

Ref.

OPINIONS AND DECLARATIONS RENDERED BY THE INTER- NATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

Edited by

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

Secretary to the Commission

VOLUME 2. Part 30. Pp. 291-306.

OPINION 160

On the status of the names *Anguina* Scopoli, 1777, *Anguillulina* Gervais van Beneden, 1859, and *Tylenchus* Bastian, 1865 (Class Nematoda)

LONDON:

Printed by Order of the International Commission on
Zoological Nomenclature

Sold at the Publications Office of the Commission
41, Queen's Gate, London, S.W.7

1945

Price four shillings

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INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

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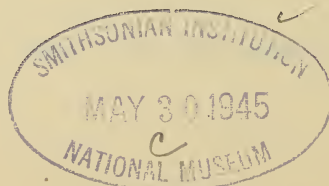
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Ref.

OPINION 160.

ON THE STATUS OF THE NAMES *ANGUINA* SCOPOLI, 1777, *ANGUILLULINA* GERVAIS AND VAN BENEDEN, 1859, AND *TYLENCHUS* BASTIAN, 1865 (CLASS NEMATODA).

SUMMARY.—For so long as generic names published by authors using a binary, though not a binominal, system of nomenclature are recognised as complying with the requirements of Article 25 of the International Code,¹ the generic names published by Scopoli in 1777 in his *Introductio ad Historiam naturalem* are to be accepted as available nomenclatorially, but the position will need to be re-examined if later it is decided to reject generic names published by authors not applying the binominal system. No case has been established for the suspension of the rules for the purpose either of invalidating *Anguina* Scopoli, 1777, and validating *Anguillulina* Gervais and van Beneden, 1859, or of invalidating both *Anguina* Scopoli, 1777, and *Anguillulina* Gervais and van Beneden, 1859, and validating *Tylenchus* Bastian, 1865 (Class Nematoda).

I.—THE STATEMENT OF THE CASE.

This case was submitted to the International Commission in 1934 by Dr. B. G. Chitwood, Assistant Zoologist, Bureau of Animal Industry, United States Department of Agriculture, on behalf of himself and four other members of the staff of that Department. The following is the text of the document submitted by Dr. Chitwood:—

THE STATUS OF *ANGUINA* SCOPOLI, 1777, *ANGUILLULINA* GERVAIS AND VAN BENEDEN, 1859, AND *TYLENCHUS* BASTIAN, 1865

Premise: *Anguina* Scopoli, 1777 (*Introd. ad Hist. nat. sist. Genera Lapidum Plantarum et Animalium*, Prague, p. 374) is the proper generic name for *Vibrio tritici* Steinbuch, 1799 (*Der Naturforscher*, v. 28, p. 251).

Reasons: (1) Scopoli (*loc. cit.* p. 373) clearly stated that he was making a new genus, *Anguina*.

(2) Scopoli gave a recognizable description (*loc. cit.* p. 374) because (a) he gave host; (b) he gave location; (c) he gave an attempted description; (d) he referred to Linnaeus' "not. ad *Chaos*."

¹ See paragraph 16(d) of the present *Opinion*.

(3) Scopoli's reference to Linnaeus is identifiable without doubt to Linnaeus (1767, *Systema Naturae* (ed. 12) 1 (2), p. 1326, footnote² reference "TRITICI"). Linnaeus in this footnote gave host, location, and an attempted description "ascaridiformem quasi vermiculum."

(4) Scopoli and Linnaeus undoubtedly referred to the same species. There is no doubt as to what that species is, for the species now known as *Tylenchus tritici* (= *Anguillulina tritici*) is the only species in the grains of wheat and it causes the formation of galls (rounded) instead of galls (oblong).

This species was first observed by Needham (1744, *Phil. Trans. Roy. Soc.* v. 42, pp. 634-641; and "An Account of some new microscopical Discoveries, Lond., pp. 85-89, pl. 5, figs. 6-7). Needham referred to them as "eels in blighted wheat" and indicated that the symptoms in wheat were well known; he also mentioned the peculiar revivability of the apparently dead forms when placed in water. This is one of the outstanding biological characters.

The next reference we find is Linnaeus (1767, *loc. cit.*), occurring as a footnote under *Chaos ustilago*. He did not name the form but rather considered it as an aberrant "ustilago." It is not identifiable as "ustilago" since the description of this species, "ustilago," was based on a fish-like oblong vermiculus from *Hordeum* (probably a protozoan or rotiferan).

