- STOKES, A. C. 1888. A preliminary contribution toward a history of the fresh-water Infusoria of the United States. *J. Trenton Nat. Hist. Soc.*, **1** (3) : 71-[344], 13 pls.
- STOUT, J. D. 1954. The ecology, life history and parasitism of *Tetrahymena* [*Paraglaucoma*] *rostrata* (Kahl) Corliss. *J. Protozool.*, **1** (3) : 211-215, 8 figs.
- TAYLOR, C. V., and FURGASON, W. H. 1938. Structural analysis of *Colpoda duodenaria*. *Arch. Protistenk.*, **90** (2) : 320-339, pls. 15-18
- THOMPSON, J. C. (Jr.) 1955. Morphology of a new species of *Tetrahymena*. *J. Protozool.*, **2** (Suppl.) : 12
- 1958. Experimental infections of various animals with strains of the genus *Tetrahymena*. *J. Protozool.*, **5** (3) : 203-205, 1 tbl.
- WARREN, E. 1932. On a ciliate protozoon inhabiting the liver of a slug. *Ann. Natal Museum* **7** (1) : 1-53, 7 figs., pl. I

TABLE I. Nominal Genera Having Direct Bearing on Nomenclatural Status of *Tetrahymena*

Establishment of Type		Status as Possible Subjective Synonym of <i>Tetrahymena</i>		Status or Disposition	
Species	How determined	None	Possible or Probable	Definite	Action Needed by International Commission
1. <i>Acomia</i> Dujardin, 1841 (: 382)	<i>A. vitrea</i> Dujardin, 1841 (: 382)	+		Restricted to <i>A. vitrea</i> (not a tetrahymenid)	None
2. <i>Balanidium</i> Claparède and Lachmann, 1858 (: 247)	<i>Bursaria entozoon</i> Ehrenberg, 1838 (: 327)	+		A trichostome genus	Addition to "Official List of Generic Names . . ."
3. <i>Colpidium</i> Stein, 1860 (=Stein, 1860a [: 47])	<i>Paramecium colpoda</i> Losana, 1829 (: 45) (emend. pro <i>Paramaecium colpoda</i>)	+		A tetrahymenid genus, separate from <i>Tetrahymena</i> (see next column)	Addition to "Official List of Generic Names . . ."
4. <i>Colpoda</i> Müller, 1773 emend. Gmelin 1790 (: 3894) (pro <i>Kolpoda</i> Müller, 1773 [: 56])	<i>Kolpoda cucullus</i> Müller 1773 (: 58)	+		A trichostome genus	Addition to "Official List of Generic Names . . ."
5. <i>Enchelis</i> Müller, 1773 (: 34) (vide <i>Enchelys</i>)				(see next column)	Suppression, under plenary powers, of this spelling for purposes or Priority, but not Homonymy. Addition to "Official Index of Rejected and Invalid Generic Names . . ."

TABLE I. Nominal Genera Having Direct Bearing on Nomenclatural Status of *Tetrahymena*

Establishment of Type		Status as Possible Subjective Synonym of <i>Tetrahymena</i>		Status or Disposition	
Species	How determined	None	Possible or Probable	Definite	Action Needed by International Commission
6. <i>Enchelys</i> Müller, 1773, emend. Berthold in Latreille (pro. <i>Enchelis</i> Müller, 1773 [: 34])	By selection (present paper)	+			A gymnostome genus—as restricted here Addition to "Official List of Generic Names . . ."
7. <i>Glaucoma</i> Ehrenberg 1830 (: 98)	By indication (monotypy)	+			A tetrahymenid genus, separate from <i>Tetrahymena</i> (see next column) Addition to "Official List of Generic Names . . ."
8. <i>Kolpoda</i> Müller, 1773 (: 56) (vide <i>Colpoda</i>)					Suppression, under plenary powers, of this spelling for purposes of Priority, but not Homonymy: addition to "Official Index . . ."
9. <i>Lambornella</i> Keilin, 1921 (: 217)	By indication (monotypy)			+	A tetrahymenid genus, synonymous with <i>Tetrahymena</i> (see next column) Conditional suppression under plenary powers as replacement for <i>Tetrahymena</i> ; available for separate taxonomic genus, if needed

