THE BULLETIN OF ZOOLOGICAL NOMENCLATURE

The Official Organ of
THE INTERNATIONAL COMMISSION ON
ZOOLOGICAL NOMENCLATURE

Edited by
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LONDON:
Printed by Order of the International Trust for
Zoological Nomenclature
and
Sold on behalf of the International Commission on Zoological
Nomenclature by the International Trust at its Publications Office,
41, Queen’s Gate, London, S.W.7
1958
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* Professor Esaki died on 14th December 1957, while the present Part was passing through the Press.
CASE No. 25

DRAFT "REGLES", ARTICLE 12, SECTION 1 (NAMES FOR TAXA OF THE ORDER/CLASS AND HIGHER CATEGORIES)

(Commission Reference : Z.N.(S.) 1242)

(For the relevant provision in the Draft Règles see 1957, Bull. zool. Nomencl. 14 : 92)

DOCUMENT 25/1

Problems involved in the stabilisation of the names for Orders, Classes and Taxa of Higher Rank

By FRANCIS HEMMING, C.M.G., C.B.E.

(Secretary to the International Commission on Zoological Nomenclature).

(Note dated 1st January 1958)

The present note, which is in the nature of an Interim Report on certain problems arising in connection with the plan for stabilising the names for Orders, Classes and Taxa of Higher Rank adopted by the Copenhagen Congress in 1953 (1953, Copenhagen Decisions zool. Nomencl. : 38-43, Decisions 59-69), has been prepared in the hope that it may prove of assistance to the Colloquium to be held in London next July, if, after it has completed the task of examining the remaining portions of the Draft of the Règles for submission to the Fifteenth International Congress of Zoology for final approval, it finds it possible to carry the consideration of this important matter forward to a further stage.
2. The scheme agreed upon by the Copenhagen Congress, it will be recalled, had two basic features, namely (1) that the names for at least the more important taxa of the Order/Class and Higher Categories should be stabilised by being placed on an Official List then established for the purpose and (2) that the nominal taxa belonging to the foregoing categories should be given a determinate content by being provided with type genera to be selected in harmony with current usage. No agreement was reached as to how the nominal taxa to be stabilised in this way should be selected, and in consequence all that it was possible to agree upon was that committees of specialists should be established to prepare and submit for eventual approval lists of recommended nominal taxa, with type genera, for the various groups in the Animal Kingdom. It was further decided that in preparing the suggested lists the Committees should "give first consideration to weight of usage, and, where usage affords no clear basis for choice, to other considerations, such as priority, the nature of such considerations to be specified in the list to be prepared" (Decision 62(1)).

3. At this point I must report that, as Secretary to the Commission, I initiated certain consultations subsequent to the close of the Copenhagen Congress which led me to the view that at least until the ground had been more thoroughly prepared by individual specialists in the various groups, committees, if established, could not hope to achieve any fruitful results. For it very soon became evident that the number of names to be considered was very much larger than had been anticipated by the Copenhagen Congress and the problems involved far more intricate than had then been supposed.

4. A pre-requisite to any scheme for providing stability for the principal Order/Class names of any group must be a reasonably complete and accurate knowledge of what are the names involved, so that not only may a choice be made of those names which it is desired should be included in the Official List for protection but also that appropriate arrangements may be made for preventing names which are subjective senior synonyms of the names to be stabilised from entering into competition with those names and thus leading to further lack of uniformity in the nomenclature for taxa of these categories. It is here that we encounter a major difficulty which, except in the case of a few exceptionally well-placed groups (paragraph 5 below), would render impossible the task of any ad hoc committee which might be appointed. I refer to the total lack at present of any work containing an enumeration of the names so far published for Orders (including Sub-Orders) and taxa of higher rank comparable in scope to the great Index Animalium compiled by the late Charles Davies Sherborn. A similar, though perhaps rather less serious, difficulty confronts any zoologist who may have occasion to ascertain what are the oldest available family-group names in his speciality. In this connection I must refer to a scheme for the preparation of a work containing bibliographical references for all names published for taxa belonging to the
Family-Group, Order/Class Group and Higher Categories which I have already submitted and which appears on the London Agenda Paper as Document 5/1.

5. Pending the preparation of the work described above, it cannot, I think, reasonably be expected that it will be possible to secure any general advance in the matter of stabilising the names for Orders and Classes all along the front from the Protozoa to the highest groups in the Urochorda. This does not mean, however, that no immediate progress is possible in any part of this field. But it does mean that such advance is only to be expected at those points where by reason of undertaking large-scale revisions specialists in particular groups find it necessary for the purposes of their own work themselves to make a detailed survey of the literature for the purpose of drawing up lists of the Order/Class Names which it is necessary for them to consider. In two cases investigations by individual specialists have been undertaken since the Copenhagen Congress and the results communicated to the Office of the Commission. The first of these is a survey of the names involved in the Class Echinoidea undertaken jointly by R. V. Melville (Geological Survey and Museum, London) and J. Wyatt Durham (University of California, Berkeley, California, U.S.A.). The second, of which an abstract only has so far been received, is concerned with Order/Class Names in the Sub-Phylum Ciliophora and has been prepared by Professor John O. Corliss (Department of Zoology, University of Illinois, Urbana, Illinois, U.S.A.). The material assembled by these specialists for the above groups concerned, together with their suggestions as to the genera to be selected as type genera, provide the basic material needed for the preparation of definite proposals for final approval. It is not suggested that the London Congress should take either of these cases into immediate consideration but it is thought that it would be helpful, as showing the large amount of preliminary investigations needed in cases falling in this field, if the Congress were to have before them the two papers referred to above. The paper on the Class Echinoidea by Melville and Durham is accordingly being placed on the London Agenda Paper as a paper submitted for information only and has been allotted for this purpose the Document Number 25/2. The abstract in regard to the Order/Class names in the Ciliophora submitted by Professor Corliss is being placed on the Agenda Paper on the same basis as Document 25/3.

6. The difficulties involved in making progress in this field are not confined to those arising from the lack in the great majority of cases of sufficient information as to the names to be considered and their relative dates. For there is at least one major question on which opinion is divided among those specialists who have communicated with the Office of the Commission. This is the question of the role which should be allotted to the principle of priority

1 See pp. 187–193 of the present volume.
in determining the status to be accorded to names belonging to the Order/Class and Higher Categories. As regards this, a wide variety of views has been expressed. These may be summarised as follows:—

(a) In favour of priority being accepted as the means for determining the relative status of names of the Order/Class, etc. Groups:—

Melville & Durham (Document 25/2)
Corliss (Document 25/3) who recognises that the Plenary Powers will need to be used to protect well-known names in certain cases
Dougherty (E.C.) (Document 25/4)
Brown (D.A.) (Document 25/5)

(b) In favour of usage being treated as of being of greater importance than priority:—

Cox (L.R.) (Document 25/6)
Hopkins (G.H.E.) (Document 25/7)
Chitwood (B.J.) (as is made clear by E. C. Dougherty’s correspondence with that specialist reproduced in Document 25/4)

(c) Opposed to any form of regulation which includes the designation of type genera for nominal taxa of the Order/Class, etc. Groups:—

Lemche (H.) (Document 25/8);

(d) In favour of usage prevailing over priority until some date to be specified by the Congress and thereafter priority to prevail:—


7. Allied to some extent with the problem discussed above is that presented by cases where there is an absolutely straight choice between two-well known names for a single taxon, both of which are, and/or have been, extensively used. Shall priority prevail in such a case or would it be better for an arbitrary choice to be made? This problem is illustrated by the case of the names POLYZOA and BRYOZOA discussed by Brown in Document 25/5 where the adoption of the principle of priority is strongly argued. In the next paper, Document 25/6, the problem presented by the name to be used for another Class of invertebrates is discussed by Dr. L. R. Cox who is opposed to the application of the priority principle for determining the status of names for taxa at the Order/Class level. This case is of interest also as illustrating another
problem which arises sometimes at the Order/Class level, namely the existence of homonymous names for taxa in different parts of the Animal Kingdom. In this instance the name concerned is Loricata which has not only been applied to the Class of the Mollusca with which Dr. Cox is concerned but has been employed also for nominal Order/Class taxa both in the Class Reptilia and in the Class Mammalia. Another situation which may arise is illustrated by the problem presented by the question of the name to be used for the Order of insects comprising the Fleas discussed by Hopkins in a paper originally prepared as part of a questionnaire to flea-specialists on the question of name to be accepted for the Order (Document 25/7). Here we have a clearly defined and well recognised Order for which a number of names have been published but none has acquired such general and predominant usage as to secure for itself an unquestionable claim for acceptance at the expense of the other names in use by some specialists.

8. If in cases of the kind discussed above the priority principle were to be applied, a definite answer would automatically be obtainable, but it could not reasonably be expected that the answer so obtained would necessarily be the answer desired by specialists and the one which would best promote stability and universality in nomenclature. If on the other hand, the "weight of usage" principle were to be applied, it could hardly be hoped that committees of specialists of mixed composition could succeed in suggesting satisfactory solutions. To take, for instance, the case of the Ordinal name to be used for the Fleas, a committee of entomologists, some of whom were specialists in other Orders, would be unlikely to command sufficient authority among flea-specialists to secure general support for its findings, even if the members of such a committee were willing to make a recommendation of this kind on a subject outside their own fields. On the other hand, it will be generally agreed that, if the "weight-of-usage" principle were to be adopted, a thorough canvass of opinion would be needed among the specialists directly concerned. Consultations so undertaken would secure all the advantages which could be obtained from a formally constituted committee and by their greater flexibility and greater homogeneity would, in my view, be much to be preferred. Indeed, this method of procedure would seem the only one practicable in cases where—as in the case of the Class Name for the genus Chiton raised by Dr. Cox in Document 25/6—identical names for two or more Order/Class taxa in different parts of the Animal Kingdom are in competition with one another, for in such a situation separate consultations would need to be undertaken with specialists in each of the groups concerned. Consultations so undertaken would throw valuable light on the importance from the "usage" standpoint of the names concerned in each of the groups involved but could not be expected to provide an agreed recommendation supported by specialists in all of those groups, save in the most exceptional circumstances. Clearly, in such cases, the Commission alone—in virtue of its judicial function—would possess the authority requisite for promulgating a decision that would be generally—even if, in some cases, regretfully—accepted by all concerned.
9. The papers submitted raise other issues on which decisions are called for:

(a) Are vernacular names to be excluded from account if the priority principle is adopted (Document 25/2, paragraph 2)?

(b) Are names which, when first published, appeared as more than one word to be excluded (Document 25/2, paragraph 2)?

(c) What Rule should be applied to the naming of nominate sub-taxa of the Order/Class and Higher Categories (Document 25/2, paragraph 3)?

(d) Should the rules provide that only a genus which is itself the type genus of a family is eligible for designation as the type genus of a taxon belonging to the Order/Class Category (Document 25/2, paragraph 3)?

(e) Should the selection of a type genus for a taxon belonging to a given series in the Order/Class Group constitute automatically a selection of the same taxon as the type genus of every taxon of lower rank in the same series within the Order/Class Category (as in the parallel case of type selections for taxa belonging to the family-group category) (Document 25/2, paragraph 3)?

(f) When a name currently used as the name of a taxon of the Order/Class Group was first published as the name for a taxon of the Family-Group Category, should that name, as used for the former, rank as from the first time that it was so used or should it rank from the earlier date on which it was first used as the name for a family-group taxon (Document 25/2, paragraph 4)?

(g) For the purposes of the Law of Homonymy should the termination used for an Order/Class Name be disregarded (Document 25/2, paragraph 5; Document 25/4, Appendix III)?

(h) Would it be a good plan to insert in the Règles a Recommandation that, where within a given major taxon in the Order/Class Group names are in general formed in accordance with a single principle, authors should guide themselves by that principle when publishing names for new taxa within that major group (Document 25/2, paragraph 6)?

(i) When selections of type genera for nominal Order/Class taxa are being made, can a genus that is already the type genus of one such taxon
be selected to be the type genus of another such taxon, in order permanently to invalidate the later-published name (Document 25/2, paragraph 7) ?

(j) What should be done with senior subjective synonyms ? Should they be suppressed under the Plenary Powers ? (Document 25/2, paragraph 8) ?

(k) Is the field of choice for the selection of type genera for nominal Order/Class taxa limited to genera expressly cited at the time of the establishment of the Order/Class taxon concerned (Document 25/2, paragraph 9) ?

(l) In order to secure the status of availability for an Order/Class name must some " indication " be given at the time of its first publication (see the note by Knight (J.B.), Lemche (H.) and Yochelson (E.L.), reproduced as Document 25/9) ?

10. It is clearly desirable that the London Congress should provide definite answers to the questions listed in the preceding paragraph and to any others of a similar character which may come to light. In addition, it will be desirable that further consideration should be given to the question of the procedure to be adopted for formulating, and for dealing with, applications for the stabilisation of names for taxa belonging to the Order/Class and Higher Categories. As regards this, it is suggested for consideration that the best course would be to include in the Règles provisions on the lines set out below. In Alternative " A " this suggestion is outlined on the assumption that, as agreed upon at Copenhagen, usage rather than priority is to be the main factor in determining what names are to be accepted for taxa of the Order/Class and Higher Categories. In Alternative " B " particulars are given as to the modifications which would be needed if priority were to be accepted as the guiding principle (subject to the use of the Plenary Powers where necessary to prevent the overturning of well-known names). The suggestions now submitted could be combined if, as suggested by Professor Chester Bradley, the " usage " principle were to be adopted for names published before a certain date and the " priority " principle after that date.

**Alternative " A " :** Procedure suggested if the " weight of usage " principle is accepted as the determining factor for the acceptance of names for nominal taxa of the Order/Class and Higher Categories

(1) Where in the case of any substantially self-contained taxon of the Order/Class Group or Groups of Higher Rank, specialists assemble sufficiently complete data as to the names already published for that taxon and for taxa of lower rank comprised therein, the paper so prepared shall be submitted to the Commission, whose duty it shall be to arrange for its publication in the Bulletin of Zoological Nomenclature, so that it may serve as a basis for further discussion.
(2) In papers published under (1) above type genera shall be specified for each of the nominal taxa of Ordinal or higher rank concerned but type selections so made are to be treated as being provisional in status only and shall not acquire any status under the Law of Priority in virtue of being so published.