Roffredi (1775, *Obs. Mem. Phys. Nat.* v. 5 (1) pp. 1-19) dealt with such a form, the wheat eelworm, but did not name it.

Needham (1775, *Jour. de Phys.* v. 5, p. 227) stated that he had given Baker a sample of diseased wheat in 1744, and in 1771 Baker informed him the "eels" still revived.

Roffredi (1776, *Nouv. Recherch. sur les Découv. microscop. etc. annot. par Needham* Pars 1, p. 25, Paris) took the view that the forms were moved by the penetration of fluid.

Steinbuch (1799, *Der Naturforscher*, v. 28, p. 256) calls the "Wurm" described by Roffredi *Vibrio tritici*. This was the first time a specific name had been applied.

Bauer (1823, *Phil. Trans. Roy. Soc.*, pp. 1-16, pl. 1, figs. 1-23, pl. 2, figs. 1-2) described the species under the name *Vibrio tritici*, not quoting an author but referring to Needham (1744, *loc. cit.*) and to Roffredi (1775, 1776, *loc. cit.*), as well as to a letter of Fontana (1776, *Journ. de Physique*, p. 43) in which that author is said to have considered the infected grains as "extraneous turnaris or gall nuts."

Dujardin (1845, *Hist. Nat. Helm. ou Vers Intest.*, Paris 239, 242-243) made *Vibrio* and *Anguillula* synonyms of *Rhabditis*. He called the wheat eelworm *Rhabditis tritici*, or in vernacular, "Rhabditis du blé niellé." As synonyms he listed:

Anguille du blé rachitique ou du faux ergot, Rozier, *Obs.*, 1775, 218.

Vibrio anguillula (?) Müller, *Infus.* p. 63, pl. 9.

Vibrio agrostis Steinbuch, dans *Naturf.*, XXVIII, p. 233, pl. 5.

Vibrio tritici Bauer dans les *Transact.*, 1823, t. CXIII, p. 1, pl. 1-2 et dans les *Ann. Sc. nat.*, 1824, t. II, p. 154, pl. 7.

Ehrenberg (1828, *Die Infusionsthier als Vollkommene Organismen*, p. 82) first placed the species *tritici* Steinbuch in the genus *Anguillula*.

Diesing (1851, *Systema Helminthum*, Vindobonae, v. 2, p. 132) renamed the "wheat eelworm" *Anguillula graminearum*, listing as references the following:

² The following is the text of the footnote here referred to:—

TRITICI Grana abbreviata illa et rotundata, exsiccata etiam post annos, in aqua tepidiuscula intra horulam egerminant in ascaridiformem quasi vermiculum; animatum vix dixero.

- Needham : *Micr.* 99 Tab. V. 7
 Backer : *Micr. expl.* 80 Tab. V Fig. 1, 2
 Roffredi : in *Journ. de Phys.* 1775. 369
 Anguille vulgaire Rozier : *Obs.* 1775, Mars. 218 Tab. 1. 7 et 1778, Nov. 401
 Anguille du blé rachitique *l.c.* 1775, Janv. Tab. 1
 Anguille du faux ergot. *l.c.* 1776, Janv. 72 et Mars. 372. et 436
 Naturf. XIX. St. 40
Vibrio graminis Steinbuch : in *Naturf.* XXVIII. St. 233. Tab. V.—et Ej. *Analecten.* 97.—135. Tab. II. Fig. 1-6
 Spallanzani : *Micr.* 189, Fig. 12 (pessima). idem *Opusc. phys.* II. 354. Tab. V. 10
 Eichhorn : *Micr.* 72. Tab. VII. A
 Gleichen : *Micr.* 61. Tab. XXVIII. 6
 Spuhlwürmerälchen. Schrank : *Beitr.* 19
 Würtemb. *Wochenbl.* 1782. 354
Vibrio anguillula. *Anguillula fluvialis* Müller : *Anim. Infus.* 65. Tab. IX. 5-8
Vibrio tritici Bauer : in *Philosoph. Trans.* 1823. I. 1-12. Tab. I et II. Versio in *Annal. des Sc. nat.*, prem. sér. II. 154-167 cum *Tabula.*—Bory : in *Encycl. méth.* 1824. 779.—Dugès : in *Annal. des Sc. nat. prem. sér.* IX. 225.—Henslow : in *Microscopical Journal*, 1841. 36.
Rhabditis tritici Dujardin : *Hist. nat. des Helminth.* 242.