10. <i>Leptoglena</i> Grassé and de Boissezon 1929 (: 187)	<i>Balantidium knowlesii</i> Ghosh 1925 (: 187)	By indication (monotypy)	+	An ill-defined nominal tetrahymenid genus (see next column)	Suppression, under plenary powers, for purposes of Priority, but not Homonymy; addition to "Official Index . . ."
11. <i>Leucopera</i> Gmelin, 1790 (: 3028) (err. pro <i>Leucophra</i> q.v.)				(See next column)	Addition to "Official Index . . ."
12. <i>Leucophora</i> Goldfuss 1820 (: 67) (err. pro <i>Leucophra</i> , q.v.)				(See next column)	As above
13. <i>Leucophra</i> Müller, 1780 (: 4)	<i>L. armilla</i> Müller 1780 (: 4)	By selection (present paper)	+	Restricted to <i>L. armilla</i> None (not a tetrahymenid—probably a piece of lamellibranch gill!) hence a <i>genus dubium</i>	
14. <i>Leucophrus</i> Ehrenberg 1838 (: 311) (err. pro <i>Leucophra</i> , q.v.)				(See next column)	Addition to "Official Index of Rejected and Invalid Generic Names . . ."
15. <i>Leucophrydium</i> Roux 1899 (: 589)	<i>L. putrinum</i> Roux 1899 (: 589)	By indication (monotypy)	+	A tetrahymenid genus, synonymous with <i>Tetrahymena</i> (see next column)	Conditional suppression under plenary powers as replacement name for <i>Tetrahymena</i> —available for separate taxonomic genus, if needed
16. <i>Leucophrys</i> Ehrenberg, 1830 (: 96) (emend. pro <i>Leucophra</i> , q.v.)				(See next column)	Addition to "Official Index of Rejected and Invalid Generic Names . . ."

TABLE I. Nominal Genera Having Direct Bearing on Nomenclatural Status of *Tetrahymena*

Establishment of Type		Status as Possible Subjective Synonym of <i>Tetrahymena</i>		Status or Disposition	
Species	How determined	None	Possible or Probable	Definite	Action Needed by International Commission
17. <i>Paraglaucoma</i> Kahl, 1926 (: [199], 351)	<i>P. rostrata</i> Kahl, 1926 (: 351)	By indication (monotypy)	+	+	Conditional suppression, under plenary powers, as replacement name for <i>Tetrahymena</i> —available for separate taxonomic genus, if needed
18. <i>Paraglaucoma</i> Warren, 1932 (: 11) (non Kahl, 1926)	<i>P. limacis</i> Warren, 1932 (: 11)	By indication (monotypy)	+	+	Junior homonym of <i>Paraglaucoma</i> Kahl, 1926 (see next column)
19. <i>Protobalantidium</i> Abé, 1927 (: 9)	<i>Balantidium knowlesi</i> Ghosh, 1925 (: 189)	By indication (monotypy)	+	+	Suppression, under plenary powers, for purposes of Priority, but not Homonymy; addition to "Official Index . . ."
20. <i>Ptyxidium</i> Perty, 1852 (: 148)	<i>Enchelis ovulum</i> Müller, 1773 (: 36)	By indication (monotypy)	+	+	Suppression, under plenary powers, for purposes of Priority, but not Homonymy; addition to "Official Index . . ."

21. <i>Saprophilus</i> Stokes, 1887 (: 247) (<i>non</i> Streubel, 1839 [: col] 136)	<i>S. agitatus</i> Stokes, 1887 (: 247)	By indication (monotypy)	+	Junior homonym of <i>Saprophilus</i> Streubel, 1839 (Coleoptera) (see next column)	Addition to "Official Index . . ."
22. <i>Sathrophilus</i> Corliss, 1960 (=1960a : 276)	<i>Saprophilus agitatus</i> Stokes, 1887 (: 247)	By designation (Corliss, 1960 [=1960a : 276])	+	An ill-defined, nominal tetrahymenid genus, possibly a junior synonym of <i>Tetrahymena</i>	None
23. <i>Tetrahymen</i> Mast and Pace, 1946 (: 232) (emend, pro <i>Tetrahymena</i> q.v.)				(See next column)	Addition to "Official Index . . ."
24. <i>Tetrahymena</i> Furgason 1940 (: 258)	<i>T. geleii</i> Furgason 1940 (: 258)	By designation	+	Type genus of family Tetrahymenidae Corliss, 1952 (=1952d : 4)—sub-junctive junior synonym of several nominal genera (see next column)	Validation, under plenary powers, against all subjective senior synonyms; addition to "Official List of Generic Names . . ."
25. <i>Tetrahymenia</i> Mugard, 1949 (: 182) (err. pro <i>Tetrahymena</i> , q.v.)				(See next column)	Addition to "Official Index . . ."
26. <i>Trichoda</i> Müller, 1773 (: 71)	<i>T. acarus</i> Müller, 1773 (: 71)	By selection (present paper)	+	Restricted to <i>T. acarus</i> (an unrecognizable species—hence a <i>genus dubium</i>)	None
27. <i>Turchiniella</i> Grassé and de Boissezon, 1929 (: 187)	<i>T. culicis</i> Grassé and de Boissezon 1929 (: 187)	By indication (monotypy)	+	An ill-defined nominal tetrahymenid genus, (see next column)	Suppression, under plenary powers for purposes of Priority, but not Homonymy; addition to "Official Index . . ."