(3) Public notice of the publication of papers dealing with the above questions shall be issued by the Trust in the same way as such Notices are required to be issued in connection with applications for the use of the Plenary Powers in particular cases.

(4) After the expiry of such period, not being less than six calendar months, as the Commission may in any case consider necessary, it shall be the duty of the Commission to issue directions as to which of the names concerned are to be accepted as being available names and which are to be rejected as being unavailable.

(5) Subject to due compliance with the foregoing procedure the Commission shall not be required to use its Plenary Powers for the purpose of rejecting a name of the Order/Class and Higher Categories when that name is a senior subjective synonym of a name which it may decide to preserve.

(6) When under (4) above the Commission issues a direction either accepting as available, or rejecting, a name for a taxon belonging to the Order/Class or Higher Categories, it shall be its duty to place that name on the Official List or, as the case may be, on the Official Index of Rejected and Invalid Names, the entry so to be made to specify in each case the type genus of the nominal taxon concerned.

Alternative “B” : Procedure suggested if the “priority” principle is accepted as the determining factor for the acceptance of names for nominal taxa of the Order/Class and Higher Categories

As in “A” above, except that (5) would no longer be applicable.
Questions relating to Order/Class Group nomenclature in the Class Echinoidea

By R. V. MELVILLE

(Geological Survey and Museum, London*)

and

J. WYATT DURHAM

(University of California, Berkeley, California, U.S.A).

(Enclosure to a letter dated 4th January 1957)1

Editorial Note: What was substantially the same paper as that here reproduced was published by the present authors under the title "A Classification of Echinoids" in January 1957 (J. Paleont. 31 (No. 1): 242–272). The paper as here reproduced differs from that already published by the authors in that they have (a) corrected one erroneous date (that for Echinideae Claus), (b) added seventeen names previously omitted and (c) have changed the treatment accorded to twenty other names. Particulars of the changes so made were communicated to the Office of the Commission by Mr. Melville on behalf of his co-author and himself in a letter dated 20th November 1957. The revisions so made by the authors affect their conclusions as set out on pages 267–270 of the paper referred to only in that the Order name Stereosomata Duncan, 1889, is now made a junior objective synonym of Echinideae Claus, 1880, and is not regarded as an available name. (Intl’d 23rd January 1958. F.H.)

In considering the names to be used in the Treatise of Invertebrate Paleontology for taxa in the Order/Class-group in the Echinoidea, the writers compiled as complete a list as possible of the relevant names. These lists were then considered in the light of the decisions of the Fourteenth International Congress of Zoology, Copenhagen, 1953, relating to names in the Order/Class-group (Copenhagen Decisions zool. Nomencl., 1953, Decisions 59–69, pp. 38–43).

* By permission of the Director, Geological Survey and Museum.

1 This case has an associated Registered Number Z.N.(S.) 1194.

The Decisions referred to envisaged the setting-up of committees of specialists in each group to consider Order/Class-group nomenclature. Since no committee is yet in being to review the subject so far as the Class Echinoidea is concerned, it seems best to us to publish the lists that we have compiled in the *Bulletin of Zoological Nomenclature*, so that other specialists can criticize our conclusions and supplement our lists prior to the establishment of an *Official List of Names in the Order/Class-group in Echinoidea*. We are grateful to the Secretary of the International Commission on Zoological Nomenclature for his support and for the opportunity he gives us of getting our difficulties more widely discussed. We therefore state the terms of reference that we have adopted and set forth the problems that we have met, and append the lists of names.

2. Our lists exclude all names that have been proposed in the vernacular and all those consisting of more than one word, even if correctly latinized. They include only latinized names referred to recognized categories (Suborder, Order, Superorder, Subclass, Class) and latinized names not formally categorized but readily recognizable as equivalent to names in the recognised categories, as well as names qualified by unaccepted terms such as "Grade" or "Tribe".

3. All names in the Order/Class-group have been treated as nomenclatorially co-ordinate to a limited extent; that is, a name introduced for a taxon at one level in the group is regarded as available with its original authorship and priority at all other levels in the group (with appropriate change of termination). We find, however, that to adopt the corollary of nominate sub-taxon would lead to the loss of well-established names. We have assumed that a nominal genus selected as type-genus of a nominal taxon at any level in the Order/Class-group must *ipso facto* be type-genus of a taxon at every lower level in the group, as well as of taxa at every level in the Family-group. This procedure seems to us a logical extension of Article 29.

4. Some familiar Order/Class-group names in the Echinoidea were first proposed in the Family-group, but have since become attached to taxa in the Order/Class-group. For instance, the names *Regularia* and *Irregularia* were first used by Latreille, 1825, as Subfamily-names; they were first applied to taxa in the Order/Class-group by Carus (1863) and have been used by later authors (including Mortensen, 1935) as Subclass-names with attribution to Latreille. Again, the familiar Order-name Clypeasteroida has generally been attributed to L. Agassiz, 1836, although his original name was in the vernacular ("les Clypéastres") without any category-name. We give both these sorts of names priority only from their first usage in latinized form for taxa in the Order/Class-group. Historically, the Phylum Echinodermata was for long regarded as a Class (by one author until at least 1857) and the Class Echinoidea as an Order, so that names in the Order/Class-group are generally of later origin than names in the Family-group as such.
5. We have extended Article 34 (the Law of Homonymy) in a strict sense in that we have considered only the first use of each word; but we have not regarded a difference in termination as creating a condition of homonymy. In this we disagree with Copenhagen Decisions paragraph 68(1) because we feel that it is better to use the terminations now generally standardized in the Echinoidea and to dispose of similar words with different terminations by means of objective synonymy. Only identical words have been treated as homonyms.

6. The majority of Order/Class-group names in the Echinoidea have been formed from the name of an included genus, partly because many of them were first proposed as Family-names. This fact has an obvious influence on the selection of the type-genus. There are also names formed from the names of what we consider marginal genera or nomina dubia (see Copenhagen Decisions para. 62(3)(a)); names formed from generic names modified by the addition of a prefix; and names formed from the name of a morphological character thought to indicate relationship between the forms endowed with it. Names of this last kind are relatively few and have generally been short-lived in practice. It will probably be found that in each major taxon, Order/Class-group names will tend more and more to have been formed in accordance with a single principle—in the Phylum Arthropoda, for instance, names formed from the names of morphological characters are obviously prevalent in current usage. We suggest that the International Commission might recommend that, in future, new Order/Class-group names should be formed in accordance with the principle prevailing in the taxon in question. We regard this not as a restriction of taxonomic freedom, but as an extension of the power of control over the mode of formation of names in the Family-group already embodied in Article 4.

7. Following Copenhagen Decisions paragraph 62(4) we have tried to provide an available name for every currently-recognised taxon. We seek clarification of the question whether this paragraph means that every accepted nominal taxon must have a different type-genus. If two mutually exclusive nominal taxa exist at the same level, we see no objection to their having the same type-genus. For example, the Class Echinoidea is currently divided into two Subclasses in two different ways. Mortensen (1935) recognizes the Subclasses Regularia and Irregularia; Durham and Melville (1957) recognize the Subclasses Perischoechinoidea and Euechinoidea. These four names, with type-genera as chosen by us, are:

Perischoechinoidea McCoy, 1849—Palaechinus McCoy, 1844
Euechinoidea Bronn, 1860—Echinus Linnaeus, 1758
Regularia Carus, 1863—Echinus Linnaeus, 1758
Irregularia Carus, 1863*—Spatangus Leske, 1778

* It will be seen from the lists of names below that we regard the names Regularia and Irregularia as objective junior synonyms of Endocyclica Bronn, 1860 and Exocyclica Bronn, 1860, respectively.
We hope that our selection of the nominal genus *Echinus* Linnaeus, 1758, as type-genus both of Euechinoidea Bronn, 1860 and of Regularia Carus, 1863 will meet with the approval of our colleagues. Since it is inconceivable that any taxonomic scheme would use both Euechinoidea and Regularia as Subclass-names, we see no objection to a state of objective synonymy existing between them. Any scheme that used both names would apply them to taxa at different levels. This objective synonymy is in effect inevitable if we have correctly applied the meaning of Article 29 in Paragraph 3 above.

8. It is not clear from *Copenhagen Decisions* paragraph 62(3)(b) what is to be done with unwanted names that become objective senior synonyms of names that are to be added to the *Official Lists*. We favour, as the least equivocal course, the use of the Plenary Powers to suppress these names.

9. We have extended Article 30(e)(x) in assuming that the type-genus of a nominal taxon in the Order/Class-group must be selected from among the genera explicitly included in the taxon by the author of the name at the time when he first proposed it. If this is rigidly construed, then two names in the Echinoidea will have to be preserved although they serve no useful taxonomic purpose and were from the beginning subjective junior synonyms of existing names. The nominal Order Nodostomata Lambert, 1915 has as type by monotypy the nominal genus *Amblypygus* L. Agassiz, 1840 (the only nominal genus mentioned in connection with the name Nodostomata when this was first proposed). *Amblypygus* is subjectively a member of the Order Cassiduloida Claus, 1880 (as interpreted by Mortensen, 1948). The name Nodostomata is proposed by Lambert in a more or less casual manner in a discussion of the differences between *Amblypygus* and *Echinoneus* Leske, 1778, which is subjectively a member of the Order Holeclytopoida Duncan, 1889, but for which Lambert (1915) proposed the Suborder-name Globatoroida in a similarly casual manner. When next used (Lambert, 1918), the nominal Order Nodostomata included two Suborders, Procassiduloida Lambert, 1918 and Spatangoida; the former contains, among others, the nominal genera *Amblypygus* and *Procassidulus* Lambert and Thiéry, 1918. This latter name was proposed as a substitute name for *Cassidulus* Lamarck, 1801, which was held to be invalid as a homonym of *Cassidula* Humphrey, 1797. Apart from the fact that there is not a true condition of homonymy in this case, the work in which the name *Cassidula* was published (the anonymous *Museum Calonnianum*) was ruled as not available for nomenclatorial purposes in *Opinion* 51. The type-species of *Cassidulus* is *C. cariboeareum* Lamarck, 1801, and under Article 30(f) and *Declaration* 27 this must also be the type-species of *Procassidulus*, in spite of the original designation of *Echinites lapiscancri* Leske, 1778. The most satisfactory course would be to use the Plenary Powers to designate the nominal genus *Cassidulus* Lamarck, 1801, as type-genus both of the nominal Suborder Procassiduloida Lambert, 1918, and of the nominal Order Nodostomata Lambert, 1915; if our selection of *Cassidulus* as type-genus of the nominal Order Cassiduloida is upheld, then both Procassiduloida and
Nodostomata will become objective junior synonyms of Cassiduloida. Another generic name will then have to be found for the group of species of which *Echinites lapiscancri* Leske, 1778, is one. Again in 1918, the nominal Suborder Globatoroida includes the nominal genus *Globator* L. Agassiz, 1840, which was presumably the source of the Order-group name. *Globator* is regarded by many specialists as a *nomen dubium*, possibly a subjective junior synonym of the nominal genus *Pyrina* Desmoulins, 1835. If *Globator* can be ruled type-genus of Globatoroida, then both the generic name and the Order-group name can be dealt with under the procedure laid down for *nomina dubia* in *Copenhagen Decisions*, paragraph 26.

**Chronological list of names in the Order/Class-group in Echinoidea**

Echinodermata Leske, 1778. Used as an unnamed category (above Order) for all echinoids, but not apparently including any other Echinoderms. The name is now used as the name of a Phylum and we do not propose to consider it in the Order/Class-group.

Echinus Leske, 1778. Listed as an Order. *Echinus* Linnaeus, 1758. Although Leske’s name is homonymous with the name of the type-genus, it is clear that he adopted it as the name of a Linnean Order to include all echinoids in a sense quite distinct from his (and Linnaeus’s) use of the generic name. We propose to adopt it, in the form Echinoidea, as the Class-name.


Pleurocysti Leske, 1778. Proposed as a “Class” below Order. *Spatangus* Leske, 1778. Objective senior synonym of Spatangidea Claus, 1876.

Echinodermata Wad, 1803. Proposed as a second-rank category under “Class Zoophyta”. See Echinodermata Leske, 1778.

Anocysti Parkinson, 1811. Proposed as a “Class” below Order. *Cidaris* Leske, 1778. Objective senior synonym of Cidarideae Claus, 1880.


Echinodermia Rafinesque, 1815. Proposed as a Suborder. See Echinodermata Leske, 1778.
Radiaria Rafinesque, 1815. This name represents a taxonomic concept (that all animals possessing radial symmetry are directly related) which no longer claims any acceptance. It is suggested that specialists in the groups concerned should jointly petition the International Commission for its suppression.


Echinida Fleming, 1822. Proposed as a "Tribe" under "Order I" which was not named. *Echinus* Linnaeus, 1758. Objective junior synonym of *Echinus* Leske, 1778.

Emmesostomi Parkinson, 1822. Proposed as a first-rank category (unnamed) below Order. *Cidaris* Leske, 1778. Objective senior synonym of *Cidarideae* Claus, 1880.

Apomesostomi Parkinson, 1822. Proposed as a first-rank category (unnamed) below Order. *Spatangus* Leske, 1778. Objective senior synonym of *Spatangidea* Claus, 1876.


Echinoderma Latreille, 1825. Proposed as a Class. See Echinodermata Leske, 1778.


Anocysti Fleming, 1828. Proposed as a third-rank category (unnamed) below Order. *Cidaris* Leske, 1778. Objective senior synonym of *Cidarideae* Claus, 1880.


