

PROPOSAL TO REGULATE THE NAMES OF TAXA ABOVE
THE FAMILY GROUP. Z.N.(S.)2381

By A. Rasnitsyn (*Palaeontological Institute, USSR
Academy of Sciences, Profsoyuznaya 113, Moscow, USSR*)

[Note by the Secretary. The present proposal consists of a letter from Dr Rasnitsyn dated 30 April 1981 which presented proposals put forward by the late Dr B.B. Rohdendorf in *Paleont. Zhur.* 1977, pp. 14–22 in Russian. An English translation of Dr Rohdendorf's paper was issued by Scripta Publishing Co. in *Palaeontological Journal* vol. 11, no. 2, pp. 149–155. Grateful acknowledgements are due to Scripta Publishing Co. for permission to reproduce their translation here. R.V.M.]

As you probably know, the late Professor Boris B. Rohdendorf in his article in *Palaeontologicheskii Zhurnal*, 1977, vol. 11, no. 2, pp. 14–22, proposed to apply the rules regulating family-group names to all higher taxa. This proposal was put into effect by Rohdendorf & Rasnitsyn, 1980. "Historical development of the Class Insecta", *Trans. Palaeontol. Inst. USSR*, vol. 175. I now ask the Commission to consider the article by Rohdendorf as an official proposal to change the International Code of Zoological Nomenclature so as to apply the rules concerning family-group names to the names of all higher taxa.

(TRANSLATION OF DR ROHDENDORF'S ARTICLE)

The nomenclature of animals and plants has become quite complicated in the course of its lengthy history, beginning with the first attempt by Linnaeus in the compilation of the celebrated 'Systema Naturae'. The relatively few ranks of categories in the Linnaean system, which included only a few higher categories, in addition to species and genera, namely orders and classes, were later supplemented by systematists in their day-to-day work by a considerably larger number of taxonomic ranks.

Thus, the taxa family, tribe and phylum very soon came into use in the nomenclature of animals alongside the Linnaean species, genus, order and class. One important refinement in nomenclature was the use of all kinds of subsidiary, inserted or intercalary categories, the names of which are formed by addition of the prefix 'sub' to the names of already adopted taxa (e.g. subspecies, subgenus, etc.). This pattern of subsidiary taxa was subsequently even further complicated in connection with the use of the prefixes 'super' (e.g. superorder, superclass) or 'infra' (e.g. infra-order). The whole pattern of nomenclature was simultaneously made more

complicated by the use of quite distinctive new names of taxa, such as, for example, cohort, phalanx, section, series etc. As a result of all these additions the number of taxonomic ranks reaches several tens and, which was particularly important, the objectivity of the systems of taxonomic categories in use was greatly reduced. Not only did this make it very difficult to contrast and compare taxa nominally of the same rank, but the systems themselves became extremely subjective on the whole.

The various negative aspects in the development of zoological nomenclature have for long been a source of concern to systematists. Improvement of the Code of Zoological Nomenclature has become the main subject of the deliberation of the International Commission on Zoological Nomenclature.

The main task of the Code was initially to work out rules for the use of names in the species-group and genus-group taxa. This, the most crucial and best worked out branch of zoological nomenclature, is currently the basis for all subsequent work on the higher taxa. The most important measure in the clarification and codification of the nomenclature of the species-group and genus-group taxa was the consistent application of the rule of the nomenclatural type, the type specimen, or holotype in the establishment of a species and the type species in the establishment of the genus-group taxon.

Zoological nomenclature was subsequently developed by the discussion and codification of the names of taxa in the family-group, i.e. family, subfamily and tribe, on the one hand, and superfamily, on the other. Once again the concept of the type, the obligatory use of a generic name as the basis for the formation of names of higher taxa, was the basis for this development. It should be stated that the 'type rule' has proved to be the most effective and rigorous condition for the ordering of the nomenclature of taxa. It may be stated without exaggeration that consistent use of the type concept has been the basis of the Code.