TABLE II. Specific Names with Direct Bearing on Nomenclatural Status of Species of *Tetrahymena*

	Original Combination	Recognized Today*	Modern Name	Action Needed, With Respect to Original Name, by International Commission
1. <i>acarus</i> Müller, 1773 (: 71)	<i>Trichoda acarus</i>	—		None
2. <i>agitatus</i> Stokes, 1887 (: 247)	<i>Saprophilus agitatus</i>	?	<i>Saprophilus agitatus</i> (Stokes, 1887) Corliss, 1960 (= 1960a : 8)	None
3. <i>armilla</i> Müller, 1780	<i>Leucophra armilla</i>	—		None
4. <i>campyla</i> Stokes 1886 (: 101)	<i>Tillina campyla</i>	+	<i>Colpidium campylum</i> (Stokes, 1886) Bresslau, 1922 (: 22)	None
5. <i>carnium</i> Ehrenberg, 1832 (: 104)	<i>Trichoda carnium</i>	?s	? <i>Tetrahymena pyriformis</i> (Ehrenberg, 1830 [: 96]) Lwoff, 1947 (: 103)	None
6. <i>chironomi</i> Corliss, 1960 (= 1960b : 115)	<i>Tetrahymena chironomi</i>	+	<i>Tetrahymena chironomi</i> Corliss, 1960	None
7. <i>colpoda</i> Losana, 1829, emend. Ehrenberg, 1838 (: 114) [= <i>kolpoda</i> Losana, 1829 (: 45)]	<i>Paramaecium kolpoda</i>	+	<i>Colpidium colpoda</i> (Losana, 1829, emend. Ehrenberg, 1838) Stein, 1860 (= 1860a : 47)	Addition to "Official List of Specific Names..."
8. <i>corlissi</i> Thompson, 1955 (: 12)	<i>Tetrahymena corlissi</i>	+	<i>Tetrahymena corlissi</i> Thompson, 1955 (: 12)	None
9. <i>culicis</i> Grassé and de Boissezon, 1929 (: 187)	<i>Turchiniella culicis</i>	?s	? <i>Tetrahymena chironomi</i> , <i>T. pyriformis</i>	None

10. <i>cucullus</i> Müller, 1773 (: 58)	<i>Kolpoda cucullus</i>	+	<i>Colpoda cucullus</i> Müller, 1773	Addition to "Official List of Specific Names . . ."
11. <i>entozoon</i> Ehrenberg, 1838 (: 327)	<i>Bursaria entozoon</i>	+	<i>Balantidium entozoon</i> (Ehrenberg, 1838)	Addition to "Official List of Specific Names . . ."
12. <i>farcimen</i> Müller, 1773 (: 34)	<i>Enchelis farcimen</i>	+	<i>Enchelis farcimen</i>	Addition to "Official List of Specific Names . . ."
13. <i>fluida</i> Müller, 1780 (: 4)	<i>Leucophra fluida</i>	—		None
14. <i>fluxa</i> Müller, 1780 (: 4)	<i>Leucophra fluxa</i>	—		None
15. <i>geleii</i> Furgason, 1940 (: 258)	<i>Tetrahymena geleii</i>	s	<i>T. pyriformis</i>	None
16. <i>inflata</i> Dujardin, 1841 (: 383)	<i>Acomia inflata</i>	?s	? <i>T. pyriformis</i>	None
17. <i>knowlesii</i> Ghosh, 1925 (: 189)	<i>Balantidium knowlesii</i>	?s	? <i>T. pyriformis</i>	None
18. <i>kolpoda</i> Losana, 1829 (: 45) (vide <i>colpoda</i>)	<i>Paramaecium kolpoda</i>			Addition, in this spelling, to "Official Index of Invalid and Rejected Specific Names . . ."
19. <i>limacis</i> Warren, 1932 (: 11)	<i>Paraglaucoma limacis</i>	+	<i>Tetrahymena limacis</i> (Warren, 1932) Kozloff, 1946 (: 449)	None
20. <i>ovata</i> Dujardin, 1841 (: 383)	<i>Acomia ovata</i>	?s	? <i>T. pyriformis</i>	None
21. <i>ovulum</i> Müller, 1773 (: 36)	<i>Enchelis ovulum</i>	?	? <i>T. pyriformis</i>	Suppression, under Plenary Powers, for purposes of Priority but not Homonymy; addition to "Official Index . . ."