Pedicellata Griffith and Pidgeon, 1834. Proposed as an Order, to include both the Echinoidea and Asterozoa of current usage. This name should be transferred for consideration in the Phylum-group, as representing a Subphylum.


Columnidae T. and T. Austin, 1842. Proposed as an Order. This originally included echinoids, crinoids, cystoids and blastoids and does not represent any useful taxonomic concept. In addition, it is a potential homonym of a Family-name in Gastropoda for the genus *Columna* Perry, 1811. Columnidae T. and T. Austin should be suppressed.


Perischoechinida McCoy, 1849. Described as an Order. *Palaechinus* McCoy, 1844. To be added to *Official List* as Subclass-name Perischoechinoidea.

Echinoidea d'Orbigny, 1852 and all subsequent usages. Proposed as an Order. *Echinus* Linnaeus, 1758. Objective junior synonym of *Echinus* Leske, 1778. This is the first use known to us of exactly this spelling (i.e. that currently used for the Class-name) for a taxon in the Order/Class-group including all Echinoids.


Endocyclica Bronn, 1860. Proposed as a Suborder. *Echinus* Linnaeus, 1758. To be added to *Official List* as Subclass-name. This, with the following name, are the first latinized names known to us which represent the taxonomic concept usually expressed by the terms "Regularia" and "Irregularia".


Irregularia Carus, 1863. Proposed as a second-rank category (unnamed) below Class. Spatangus Leske, 1778. Objective junior synonym of Exocyclica Bronn, 1860.

Palechinida Haeckel, 1866. Proposed as a Subclass. Palaechinus McCoy, 1844. To be added to Official List as Order Palaechinoidea.


Melonitida Haeckel, 1866. Proposed as an Order. Melonites Norwood and Owen, 1846 (non Lamarck, 1822), replaced by Melonechinus Meek and Worthen, 1860. Since this name was formed from the name of an invalid generic homonym, it would be best considered stillborn. Since there are not as yet any rules that state that this must be the case, the best alternative is to suppress the name on the grounds that it has never been re-employed and is not used in any existing taxonomic scheme.

Eocidarida Haeckel, 1866. Proposed as an Order. Palaechinus McCoy, 1844. Objective junior synonym of Palechinida Haeckel (of which it was originally only a part).


Petalosticha Haeckel, 1866, and all subsequent usages. Proposed as an Order. Spatangus Leske, 1778. Objective junior synonym of Exocyclica Bronn, 1860.

Clypeastridae A. Agassiz, 1873. Proposed as a Suborder. Clypeaster Lamarck, 1801. To be added to Official List as Order Clypeasteroida. As explained elsewhere (Durham, 1955), the alteration of the stem of this name by the insertion of an e is considered a valid emendation on etymological grounds and in order to conform with all other names of the stem of which the Greek word δαρε forms a part.

Clypeastridae Claus, 1876. Proposed as an Order. Clypeaster Lamarck, 1801. Objective junior synonym of Clypeastridae A. Agassiz, 1873.

Spatangidea Claus, 1876. Proposed as an Order. Spatangus Leske, 1778. To be added to Official List as Order Spatangoida.


Cystocidaridae Zittel, 1879. Proposed as an Order. Cystocidaris Zittel, 1879, an unnecessary nom. nov. for Echinocystites Wyville Thomson, 1861. The ordinal name is an objective senior synonym of Echinocystida Jackson, 1912.
Bothriocidaridae Zittel, 1879. Proposed as an Order. *Bothriocidaris* Eichwald, 1869. To be added to *Official List* as Order Bothriocidaroida. This name is sometimes attributed to Schmidt, (F.), 1874, but he did not name the taxon, although he recognized the taxonomic need for one.


Regulares Zittel, 1879. Proposed as an Order. *Echinus* Linnaeus, 1758. Objective junior synonym of Endocyclica Bronn, 1860. Zittel gives "Endocyclica Wright" as an alternative name; this presumably refers to Echinoidea Endocyclica Wright, 1857, which is excluded from this list because it consists of more than one word.

Irregulares Zittel, 1879. Proposed as an Order. *Spatangus* Leske, 1778. Objective junior synonym of Exocyclica Bronn, 1860. Zittel's reference to "Exocyclica Wright" is ignored on the same grounds as are stated in the preceding entry.

Gnathostomata Zittel, 1879. Proposed as a Suborder. *Clypeaster* Lamarck, 1801. To be added to *Official List* as a Superorder.

Atelostomata Zittel, 1879. Proposed as a Suborder. *Spatangus* Leske, 1778. To be added to *Official List* as a Superorder.


Cidarideae Claus, 1880. Proposed as a Suborder. *Cidaris* Leske, 1778. To be added to *Official List* as Order Cidaroida.


Clypeastroideae Claus, 1880. Proposed as an Order. *Clypeaster* Lamarck, 1801. Objective junior synonym of Clypeastridae A. Agassiz, 1873.

Spatangoideae Claus, 1880. Proposed as an Order. *Spatangus* Leske, 1778. Objective junior synonym of Spatangidea Claus, 1876.

Cassidulideae Claus, 1880. Proposed as a Suborder. *Cassidulus* Lamarck, 1801. To be added to *Official List* as Order Cassiduloida.


Cystocidaroida Duncan, 1889. Proposed as an Order. See Cystocidaridae Zittel, 1879.

Plesiocidaroida Duncan, 1889. Proposed as an Order. *Tiarechinus* Neumayr, 1881. To be added to Official List as an Order.

Diadematoidea Duncan, 1889. Proposed as an Order. *Diadema* Gray, 1825. To be added to Official List as Superorder Diadematacea and as name of its nominate Order.

Holectypoida Duncan, 1889. Proposed as an Order. *Holectypus* Desor, 1842. To be added to Official List as an Order.

Clypeastroida Duncan, 1889. Proposed as an Order. *Clypeaster* Lamarck, 1801. Objective junior synonym of Clypeastridae A. Agassiz, 1873.


Spatangoida Duncan, 1889. Proposed as an Order. *Spatangus* Leske, 1778. Objective junior synonym of Spatangidea Claus, 1876.


Objective junior synonym of Euechinoidea Bronn, 1860.

See Cystocidaridae Zittel, 1879.

Promelonaria Haeckel, 1896. Proposed as an Order. *Cystocidarid* Zittel, 1879
(= *Echinocystites* Wyville Thomson, 1861). Objective senior synonym
of Echinocystoida Jackson, 1912.

Eumelonaria Haeckel, 1896. Proposed as an Order. See Melonitida Haeckel,
1866.

Palechinida or Palaeoechinoidea or Perischoechinoidea [sic] Haeckel, 1896.
Proposed as a Subclass. *Palaechinus* McCoy, 1844. Objective junior
synonyms of Perischoechinida McCoy, 1849.

Stenopalmaria Haeckel, 1896. Proposed as an Order. *Bothriocidarid* Eichwald,
1859. Objective junior synonym of Bothriocidaridae Zittel, 1879.

Objective junior synonym of Paleochinida Haeckel, 1866.

Desmosticha = Cidoronia [sic] Haeckel, 1896. Proposed as a Legion or Order.
*Cidaris* Leske, 1778. Objective junior synonym of Cidarideae Claus,
1880.

Cidaridaria Haeckel, 1896. Proposed as an Order or Suborder. *Cidaris* Leske,
1778. Objective junior synonym of Cidarideae Claus, 1880.

Diademaria Haeckel, 1896. Proposed as an Order or Suborder. *Diadema* Gray,
1825. Objective junior synonym of Diadematoida Duncan, 1889.

Anthosticha = Clypeastronia [sic] Haeckel, 1896. Proposed as a Legion or Order.
*Clypeaster* Lamarck, 1801. Objective junior synonyms of Clypeastridae A. Agassiz,
1873.

Conodoryparia = Holactypida [sic] Haeckel, 1896. Proposed as an Order or
Suborder. *Holactypus* Leske, 1842. Objective junior synonyms of
Holactypoida Duncan, 1889.

Scutellaria Haeckel, 1896. Proposed as an Order or Suborder. *Scutella*
Lamarck, 1816. To be added to *Official List* as Suborder Scutellina.

Petalosticha = Spatangonia [sic] Haeckel, 1896. Proposed as a Tribe or
Order. *Spatangus* Leske, 1778. Objective junior synonyms of
Spatangidea Claus, 1876.

Cassidularia or Cassiduloidea [sic] Haeckel, 1896. Proposed as an Order or
Suborder. *Cassidulus* Lamarck, 1801. Objective junior synonyms of
Cassidulideae Claus, 1880.

Spatangaria Haeckel, 1896. Proposed as an Order or Suborder. *Spatangus*
Leske, 1778. Objective junior synonym of Spatangidea Claus, 1876.


Arbacina Gregory, 1900. Proposed as a Suborder. *Arbacia* Gray, 1835. To be added to *Official List* as Order-name *Arbacioida* and as name of its nominate Suborder.


Clypeastrina Gregory, 1900. Proposed as a Suborder. *Clypeaster* Lamarck, 1801. To be added to *Official List* as Suborder-name *Clypeasterina*.


Exocysta Lambert, 1900. Proposed as an Order. *Clypeaster* Lamarck, 1801. Objective junior synonym of *Clypeastridae* A. Agassiz, 1873.


Clypeastrida Delage and Hérouard, 1903. Proposed as an Order. *Clypeaster* Lamarck, 1801. Objective junior synonym of Clypeastridae A. Agassiz, 1873.

Spatangida Delage and Hérouard, 1903. Proposed as an Order. *Spatangus* Leske, 1778. Objective junior synonym of Spatangidea Claus, 1876.


Meridosternata Mortensen, 1907. Proposed as a Suborder. *Holaster* L. Agassiz, 1836. To be added to *Official List*.

Amphisternata Mortensen, 1907. Proposed as a Suborder. *Spatangus* Leske, 1778. To be added to *Official List*.

Echinocystoida Jackson, 1912. Proposed as an Order. *Echinocystites* Wyville Thomson, 1861. To be added to *Official List* as Echinocystitoida (to conform with stem of name of type-genus).


Megalopoda Macbride and Spencer, 1938. *Eothuria* Macbride and Spencer, 1938, which is not certainly an echinoid.

Aspidodiademina Mortensen, 1939. Proposed as a Suborder. *Aspidodiadema* A. Agassiz, 1879. To be added to *Official List*. 


Orthopsina Mortensen, 1942. Proposed as a Suborder. *Orthopsis* Cotteau; 1864. To be added to *Official List*.


**Alphabetical List of Names in the Order/Class-Group in the Class Echinoidea**

- Abranchiata Ludwig, 1882
- Adelostella T. and T. Austin, 1842
- Amphisternata Mortensen, 1897
- Anocysti Parkinson, 1811
- Anocysti Fleming, 1828
- Anthostichia Haeckel, 1896
- Apomesostomi Parkinson, 1822
- Arbacia Gregory, 1900
- Aspidodiademina Mortensen, 1939
- Asternata Gregory, 1900
- Atelostomata Zittel, 1879
- Aulodonta Jackson, 1912
- Autechinida Haeckel, 1866
- Bothriocidaridae Zittel, 1879
- Bothriocidaroida Duncan, 1889
- Branchiata Ludwig, 1882
- Brachygnata Lambert, 1915
- Calycina Gregory, 1900
- Camarodonta Jackson, 1912
- Cassidularia Haeckel, 1896
- Cassidulidae Claus, 1880
- Cassidulina Mortensen, 1948
- Cassiduloidea Duncan, 1889
- Catoecysti Leske, 1778
- Catoecysti Parkinson, 1811
- Catoecysti Fleming, 1828
- Centrechinoida Jackson, 1912
- Cidarida Delage and Hérouard, 1903
- Cidaridaria Haeckel, 1896
- Cidaridea Claus, 1883
Cidarideae Claus, 1880
Cidaroida Duncan, 1889
Cidaronia Haeckel, 1896
Cirrhi-Spinigrada Forbes, 1841
Clypeastridae Delage and Hérouard, 1903
Clypeastridae A. Agassiz, 1873
Clypeastridea Claus, 1876
Clypeastrina Gregory, 1900
Clypeastraidea Duncan, 1889
Clypeastraidea Ludwig, 1886
Clypeastraidea Claus, 1880
Clypeastronia Haeckel, 1896
Clypeastronidae T. and T. Austin, 1842
Conoclyparia Haeckel, 1896
Conoclypina Mortensen, 1948
Cyphosomina Delage and Hérouard, 1903
Cystechinida Haeckel, 1896
Cystocidaridae Zittel, 1879
Cystocidaroida Duncan, 1889
Cystocidaroida Haeckel, 1896
Desmosticha Haeckel, 1886
Diademaria Haeckel, 1896
Diadematoida Duncan, 1889
Diademida Delage and Hérouard, 1903
Diademina Gregory, 1900
Diadema Fischer de Waldheim, 1823
Echini Goldfuss, 1820
Echinida Fleming, 1822
Echinidae Fleming, 1828
Echinidae T. and T. Austin, 1842
Echinidea Blainville, 1834
Echinidea Haeckel, 1896
Echinidea Claus, 1880
Echinides Stark, 1828

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Holectypina Gregory, 1900
Holectypoida Duncan, 1889
Irregulares Zittel, 1879
Irregularia Carus, 1863
Irregulariae Delage and Hérouard, 1903
Laganina Mortensen, 1948
Lepidocentroida Mortensen, 1934
Megalopoda MacBride and Spencer, 1938
Melonechinoida Mortensen, 1934
Melonitida Haeckel, 1866
Meridosternata Mortensen, 1907
Neoechinoidea Perrier, 1893
Nodostomata Lambert, 1915
Nucleolitoida Hawkins, 1920
Orthopsina Mortensen, 1942
Palaeoechinida Perrier, 1893
Palaeo-echnioidea Parker and Haswell, 1897
Palechinida Haeckel, 1866
Palechinida or Palaeoechnoidea or Perischoechinoidea Haeckel, 1896
Palechinoidea Zittel, 1879
Pedicellata Griffith and Pidgeon, 1834
Pedinina Mortensen, 1939
Perischoechinida McCoy, 1849
Perischoechinidae Zittel, 1879
Perischoechinoidea Bronn, 1860
Petalosticha Haeckel, 1866
Phymosomina Mortensen, 1904
Pileatoidea Lambert, 1900
Plagiocysta Lambert, 1900
Plesiocidaroida Duncan, 1889
Pleurocysti Leske, 1778
Pleurocysti Parkinson, 1811
Pleurocysti Fleming, 1828
Procassiduloida Lambert, 1918
Promelonaria Haeckel, 1896
Protosternata Mortensen, 1907
Pseudoechinoidea Mortensen, 1935
Radiaria Rafinesque, 1815
Regulares Zittel, 1879
Regularia Carus, 1863
Regulariae Delage and Hérouard, 1903
Rotulina Durham, 1955
Salelina Delage and Hérouard, 1903
Salenina Delage and Hérouard, 1903
Scutellaria Haeckel, 1896
Scutellina Durham, 1955
Spatangaria Haeckel, 1896
Spatangida Delage and Hérouard, 1903
Spatangidea Claus, 1876
Spatangidae Claus, 1880
Spatangoida Duncan, 1889
Spatangoidea Ludwig, 1886
Spatangoidea Duncan, 1889
Spatangoidea Claus, 1880
Spatangonia Haeckel, 1896
Stenopalmaria Haeckel, 1896
Stereodermata Lambert, 1900
Stereosomata Duncan, 1889
Sternata Gregory, 1900
Stirodonta Jackson, 1912
Streptosomata Duncan, 1889
Tennopleurina Mortensen, 1942
Typica Carus, 1863
Available Names in the Order/Class-Group in Echinoidea

Class


Subclass

Endocyclica Bronn, 1860. Objective junior synonyms Regularia Carus, 1863, Desmosticha Haeckel, 1866, Regulares Zittel, 1879, Regulariae Delage and Hérouard, 1903.


