

**PROPOSED USE OF THE PLENARY POWERS (a) TO VALIDATE THE
GENERIC NAME "LEPIDURUS" LEACH, 1819, AND TO DESIGNATE A
TYPE SPECIES FOR, AND TO DETERMINE THE GENDER OF, "TRIOPS"
SCHRANK, 1803 (CLASS CRUSTACEA, ORDER PHYLLOPODA) AND
(b) TO VALIDATE THE FAMILY NAME "APODIDAE" HARTERT, 1897
(CLASS AVES)**

By **L. B. HOLTHUIS**

(*Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands*)

and

FRANCIS HEMMING, C.M.G., C.B.E. (London)

(Commission Reference : Z.N.(S.) 1020)

Introductory

The controversy existing amongst carcinologists as to the correct names that have to be applied to the two Phyllopod genera that by different authors have been indicated as *Apos*, *Apus*, *Binoculus*, *Lepidurus* or *Triops*, has caused a considerable instability in the nomenclature of this group. Furthermore this question not only concerns carcinological, but also involves ornithological nomenclature. Therefore a final decision on this problem by the International Commission on Zoological Nomenclature is highly desirable.

2. The following are the references to Crustacean genera dealt with in this proposal :

Apus Schaeffer, 1756, *Krebsart. Kiefenfuss* : 131 (type species, by selection by E. Desmarest (1858, Chenu's *Ency. Hist. nat. (Crust.)* : 59) : *Apus cancriformis* Bosc [1801-1802] *Hist. nat. Crust.* 2 : 244) (gender : masculine)

Binoculus Geoffroy, 1764, *Hist. abrg. Ins. Env. Paris* 2 : 658 (type species, by selection by Fowler (1912, *Ann. Rep. New Jersey State Mus.* 1911 : 466) : *Monoculus apus* Linnaeus, 1758, *Syst. Nat.* (ed. 10) 1 : 635) (gender : masculine)

Binoculus Müller (O.F.), 1776, *Zool. dan. Prodr.* : 200 (type species, by selection by Fowler (1912, *Ann. Rep. New Jersey State Mus.* 1911 : 466) : *Binoculus palustris* Müller (O.F.), 1776, *Zool. dan. Prodr.* : 200 (a junior objective synonym of *Monoculus apus* Linnaeus, 1758) (gender : masculine)

Apos Scopoli, 1777, *Intr. Hist. nat.* : 404 (type species, by monotypy : *Monoculus apus* Linnaeus, 1758, *Syst. Nat.* (ed. 10) 1 : 635) (gender : masculine)

Apus Cuvier, [1797–1798], *Tabl. élém. Hist. nat. Anim.* : 700 (nomen nudum)

Apus Cuvier, 1800, *Leçons Anat. Comp.* 1 : tabl. 7 (type species by absolute tautonymy : *Monoculus apus* Linnaeus, 1758, *Syst. Nat.* (ed. 10) 1 : 635) (gender : masculine)

Apus Latreille, [1802–1803], *Hist. nat. gén. partic. Crust. Ins.* 3 : 16 (type species by monotypy) : *Monoculus apus* Linnaeus, 1758, *Syst. Nat.* (ed. 10) 1 : 635) (gender : masculine)

Triops Schrank, 1803, *Fauna boica* 3(1) : 180, xvii (type species, by monotypy : *Binoculus palustris* Müller (O.F.), 1776, *Zool. dan. Prodr.* : 200 (a junior objective synonym of *Monoculus apus* Linnaeus, 1758) (gender : masculine)

Apodium Rafinesque, 1814, *Princip. fond. somiol.* : 29 (a substitute name for *Apus* Latreille [1802–1803]) (gender : neuter)

Phyllopus Rafinesque, 1815, *Analyse Nature* : 99 (a substitute name for *Apus* Latreille [1802–1803]) (gender : masculine)

Lepidurus Leach, 1819, *Dict. Sci. nat.* 14 : 539 (type species, by monotypy : *Monoculus apus* Linnaeus, 1758, *Syst. Nat.* (ed. 10) 1 : 635) (gender : masculine)

Monops Billberg, 1820, *Enum. Ins. Mus. Billberg.* : 132 (type species, by monotypy : *Monoculus apus* Linnaeus, 1758) (gender : masculine)

Trinoculus Voigt, 1836, Cuvier's *Thierreich* (ed. 2) 4 : 275 (a substitute name for *Apos* Scopoli, 1777 (gender : masculine)

Apus Schoch, 1868, *Mikr. Thiere* 2 : iii, 21 (Class Rotifera)

Proterothriops Ghigi, 1921, *Atti Soc. Ital. Sci. nat.* 60 : 163, 166 (type species, by original designation : *Apus numidicus* Grube, 1865, *Arch. Naturgesch.* 31 : 278) (gender : masculine)

History of the genera of Crustacea involved

3. Under the name *Apus cancriformis*, Schaeffer, in his pre-Linnean (1756) paper "Der krebbsartige Kiefenfuss mit der kurzen und langen Schwanzklappe", gave good descriptions and excellent figures of the two species of Phyllopods with which we are concerned here. One of the species, here for convenience named species "A", was extensively figured by Schaeffer on pls. 1–5 of his work, while he accurately figured the second species, here named species "B", on his pl. 6.

4. Linnaeus in the Tenth Edition of his *Systema Naturae* included both species in his nominal species *Monoculus apus*, which therefore was a composite species. All subsequent authors of the XVIIIth Century followed Linnaeus in considering "A" and "B" as one species.

5. Geoffroy (1764) removed *Monoculus apus* from the genus *Monoculus* and placed it in his new genus *Binoculus*, referring to the species as *Binoculus cauda biseta*. Geoffroy's *Histoire abrégée* of 1764 is not binominal and has been rejected for nomenclatorial purposes by the International Commission in *Opinion* 228 (1954, *Ops. Decls. int. Comm. zool. Nomencl.* 4 : 209-220). The next author to use the generic name *Binoculus* was Müller (O.F.) (1776) who placed in it *B. palustris* and *B. piscinus*. *Binoculus palustris* was a new name that Müller, without apparent reason, substituted for *Monoculus apus* Linnaeus. *B. piscinus* is a name for a parasitic Copepod. The oldest valid type selection for *Binoculus* Müller, as far as is known to us, is that by Fowler (1912), who selected *Binoculus palustris* Müller as the type species of that genus. Latreille (1810, *Consid. gén. Ordre nat. Crust. Arachn. Ins.* : 421), it is true, selected *Monoculus argulus* Fabricius, 1793, as the type species of *Binoculus*, but this selection is invalid as *M. argulus* was not included in the original description of *Binoculus* Müller.