Experience gained in the codification of taxonomic names in the family-group has shown that the coining of names on the basis of the type rule must simultaneously be accompanied by the obligatory use of definite suffixes and endings characterizing the rank of the taxon concerned. In this way some uniformity was achieved in the taxonomic names of the family-group, and this was consolidated by a special article, Article 29 of the Code, which laid down the suffixes and endings -idae for families and -inae for subfamilies. This decision is now universally recognized. However, no decision was adopted in the Code concerning the other taxa of the family-group, namely the superfamily and the tribe, and it was merely recommended (Article 29A) that special suffixes and terminations

should be given to these taxa. Hence it is obvious that the further refinement of zoological nomenclature must be to discuss and approve rules codifying the names of animal taxa for the whole of the family-group and for higher ranks, above all the taxa of the order-group. The experience that has now been acquired in the use of the type rule and in the codification of suffixes and terminations is an adequate basis for the solution of these problems.

There is no particular need to discuss the usefulness of unifying the procedure for forming names of taxa. The whole experience of zoological nomenclature, which is now consolidated by the Code and by the universal practice of systematic zoologists, has shown that the type rule and the unified procedure for the formation of taxonomic names in the family-group have been a very valuable refinement. Their application has made it possible to assess the rank of any animal from the name of the taxon, and thus more rigorously to compare and contrast the various taxa, and further to achieve stability in naming and, finally, to move closer to the possibility of objective recording of the characteristic features of the system by precise methods for the recording of systematic and faunistic data. It is obvious that it is only by establishing definite rules for the coining of names for higher taxa that the necessary order may be attained in this sphere of zoological nomenclature.

In the preface to the first [*sic*] edition of the International Code of Zoological Nomenclature (1964, p.IV [Russian translation 1966, p.XIV]; changes and corrections to the ICZN, 1973) the President of the International Commission on Zoological Nomenclature, J. Chester Bradley, wrote '..... The failure of the Code to deal with names of higher rank than superfamily arises from no failure to recognize the necessity of such names. It exists because the practice of zoologists in regard to them is not sufficiently uniform to permit the formulations of rules covering them at this time.' I have considered it necessary to quote this statement by Bradley, since it is a clear exposition of the actual state of affairs as regards extension of the use of the established rules of the Code.

Although unification of the names of the higher taxa is a problem that has long been the subject of examination by various authors, attention has been concentrated in these attempts on reform of the nomenclature as a whole, and the nomenclatures proposed have proved in most instances to be totally divorced from the real system of species — genera — families. Failure to use the rule of the taxonomic type, the type genus, in these nomenclatures was undoubtedly the reason for their impracticability.

In connection with this problem it is worthwhile considering the attempts made by botanists to solve similar questions. We should firstly refer to a paper by Rickett & Camp (1950), in which

they correctly propose that the names of the type genera of plants should be used as the basis for the names of higher taxa. The examples of actual names of higher taxa given by them do not, however, solve the question: they propose that the generic name should be used in forming the name of a higher taxon, and that its ending should be replaced by the corresponding full name of the rank of the taxon. Consequently, they completely reject the customary suffixes and terminations in their outline, proposing a purely formal list of names arrived at by taking the generic name with a termination taking the form of the name of the taxon - phylum, -classis, -ordo, -familia, -tribus.

Such a proposal is clearly unacceptable; in zoology it would call for the unnecessary scrapping of the names of the family-group already embodied in the Code. Other botanists have understood the inconvenience of discarding suffixes and terminations. For example, a new classificatory outline of the higher plants based on use of the concept of the nomenclatural type was proposed in a paper by Cronquist, Takhtadzhian & Zimmermann (1966). Takhtadzhian made practical use of the new nomenclature in the same year (1966) in an examination of the system and phylogeny of the flowering plants. We should note that the new names of the higher botanical taxa in these works were compiled by the use of special suffixes and terminations reflecting the ranks of the taxa, i.e. by a familiar, long adopted and customary procedure. The present author assumes that such a reform of the botanical nomenclature is appropriate and timely, and that it may serve as a good example for zoologists. Admittedly, there are great differences between botanical and zoological nomenclature due primarily to the great diversity of animals, which belong to a considerably greater number of taxa both of lower and, especially, of the highest ranks, for example phyla. All these factors make it very much more difficult to reform the nomenclature of higher zoological taxa as a whole.