Perischoechinoidea McCoy, 1849 (as Perischoechinida). Objective junior synonyms Perischoechinoidea Bronn, 1860, Palechinoidea Zittel, 1879, Palaeoechinida Perrier, 1893, “Palechinida or Palaeochochinoidea or Perischoechinoidea” Haeckel, 1896.

Pseudoechinoidea Mortensen, 1935.

Superorder

Atelostomata Zittel, 1879
Diadematea Duncan, 1889 (as Diadematoidea)
Echinacea Claus, 1880 (as Echinidea)
Gnathostomata Zittel, 1879.

Order

Arbacioida Gregory, 1900.
Bothriocidaroida Zittel, 1879 (as Bothriocidaridae). Objective junior synonyms Bothriocidaroida Duncan, 1889, Stenopalmaria Haeckel, 1896.
Cassiduloida Claus, 1880 (as Cassidulideae). Objective junior synonyms Cassidulidea Duncan, 1889, Cassidularia Haeckel, 1896, Asternata Gregory, 1900, Procassiduloida Lambert and Thiéry, 1921; subjective junior synonym Nodostomata Lambert, 1915.


Clypeasteroida A. Agassiz, 1873 (as Clypeastridae). Subjective senior synonyms Catocysti Leske, 1778, Parkinson, 1811 and Fleming, 1828; objective junior synonyms Clypeastridea Claus, 1876, Clypeastroideae Claus, 1880, Clypeasteridea Ludwig, 1882, Clypeastroidea Duncan, 1889, Anthosticha Haeckel, 1896, Clypeastronia Haeckel, 1896, Exocysta Lambert, 1900, Clypeastrida Delage and Hérouard, 1903.

Diadematoidea Duncan, 1889. Objective junior synonyms Diademaria Haeckel, 1896, Diademida Delage and Hérouard, 1903, Centrechinoida Jackson, 1912.

Echinocystitoida Jackson, 1912 (as Echinocystoida). Objective senior synonyms Cystocidaridae Zittel, 1879, Cystocidaroida Duncan, 1889, Promelonaria Haeckel, 1896, Cystechinida-Cystoechinoidea Haeckel, 1896, Plagiocysta Lambert, 1900; Objective junior synonym Lepidocentroida Mortensen, 1934.

Echinoida Claus, 1880 (as Echiniodeae). Objective junior synonyms Branchiata Ludwig, 1882, Ectobrancheiata Ludwig, 1886, Stereosomata Duncan, 1889, Stereodermata Lambert, 1900.

Echinothurioida Claus, 1880 (as Echinothurideae). Objective junior synonyms Streptosomata Duncan, 1889, Echinothuriida Delage and Hérouard, 1903.

Hemicidaroida Beurlen, 1937.

Holasteroida Durham and Melville, 1957.

Holectypoida Duncan, 1889. Objective junior synonyms Conoclyparia Haeckel, 1896, Holectypida Delage and Hérouard, 1903, Pileatoida Lambert, 1900; Subjective junior synonyms Brachygnata Lambert, 1915, Globatoroida Lambert and Thiéry, 1921.

Megalopoda MacBride and Spencer, 1938.

Palaechinoida Haeckel, 1866 (as Palechinida). Objective junior synonyms Eocidarida Haeckel, 1866, Perischoechinidae Zittel, 1879, Eurypalmaria Haeckel, 1896, Palaeo-echinoidea Parker and Haswell, 1897, Melonechinoida Mortensen, 1934.

Phymosomatoida Mortensen, 1904 (as Phymosomina). Objective senior synonym Cyphosomina Delage and Hérouard, 1903; objective junior synonym Stirodonta Jackson, 1912.

Plesiocidaroida Duncan, 1889.


Temnopleurooida Mortensen, 1942.

**Suborder**

Amphisternata Mortensen, 1937.

Aspidodiademina Mortensen, 1939.

Calycina Gregory, 1900. Objective junior synonym Salenina ("Salelina") Delage and Hérouard, 1903.

Cassidulina *sensu stricto* (Mortensen, 1948).

Clypeasterina *sensu stricto* (Gregory, 1900, as Clypeastrina).

Conoclypina Mortensen, 1948.

Diademina *sensu stricto* (Gregory, 1900). Objective junior synonym Aulodonta Jackson, 1912.

Echinina *sensu stricto* (Gregory, 1900). Objective junior synonym Camarodonta Jackson, 1912.


Holeclypina *sensu stricto* (Gregory, 1900).

Laganina Mortensen, 1948.

Meridosternata Mortensen, 1907.

Orthopsina Mortensen, 1942.

Pedinina Mortensen, 1939.

Protosternata Mortensen, 1907.
Scutellina Haeckel, 1896 (as Scutellaria).

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Proposed type genera for higher taxa within the Sub-Phylum Ciliophora (Phylum Protozoa)

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(Enclosure to a letter dated 14th December 1957)¹

Acting within the spirit of the Copenhagen Decisions on Zoological Nomenclature (Hemming, 1953) and appreciating the need to stabilize the higher zoological taxa by fixation of type genera, the present paper considers the problem of selecting such types in a subphylum of "lower organisms", the ciliated protozoa.

2. Before types can be designated, or even suggested, another nomenclatural problem should be resolved as satisfactorily as possible: clarification of the standing of names of the taxa themselves in the Order/Class-Group within the subphylum Ciliophora. Classificational schemes are also involved to the extent that various groups have been shifted in their rank and relationship to each other by different authors. Strictly nomenclatural aspects of ciliate systematics, however, are for the most part unaffected by the taxonomic position of the various groups, if proposed changes in rank have not been too drastic.

3. Various classificational schemes are currently in use for the ciliates. One very recent revision has just been published (Corliss, 1956, 1957), based principally upon proposals made by Fauré-Fremiet (1950). Several major differences exist between conventional schemes and the latest rearrangement. The suggested alterations are based upon analyses and interpretations of new information or of data considered more reliable (i.e., more fundamental in nature) from a phylogenetic point of view than those generally employed.

* The investigation described in this paper was carried out under Grant G-3887 from the National Science Foundation.

¹ This case has an associated Registered Number Z.N.(S.) 1302.
4. The propositions of the Copenhagen Decisions related to nomenclatural procedures for higher taxa have been applied to group names within the Ciliophora (Corliss, 1957). This has revealed that most of the existing confusion stems from past failures to recognize priority at the higher taxonomic levels. Plenary Powers of the International Commission on Zoological Nomenclature must be invoked to resolve cases of homonymy and to preserve several time-honored names.

5. A more detailed proposal of type genera for the higher ciliate groups will be made to the International Commission on Zoological Nomenclature in proper form at a later date; but the following list of suggested names is essentially a condensation of the information to be included in such a petition. Thus the present paper is not an attempt to offer formal designation of types. Shifting various systematic groups to higher or lower ranks in the classificational scheme in general need not affect the relationship of a taxon to its type genus; thus a worthwhile degree of stability can be achieved by suggesting type genera, even though the scheme adopted here as a framework may undergo subsequent change. The thirty taxonomic units recognised below involve twenty-one different genera of ciliates as types. The genera chosen are generally quite central taxonomically to the collection of subunits involved. In addition the selected genera, with two exceptions, are also types of representative families within the orders or suborders concerned.

6. For conciseness the following plan of presentation is used below: the name of a given taxon includes only the (original) author, not the date; this information is separated from the full name of the type genus by a colon. Names of authors are abbreviated following their first usage.


9. Rather detailed discussion of certain choices of generic names used above is warranted but is beyond the scope of the present abbreviated report. It may be interesting to note in passing that no genus of ciliates was listed in Linnaeus' 10th edition of the *Systema Naturae*, although Hill (1752) had published the name “Paramecium” six years earlier. Rarely have types been designated for any of the ciliate taxa; the relationship of such cases to the proposals made above also will be considered in a fuller paper to be published elsewhere at an appropriate later date.
Questions arising in connection with the naming of Orders and taxa of Higher Rank

By ELLSWORTH C. DOUGHERTY

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(Editorial Note: In a letter dated 20th November 1957 Dr. Dougherty explained that, in conjunction with Dr. Benjamin G. Chitwood, he had recently been engaged on work on a re-classification of the Nematodes and that in the course of this work Dr. Chitwood and he had found themselves in disagreement on certain questions relating to the naming of Orders and taxa of higher rank. Dr. Dougherty explained that he had set out his views in a series of documents which had formed enclosures to a letter which he had recently addressed to Dr. Chitwood. These papers, he suggested, might be published in the Bulletin of Zoological Nomenclature. It has been judged that the most convenient course would be to present this documentation to the London Congress for consideration in connection with Section 1 of Article 12 of the Draft Règles (1957, Bull. zool. Nomencl. 14 : 92). The following extract from Dr. Dougherty's letter, together with the enclosures to that letter, has accordingly been allotted the Congress Number Document 25/4 and is reproduced below. (Int'l'd. F.H. 23rd January 1957)

(Extract from a letter, with enclosure, dated 20th November 1957)

Dr. Chitwood and I have reached a fundamental impasse with respect to the criteria by which names of higher taxa of the Order/Class and Phylum Groups are to be reckoned for the purposes of the Law of Priority. I am enclosing some appendices (II–V) to a recent letter to Dr. Chitwood. If any of this material seems suitable for the Bulletin (with appropriate recasting, of course), please let me know.

In the first appendix of my letter to Dr. Chitwood (of which an extra copy was not made), I indicated that I planned to send you copies of Appendices II and III; subsequently to writing that, however, I recast the material a bit so that it came to be four appendices, instead of but two. A copy of this letter goes to Dr. Chitwood by way of explanation of this fact.

APPENDIX I

(not furnished to the Office of the Commission by Dr. Dougherty)

APPENDIX II

Determination of Names for Higher Zoological Taxa

A. Present Rules

In our recent letters we have been wrestling with problems that, in important respects, Copenhagen left unsolved. The volume *Copenhagen Decisions* (1953) has a Section D (pp. 38–43), which is entitled: “Proposed adoption of rules for the naming of Orders and Higher Taxonomic Categories”.

One thing is immediately evident: the scheme for arriving at lists of recommended names for taxa of the Order/Class- and Phylum-Groups in the Animal Kingdom, as outlined in Decision 62 (pp. 38–40), has yet to be implemented. Certainly the suggestion (Decision 62(6)) that “Specialist Committees” have such lists ready and published before “the Linnean Bicentenary in 1958” was hopelessly optimistic. No one at the Copenhagen Colloquium gave any indication of understanding the enormity of the problems involved. (Certainly I did not realize it; only through our joint efforts, in fact, have I come to appreciate fully this situation.) The fact that, to my knowledge, Francis Hemming has not actively sought to have “Committees of Specialists” formed is, I feel, partly due to the intrinsic difficulties involved.¹ No doubt another factor has also played a critical role: he has, I believe, been overwhelmed with a flood of problems of all sorts, whose extent the Colloquium also failed to recognize. The implementation of the Copenhagen provisions with respect to names of higher taxa (i.e., those above the Family-Group) has, I surmise, been forced to a position of relatively low priority by the imperative nature of more urgent problems. The participants of the forthcoming London Colloquium will, I am sure, have a more realistic understanding of the time necessary for the realization of the goals set at Copenhagen (some of which will, I believe, be modified).

But, if I start with the body of law enacted in 1953 for deciding on names of higher taxa, I can, I feel, illuminate some of our problems rather more adequately than has been done so far by either of us.

¹ See Document 25/1, paragraph 3.
As regards higher-taxon names already proposed, I draw your attention first of all to main Decisions 63 (p. 38) and 62(1) (pp. 31-34) and quote from the following: “[Decision 62] The Colloquium recommends . . . Decision 62(2) . . . [that the] Commission should be asked to invite the Committees of Specialists, when selecting names to be included in the recommended lists, to give first consideration to weight of current usage, and, when usage affords no clear basis for choice, to other considerations, such as priority . . .”. This is the ruling on which I base my preference for Nematoda as a Class or Phylum name. It implies, of course, a “popularity contest”, of which you have been bitterly critical. If enough other zoologists feel as you do, this rule can be changed. I happen to agree with it on principle; but I fully realize that its application has many pitfalls.