6. In 1777 Scopoli erected a new genus *Apos*, in the original description of which he only cited one species, *Monoculus apus* Linnaeus, which is therefore the type species by monotypy.

7. The name *Apus* has been treated by some authors (e.g. Neave, 1939, *Nomencl. zool.* 1 : 268) as having been published as a generic name by Cuvier in [1797-1798] (*Tabl. élém. Hist. nat. Anim.* : 454, 700) but an inspection of this work shows that this claim is ill-founded. In the "Table des noms latins" Cuvier on page 700 entered the name *Apus* with a reference to page 454 in the body of the work. Reference to that page shows however that Cuvier there dealt with the present genus under the name "Les Monocles (*Monoculus*)". He divided this genus into several sections, the third of which he called "Les Apus". Neave and others who have accepted the generic name *Apus* from the above work were presumably misled into so doing by the fact that within the section "Les Apus" Cuvier entered one species as "l'*apus cancriforme* (*Monoculus apus* Lin.) *Limulus apus* Müller". For at first sight the term "*apus cancriforme*" (which was printed in italics) looks like a properly formed Latin binomen, apart from the fact that the word "*apus*" is printed with a small letter instead of with a capital. Closer inspection, however, shows clearly that Cuvier used the above term as a vernacular (French) word and that he regarded *Monoculus apus* Linnaeus (which, as shown above, he cited immediately after the term "*apus cancriforme*") as being the scientific name for this species. There is therefore nothing on page 454 of Cuvier's book which can be accepted as constituting the introduction of the generic name *Apus*. Accordingly,

the only possible ground on which it might have been claimed that he used the word "*Apus*" as a generic name in this book is his inclusion of this name in the "Table des noms latins" on page 700. But this claim is now excluded by the ruling given by the International Commission in its *Opinion* 374 (1955, *Ops. Decls. int. Comm. zool. Nomencl.* 11(14) : 369-378), where it ruled that the name *Antirhynchonella* published in 1871 in the index to Quenstedt's work *Die Brachiopoden* but without any corresponding use in the text did not thereby acquire the status of availability. The name *Apus* Cuvier [1797-1798] published on page 700 of the *Tableau élémentaire* must therefore be rejected as a *nomen nudum*.

8. The first author to use the name *Apus* as a generic name for Phyllopods was Cuvier (1800). The type species of this genus is *Monoculus apus* Linnaeus by absolute tautonymy.

9. Bosc [1801-1802] was the first author to recognise "A" and "B" as distinct species; he even (incorrectly) split "A" into two separate species, which he named *Apus cancriformis* and *A. viridis* respectively, while to species "B" the new name *Apus productus* was given. The name *Apus viridis* by subsequent authors practically always has been placed in the synonymy of *A. cancriformis* and is of no further importance here.

10. In 1803 Schrank introduced the generic name *Triops* (spelled correctly on pages 180 and xvii of his work but incorrectly as *Triopes* on page 251), in which he cited as the only species *Triops palustris*. *Binoculus palustris* Müller (O.F.), is thus the type of *Triops* by monotypy. *Triops* thereby becomes a junior objective synonym of *Binoculus* Müller (O.F.), of *Apos* Scopoli, and of *Apus* Cuvier.

11. Other objective synonyms of the names discussed above are the generic names *Apodium* Rafinesque, 1814, *Phyllopus* Rafinesque, 1815, and *Trinoculus* Voigt, 1836, all three being proposed as substitute names for either *Apus* or *Apos*. In addition, in 1820, Billberg introduced the name *Monops* with *Monoculus apus* Linnaeus as type species by monotypy, without however referring to any of the earlier generic names given to this species.

12. Leach (1814, *Edinburgh Ency.* 7 : 388) was the first author definitely to restrict the nominal species *Monoculus apus* Linnaeus, thereby removing its composite character and giving to it the interpretation which has been adopted by all subsequent workers. Five years later Leach (1819) was the first author also to consider species "A" and species "B" as belonging to different genera. For the genus containing species "A" he retained the name *Binoculus* and gave the name *Lepidurus* to the genus containing "B". In the remainder of the present section of this application these genera will be referred to as genus "X" and genus "Y" respectively. In the specific nomenclature Leach followed Bosc, referring to the two species as *Apus cancriformis* and *Apus productus* respectively.

13. Throughout practically the whole of the XIXth century the species "A" and "B" were indicated with the names *Apus cancriformis* and *Lepidurus* (or *Apus*) *productus*. At the end of that century, however, Hartert (1897, *Thierreich* 1 : 83) discovered that the oldest generic name for the Swift (Class Aves, Order Apodiformes) is *Apus* Scopoli, 1777, and he consequently introduced this name into ornithological nomenclature for the genus that until then was generally known as *Micropus* Wolf, 1810, or *Cypselus* Illiger, 1811. From various sides there was a strong opposition against this changing of names. For example, Bell (1900, *Ann. Mag. nat. Hist.* (7) 5 : 480) suggested that *Apus* Schaeffer, 1756, although a pre-Linnean name, should be adopted for the Phyllopod genus, while he furthermore was of the opinion that *Apos* Scopoli (1777 : 404) invalidated *Apus* Scopoli (1777 : 483). Stebbing (1910, *Ann. S. Afr. Mus.* 6 : 484) followed Bell's suggestion and adopted the name *Apus* Schaeffer, 1756, for the Crustacean ; he furthermore remarked that, if it were necessary to reject Schaeffer's name on nomenclatorial grounds, the name *Apos* Scopoli, 1777, could be used, leaving *Apus* Scopoli as a generic name for birds. Stebbing's nomenclature was adopted by several later authors such as Barnard (1929, *Ann. S. Afr. Mus.* 29 : 229) and Linder (1952, *Proc. U.S. nat. Mus.* 102 : 52), while Gurney (1923, *Ann. Mag. nat. Hist.* (9) 11 : 496, 497) continued to use the generic name *Apus* Latreille [1802-1803], deliberately neglecting the *Règles* by adopting what he called "the rules of common-sense". The foregoing zoologists employed the name *Apus cancriformis* for species "A" and the name *Lepidurus apus* or *L. productus* for species "B". Some carcinologists, however, abandoned the name *Apus* entirely. The first of these was Keilhack (1909, *Zool. Annalen* 3 : 177) who furthermore argued that the name *Apos* Scopoli, 1777, could not be used for any genus of Notostracan Phyllopods (a group to which both species "A" and "B" belong) as was suggested by Bell and Stebbing, since Scopoli's diagnosis does not fit any such genus, but evidently was meant for the genus of Anostracan Phyllopods now known as *Branchipus* Schaeffer, 1766. Keilhack, however, was wrong here. Though Scopoli's short description of *Apos* may not entirely fit the Notostracan genera, the fact that the only nominal species included in the original description of it is *Monoculus apus* Linnaeus, makes that species automatically the type species of Scopoli's genus. Most subsequent authors accepted Keilhack's point of view as correct and, to our knowledge, the generic name *Apos* Scopoli has not been adopted by any later zoologist. Keilhack suggested that the generic name *Triops* Schrank should be used to replace *Apus* Cuvier and in this respect he has been followed by several other authors. These authors use the name *Triops cancriformis* for species "A" and *Lepidurus productus* or *L. apus* for species "B". The situation at present is thus such that the generic name *Lepidurus* Leach is adopted by practically all carcinologists to indicate genus "Y", while for the other genus either the name *Apus* Schaeffer (or *Apus* Cuvier), or *Triops* Schrank is employed. Most authors have the same opinion about the size of these genera, only the Italian author Ghigi (1921, *Atti Soc. ital. Sci. nat.* 60 : 160-188) divided "X" in two distinct genera which he called *Thriops* (an erroneous spelling of *Triops*) Schrank (containing species "A"), and *Proterothriops* (a new genus).