Gradual inclusion of the ranks of taxa and groups of animals to be considered will be the natural and most consistent measure in the solution of this problem. The first task is to improve the nomenclature of the taxa in the order-group, i.e. the taxa directly incorporating the family-group, which is already regulated in the Code.

Apart from the use of the rule of the nomenclatural type, which needs no comment, it is a particularly complicated matter to codify and work out definite suffixes and terminations for the various ranks of taxa. It should be noted that there has hitherto been extreme diversity of approach to the formation of names of higher taxa. This is literally true for taxa of any rank, beginning with phyla. Thus, if we examine the names of the phyla of animals, for example,

those given in the well-known book by Fedotov (1966), we find it difficult to discern any similarity in word formation among these names, of which there are approximately 20. Apart from the few standardized names, for example Phoronida and Nemertiini, all the other names of the phyla are very differently constructed, and are simple or compound words having the most varied suffixes and terminations. The suffixes and terminations -ata and -ida, which define the group nature of the name, are used in some names — Chordata, Echinodermata, Coelenterata, Phoronida, Annelida and Pentastomida. We should also include under this heading the names of the two phyla Graptozoa and Bryozoa, which end in the word -zoa, which essentially has a combining group nature.

All these remarks are applicable practically in their entirety to the names of taxa of the class-group, which are also extremely diversified.

Rather the same may also be said concerning the names of the taxa of the order-group. A definite tendency to strive for the unification of names should be noted in this case in the classifications of many groups of animals. Admittedly, the rule of the nomenclatural type is rarely used, and unification is achieved by the use of definite suffixes and terminations, which are different in different groups of animals. Thus, names of orders ending in the word -ptera are commonly used in the class Insecta, names ending in the word -formes in classifications of fishes and birds, -theria among the mammals, -ata in the nematodes etc.

The suffixes and terminations -ida, -oidea, -idea, and -ina are more widely used. It is probably best to select and codify appropriate endings for the taxa of the order-group from among suffixes and terminations of this kind.

In the absence of any regulation of the names of the higher taxa all previous attempts at their unification have, however, failed. Alongside the 'unified' names haphazardly adopted by most specialists, other names that run counter to the order in course of establishment are widely used in almost all groups of animals. It is obvious that general decisions should be taken concerning the forms for names of higher taxa in zoology, by consistently applying the established rules of word formation: by using the nomenclatural type, the generic name and an appropriate suffix and termination for the taxon of the rank concerned.

Regulations of the names of taxa must inevitably be preceded by wide discussion of the proposed rules, a draft of which must be submitted to the International Commission on Zoological Nomenclature as proposals for ratification. The present author's object is a first statement of a number of specific proposals on the nomenclature of higher taxa, beginning with the taxa of the family-group.

Before turning to an examination of the specific proposals on nomenclature, we must note that the problem of higher taxa is an intricate one to solve. It seems to the author that the main prerequisite for solution is the need to distinguish clearly between phylogeny and the system, between outlines of phylogenetic development, on the one hand, and the systematic division of a group into taxa, its classification, on the other. In tracing the paths of historical development some students of phylogeny are frequently prone to regard the phylogenetic relations that they are considering, the various outlines of relationship, as a direct expression of systematic relations. Thus, for example, when examining his concept of 'sister groups', i.e. the phenomenon of the inception of two new groups as a result of divergence, Hennig (1953, 1969, 1973) considers it necessary to designate each pair of new forms that develop by special names; he does not define the ranks of these proposed taxa, but they are essentially incompatible with higher taxa. Undoubtedly such a phylogenetic nomenclature only partly reflects the real system of the taxa, which are not characterized solely by phylogenetic relations, but also by the general sum of distinguishing characteristics, and by the degree of segregation, a decisive criterion in the erection of taxa. Nor can the time of each divergence in phylogenetic development ('sister groups') be designated by taxa of high rank for the further reason that the number of ranks of such 'taxa' would then increase excessively and, as a result, the real system would be replaced by a random profusion of categories that could not be compared and contrasted. It must be stated that the whole of this problem lies entirely outside the scope of the author's present tasks; nevertheless it was essential to refer to it in order to understand the system of taxa adopted by the author as a basis, a system consisting of a limited number of principal taxa and appropriate supplementary taxa. This outline is widely known and is given, for example, by Simpson in his book on the classification of mammals (1945).