Let us, for the sake of argument, decide that this is not a good rule—that, instead, some rule based on the Law of Priority should be substituted for it. Now we are faced with the problem of just what way in which to formulate such a rule.

Over the past months you have gradually clarified your thinking on these issues—partly, I am sure, under pressure from me. I believe that you have been primarily drawn to your present position by your desire to preserve Nemata as the phylar name for the nemas (=nematodes) and that most other aspects of the problem have been subordinated to this aim.

B. Your Proposal for a Rule on Acceptance of Names of Higher Taxa

In your last letter (of Nov. 14th) you enunciated a principle (hereinafter referred to as “[your] Rule”) that is quite clear—I quote: “The only formula we can arrive at is that the stem of the name used by the man who made the final logical exclusions should be accepted if he used that name at the rank we use today”. At first glance, this would seem a fair enough rule, but, if ever formalized, it could lead to endless confusion as I can immediately show.

Before going into the more important objections, I should point out that, from your standpoint, it would have one effect that you may not have perceived and would, I believe, not wish: namely, it would ensure the preservation of a name with the stem aphasmid-, whether at the Subclass or Class level, for certainly Aphasmidia (subclass) and Aphasmidea (class) are the first names used for taxonomically rational taxa at those levels (Adenophori having followed Aphasmidia at the Subclass level and Anenophorea being far junior to the Aphasmidea at the Class level). (Secernentea as a Class name would, on the other hand be valid under your Rule since it would be a replacement for the homonymous name Phasmidea.)
The difficulties with your Rule are more deep-seated than this, however; they derive from two main facts. First, its implementation would require an intrusion of taxonomy into nomenclature far more than any formal provision of the Rules now provides for—with the all-important exception that, fundamentally, the "popularity contest" provision, of which you are so critical, would allow full operation of taxonomic (or systematic, if you will) ideas to operate in reaching ultimate decisions on nomenclature. (Incidentally, this principle is also extended to names of the Family-Group—see Decision 45 [p. 33].) Second, your Rule would require junking what I should call the "Principle of Co-ordination" of taxa of the Order/Class- and Phylum-Groups (see Decision 66 [pp. 41-42]).

C. Nomenclature vs. Taxonomy

One of the most difficult problems in the nomenclatural aspect of systematics at the level of higher taxa is that of deciding to what extent use of names should vary according to taxonomic concepts. Given the Règles as amended at Copenhagen and general zoological traditions in nomenclature, going far back of Copenhagen, I contend that one should strive, in settling on rules of nomenclature for higher taxa, to minimize the obtrusion of taxonomic concepts.

Your Rule could, however, embroil zoology in an endless confusion in many cases. In effect, it would abolish the fundamental usefulness of the type system for higher taxa (type genera in these cases). You may be inclined, I should anticipate, to dispute that it in any way would interfere with the type system, but I think that it can be fairly shown that it would. Types are useful primarily as anchors for names when there are, as is inevitable in our growing state of taxonomic knowledge, changes in taxonomic systems.

Let us examine what would be the full implication of a rule requiring that that name be used that was first applied to a group after "logical exclusions" [= a "natural" group] had been made. This brings us full-tilt into taxonomic issues that I feel strongly should be left out of nomenclature.

Look what would happen in an extreme case if it were necessary (as it would be in the strict application of your Rule) to accept any name change associated with a change of content in a given taxon; in such cases, it is obvious that the type would stand for little. Let us imagine a higher taxon X of a given rank that, when originally named, contained subordinate taxa (orders, families, genera—it doesn't matter much for the sake of this discussion which they were); let us call these subordinate taxa A, B, C, D, E. Now, by
your Rule, any of the following would result in a condition in which a different name, if proposed, would be binding:

1. A, B, C, D, with E removed (with name change of group to Y);
2. A, B, C, with D and E removed (with name change to group to Z);
3. and so on through many permutations.

A worker accepting concept (1) would be bound by name Y; a worker accepting concept (2) would be bound by name Z; etc. Similarly, the introduction of any other subordinate taxon (F, G, etc.) into X would require that any name-change undergone by X be binding. The ultimate consequences of this are ridiculous. And what is a valid group anyway? In fact, who are we to say that a group is valid?

No, I think we need the type system for higher taxa, just as we do for species, genera, and families and taxa subordinate to these. We need to keep names that were originally proposed for largely reasonable groups and to follow the same system of restriction as we do for names in the Species-, Genus-, and Family-Groups.

The one escape mechanism is the "popularity contest" provision. With it, totally irrational groups can be ignored and, in general, prevailing usage maintained.

D. Coordination of Taxa

I admit that I have been critical of the idea of coordination of names of the Family-Group and that, to be consistent, I should also object to this principle at higher levels. The Botanists in their Code eschewed coordination from the very first—from the species level up. Concomitantly with this, however (and perhaps with wisdom) they have steadfastly refused to legislate the application of the Law of Priority for taxa above the level of order; they have gone so far as to exclude such taxa explicitly from Priority. In many ways it is clear that the Botanists are twenty years ahead of the Zoologists in the perfection of their Code—although it is perhaps not fair to judge the two Codes in this way, for the plants strike me (on the basis of my recent studies of their evolutionary interrelationships) as posing less difficulties of classification than the animals. However, it may well be that, all this admitted, the Botanists have been more unified and clear-headed; and their rejection of coordination strikes me as a good example of clear thinking. The fact is that they do have a better Code than we in Zoology. (In fact we have been essentially without a Code—in the sense of codification—since the revolutionary
changes of 1948 at Paris, for, at that time and subsequently, much vital innovation has been made [as in the Copenhagen volume and also as published in the Bulletin of Zoological Nomenclature and in various of the Opinions, Declarations and Directions published by the International Commission in the series Opinions and Declarations Rendered ...].)

I have done some soul-searching the last few weeks and especially the last few days, and have decided that, since the Principle of Coordination, as applied to species and genera, was a part of zoological nomenclature with the earliest official Code (1900) and since this concept has already been legislated for higher taxa as well, at Copenhagen, it perhaps serves best the interests of nomenclatural stability in zoology to accept this extension of the concept in question all the way up the hierarchy of taxa. So I am now prepared to accept it at the Family-Group level too. If, however, the Principle of Coordination is to be reversed at the Family-Group level, the same should be done at the Order/Class- and Phylum-Group levels as well. But you will, I hope, see that, in your Rule, you are asking for a reversal of this long standing zoological tradition.

E. Summary and Conclusions

I pointed out that I regard your Rule as contravening two basic principles of zoological nomenclature—that of the type concept and that of coordination. It is ironical that, at present, at least, you must look in the Code to the very ruling of which you appear to disapprove most strongly, for a source of support. As far as I can see, every other provision is designed to keep taxonomic (or systematic, if you prefer) ideas out of nomenclature as much as possible.

Frankly, I think that the most undesirable feature of your Rule lies in the fact that, at the same time that it demands radical departures from much past nomenclatural tradition, it relies basically on another nomenclatural tradition. Thus, on the one hand, it would, in effect: (1) circumvent the type concept (type genus in the case of families and higher taxa); and (2) at the same time, reject the time-honored process of exclusion, which has traditionally not affected the names of species, genera, and families, and whose application, as a result of the 1953 legislation, would appear to have been extended to higher taxa. On the other hand, your Rule rests squarely on the Law of Priority. In other words, you propose sweeping aside certain important traditions and yet at the same time requiring that the essentially new concepts be supported by the Law of Priority.

Well, all this is possible, but I doubt that it is desirable. Personally, I should prefer not to indulge in radical departure from current rules, but rather to work with them insofar as I can in good conscience. It is a strange
predicament. On the one side I support the Règles as they are constituted, with full appreciation that the “popularity contest” provisions for higher taxa run counter to many of the traditional concepts of the earlier Code (but I accept the “popularity contest” provision because I realize that the Règles before 1953 did not have any explicit provisions for determining the names of higher taxa; except a few for families and subordinate categories thereto. Thus the very promulgation of such rules was a radical departure; and it does not disturb me if, in their promulgation, essentially new concepts are introduced). On the other side you would, in effect, replace the legislation of 1953 with concepts that are, in their way, as novel as the “popularity contest” provisions.

I am willing for the sake of our paper to go along, in the main body of the text, with your Rule and to express my demurrals in footnotes. But I hope that after reading and digesting what has been written in this appendix you will abandon some, at least, of your position. There are certainly many moral points to back you; but, as I have said to you often, nomenclature as it has generally evolved has operated in certain vital respects independently of taxonomy and systematics. It has traditionally been a means of getting stable names—not of honoring people. The adding of author’s names and dates has been (properly) regarded as an abbreviated bibliographic device. You are highly ambivalent on this matter—at one time you state that authors’ names should be left off of higher taxa in order to discourage the incentive for personal glory; another time you say that, for a given taxon, that name should be used that was applied to it at the time the group was first accurately characterized at the level accepted by you and that this is only right because it honors the person responsible (von Linstow and Cobb being two of your heroes in this connection]. I can only say that, to me, these are scarcely consistent viewpoints.

But I say what I said before—to me this is a non-Aristotelian world. Therefore, I do not object to multiple logical systems; but I do like to know what I am doing and to be able to recognize where I am applying one set of logic and where another. I want you to do the same. Otherwise you will not be adequately prepared to meet the challenge of those whose systems of logic differ from yours.

APPENDIX III.

Conditions Causing Homonymy between Names of Higher Taxa

At the outset, let me explain what I believe the International Congress of Zoology means with respect to homonymy of names of higher taxa (see Copenhagen Decisions . . ., p. 42, Decision 68). In the Copenhagen volume it is stated that [in addition, by implication, to the fact that two names are
homonyms when they are of identical spelling] two names that differ only in "termination" are also homonyms. You in effect raised the question of how this ruling is to be interpreted—in your letter of the 7th. Having been at Copenhagen, I can say that a lot of discussion went into the rulings later published as the Copenhagen Decisions . . . , but that in some cases the published version fails to do full justice to those discussions. In the particular case before us I can say that it is quite clear to me that what the Colloquium had in mind with respect to "terminations" were only the common neuter pleural adjectival endings -a, -ea, -ia, -ida, -ina (-oidea is a special case, which I discuss further on).

By contrast with the foregoing, when a compound word is made by combining the appropriate parts of two latinized Greek words (or two Latin words, or a Latin plus Greek or Greek plus Latin word in hybrid combination), a different word is formed, and the second part cannot be considered as a "termination" in the sense of the Copenhagen decision in question. Instead the stem (or root) of the compound word consists of both parts up to the declensional (usually adjectival) ending (i.e., -a, -ea, etc.). [Since I first wrote the foregoing paragraph, it has become evident that you independently arrived at the point of view there expressed (vide P.S. to your letter of Nov. 9th).]

As an example, let us take the case exemplified on the one hand by the series that, in Pearse's system (1942), ran Spiruria-Spirurida-Spirurina. Here the difference lies in the -ia, -ida, -ina suffixes, which are merely adjectival in force and do not contribute any other meaning to the word than indication of the rank for the respective taxa. But, on the other hand, take the word Spiruromorphina, which I have suggested as a replacement for Spirurina: this consists of combinations of three Greek words, σπιριτα, ορβα, and μορφη, plus the Latin adjectival ending -ina. To be more exact, the word is made up as follows—from:

(1) σπιριτα—the stem spir-;
(2) ορβα—the stem ur-;
(3) the connecting vowel -o-; 

* This is normal for Greek when two words are combined to give a compound word and the stem of the first one and the derivative of the second one begins with a consonant. For compound Latin words in the same situation the proper vowel is -i-. With hybrid (Greek-Latin or Latin-Greek) words the connecting vowel is -o- if the first part is Greek and -i- if the first part is Latin. (This last rule explains why nematocide [Greek-Latin] is to be preferred to nematicide [where the Latin combining vowel is used with a Greek stem]. Despite Cobb's contention, it did not usually make any difference, in the best Classic Latin, if a word had already been adopted from Greek; it still kept its "-o-" connecting vowel in hybrid compounds. A good classic example is thermē-pōto (< θέρμης, hot; and pōto, to serve drinks—hence, to refresh with hot drinks).
(4) $\mu\omicron\rho\phi\pi$ → the stem $morp$-;

(5) and, finally, the adjectival ending -ina.

Result: $Spir-ur-o-morph$-ina. The stem of this new compound word is $spiruromorph$-, and names based on the new stem $spiruromorph$- should pose no problems of homonymy with words based on the old stem $spirur$-. The contrary view, to my way of thinking, does violence to good linguistic sense.

I must admit, however, that the suffix -oidea is an embarrassment here. It is the neuter plural of Latin -oideus, -oidea, oideum, which in turn derives from the uncontracted Greek adjectival suffix $-\epsiloni\delta\eta\varsigma$, which in its turn derives from the Greek word $\epsilon\iota\delta\sigma$ (form). Viewed in this light, it might be held to have as much right to conferring independent status as should (I believe) -morph(ina). There is this difference, however: -oidea has been adopted in an adjectival sense for superfamilies and made homologous with the endings -idae and -inae, which apply, of course, to families and subfamilies respectively. (As indicated in an earlier letter [Nov. 4th—sent Nov. 7th],3 -idae is a Latin noun suffix [masculine plural] and -inae a Latin adjectival suffix [feminine plural]). But I believe that the neo-Latin usages of all these endings have reduced them to the same function (adjectival in force) as those of higher categories and that, for purposes of determining homonymy, they should not usually count as parts of stems. I think that exception should be made, however, where the Greek word $\epsilon\iota\delta\sigma$ is specifically given as the basis of word formation (just as I should propose in the case of $\mu\omicron\rho\phi\pi$).

No doubt the International Commission needs to go over these points and spell them out more clearly.