14. To solve the very intricate problem placed before us we first have to ascertain to which species must be applied the specific name *apus* Linnaeus, 1758, as published in the combination *Monoculus apus*. As pointed out above, Bosc [1801–1802] was the first author to split *Monoculus apus* Linnaeus. Under his *Apus cancriformis*, Bosc referred to Schaeffer's first two plates and to "*Monoculus apus* . Fab.", while under *A. productus* he only referred to Schaeffer's pl. 6 (under *A. viridis* a reference to Schaeffer's pl. 5 was given). This seems to indicate that Bosc himself thought of *A. cancriformis* as the typical *Monoculus apus*. Leach (1819) on the other hand made it clear that he considered *Lepidurus productus* as a synonym of the typical *Monoculus apus*. Leach's point of view has been adopted by most subsequent authors, the species *Lepidurus productus* (Bosc) often being given the name *Lepidurus apus* (Linnaeus). So far as we know no lectotype has ever been selected for *Monoculus apus* Linnaeus and the identity of that nominal species consequently is not yet definitively established. In order to remedy this undesirable situation the senior author (Holthuis) selects here, in agreement with current usage, as the lectotype of *Monoculus apus* Linnaeus, 1758 (*Syst. Nat.* (ed. 10) 1 : 635) the specimen figured as Figure III on plate VI of Schaeffer's (1756) "*Der Krebsartige Kiefenfuss*". This selection now definitively links the specific name *apus* Linnaeus, 1758, to species "B". At the same time Holthuis selects as the lectotype of *Apus productus* Bosc [1801–1802] (*Hist. nat. Crust.* 2 : 244) the same specimen, namely that figured on pl. VI, fig. III, of Schaeffer's "*Der Krebsartige Kiefenfuss*". *Monoculus apus* Linnaeus and *Apus productus* Bosc thereby now have become objective synonyms of one another. Further, as the lectotype of *Apus cancriformis* Bosc, [1801–1802] (*Hist. nat. Crust.* 2 : 244) Holthuis selects the specimen figured as Figure IV on plate I of Schaeffer's "*Der Krebsartige Kiefenfuss*". By these selections the identity of the above nominal species is now definitely determined.

15. Bosc [1801–1802] is cited by practically all zoologists as the original author of the name *Apus cancriformis*. Even Sherborn (1924, *Index Anim.*, Pars secund. (5) : 1035) considered this to be a new name of Bosc's. There is, however, an earlier use of the specific name *cancriformis* for one of the two species dealt with here. That name is *Limulus cancriformis* Lamarck, 1801 (*Syst. Anim. sans Vertèbr.* : 169). Since Bosc ([1801–1802] *Hist. nat. Crust.* 2 : 243) refers to Lamarck's *Syst. Anim. sans Vertèbr.*, the latter book must have been published before the former, so that the specific name *cancriformis* Lamarck is older than *cancriformis* Bosc. Since Lamarck's name is given as a substitute name for *Monoculus apus* Linnaeus, it is identical with *Apus productus* Bosc and specifically distinct from *Apus cancriformis* Bosc. As Bosc in his synonymy of *Apus cancriformis* does not cite *Limulus cancriformis* Lamarck, we may conclude, as have most authors, that Bosc's name is a new name and not merely a new combination formed with the specific name *cancriformis* proposed by Lamarck. This is rendered the more probable by the fact that there is an exactly similar case in regard to the specific name *productus*. One of the three species placed in the genus *Limulus* by Lamarck (1801, *Syst. Anim.*

sans Vertèbr. : 169) is *Limulus productus*, which is a new combination formed with the specific name *productus* as originally proposed by Müller (O.F.) (1785, *Entomotr.* : 132) in the combination *Caligus productus*. This species belongs to the parasitic Copepoda and at present is known under the name *Dinematura producta* (O. F. Müller). It is of course entirely different from the phyllopod species which Bosc ([1801–1802] *Hist. nat. Crust.* 2 : 244) named *Apus productus*. Since it is perfectly obvious to anyone that *Apus productus* Bosc [1801–1802] is a new name and not a new combination of *Limulus productus* Lamarck, 1801, we are, I believe, justified in considering the name *Apus cancriformis* Bosc [1801–1802] also as a new name and not as a new combination of *Limulus cancriformis* Lamarck, 1801. *Limulus cancriformis* Lamarck and *Apus cancriformis* Bosc are at present placed in different genera and therefore are not homonyms of one another, so that the existence of Lamarck's specific name *cancriformis* does not endanger that of the specific name *cancriformis* Bosc. It is requested here that the name *cancriformis* Lamarck, 1801, as published in the combination *Limulus cancriformis*, be placed on the *Official Index of Rejected and Invalid Specific Names in Zoology*, since it is a junior objective synonym of the name *apus* Linnaeus, 1758, as published in the combination *Monoculus apus*.