We must first establish the need to employ the rule of the nomenclatural type, to use the name of the type genus of the oldest family as the basis for naming the higher taxa, in the first instance taxa of the order-group. The way in which the generic name is used to compile names of higher taxa is in full accord with the procedure for the compilation of names in the family-group, which has already been defined and set out in the appropriate articles of the Code (articles 11e, 23a, 29a, b, c, 35-41, 55, 62-65), merely excluding the use of other suffixes and terminations. Authorship of names of higher taxa is carried forward in accordance with Article 36 of the Code, as adopted for taxa of the family-group.

The choice of an appropriate suffix and termination is an

essential condition if the names of taxa of particular ranks are to have the necessary stability and the required meaning. This obliges us to select with particular care the suffixes and terminations that are the most prevalent and convenient in all respects. The lack of uniformity in the various branches of zoology will oblige us to scrap some of the nomenclature, but this is inevitable in carrying out the essential unification.

The following suffixes and terminations may be proposed for the taxa of the order-group:

cohort	-iformes
superorder	-idea
order	-ida
suborder	-ina
infraorder	-omorpha

The proposed suffix and termination -ida for the main taxon of the group, namely the order, is the one most widely used at the present time in various classifications. It is especially important to note the frequent use of such a form for the order in serial publications, for example, "Principles of Paleontology" and "Treatise on Invertebrate Paleontology", in the classifications of many arthropods, mollusks, coelenterates, echinoderms, etc.

Rather the same may be said concerning the names of taxa in the cohort, superorder, suborder and infraorder. As regards the suffix and termination for the superorder, namely -oidea, which is already quite widely used in practice, we should note as an undesirable feature that it is identical in form to the name of the superfamily, which has been incorporated in the Code as a recommendation (Recommendation 29A). This is why the author has proposed the new suffix and termination -idea for the superorder.

Standardization of the names of animal taxa of higher rank than the taxa of the order-group must be the next stage in the codification of nomenclature following the establishment of order in the order-group. At the present time we can do no more than put forward suffixes and terminations for these names as a basis for discussion. Thus, it is natural to propose for the taxa of the class-group:

superclass	-odea
class	-oda
subclass	-ona
infraclass	-ones

and for the phylum-group:

superphylum	-ozoidea
phylum	-ozoa
subphylum	-ozoina

infraphylum -ozoines

It will be a fairly complicated and lengthy matter to carry out a reform of the nomenclature for the names of the higher zoological taxa. In addition, it is equally obvious that to do so will need contributions from a large team of specialists concerned with the systematics of the various animal phyla and classes.

The principles and conditions for the solution of the problem which we have outlined may provide the initial basis for this. At present the author does not wish to go further than to propose new names for the taxa of the order-group for the Insecta, the class of animals with whose system he is best acquainted and on which there already exist reliable compilations.

It is clear from all that has been said above that the first stage in solution of the problem will be to clarify the names of the family-group within the order, which has priority over the others, and thus to establish the type genera, which must become the basis for formation of the names of the higher taxa.

The first standardized group names of taxa in the class Insecta were used following the publication of the tenth edition of the 'Systema Naturae' by Linnaeus (1758) in the work of the Austrian entomologist Laicharting (1781-1784) on the insects of the Tyrol. Numerous groupings, taxa of the family-group, were defined at the beginning of the 19th century when the new taxonomic rank of the family was established by Latreille (1802-1805). The works of these two naturalists are the primary sources from which to establish the senior synonyms for names of the taxa of the family-group in the class Insecta.

[Professor Rohdendorf's article concluded with a list of standard names for all the taxa of the Class Insecta above the family group, each based on the name of a type genus, and each given a standard termination according to his proposals as set out in the article. This is not reproduced here for reasons of space; interested readers are referred to *Palaeontologischeskii Zhurnal*, 1977, or to *Palaeontological Journal*, vol. 11, 1977. R.V.M.]