With respect to the ending -acea and your contention about it in your letter of the 5th, yes—I know that it is adjectival in force, being a Latin adjectival ending (like -inae, etc.) and that it has been used in Botany in the feminine [sic] plural form, -aceae [sic] (agreeing in number and gender with the kingdom Plantae), for families of plants. However, I doubt that it will find a place in any system of uniform zoological endings and therefore should prefer to leave it alone in the case of the word Gordicea. Your emendation Gordiea does, it is true, preclude any possible future conflict in this respect. I should point out, however, that, in this sense, the stem of Gordiacea is gordi- and that Gordiea is a better emendation than Gordiea. (Contraction of vowels was, of course, done in both Greek and Latin, but in the case of the neo-Latin names for the Family-Group, it has become the rule that the endings -idae, -inae, etc., should be added to the complete stem—thus the family GORDIIDAE.)

3 The letter here referred to was not furnished to the Office of the Commission by Dr. Dougherty.
The same rule has been applied to the higher taxa of plants. It therefore would seem logical to follow this practice for names of higher zoological taxa—at least in making emendations where a stem of a higher taxon has already been established—as gordi- in Gordiacea.

My discussion of the status of compound words that include, as a suffix, a derivative of μορφή should, I feel, explain why I hold that it is improper to create a word Archescoleca or Archaeoscoleca and attribute it to Huxley. The name of Huxley’s taxon Scolecida was derived only from σκόλη; your alternative names are derived from ἄρχε- or ἄρχειος and σκόλη. Linguistically they are hardly equivalent to Scolecida; nor can they reasonably be so nomenclatorially.

APPENDIX IV

A Summary of My Personal Views on Determining Names of Higher Taxa

1. General Principles

(1) I believe that the first consideration to be given to deciding the name of a higher taxon is universality and stability of usage; to me—as in the present Règles—this takes precedence over considerations of priority, etymology, etc. if it appears to me that a given name is important and most widely used as between two or more contenders, I don’t give a hoot or holler whether it is historically etymologically, or philologically legitimate; where there is no overriding consideration of usage, however, I feel that priority is the best guide;

(2) I believe that, once a name is decided upon, its documentation should be determined: I hold that, as much as possible, this should be accomplished as an exercise of nomenclature, with minimal obtrusion of taxonomic concepts;

(3) I subscribe to the following further principles with respect to deciding the author and date of the name of a given higher taxon:

(a) the author of a higher taxon (i.e., of the Order/Class- or Phylum-Group) is the first person to use the name at any level above the Family-Group (and for this purpose the adjectival group-endings can be ignored—it is the stem [or root] that counts); the date is that of first usage; it makes no difference whether the original grouping was unnatural, as long as it held a genus that would fit as a modern type genus of the taxon;
(b) where the original nominal group was taxonomically unnatural, I do not believe that, from the point of view of nomenclature, any recognition of the restricting author need be extended by analogy with the treatment of lower taxa (promotion or demotion of rank can, however, usefully be indicated by the device of parentheses; and changes in spelling [of the ending and, to a limited extent, of the stem] can be indicated by the device of square brackets);

(c) if, however, it were desired to indicate that some other than the original author were responsible for the taxonomic concept of a given nominal group, this could be indicated by using "sensu" followed by author and date.

2. The meaning of §, #, and †, of another symbol † and of the word "partim"

(1) By § I mean that a name, as originally used, contained groups not now in the group bearing the name, or, in the case of a synonym, not in the group with which it is synonymized; from the nomenclatural standpoint, however, I regard such groups as more or less co-extensive and as having the same type genus;

(2) by # I mean that a name, as originally used, did not contain a group or groups known at the time the name was proposed and now included in the group bearing the name, or, in the case of a synonym, now in the group in which the synonym is listed; from the nomenclatural standpoint, I again regard such groups as more or less co-extensive and having the same type genus;

(3) by † I mean that a name, as originally used, applied to a group now entirely included within, but comprising only a part of, the group with which it is synonymized; such groups have a type genus different from that of the group with which the included group is submerged, but the type genus of the included group is considered as not being separable, at least for the time being, from that of the including group;

(4) with "partim" I had wished to convey a quite different concept (I now feel I should abandon this proposal); what I had intended was that, where two or more groups were originally united under a name, but would at present be regarded as not belonging together and where no one had restricted the name to one of the natural group originally included and, furthermore, I should not wish to restrict it, I should list the name in the synonymy of each of the originally included groups, but qualify it in each case with "partim"; this was meant to indicate immediately that the name in question would be found in the synonymy of more than one group (you have, I believe, misunderstood this; the fault is, however, mine for not being clear); I now think that another symbol should be used and propose † (which, appropriately enough, also means dead);
(5) I now have decided that "partim" should be restricted to the sense in which it is usually applied in generic synonymies—viz., to qualify a group name that, when first proposed, included that nominal group (or members of that group) in whose synonymy the name is being listed, but that, as now treated, does not or should not contain the former (or members of the former).

All these symbolic devices are designed to convey taxonomic concepts in what is otherwise a formalistic nomenclatural system.

3. Possible Modification and Amplification of Existing Rules

I have given what I consider the most reasonable analysis of the Règles as they apply to higher taxa. However, I am not strongly wedded to any one nomenclatural system. I can see some virtue in the argument that nomenclature and taxonomy should be brought somewhat more into line and that the rules for crediting authorship for higher taxa might be somewhat different from those used for families, genera, and species—or, what is implied more basically, that the choice of a name for a given taxon should be governed by considerations of systematic naturalness of the Group. But this, I feel, would be an exceedingly difficult thing to implement as an explicit provision of the Règles, requiring, as it would, a new departure in nomenclature, with, I am sure, unpredictable ramifications.

It may be admitted, however, that considerations such as the taxonomic naturalness have obviously played a decisive role in deciding in many zoological groups the names that are generally used. By consequence, such names will doubtless find their way on to the lists of names for zoological taxa such as are called for by the Copenhagen decision in this connection. Therefore, from this standpoint, the departure, mentioned in the immediately preceding paragraph, from past nomenclatural practices will, after all, play an inevitable role. But I believe that the Copenhagen provision that results in what you call a "popularity contest" handles this problem neatly and avoids a most difficult impasse—viz., the obtrusion of taxonomic considerations into nomenclature to an extent that would greatly reduce nomenclatural stability.

I am sure that it is precisely because of this difficulty (which was perceived, but not exhaustively discussed) that the Copenhagen Congress on Zoological Nomenclature decided to have "lists" of names for the higher taxa of organisms prepared by "panels of specialists". The issue of applying priority was specifically by-passed in this situation, although priority was declared binding in determining the status of names for higher categories created in the future. The effect of this is that experts in each group have a chance to express preference for a given name or set of names on any basis they desire. This the
taxonomic problem tends to be divorced from the nomenclatural; for nomenclature would be fixed only after experts had decided the names in each group on whatever grounds they regarded as suitable.

A further effort to avoid, as much as possible, the intrusion of taxonomy into formal nomenclature was the Copenhagen decision to require type genera for higher taxa. Such type genera are meant to anchor names (i.e., nomenclatural entities) into taxonomic systems.

In essence, the points that we have been arguing back and forth these past months are ones in which we have failed to agree on the relative roles of nomenclature and taxonomy (or systematics, if you will) in determining the choice of names.

I repeat—I hold that a nomenclatural system that depends as little as possible on taxonomic concepts—i.e. is "automatic"—is the best. Otherwise one is continually beset with problems of whether a given name should or should not be used because the taxonomic concept originally embraced by it is not that accepted today.

But what we have been arguing over is certain to reach the International Commission. We could no doubt serve a valuable function by organising our thinking, including our conflicting views, and presenting all for the Commission's consideration.

**APPENDIX V**

Application of the "Règles" to the names

Nemata vs. Nematoda, etc.

With the background of Appendices II–IV we can now conclude with a discussion of the relative status of Nemata and of Nematoda and its variants.

First of all, let us make clear the taxonomic (and systematic) problems. Both of us recognize that, in the nemas and horse-hair worms, we have two groups of independent phyla. We obviously need names for these taxonomic entities. So far there is, I am sure, no disagreement.

I believe we also agree on the essential historical facts—the earlier ones at least. Originally the name Nematoidea was given to an order containing both nemas and horse-hair worms—though primarily the former. This nominal order was, we feel, unnatural. Subsequently the Nematoidea (and various
linguistic equivalents: Nematodes, Nematoda, etc.) fluctuated from the level of Order down to that of Family and up to that of Phylum, in accordance with the views of various investigators. Although the horse-hair worms were taken out of the nominal group Nematoidea by von Siebold in 1843, certain nemas (especially mermithids) were confusedly placed with the horse-hair worms until Vajdovský in 1886 clearly distinguished between the two groups and segregated the latter (as in the order Nematomorpha) from the former.

A point that we have never discussed is that Vajdovský, at the same time as he made a logical grouping for Nematomorpha, restricted the vernacular term “Nematoden” to an “Ordnung” for the nemas and thus created a completely natural nemic taxon. I do not know who was the first person to translate Vajdovský’s concept into a formal neo-Latin word, but it is to be noted that Grobben (1909) had “Ordnungen” Nematodes and Nematomorpha in his Klasse Aschelminthes. So it seems clear that at least one variant of the word “Nematoda” was validly restricted to the nemas before Cobb created his phylum for them in 1919.

Now it appears that, under your Rule, the correct name for the Phylum of nemas would be Nemata. But what do the present Règles require?

Insofar as they provide a guide, the following are the interpretations that appear to me to fit the Règles most closely:

(1) Nematoidea Rudolphi, 1808, is coordinate with all taxa of that name above the level of the Family-Group;

(2) Nematoda Diesing, 1861, an orthographic variant of Nematoidea, is the name that would win, hands down, under the Règles “popularity contest” provision; B. G. Chitwood is almost alone in favoring Nemata;

(3) Nematoda as a taxon was validly restricted to the nemas—at least by Grobben (1910) and probably earlier;

(4) in its promotion to phylar rank it must be reckoned as having maintained the same priority that it had at a lower level (see Copenhagen Decisions . . . , 1953, Decision 66 [pp. 41–42]); at the phylar level it therefore has priority over Nemata Cobb, 1919, even though it was promoted subsequently by Potts.

Now, I don’t hold that all these rules are necessarily good ones. I tend to question, for example, that a promoted name should have priority over another name if the promotion was done after the latter was proposed. This is a point that the International Commission should, I think, re-examine. If they reverse themselves on it, then, of course, Pott’s promotion of Nematoda would not affect Nemata Cobb, 1919.
However, we are still left with Lankester's phylum Nematoidea. By designation of a nemic genus as type, this would automatically become the name of the phylum of nemas under the Law of Priority even if coordination were done away with. To invalidate Lankester's group, the type system for higher taxa would have to be junked also.

In sort, I now conclude that I must point out in a demurring footnote in our paper that Nemata can only be validated either by changing the present Règles drastically, or by appealing for its preservation under the "popularity contest" provision.

My position is, as I have stated consistently, that Nematoda is the name of choice. If we accept this merely for the sake of argument, then how should it be documented? Using the device of parentheses to allow indication of the person to promote it to the rank in which I accept it and of square brackets to fix responsibility for the spelling now used, one would have:

Nematoda ([Rudolphi, 1808] Diesing, 1861) Lankester, 1877.

Now, if it were to seem desirable to indicate also the sense in which this name is being used—i.e., the person responsible for the taxonomic concept associated with the name, this could be indicated with the device of "sensu". One should then have:


An even more extended version, which would indicate the fact that Lankester did not use the spelling Nematoda, would be:


By this one would know that Rudolphi was responsible for the original word but did not spell it Nematoda, Diesing was the first one to use the present spelling, Lankester was the first to use it for a phylum, but not with the spelling Nematoda, and Potts was the first to use the spelling Nematoda at the phylar level. All of these are primarily nomenclatural facts and are not meant to document the historical sequence of taxonomic concepts that have been meant by Nematoda and its variants. The one taxonomic fact that would have to underly all, however, is that, in all its permutations, nomenclatural and taxonomic, Nematoda would be conceived as having the same type genus.

I realize that this leaves Cobb out, but to me the purpose of giving names and dates is, first and foremost, to document the nomenclatural facts. The taxonomic concepts are subordinate to these nomenclatural facts. It would, I
believe, be incorrect to put Cobb’s name in the foregoing series because his word Nemates (or, emended, Nemata) is of different classic origin and thus should be treated as nomenclaturally different from Nematoidea and its variants, including Nematoda.

Lists of author’s names such as follow Nematoda in the foregoing examples would obviously not be used except in places where detailed nomenclatural documentation would be needed. In most cases, one could write merely the “Phylum Nematoda Rudolphi, 1808” or possibly the “Phylum Nematoda Rudolphi, 1808, sensu Potts, 1932”.

In finishing this difficult discussion, I might cite a few examples of the way in which I should apply the symbolism—§, †, ‡ and †. The examples can appropriately center around Nemata, etc. Since I have agreed that in the long paper your views should prevail in the text, I must assume first of all that the phylar name Nemata is to be used for the nemas. I believe that the main entry should be:

Phylum Nemata [Cobb, 1919] Pearse, 1936

The synonymy would be as follows:

† Intestina Linn., 1758 (Ordo-p. [n.v.]) [here † is used in the sense proposed in this letter; “† Intestina” would also need to be listed in the synonymy of the subkingdom Amera.]

§ Nematoidea Rud., 1808 (Ordo—pp. 197, 198) [here the § means that organisms (viz., certain horse-hair worms) were originally in Rudolphi’s order, but we exclude them; it also means, however, that the type of genus of Rudolphi’s order is reckoned as the same as that of the phylum Nemata].

... [sundry names].

Gordiacea von Siebold, 1843 (Ordnung—pp. [362], 303), partim [here “partim” is used in the sense in which it is redefined earlier in this letter; Gordiacea is included in this form in the synonymy of Nemata because it originally included certain nemas (mermithids), but no longer does].

† Nematalmia Vogt, 1851 (Klasse—pp. 174, 175) [here the † is used instead of “partim” in accordance with the revision proposed earlier in this letter].