16. We may now direct our attention to the generic names for species "A" and "B". It is clear that *Apus* Schaeffer, 1756, being a pre-Linnean name, cannot be used unless validated under the Plenary Powers. *Binoculus* Geoffroy likewise is an unavailable name as it was published in a non-binominal book which has been rejected by the International Commission on Zoological Nomenclature. *Apus* Cuvier [1797–1798] is a *nomen nudum*, and *Apus* Cuvier, 1800, is a junior homonym of *Apus* Scopoli, 1777; the two former names thus are also unavailable. The generic names *Binoculus* Müller (O.F.), 1776, *Apos* Scopoli, 1777, *Triops* Schrank, 1803, *Apodium* Rafinesque, 1814, *Phyllopus* Rafinesque, 1815, *Lepidurus* Leach, 1819, *Monops* Billberg, 1820, and *Trinoculus* Voigt, 1836, all have as their type species either *Monoculus apus* Linnaeus, 1758, or a species that is objectively identical with it. Therefore the foregoing generic names are objective synonyms of each other. The oldest of these names, *Binoculus* Müller (O.F.), 1776, consequently is the only available name and if the normal rules were to be applied, that name should be used for genus "Y". The oldest available name for genus "X", as far as is known to us, is *Proterothriops* Ghigi, 1921. Neither *Binoculus* nor *Proterothriops* have been much used by carcinologists and their reintroduction for genera "Y" and "X" respectively would cause a great deal of confusion in the nomenclature of the Phyllopoda.

17. For genus "X" the generic names *Apus* Schaeffer, or *Triops* Schrank have been regularly employed; *Proterothriops*, the nomenclatorially correct name, has been used by a few authors, who employed it for part of the genus only. Many carcinologists would advocate the validation of the name *Apus* Schaeffer, 1756, under the Plenary Powers, since this name is used in many

important publications on Phyllopods, several of which being of quite recent date. Apart from the serious difficulties which would be involved in a proposal for the validation of a pre-Linnean name, the above solution would have been acceptable, had it not been that since Hartert's (1897) rediscovery of the name *Apus* Scopoli, 1777, that name has become firmly established in ornithological nomenclature. In modern handbooks and check-lists, such as Peters's (1940 *Check-List of Birds of the World* 4 : 244) this name has been generally adopted. To change the generic name of the Swift back to *Micropus* Wolf, 1810, or *Cypselus* Illiger, 1811, would seriously disturb ornithological nomenclature. This consideration alone is, we consider, sufficient to rule out the possibility of using the Plenary Powers to validate *Apus* as a name for Crustacea.

18. Schrank (1803) in the description of the type species of his genus referred to Schaeffer's (1756) plates 1-4 and not to the other plates published by that author. This makes it probable that Schrank's specimens actually belonged to species "A", since that is the only species figured on those plates, species "B" being shown on Schaeffer's pl. 6 only. Schrank therefore incorrectly applied the specific name *palustris* Müller (O.F.) (which is objectively synonymous with *apus* Linnaeus and thus belongs to species "B") to his specimens. *Triops* Schrank, 1803, therefore may be considered as a genus based upon a misidentified type species. This is, in our opinion, a clear case where it would be appropriate in the interests of nomenclatorial stability that the Commission should make use of the provision inserted in the *Règles* by the Thirteenth International Congress of Zoology, Paris, 1948, for dealing with the names of genera based upon misidentified type species (1950, *Bull. zool. Nomencl.* 4 : 158-159) and therefore under that procedure designate species "A" to be the type species of *Triops* Schrank in place of species "B". The name *Triops* would thereupon become available for use in the sense adopted by Keilhack and other authors. Since it is not practicable to validate *Apus* Schaeffer, 1756, the validation of the name *Triops* Schrank in the above sense is the best solution.

19. Practically all modern carcinologists use the generic name *Lepidurus* Leach, 1819, to indicate genus "Y". However, as has been pointed out above, there are at least four senior generic names that are objective synonyms of *Lepidurus*, which thus is unavailable nomenclatorially, *Binoculus* Müller being the correct name for the genus. Since, however, the name *Lepidurus* is so generally used at present, while *Binoculus* is highly unfamiliar to zoologists, the use of the Plenary Powers for the validation of the former name seems to be entirely justified. By this action a further confusion and instability in the nomenclature of the Phyllopoda will be prevented.

20. At this point it is necessary to draw attention to one further problem on which action under the Plenary Powers will be necessary as part of any general settlement of outstanding problems in connection with this case. This

is concerned with the question of the gender to be assigned to the generic name *Triops* Schrank, 1803. This name has invariably been treated as being masculine and the abandonment of this practice would lead to serious confusion and inconvenience without securing any benefit whatsoever. Unfortunately, however, under a decision taken by the Copenhagen Congress (1953, *Copenhagen Decisions zool. Nomencl.* : 50, Decision 84(7)(b)(iii)) generic names having the termination "-ops" are to be treated as being feminine in gender. In the case of the Decapod Crustacea the general practice has been to treat generic names having this termination as being masculine in gender and we consider that this practice should be validated and we have in mind to submit a proposal to the Commission in this sense. It would clearly be most undesirable that the settlement of the *Apus* problem should be postponed until after this general problem has been submitted to, and settled by, the Commission, for this would inevitably involve a considerable delay. On the other hand, a decision on the particular case of the gender of the generic name *Triops* must be taken as part of the decision on the present case, for the gender to be attributed to that name must be noted in the entry relating to the name *Triops* when that generic name is inscribed on the *Official List*. We accordingly recommend that, as has been proposed in relation to the generic name *Nephrops* [Leach], [1814], where an exactly similar problem arises (1955, *Bull. zool. Nomencl.* **11** : 260-262), the name *Triops* Schrank should be treated as a separate case and that the Commission acting under its Plenary Powers should direct that this generic name be treated as being masculine in gender.

Ornithological genera concerned

21. The following are the references for the names of the ornithological genera involved in the present case :—

Apus Scopoli, 1777, *Introd. Hist. nat.* : 483 (gender : masculine) (type species, by monotypy : *Hirundo apus* Linnaeus, 1758, *Syst. Nat.* (ed. 10) **1** : 192)

Micropus Wolf, 1810, in Meyer & Wolf, *Taschenb. deuts. Vögelk.* **1** : 280 (type species, by selection by Salvadori (1880, *Mem. R. Accad. Sci. Torino* (2) **33** : 534) : *Hirundo apus* Linnaeus, 1758)

Cypselus Illiger, 1811, *Prodr. Syst. Mamm. Av.* : 229 (a substitute name for *Apus* Scopoli, 1777)

Brachypus Meyer, 1814, *Ann. Wetterau. Ges.* **3** : 333 (a substitute name for *Micropus* Wolf, 1810)

Brevipes [Palmer], 1836, *Analyst* **4** : 101 (a substitute name for *Brachypus* Meyer, 1814).