TABLE II. Specific Names with Direct Bearing on Nomenclatural Status of Species of *Tetrahymena*

	Original Combination	Recognized Today*	Modern Name	Action Needed, With Respect to Original Name, by International Commission
22. <i>patella</i> Müller, 1773 (: 95)	<i>Trichoda patella</i>	—		None
23. <i>patula</i> Müller, 1786 (: 181)	<i>Trichoda patula</i>	?	? <i>Climacostomum patulum</i> (Müller, 1786) Stein, 1860 (= 1860b : 60)	Suppression, under Plenary Powers for purposes of Priority but not Homonymy; addition to "Official Index . . ."
24. <i>patula</i> Ehrenberg, 1830 (: 95)	<i>Leucophrys patula</i>	+	<i>Tetrahymena patula</i> (Ehrenberg, 1830) Corliss, 1951 (= 1951b : 11)	Validation, under Plenary Powers; addition to the "Official List of Specific Names"
25. <i>piriformis</i> of the literature	<i>Glaucoma piriformis</i>	s	<i>T. pyriformis</i>	Addition to "Official Index . . ."
26. <i>pirum</i> Müller, 1786 (: 108)	<i>Kolpoda pirum</i>	?	? <i>T. pyriformis</i>	Suppression, under Plenary Powers, for purposes of Priority but not Homonymy; addition to "Official Index . . ."
27. <i>pura</i> Ehrenberg, 1832 (: 104)	<i>Trichoda pura</i>	?s	<i>T. pyriformis</i>	None
28. <i>putrinum</i> Stokes, 1886 (: 103)	<i>Colpidium putrinum</i>	?s	? <i>T. pyriformis</i>	None
29. <i>putrinum</i> Roux, 1899 (: 589)	<i>Leucophrydium putrinum</i>	s	<i>T. patula</i>	None
30. <i>pyriformis</i> Ehrenberg, 1830	<i>Leucophrys pyriformis</i>	+	<i>Tetrahymena pyriformis</i> (Ehrenberg, 1830) Lwoff, 1947	Validation, under Plenary Powers; addition to "Official List . . ."

	31. <i>pyrum</i> Ehrenberg, 1830 (: 96)	<i>Trichoda pyrum</i>	?	? <i>T. pyriformis</i>	Suppression, under Plenary Powers, for purposes of Priority but not Homonymy; addition to "Official Index . . ."
32. <i>rostrata</i> Kahl, 1926 (: 351)		<i>Paraglaucoma rostrata</i>	+	<i>Tetrahymena rostrata</i> (Kahl, 1926) Corliss, 1952 (=1952c : 3)	None
33. <i>scintillans</i> Ehrenberg, 1830 (: 98)		<i>Glaucoma scintillans</i>	+	<i>Glaucoma scintillans</i> Ehrenberg, 1830	Addition to "Official List of Specific Names . . ."
34. <i>stegomyiae</i> Keilin, 1921 (: 217)		<i>Lambornella stegomyiae</i>	+	<i>Tetrahymena stegomyiae</i> (Keilin, 1921) Corliss, 1960 (=1960b :125)	None
35. <i>striatum</i> Stokes, 1886 (: 103)		<i>Colpidium striatum</i>	+	<i>Colpidium striatum</i> Stokes, 1886	None
36. <i>truncatum</i> Stokes, 1885 (: 442)		<i>Colpidium truncatum</i>	+	<i>Colpidium truncatum</i> Stokes, 1885	None
37. <i>vitrea</i> Dujardin, 1841 (: 382)		<i>Acomia vitrea</i>	—		None

* + = recognized species; — = unidentifiable species; ? = species of uncertain status; s = junior synonym; ?s = probable junior synonym.



Corliss, John O. and Dougherty, Ellsworth C. 1967. "An appeal for stabilization of certain names in the protozoan family Tetrahymenidae (subphylum Ciliophora, order Hymenostomatida), with special reference to the generic name *Tetrahymena* Furgason, 1940. Z.N. (S.) 625." *The Bulletin of zoological nomenclature* 24, 155–185. <https://doi.org/10.5962/bhl.part.15384>.

View This Item Online: <https://www.biodiversitylibrary.org/item/44466>

DOI: <https://doi.org/10.5962/bhl.part.15384>

Permalink: <https://www.biodiversitylibrary.org/partpdf/15384>

Holding Institution

Natural History Museum Library, London

Sponsored by

Natural History Museum Library, London

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: International Commission on Zoological Nomenclature

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.