‡ Nematoidei Vogt, 1851 (Ordnung—p. 181) [here the ‡ is used because Vogt’s order did not include all nemas (i.e., the mermithids were excluded)].
The foregoing examples should serve, I feel, to indicate how the symbols would function. I think, however, that using them for names in the Family-Group would be too complicated (at least at this time) for an enormous amount of checking would be required. I therefore propose that, if we are to use these symbols for the higher taxa, we nevertheless not use them for names in the Family-Group (except perhaps for ‡) and that this fact be specifically stated.
The relative merits of the Class names "Polyzoa" and "Bryozoa"

By D. A. BROWN

(Senior Lecturer in Geology, University of Otago, Dunedin, New Zealand)

(Letter dated 24th November 1953)

As it seems likely, from my reading of recent numbers of the *Bulletin of Zoological Nomenclature*, that the Commission will soon make pronouncements on the naming of Taxonomic Categories above the Family level, I am prompted to make some observations in regard to the relative merits of the names Polyzoa and Bryozoa (Reference: Document 4/3, *Bull. zool. Nomencl.* 10 : 3). As an active worker on the group, I may say, from the outset that I firmly support the late Sir Sidney Harmer's preference for the term "Polyzoa" for reasons that will appear below.

First, there is no question as to the priority in time of J. Vaughan Thompson's "Polyzoa". This point was fully dealt with by Harmer during the discussion on the two names by the Linnean Society of London in 1910 (*Proc. linn. Soc. Lond.* Session 123, esp. pp. 70-71).

Second, it is quite clear that Thompson recognized the Polyzoa as a distinct type of structure in the Animal Kingdom and his term "Polyzoa" may, therefore, quite fairly be used as that of a Class or Phylum.

In all the arguments over the relative merits of the terms Polyzoa and Bryozoa it has often been contended that because of the quaint wording employed by Thompson in his memoir (*Zoological Researches, Memoir V, "On Polyzoa, a new animal discovered as an inhabitant of some Zoophites, with a description of the newly instituted Genera of Pedicellaria and Vesicularia", December, 1830), the value of his term "Polyzoa" was never

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1 This case has an associated Registered Number Z.N.(S.) 1310.

quite certain, being sometimes employed in the singular, sometimes in the plural, "Polyzoae". In fact, one famous controversialist strongly suggested that Thompson regarded the term as of generic value, a contention immediately dispelled by the wording of the title to Thompson's paper which shows that it is, in fact, a group term.

A close examination of the various arguments that were put forward at the aforementioned meeting of the Linnean Society of London in 1910, shows that although Thompson's Memoir was attacked vigorously on the grounds of bad syntax and grammatical construction, there was no denying the praise given to Thompson for the thoroughness of his researches and for his clear understanding of the group of animals that he was studying. It was not what he did but what he said that provided the proponents of the term "Bryozoa" with their chief arguments.

Oddly enough, it was never suggested that any critical examination be given to the work of the originator of the term "Bryozoa", probably a mere coincidence. The term was first introduced by C. G. Ehrenberg in a portion of the "Symboliae Physicae" dated March 1831, a publication of much wider distribution and availability than Thompson's Memoir. (Incidentally, the late Sir Sidney Harmer in his application, Bull. zool. Nomencl. 1: 230-231, was mistaken in thinking that the term "Bryozoa" did not occur in this work.)

Ehrenberg defined his Circulus Bryozoa in the following terms: "Ore anoque distinctis, tubo cibario perfecto. (Vibratio aperta ciliorum ope, an omnibus? Ovipara et gemmipara, sponte nunquam dividua)". This is scarcely a precise diagnosis, but then let us see what Ehrenberg ascribes to his Bryozoa. Not only what we call the Polyzoa but also a goodly portion of the Corals, the Sertularian Hydroids, and probably some of the other Coelenterata. So, although Ehrenberg's definition does give the more important characters of the Polyzoa, he had not, unlike Thompson, really discovered that they were unique. It is even more surprising to find that eight years later (Phys. Abhandl. K. Akad. Wiss., Berlin (1838), pp. 59-120, 1839), when Ehrenberg brought out a fresh classification of the invertebrates, excluding insects, he included in his Order Bryozoa not only the groups mentioned above, but also added the Foraminifera. Thus, we may criticize Ehrenberg not only for what he did but also for what he said.

While it may be argued that, in general, the term "Bryozoa" has been employed more widely, geographically speaking, than the term "Polyzoa", it is important to note that a large proportion of the work on the Phylum has been done by workers who have spoken of these animals as Polyzoa (Busk, Allman, Hincks, Norman, Kirkpatrick, MacGillivray, Maplestone, Gray, Johnston, Lang, and in our own time, Miss Hastings and, most famous of all, the late Sir Sidney Harmer).
I believe that Vaughan Thompson's term "Polyzoa" should be universally adopted, not only because of its clear priority in time, but also as a tribute to a scientific worker of great merit. (See Harmer, *Bull. zool. Nomencl.* 1 : 230–231.) The obscurity of his published work should not be allowed to deprive him of his right to recognition.
DOCUMENT 25/6

Question of the name to be used for the Class typified by the genus "Chiton" Linnaeus, 1758

By L. R. COX
(British Museum (Natural History), London)

(Enclosure to a letter dated 23rd October 1956)¹

It may be recalled that the nomenclature of higher taxonomic categories was discussed in 1953 at the Copenhagen Colloquium, and that it was decided that Committees of Specialists should be asked to make recommendations to the Commission regarding the names to be adopted for taxa belonging to the Order/Class-Group and to the Phylum-Group, it clearly not being the view of the Colloquium that acceptance of such names should be determined entirely by considerations of priority. No Committee of Specialists on the Mollusca is, however, at present in existence, and the formation and operation of such a Committee would appear likely to present considerable difficulties. The applicant has, therefore, decided to submit the present case direct to the Commission, making a definite recommendation in the hope that all workers with views on the subject will express them in writing for the guidance of members of the Commission.

2. There is much discrepancy in standard works of reference in the name applied to the Class* of the Phylum Mollusca which is typified by the genus Chiton Linné, 1758, and it is important that a decision should be reached as to which name shall receive official acceptance.

3. The following are the names which have been proposed for this Class.

Loricata C. F. Schumacher, 1817, Essai d'un nouveau Système des habitations des vers testacés, pp. 23, 35. Name applied to the "divisio secunda" of the "subsectio secunda" of the Monothalami, which name was applied

* Or Order, in some systems of classification.

¹ This case has an associated Registered Number Z.N.(S.) 1110.

to the "première section générale" of the "Vers testacés". *Chiton L.* was the sole genus mentioned and no diagnosis of the Loricata was given.

Crepidopoda G. A. Goldfuss, 1820, *Handbuch der Zoologie*, Teil 1, pp. xliii, 624. Proposed as an Order of the Class Mollusca with *Chiton L.* as the sole included genus. The characters of the Order were described.

Polyplacophora J. E. Gray, 1821, *London Medical Repository*, Vol. 15, p. 234. Proposed, with a formal diagnosis, for an Order of the Class Gasteropodophora of the Sub-Kingdom Mollusca equivalent to the Linnean genus *Chiton*, three species of which were mentioned but included in what appear to be intended as new genera *Acanthochitona*, *Lepidochitona* and *Cryptoplax*.


Placophora H. von Ihering, 1876, *Jahrb. deutsch. malak. Ges.*, Jahrg. 3, p. 137. Proposed for a Class of the newly erected Phylum Amphineura, the Class being co-extensive with the family Chitonidae. A diagnosis was given.


The name Amphineura was proposed by H. von Ihering (1876, *Jahrb. deutsch. malak. Ges.*, Jahrg. 3, p. 136) for a Phylum founded to include the Classes Aplacophora (= families Chaetodermata and Nemeniidae) and Placophora, and excluded from the Mollusca. It was thus not synonymous with the series of names under consideration, and further reference need not be made to it.

4. Of the above names for the chitons, all except Loricata, Polyplacophora and Placophora have been generally disregarded and may be rejected without further discussion. Of the three names just mentioned, I list below those employed in (a) standard works of reference, (b) titles of a number of papers by modern authors:—
(a) In standard works of reference

K. Zittel, *Handbuch der Palaeontologie* (1881-5)  
H. A. Pilsbry, Tryon's *Manual of Conchology*  
Vol. 14 (1892)  
A. H. Cooke, "Molluscs" in *Cambridge Natural History* (1895)  
H. A. Pilsbry, Eastman's edit. of Zittel's *Textbook of Palaeontology* (1900)  
C. Dechaseaux in Piveteau, *Traité de Paléontologie* (1952)  
A. M. Jakovleva, *Tab. anal. Fauna URSS*, No. 45 (1952)  
*Zoological Record* for 1953 (1955)

(b) Titles of papers (taken from the "Zoological Record")

Iredale and Hull (1927), Loricata; Hull and Risbee (1931), Loricata; V. Fretter (1937), Polyplacophora; H. Leloup (1937-1952 numerous papers), Polyplacophora; J. R. M. Bergenhayn (1930-2), Loricata; J. R. M. Bergenhayn (1937 and 1946), Polyplacophora; C. M. Yonge (1939), Loricata (Placophora); Cotton and Weeding (1940), Loricates (vernac.); L. Arvy and M. Gabe (1949), Polyplacophora; M. Gabe and H. Prenant (1949), Polyplacophora; Z. A. de Castellanos (1952), Polyplacophora; P. Kaas (1953), Loricata; J. R. M. Bergenhayn (1955), Loricata.

5. Although use of the name Loricata has increased in recent years, probably because of the importance which has been attached to priority, Polyplacophora still appears to be the most widely accepted name for the
chitons. An objection to Loricata lies in the fact that this name has been also used both in Mammalia and Reptilia, although it should be mentioned that authorities who have been consulted do not favour its adoption in either of these groups.

6. In view of the foregoing considerations I now make application to the Commission:

(1) To accept the name Polyplacophora as the valid name for the Molluscan Class typified by the genus Chiton Linné and to place it on the Official List of Names in the Order/Class Group in Zoology.

(2) To place the names Loricata, Crepidopoda, Polyplaxiphora, Placophora, Polybranchiata and Lepidoglossa, for each of which the genus Chiton Linné, 1758, is here designated as type genus, on the Official Index of Rejected and Invalid Names in the Order/Class Group in Zoology.

(3) To place the generic name Chiton Linné, 1758, on the Official List of Generic Names in Zoology.

(4) To declare that the species Chiton tuberculatus Linné, 1758, shall be accepted as type species of the genus Chiton Linné, 1758, in accordance with the designation of W. H. Dall (1878, Proc. U.S. nat. Mus., Vol. 1, p. 297), thereby setting aside any prior designation of any of the other three original Linnean species that may have been made.*

(5) To place the specific name Chiton tuberculatus Linné, 1758, on the Official List of Specific Names in Zoology.

(6) To place the family name Chitonidae C. F. Rafinesque, 1815 (published in the form Chitonia and emended to Chitonidae by J. E. Gray, 1834) on the Official List of Family-Group Names in Zoology.

* Dodge (H.), (1952), Bull. Amer. Mus. nat. Hist., Vol. 100, p. 19, states that “in the Tenth Edition Linnaeus listed only four species in this genus: hispidus, tuberculatus, aculeatus and punctatus. Of the four only one, tuberculatus, has been identified”. 
Order/Class Group Names in Zoology with special reference to the name to be used for the Order of Insects comprising the Fleas

By G. H. E. HOPKINS

(British Museum (Natural History), The Zoological Museum, Tring, Herts., England)

(Enclosure to a letter dated 8th August 1957)1

In 1953 (Copenhagen Decisions on Zoological Nomenclature, Decisions 56–69) provision was made for the first time concerning the methods to be used in determining what names shall be applied to taxa above the Family-Group level. Such names are to be fixed ("defined") by selection of a type genus for each, and the mode of procedure proposed is that a Committee of Specialists in each major group of the Animal Kingdom should draw up lists of recommended names and of objectively invalid names within the field of their speciality; in drawing up these lists first consideration is to be given to weight of usage, other considerations (such as priority) being set aside unless usage affords no clear basis for choice.

2. The decision that priority is not to be the main consideration in choice of names is most wise and necessary, but the procedure suggested seems to me to be hopelessly cumbersome, and the prospects of arriving at a conclusion by following it seem to be well indicated by the fact that no committees of specialists have been set up in the four years since it was decided upon. Moreover, an attempt to find out what names must be taken into account in the case of the fleas (Hopkins, 1951, Entomologist 84: 208–214) has convinced me not only that there is a strong probability that there are many names in the Order/Class group which have been entirely overlooked ever since their publication, but that it is extremely undesirable that objective invalidity should be the only criterion for declaring names in this category to be

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1 This case has an associated Registered Number Z.N.(S.) 1309.

unavailable. In the groups of insects on which I work the Order/Class group of names includes few, if any, objective synonyms because few, if any, selections of a type genus have been made, and it is most undesirable that any such selections should be made hastily lest unwanted names in one major group of animals should be much-wanted by workers in another field of zoology. Taking the fleas as an example, several names in the Order/Class group which have been applied to them also applied originally to other orders of insects, and to select as type genus of such taxa a genus of fleas would preclude their use by workers on any of these other orders.

It seems to me that a much simpler procedure would be more likely to be effective, and that, since my suggestions involve the substitution of an individual for the Committee of Specialists, it is essential that in the early stages any action taken by him must be provisional. I also think that the rejection of priority as the main criterion by which names are to be accepted or rejected makes it possible and desirable to set a time-limit in considering whether a given name is, or has been, in general use. My suggestions are as follows:—

(1) A single specialist in each major group of the Animal Kingdom should be invited (or may volunteer) to draw up, for the group of animals with which he is concerned, a list of names in the Order/Class-Group which are in general use, or have been in general use within the last 25 years, together with his recommendations as to which of them should be accepted (with his reasons for the recommendations) and as to the genus which should be selected as the type of each. These recommendations and selections of type genera to be provisional, having no validity until endorsed by the International Commission on Zoological Nomenclature.