22. The generic name *Apus* Scopoli, 1777, is an available name and is the oldest such name for the Swift. It should therefore now be placed on the *Official List of Generic Names in Zoology*, the name of its type species, *apus*

Linnaeus, 1758, as published in the combination *Hirundo apus*, being placed at the same time on the *Official List of Specific Names in Zoology*. The four other generic names specified in paragraph 8 above are, as is there shown, all junior objective synonyms of *Apus* Scopoli, 1777, and should therefore be placed on the *Official Index of Rejected and Invalid Generic Names in Zoology*.

23. The following names are all junior homonyms either of *Brachypus* Meyer, 1814, or of *Micropus* Wolf, 1810, and should therefore be placed on the *Official Index of Rejected and Invalid Generic Names in Zoology* :—

Brachypus Swainson, 1824, *Zool. J.* 1(3) : 305

Brachypus Meigen, 1824, *Syst. Besch. europ. zweifl. Ins.* 4 : 34

Brachypus Gray (J.E.), 1825, *Ann. Phil.* (2) 10 : 338

Brachypus Schoenherr, 1826, *Curculionid. Disp. meth.* : 217

Brachypus Fitzinger, 1826, *Neue Classif. Rept.* : 20, 50

Brachypus Guilding, 1828, *Zool. J.* 4(14) : 167

Micropus Hübner, 1818, *Zutr. z. Samml. exot. Schmett.* 1 : 24

Micropus Gray (J.E.), 1831, *Zool. Miscell.* (1) : 20

Micropus Swainson, [1832], in Richardson, *Faun. bor.-amer.* 2 : 486

Micropus Spinola, 1837, *Essai Genr. Ins. Hémipt.* : 218

Micropus Denny, 1842, *Monogr. Anoplurorum Brit.* : 247

Micropus Kner, 1868, *Sitzber. Akad. Wiss. Wien, Math.-Naturw. Kl.* 58(1) : 29, 322

Family-Group-Name Problems

24. The family-group-name problems involved in the present case are complicated by reason partly of the unfortunate decision of the Copenhagen (1953) Congress to keep alive family-group names based upon generic names which are junior objective synonyms, or junior subjective synonyms, of generic names of older date, and partly of the fact that the Crustacean and ornithological aspects of the problem involved are brought into direct relation with one another through the existence of homonymous family names. In the imme-

diately following paragraphs particulars are given, first, of the family-group names which have been published for the family of Crustacea with which we are directly concerned and, second, of the family-group names which have been given to the family of birds containing the Swift. Next, the problems arising in each case are discussed in isolation. Finally, the relation of these names to one another is considered in the light of the unfortunate situation of homonymy which has arisen through the establishment of identical family-group names on the basis on the one hand of the avian genus *Apus* Scopoli, 1777, and on the other hand of the Crustacean genus *Apus* Cuvier. We are indebted to the senior author's colleague Dr. G. C. A. Junge for assistance and advice as regards the avian names involved.

25. The following family-group names have been published for the family of Crustacea containing the genera styled in the present paper as Genus "X" and Genus "Y":—

PHILLOPIA (an Invalid Original Spelling for PHYLLOPODIDAE) Rafinesque, 1815, *Analyse Nature* : 99 (type genus : *Phyllopus* Rafinesque, 1815, *Analyse Nature* : 99)

APODES (an Invalid Original Spelling for APODIDAE) Billberg, 1820, *Enum. Ins. Mus. Billberg.* : 132 (type genus : *Monops* Billberg, 1820)

APUSIENS Milne Edwards (H.), 1840, *Hist. nat. Crust.* 3 : 353 (invalid because a vernacular (French) word and not a Latinised word)

APIDAE (an Invalid Original Spelling for APODIDAE) Burmeister, 1843, *Organisation Trilobiten* : table opposite page 38 (type genus : *Apus* Cuvier, 1800)

APODIDAE Agassiz (J.L.R.), 1846, *Nomencl. zool.*, Index univ. : 30 (a correction of APIDAE Burmeister, 1843)

TRIOPSIDAE Keilhack, 1909, Brauer's *Süsswasserf. Deutschl.* 10 : 7 (type genus : *Triops* Schrank, 1803)

BINOCULIDAE Fowler, 1912, *Ann. Rep. New Jersey State Mus.* 1911 : 466 (type genus : *Binoculus* Müller (O.F.), 1776)

26. The following family-group names have been published for the family of birds containing the genus *Apus* Scopoli, 1777 :—

CYPSELINAE Bonaparte, 1838, *Geogr. comp. List Birds Europe N. Amer.* : 8 (type genus : *Cypselus* Illiger, 1811, a junior objective synonym of *Apus* Scopoli, 1777)

MICROPODIDAE Stejneger, 1885, *Standard nat. Hist.* 4 : 437 (type genus : *Micropus* Wolf, 1810, a junior objective synonym of *Apus* Scopoli, 1777)

APODIDAE Reichenow, 1897, *Ornith. Monatsber.* 5 : 10 (type genus : *Apus* Scopoli, 1777) (invalid because published for some purpose other than for use in zoological nomenclature)

APODINAE Hartert, 1897, *Das Thierreich* 1 : 80 (type genus : *Apus* Scopoli, 1777) (known to have been published later than APODIDAE Reichenow because Hartert cited a reference to Reichenow's paper)

27. Of the four family-group names based on different generic names which have been given to the family of Crustacea with which we are here concerned one name, APODIDAE published as APIDAE by Burmeister in 1843, is already invalid under a decision taken by the Fourteenth International Congress of Zoology, Copenhagen, 1953 (1953, *Copenhagen Decisions zool. Nomencl.* : 36, Decision 54(1)(b)), for it is based upon the name of a genus (*Apus* Cuvier, 1800) which is a homonym of a previously published name (*Apus* Scopoli, 1777). In addition, there is, it should be noted, another name APODIDAE (correction of APODES) Billberg, 1820, which is also invalid, having been based by Billberg not upon the name (*Monops* Billberg) used by him for the type genus but upon the specific name (*apus* Linnaeus, 1758, as published in the combination *Monoculus apus*) of the type species of the type genus, an error which gives to the family-group name so published the misleading appearance of having been based—as, in fact, Burmeister's later name APIDAE was based—upon the generic name *Apus* Cuvier, 1800. Two of the remaining names will also be invalid if the Commission accepts the proposals at the generic-name level submitted in the present application. For, if the International Commission suppresses the generic names *Binoculus* Müller (O.F.), 1776, and *Phyllopus* Rafinesque, 1815, under its Plenary Powers, the family-group names based on those generic names (BINOCULIDAE Fowler, 1912, and PHYLLOPODIDAE (correction of PHYLLOPIA) Rafinesque, 1815) will both thereby also be automatically suppressed under the Ruling given by the Commission in *Declaration 20* (1955, *Ops. Decls. int. Comm. zool. Nomencl.* 10(19) : i-viii). The avoidance of the need for using the name PHYLLOPODIDAE is particularly satisfactory, for, so far as we know, no one apart from Rafinesque has ever employed this name, the re-introduction of which after so long an interval would be bound to give rise to confusion. The rejection of the name BINOCULIDAE is also much to be welcomed, for this name has hardly, if at all, been used in carcinological literature. The rejection of the names discussed above will leave the well-established name TRIOPSIDAE Keilhack, 1909, based on *Triops* Schrank, 1803, the oldest available, and indeed the only available, name for this family of Crustacea.

28. The three family-group names in the Class Aves which are involved in the present case are all objective synonyms of one another, the type genus of each having the Swift, *Hirundo apus* Linnaeus, 1758, as its type species. Of these names, the first, CYPSELINAE (type genus : *Cypselus* Illiger, 1811) was published by Bonaparte in 1838 and the second, MICROPODIDAE (type genus : *Micropus* Wolf, 1810) by Stejneger in 1885. The third, based upon the generic name *Apus* Scopoli, 1777, was first published in 1897, in which year it was published independently by two different authors, namely as APODIDAE by Reichenow and as APODINAE by Hartert. Reichenow's name was the first to be published, as is shown by the fact that in Hartert's paper there is a direct reference to that by Reichenow. We must note here, however, that, although Reichenow published the name APODIDAE, he made it clear that he himself

rejected this name and considered that it ought not to be used in zoological nomenclature, writing of it as follows:—"Da die Anwendung von Apodidae sich nicht empfehlen dürfte". Accordingly, under a decision taken by the Copenhagen Congress that a name is not to be treated as having acquired the status of availability if its author makes it clear that it is published by him for some purpose other than for use in zoological nomenclature (1953, *Copenhagen Decisions zool. Nomencl.* : 63, Decision 114) the name APODIDAE did not acquire the status of availability through being published by Reichenow in the manner described above. The family-group name based on the generic name *Apus* Scopoli, 1777, is therefore to be attributed to Hartert by whom it was published in conditions which satisfied the requirements of the *Règles*. We see therefore that the position as regards the three family names discussed above is that the name (APODIDAE) based on the valid name of the type genus (*Apus* Scopoli) is of later date than either of the other two names (CYPSELINAE ; MICROPODIDAE). Up to 1953, however, it would still have been the valid name for this family of birds. However, under a decision taken by the Copenhagen Congress in that year (1953, *Copenhagen Decisions zool. Nomencl.* : 36, Decision 54(1)(a)) a family-group name based upon a generic name which (as here) is a junior objective synonym of another generic name is nevertheless to be retained. Accordingly, in the absence of remedial action by the Commission the valid name for this family is CYPSELIDAE.

29. Having examined separately the family-group-name problems which arise in connection with the names to be used for the families of Crustacea and birds involved in the present case, we must now consider the position of the names for these families in relation to the name APODIDAE which has been bestowed upon both. In the case of the family of Crustacea we have seen that the name APODIDAE which is based upon the invalid name *Apus* Cuvier was formerly widely used by carcinologists. During the last forty-five years, however, it has been largely replaced by the name TRIOPSIDAE following the initiative of Keilhack and later authors. In the case of the family of birds an exactly opposite movement has been in progress, for, whereas formerly the names CYPSELIDAE and MICROPODIDAE were both widely used, the name APODIDAE has been making steady progress and is now used by the majority of authors. This name, for example, is used in Peters's *Check-List of Birds of the World*, in the *Handbook of British Birds* and in Roger Tory Peterson's *Field Guide to the Birds of Britain and Europe* and the same author's *Field Guide to the Birds Found East of the Rockies*. It is moreover the name which is accepted in the Check-List prepared by the British Ornithologists' Union. At this stage it would clearly be a retrograde step from the point of view of nomenclatorial stability to abandon the name APODIDAE in favour of either CYPSELIDAE or MICROPODIDAE. Prior to the Copenhagen Congress of 1953 the *Règles* contained no provision regulating the action to be taken in cases where a state of homonymy arose at the family-name level as the result of such names being formed in different groups from generic names which were themselves homonyms of one another, being words having the same stem (*thème*). This matter was

considered by the Copenhagen Congress of 1953 which inserted in the *Règles* a provision that, where two family-group names were found to be homonyms of one another by reason of being based upon generic names which possess the same stem but are not themselves homonyms of one another, the case is to be referred to the International Commission for decision. The Congress further directed that the Commission was to make a spelling change in one of the names sufficient to bring the condition of homonymy to an end. The decision so taken covers the case where each of two similar but valid generic names (such as *Cyprina* and *Cyprinus*) is taken as the base for a family-group name with the result that the two names so formed consist of the same word (in the case cited above, the word CYPRINIDAE). The foregoing decision gives no guidance however as to the action which should be taken where as in the present case a family name in current use, such as the name APODIDAE in birds, is a junior homonym of a family name in some other group, which is invalid by reason of the fact that the name of its type genus (in the case of the family APODIDAE in Crustacea, the name *Apus* Cuvier, 1800) is itself a junior homonym of the name of the type genus (in the case of the family APODIDAE in Aves, the name *Apus* Scopoli, 1777) of the other family. The omission of the Copenhagen Congress to deal with this class of case was no doubt accidental and it is reasonable to infer that in such a case the correct course is to refer the matter to the Commission for decision.