(2) The list to be published in the Bulletin of Zoological Nomenclature to permit any interested specialist to put forward objections to any of the recommendations or suggestions for additions to the list of recommended names.

(3) After a suitable period, which I suggest might be six months, all proposals to which no objection has been made to be automatically accepted. All disputed proposals to be decided by the members of the International Commission of Zoological Nomenclature through the ordinary voting procedure. Names decided upon in this way to be dealt with as follows:—

(a) Accepted names to be placed on the Official List;

(b) A declaration to be made that all other names in the Order/Class-group, which have been proposed, prior to the date of the declaration, for taxa within the group of the Animal Kingdom dealt with in the list concerned are to be regarded as invalid for
all purposes within the group of the Animal Kingdom with which the list in question is concerned.

ANNEXE TO DOCUMENT 25/7

(Communicated to the Office of the Commission under cover of a letter dated 9th July 1957)

An annotated list of the Order/Class-group names which have been proposed for the fleas seems desirable, since its publication will afford an opportunity for workers on the group to inform me of their opinions as to names which should be adopted. A special complication is that the fleas form so homogeneous a group that they are now universally regarded as an order divisible directly into superfamilies without the intervention of suborders; this raises the question whether names proposed for supposed suborders and based on characters now known to be fallacious ought to be preserved or abolished. Readers will find that the list differs considerably from that of Costa Lima and Hathaway (1946, *Pulgas*, p. 89) as regards some of the early references, particularly to works by French authors. This is because Costa Lima and Hathaway, who evidently did not have access to some of the rare books concerned, inevitably accepted the statements of later authors about these names; the statements were, however, often incorrect, since many of these names were only put into Latin by the later authors and were originally published as vernacular words and have no validity (note, e.g., that Lamarck, 1801, referred to *Apteres* and not *Aptera*). The list is arranged by date.

*Aptera Linn., 1758, Syst. Nat. (ed. 10) 1, p. 608.* First restricted to the fleas by Leach (1815, *Brewster's Edinburgh Encyclopaedia* (ed. 1) 9: 76, 126). This restriction is much earlier than Shipley’s action (1904, *Zool. Anz. 27*, p. 260) in formally confining the name to another group of insects, but the name has been used extensively for the latter group and does not seem to have been employed for the fleas for at least a hundred years.

*Saltatoria Retzius, 1783 and Suctoria Retzius, 1783, Caroli . . . De Geer . . . Genera et Species Insectorum, pp. iv, vi. “Subordo 4. Saltatoria” (p.iv) and “Classis 11. Suctoria” pp. iv, vi) both comprise only the fleas and have definitions reasonably diagnostic of the order. Saltatoria, which has page-precedence, has never been used again for the fleas but is in use for one of the main divisions of the Orthoptera. Suctoria is one of the three main claimants to be the correct name for the fleas.

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\*For a note explaining the origin of the present paper see paragraph 7 in the Secretary’s introductory note (Document 25/1) on page 493 of the present volume.*
Rophoteira [Schellenberg & de Clairville], 1798, *Entomologie Helvetica* 1:44. The definition accompanying this name is by no means diagnostic but could apply to the fleas. It has never been employed for them, but Wagner (1939, *Aphaniptera*, p.1) may be considered to have restricted it to them by placing it in the synonymy of *Aphaniptera*.

(Siphonata "Illiger, 1807" Jordan, 1948, in Smart, *Insects of medical importance* (ed. 2), p. 211). There is no such name, merely a remark by Illiger "Hoc genus cel. Fabricio peculiarem ordinem praebebit, cui nomen *Siphonatorum* est. I.". The supposed name is probably a translation of the "Suceurs" of the early French writers, and is in Latin merely because the whole work is in that language. Siphonata has never been employed for the fleas, but Retzius used it in 1783 for the Homoptera. As applied to the fleas it dates from Jordan, 1948.

Medamoptera [Leach], [1815], in Brewster’s *Edinburgh Encyclopaedia* (ed. 1) 9:76. Leach defines “Century II. Medamoptera” in a way that fits many insects besides the fleas, but it comprises only “Order X. Aptera”, with which it is, therefore, synonymous. The definition of Aptera given by Leach is also most unsatisfactory, but on p. 126 of Leach’s work there is a definition which is diagnostic of the fleas and Suctoria Latreille is given as a synonym. The name Suctoria was apparently first published by Retzius in 1783 and is discussed above, but it was used by Latreille in 1805. Medamoptera has not been adopted by any subsequent author.

*Aphaniptera* Kirby and Spence, 1815, *Introduction to entomology* (ed. 1) 1:69. The date of this name has been variously given as 1816, 1818, 1822 and 1826, partly owing to a very natural confusion as to the actual date of publication (new editions of the first two volumes of Kirby and Spence’s work were published before the first editions of vols. 3 and 4) and partly because of doubt as to whether it was anything but a *nomen nudum* before 1826. However, the statement “consisting of the flea genus” is apparently a sufficient definition according to the new rules, and this was published in 1815. The first definition was published in 1826 (*T.c.*, vol. 4, p. 367) where it is explained that the name is based on the belief (now known to be erroneous) that fleas have rudimentary or vestigial wings. The fact that the name perpetuates an erroneous belief is a main reason why many entomologists have refused to use it in spite of claims that it had priority. It is, however, one of the chief claimants to be the correct name of the order.

*Siphonaptera* Latreille, 1825 *Fam. nat. Règne anim.*, p.334. The name was published with a definition and the only complication is Latreille’s claim that he had used the name earlier. If this was in a published work, the
reference has never been traced. This name is one of the principal claimants be the correct name for the fleas.


Proboscidea Walker, 1851 and Eproboscidea Walker, 1851, *i.e.*, p. 4. These names were proposed for fleas with the legs "close side by side" and "distant" respectively. No examples are mentioned, the character is an illusory one, and it is impossible to suggest to what groups of fleas they were meant to apply. Nevertheless, the latter name is of some importance because it could be used (by anyone who may in the future consider the fleas to be divisible into suborders) on the grounds that names based on non-existent characters are less objectionable than the next senior subordinal names for the fleas, which are based on misleading characters. They have never been used again.

Integricipita Oudemans, 1908, and Fracticipita Oudemans, 1908, *Tijdschr. Ent.* 51: 92. These names, like Proboscidea and Eproboscidea, are in a different category from all those used previously, since they were proposed for suborders whereas all the previous names which applied to the fleas to the exclusion of other insects were employed for the whole order and are synonymical. Oudemans' two names are now disused, partly because no prominent worker on fleas now considers it desirable to divide them into suborders, and partly because they are based on a character now known to be of such trivial phylogenetic importance that instances occur in which the male of a species is fracticipit and the female integricipit. These four names seem to be the only ones which were applied to supposed suborders of fleas, certain others proposed by Oudemans which have the appearance of Order/Class group names (Solitothoracica and Brevithoracica Oudemans, 1908, Posttuberata, Intuberata, Longiclavata, Breviclavata, Dolichothoraca and Brevithoraca Oudemans, 1909) applying to Family-group taxa. Integricipita and Fracticipita were widely used at one time and were employed as recently as 1946 in Costa Lima and Hathaway's *Pulgas*, though it is not clear whether these authors accepted them. They are extremely objectionable because they convey the incorrect suggestion that the fracticipit or integricipit nature of the head is of fundamental importance.


Siphonata Jordan, 1948, in Smart, *Insects of medical importance* (ed. 2): 211. This name has already been discussed under its erroneous attribution to Illiger, 1807.
It seems to me that the simplest and most satisfactory method of dealing with this problem would be for the International Commission on Zoological Nomenclature to declare either Siphonaptera or Aphaniptera (according to the wishes of the majority of specialists on fleas) to be the valid name of the Order and to declare all other names which have been proposed for the Order or for Suborders within it to be unavailable for this Order or for any taxon contained within it, thus not affecting their availability, if required, for any other group of the Animal Kingdom. It is not clear, however, whether this method would be permissible under the International Rules of Zoological Nomenclature at present in force.
Question of the Rules for the naming of Orders and taxa of higher rank

Views expressed by HENNING LEMCHE
(Universitetets Zoologiske Museum, Copenhagen)

(a) Letter dated 13th July 1957 from HENNING LEMCHE

On certain occasions I have worked with problems concerning systematic matters of taxons higher than the Family-Group level. During such work, it is my experience that it is imperative to be able in some way or other to compare different views set forth by different authors, and to discuss their value. In all such cases, it is almost prohibitive to a lucid discussion if the same names are to be applied to different contents in different systematics, whereas discussion is easy if the names used in the conflicting views are all different.

For these reasons, I hereby make the formal proposal to the I.C.Z.N. that a paragraph be inserted in the Rules that

(1) Names of taxons of higher order than the Family-Group level are subject to the Rule of Priority only if they are used to designate the same complex of taxons of lower order.

Similarly, I ask that a Recommandation is adopted that

(2) In cases where a revision of some group necessitates the introduction of new and strongly deviating taxons of higher rank than the Family-Group level, authors are requested not to change the contents of the old names but to introduce new ones for their new ideas, in order that discussion of the relative value of the old and new systematic views may go on with as little confusion as possible.

The central thing is that, as long as we are on the specific or generic levels, a change of a name means that those acquainted with the old name is at a loss when confronted with a new one. On the Family-Group level, already, this

1 While the present Part was passing through the press, a further communication in regard to this problem was received from Dr. Lemche. This has been allotted the Document Number 25/10, and will be published in the next available Part of the present volume.

is no more the case, since the family-name is based on a generic name which should be familiar—or at least identifiable—to the specialist. Names of higher categories stand exclusively for systematic ideas, and changes in their content deprive them of every value, as nobody will know what idea is behind the name in each single case when he meets it. Thus, stability obtained by giving priority to names of higher taxons means stability to empty names, whereas the ideas behind are left in the utmost confusion.

(b) Letter dated 19th July 1957 from Francis Hemming to Henning Lemche

I agree with you that the Principle of Priority is one which should be applied to Order/Class names with the greatest care, even if it is to be applied at all. Your letter, however, places me in a difficult position because, under the Copenhagen Decisions, such names are not at present subject to priority at all. Accordingly, as it seems to me, your proposal, that names of this type should be subject to priority only in certain circumstances, represents a new departure in the sense that if adopted it would bring these names to some extent under the Law of Priority. I have a feeling that this is not the intention of your proposal, your idea being rather to limit them to extend the application of the Priority Principle at this level. Before I take any further action, I shall be grateful to receive your comments on the point raised above. I take it that I am right in concluding that you accept the view adopted by the Copenhagen Congress that no progress can be made with stabilising Order/Class names until type genera have been designated for the taxa in question.

(c) Letter dated 14th August 1957 from Henning Lemche

As you correctly suppose it was never my intention to raise this question but only to safeguard the freedom in systematic work on higher levels. Hence, I should like to have my proposals regarded as subsidiary, only, i.e., to be used as soon as any proposal to introduce priority on these levels is appearing, and that my letter of July 13th should rest until such a situation arises.

Yes, I agree that no progress in stabilising these names can be made without indicating type genera, but even then it is difficult to see how stabilisation of these names could avoid being stabilisation, and hence paralyzation, of systematic work on higher levels.
DOCUMENT 25/9

Petition requesting clarification of the date and authorship of the Order/Class name ‘Monoplacophora’

By

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(Enclosure to a letter dated 16th September 1957)1

The Order/Class name Monoplacophora has come into usage for patelliform mollusks, the soft anatomy of which has not undergone torsion. Because of the phylogenetic importance of this group, the name will probably be cited frequently in the future and a prompt opinion by the International Commission of Zoological Nomenclature on the matter discussed below is requested.

2. The first usage of the name is in an article by Wenz, 1940 (Arch. Moll. 72:5) as follows: ‘‘... als sich bei einem Besuche N. Hj. Odhner herausstellte,

* Publication authorized by the Director, U.S. Geological Survey, Washington 25, D.C.

dass er zu einer ähnlicher Auffassung gekommen war und meinte, man könnte die Tryblidiacea geradezu als Monoplacophora bezeichnen . . .". A free translation is as follows: "... during a visit N. Hj. Odhner stated that a similar concept had come to him, and frankly he thought one might designate the Tryblidiacea as Monoplacophora . . .". This is the only mention of Monoplacophora in the entire paper. There is neither description, diagnosis, or any other form of indication. The sentence quoted appears under a section headed "Die Tryblidiacea". So far as it is known the name Monoplacophora was never used in any subsequent papers by Wenz or in any paper by Odhner.

3. The second usage of Monoplacophora is in a formal classification by Knight, 1952 (Smiths. Misc. Coll. 117 : 47) where the taxon is considered an order and diagnosed. Authorship of the term is attributed by Knight, 1952 (Smiths. Misc. Coll. 117 : 5) to Wenz. From the text it seems clear that Knight refers to the 1940 paper by Wenz. The third significant usage is a formal definition of Monoplacophora as a Class by Lemche, 1957 (Nature 179 : 413–414). Authorship of the taxon is attributed by Lemche to Odhner, 1940. Except for a mention of the name by Kaestner, 1952 (Lehrb. Speziellen Zoologie, Teil 1, Wirbellose (Lief. 2) : 229) so far as it is known, Monoplacophora has not been formally used in other publications.

4. It is clear that ambiguity surrounds the first usage of Monoplacophora and that the wording is subject to several different interpretations. We request that date and authorship of the taxon Monoplacophora be decided by the International Commission on Zoological Nomenclature in accordance with the Copenhagen Decisions on Zoological Nomenclature, Decision 114(3).

(1) The Commission is asked to choose among the three possibilities given below as to authorship and date of the Order/Class name Monoplacophora:

(a) Wenz, 1940

(b) Odhner in Wenz, 1940

(c) Knight, 1952

(2) The Order/Class name Monoplacophora with approved authorship and date be placed on the Official List of Order/Class-Group Names in Zoology.

(3) Either (a) or (b) or both, depending on the decision of the Commission be placed on the Official Index of Rejected and Invalid Order/Class-Group Names in Zoology.
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