30. In the present case the position as regards the family of Crustacea concerned is that the name APODIDAE is invalid because (as we have seen in paragraph 27 above) it is based upon a generic name which itself is a junior homonym of another generic name. For this reason and because of the confusion which would arise owing to the wide usage of the name APODIDAE in ornithology, there would clearly be no justification for the re-introduction of this name in carcinology, where moreover the name TRIOPSIDAE must now be regarded as being firmly entrenched. In the case of the family of birds the name APODIDAE is based upon the valid name of the type genus of the family and is currently the name most commonly used for that family. Further, apart from the doubts as to the treatment to be accorded to homonymous family-group names which then existed, the name APODIDAE, as being the name based upon the valid name of its type genus, was the valid name for this family up to the time when in 1953 the rules were changed by the Copenhagen Congress. Accordingly, it may be concluded that the interests of nomenclatorial stability in the two groups concerned will be best served by a settlement under which (a) the name TRIOPSIDAE is confirmed as the name for the family of Crustacea formerly known as APODIDAE and (b) the name APODIDAE is accepted as the family name for the family of birds formerly known either as CYPSELIDAE or as MICROPODIDAE. A solution on these lines is accordingly recommended. This solution will involve the suppression by the Commission under its Plenary Powers of the names CYPSELINAE Bonaparte, 1838, and MICROPODIDAE Stejneger, 1885, both of which have priority over APODIDAE Hartert, 1897.

Recommendations

31. In the light of the considerations set forth in the present application the International Commission is asked to take the following action for the purpose of restoring order and preventing further confusion in the nomenclature of the groups concerned, namely that it should :—

(1) use its Plenary Powers :—

(a) to suppress for the purposes of the Law of Priority but not for those of the Law of Homonymy the under-mentioned names of genera, each of which has as its type species either *Monoculus apus* Linnaeus, 1758, or the objectively identical nominal species *Binoculus palustris* Müller (O.F.), 1776 :—

(i) *Binoculus* Müller (O.F.), 1776 ;

(ii) *Apos* Scopoli, 1777 ;

(iii) *Apodium* Rafinesque, 1814 ;

(iv) *Phyllopus* Rafinesque, 1815 ;

(b) to suppress for the purposes of the Law of Priority but not for those of the Law of Homonymy the under-mentioned names of family-group taxa in the Class Aves :—

(i) CYPSELIDAE Bonaparte, 1838 ;

(ii) MICROPODIDAE Stejneger, 1885 ;

(c) under the procedure prescribed by the Thirteenth International Congress of Zoology, Paris, 1948, for determining the type species of a genus based upon a misidentified type species, to set aside all type designations or selections for the genus *Triops* Schrank, 1803, made prior to the Ruling now asked for and, having done so, to designate *Apus cancriformis* Bosc, [1801–1802], to be the type species of the foregoing genus ;

(d) to direct that the gender to be attributed to the generic name *Triops* Schrank, 1803, shall in accordance with established practice be the masculine gender ;

(2) take note that under the Ruling given in *Declaration* 20 the under-mentioned family-group names will automatically be suppressed for the purposes of the Law of Priority but not for those of the Law of Homonymy in the event of the suppression under the Plenary Powers of the names of the type genera of the taxa respectively concerned as recommended in (1)(a) above :—

(a) BINOCULIDAE Fowler, 1912 (type genus : *Binoculus* Müller (O.F.), 1776) ;

(b) PHILLOPIA (Invalid Original Spelling for PHYLLOPODIDAE) Rafinesque, 1815 (type genus : *Phyllopus* Rafinesque, 1815) ;

(3) place the under-mentioned generic names on the *Official List of Generic Names in Zoology* :—

- (a) *Lepidurus* Leach, 1819 (gender : masculine) (type species, by monotypy : *Monoculus apus* Linnaeus, 1758, as defined by the lectotype selected by Holthuis in the present application) (Class Crustacea) ;
- (b) *Triops* Schrank, 1803 (gender : masculine, as determined under the Plenary Powers under (1)(d) above) (type species, by designation under the Plenary Powers under (1)(c) above : *Apus cancriformis* Bosc, [1801–1802] (Class Crustacea) ;
- (c) *Apus* Scopoli, 1777 (gender : masculine) (type species, by monotypy : *Hirundo apus* Linnaeus, 1758) (Class Aves) ;

(4) place the under-mentioned specific names on the *Official List of Specific Names in Zoology* :—

- (a) *apus* Linnaeus, 1758, as published in the combination *Monoculus apus*, as defined by the lectotype selected by Holthuis in the present application (specific name of type species of *Lepidurus* Leach, 1819) (Class Crustacea) ;
- (b) *cancriformis* Bosc, [1801–1802], as published in the combination *Apus cancriformis* (specific name of type species of *Triops* Schrank, 1803) (Class Crustacea) ;
- (c) *apus* Linnaeus, 1758, as published in the combination *Hirundo apus* (specific name of type species of *Apus* Scopoli, 1777 (Class Aves) ;

(5) place the under-mentioned generic names on the *Official Index of Rejected and Invalid Generic Names in Zoology* :—

- (a) *Apodium* Rafinesque, 1814, as suppressed under the Plenary Powers under (1)(a)(iii) above ;
- (b) *Apos* Scopoli, 1777, as suppressed under the Plenary Powers under (1)(a)(ii) above ;
- (c) *Apus* Schaeffer, 1756 (invalid because published before the starting point of zoological nomenclature ;
- (d) *Apus* Cuvier, 1800 (a junior homonym of *Apus* Scopoli, 1777) ;
- (e) *Apus* Latreille, [1802–1803] (a junior homonym of *Apus* Scopoli, 1777) ;
- (f) *Apus* Schoch, 1868 (a junior homonym of *Apus* Scopoli, 1777) ;

- (g) *Binoculus* Geoffroy, 1764 (a name published in a work rejected for nomenclatorial purposes) ;
- (h) *Binoculus* Müller (O.F.), 1776, as suppressed under the Plenary Powers under (1)(a)(i) above ;
- (i) *Brachypus* Meyer, 1814 (a junior objective synonym of *Apus* Scopoli, 1777) ;
- (j) The under-mentioned names, each of which is a junior homonym of *Brachypus* Meyer, 1814 :—
 - (i) *Brachypus* Swainson, 1824 ;
 - (ii) *Brachypus* Meigen, 1824 ;
 - (iii) *Brachypus* Gray (J.E.), 1825 ;
 - (iv) *Brachypus* Schoenherr, 1826 ;
 - (v) *Brachypus* Fitzinger, 1826 ;
 - (vi) *Brachypus* Guilding, 1828 ;
- (k) *Brevipes* Palmer, [1836] (a junior objective synonym of *Apus* Scopoli, 1777) ;
- (l) *Cypselus* Illiger, 1811 (a junior objective synonym of *Apus* Scopoli, 1777) ;
- (m) *Micropus* Wolf, 1810 (a junior objective synonym of *Apus* Scopoli, 1777) ;
- (n) The under-mentioned names, each of which is a junior homonym of *Micropus* Wolf, 1810 :—
 - (i) *Micropus* Hübner, 1818 ;
 - (ii) *Micropus* Gray (J.E.), 1831 ;
 - (iii) *Micropus* Swainson, [1832] ;
 - (iv) *Micropus* Spinola, 1837 ;
 - (v) *Micropus* Denny, 1842 ;
 - (vi) *Micropus* Kner, 1868 ;
- (o) *Monops* Billberg, 1820 (a junior objective synonym of *Lepidurus* Leach, 1819) ;
- (p) *Phyllopus* Rafinesque, 1815, as suppressed under the Plenary Powers under (1)(a)(iv) above ;
- (q) *Thriops* Ghigi, 1921 (an Erroneous Subsequent Spelling for *Triops* Schrank, 1803) ;
- (r) *Trinoculus* Voigt, 1836 (a junior objective synonym of *Lepidurus* Leach, 1819) ;

- (s) *Triopes* Schrank, 1803 (an Invalid Original Spelling for *Triops* Schrank, 1803);
- (6) place the under-mentioned specific names on the *Official Index of Rejected and Invalid Specific Names in Zoology* :—
- (a) *palustris* Müller (O.F.), 1776, as published in the combination *Binoculus palustris* (a junior objective synonym of *apus* Linnaeus, 1758, as published in the combination *Monoculus apus*);
- (b) *cancriformis* Lamarck, 1801, as published in the combination *Limulus cancriformis* (a junior objective synonym of *apus* Linnaeus, 1758, as published in the combination *Monoculus apus*);
- (c) *productus* Bosc, [1801–1802], as published in the combination *Apus productus* (a junior objective synonym of *apus* Linnaeus, 1758, as published in the combination *Monoculus apus*);
- (7) place the under-mentioned names on the *Official List of Family-Group Names in Zoology* :—
- (a) TRIOPSIDAE Keilhack, 1909 (type genus: *Triops* Schrank, 1803, with the type species designated under the above Powers under (1)(c) above) (Class Crustacea);
- (b) APODINAE Hartert, 1897 (type genus *Apus* Scopoli, 1777) (Class Aves);
- (8) place the under-mentioned family-group names on the *Official Index of Rejected and Invalid Family-Group Names in Zoology* :—
- (a) APIDAE Burmeister, 1843 (type genus: *Apus* Cuvier, 1800) (an Invalid Original Spelling for APODIDAE) (invalid because based upon a generic name rejected as a junior homonym of an earlier name, namely *Apus* Scopoli, 1777) (Class Crustacea);
- (b) APODES Billberg, 1820 (type genus: *Monops* Billberg, 1820) (an Invalid Original Spelling for APODIDAE) (invalid because based not upon the name of the type genus (*Monops*) but upon the specific name (*apus* Linnaeus, 1758, as published in the combination *Monoculus apus*) of the type species of the type genus);
- (c) APODIDAE Agassiz (J.L.R.), 1846 (type genus: *Apus* Cuvier, 1800) (a correction of the Invalid Original Spelling APIDAE Burmeister, 1843) (invalid because based upon a generic name rejected as a junior homonym of an earlier name, namely *Apus* Scopoli, 1777) (Class Crustacea);

- (d) APODIDAE Reichenow, 1897 (type genus : *Apus* Scopoli, 1777) (invalid because published for some purpose other than for use in zoological nomenclature) (Class Aves) ;
- (e) APUSIENS Milne Edwards (H.), 1840 (type genus : *Apus* Cuvier, 1800) (invalid because a vernacular (French) word and not a Latinised word) (Class Crustacea) ;
- (f) BINOCULIDAE Fowler, 1912 (type genus : *Binoculus* Müller (O.F.), 1776) (suppressed under the Plenary Powers automatically through the suppression under those Powers of the name of its type genus) (Class Crustacea) ;
- (g) CYPSELINAE Bonaparte, 1838, as suppressed under the Plenary Powers under (1)(b) above (type genus : *Apus* Scopoli, 1777) (Class Aves) ;
- (h) MICROPODIDAE Stejneger, 1885, as suppressed under the Plenary Powers under (1)(b) above (type genus *Micropus* Wolf, 1810) (Class Aves) ;
- (i) PHILLOPIA Rafinesque, 1815 (type genus : *Phyllopus* Rafinesque, 1815) (an Invalid Original Spelling for PHYLLOPODIDAE) (Class Crustacea).

**SUPPORT FOR DR. JAANUSSON'S APPLICATION REGARDING THE
GENERIC NAME "ASAPHUS" BRONGNIART, 1822 (CLASS TRILOBITA)**

By C. J. STUBBLEFIELD

(Geological Survey and Museum, Exhibition Road, London, S.W.7)

(Commission Reference : Z.N.(S.) 636)

(For the proposal submitted see 1955, *Bull. zool. Nomencl.* **12** : 90-96)

(Letter dated 2nd February 1956)

I support the application by Dr. V. Jaanusson for the suppression of *Asaphus* Brongniart, 1817, and for the acceptance of *Asaphus* Brongniart, 1822, with *Entomostracites expansus* Wahlenberg, 1821, as its type species, since I regard this as being in the best interests of stability in nomenclature of the Trilobita.



Holthuis, L. B. and Hemming, Francis. 1956. "Proposed use of the plenary powers (a) to validate the generic name "Lepidurus" Leach, 1819, and to designate a type species for, and to determine the gender of, "Triops" Schrank, 1803 (Class Crustacea, Order Phyllopoda) and (b) to validate the family name "Apodidae" Hartert, 1897 (Class Aves)." *The Bulletin of zoological nomenclature* 12, 67–85.

View This Item Online: <https://www.biodiversitylibrary.org/item/44290>

Permalink: <https://www.biodiversitylibrary.org/partpdf/36406>

Holding Institution

Natural History Museum Library, London

Sponsored by

Natural History Museum Library, London

Copyright & Reuse

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

Rights Holder: International Commission on Zoological Nomenclature

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

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

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