Davaine (1857, *Recherches sur l'anguille du Blé Niellé*, etc. Paris) described the species and called it *Anguillula tritici*.

Gervais and Beneden (1859, *Zool. médicale*, v. 2. p. 102) made a genus *Anguillulina*, placing *tritici* in the genus. They also included *Anguillulina dipsaci* (Kühn, 1857).

Bastian (1865, *Trans. linn. Soc.* v. 25, 125-128) made a genus *Tylenchus*, in which he included *T. agrostidis* Bastian, 1865; *T. davainii* Bastian, 1865; *T. dipsaci* (Kühn, 1857) and *T. tritici* (Steinbuch, 1799).

Schneider (1866, *Monog. Nematoden*, p. 164-165) renamed the species *Anguillula scandens*.

Concerning the genera in which *tritici* has been placed, the following may be said :

- (1) *Chaos* Linnaeus, 1767, has as its type *Chaos protheus* Linnaeus, 1767 (= *Volvox chaos* Linnaeus, 1758, Protozoan).
- (2) *Vibrio* Müller, 1773, type uncertain. Stiles and Hassall, 1905,—preferably *V. lineola* or *V. bacillus* (Bacteria).
- (3) *Anguillula* Ehrenberg in Hemprich and Ehrenberg, 1828, has as its type *fluvialis* (Müller, 1786). It was originally proposed for *V. fluvialis* Müller, 1783, Ehrenberg, 1828; *V. inflexa* H. and E., 1828; *V. coluber* (M., 1786), H. and E., 1828; *V. reticulata* H. and E., 1828; and *V. dongalana* H. and E., 1828.

Anguillula Müller, 1773, is an error; Müller did not make a genus *Anguillula*. He made the species *Vibrio anguillula* Müller, 1773, which included *Chaos redivivum* Linnaeus, 1767, 1326. Later (1783, 161-163) he subdivided the species *anguillula* into varieties.

Müller (1786, *Animalcula Infusoria fluvialia et marina*, etc.), on page 63, gives the species *Vibrio anguillula*. Under that species he listed : (a) *Anguillula aceti* (p. 63); (b) *Anguillula glutinis* (p. 64); (γ) *Anguillula fluvialis* (p. 65); (δ) *Anguillula marina* (p. 66). Under *fluvialis* he gave several references, including Needham (1745, *loc. cit.*) and others referring to the wheat eelworm, but the first reference is to his original description of *fluvialis* which is not the wheat eelworm.

Gmelin (1790, 3900-3901) was erroneously quoted by Stiles and Hassall (1905, p. 35) as having credited Müller with making a genus *Anguillula*. Sherborn (1902, p. 1077) erroneously attributed *Anguillula* to Müller, 1786, by listing Müller's varieties as species of *Anguillula*. This is apparently the cause of the error by Stiles and Hassall, to whom a copy of Müller (1786) was not available.

Davaine designated *tritici* type of *Anguillula* Ehrenberg, and de Man designated *aceti* type of this genus. Stiles and Hassall (1905, pp. 36, 86) designated *A. fluvialis* (Müller, 1783) (= *V. fluvialis* Müller, 1783) as type of *Anguillula* Ehrenberg. This designation must stand on the grounds that it is the first designation of an originally included species.

Peters (1927, *J. Helminth.* v. 5, 141-142) on the basis of the above designation made a new genus *Turbatrix* for the vinegar eel (*T. aceti* (Müller, 1783)) on the grounds that *Anguillula fluvialis* is unrecognizable. We agree with this action. Therefore, *Anguillula* is no longer available for any animal. If this were not so, it would not be available for *tritici* because *tritici* was not an included species and because *Anguina* has priority.

- (4) *Rhabditis* Dujardin, 1845, has as the type *R. terricola* Dujardin, 1845, (type designation by Stiles and Hassall). Type not congeneric with *tritici*.
 (5) *Anguillulina* Gervais and Beneden, 1859, has as its type *A. tritici* (Steinbuch, 1799), des. by Stiles and Hassall, 1905.
 (6) *Tylenchus* Bastian, 1865, has as its type *T. davainii* Bastian, 1865. See Stiles and Hassall, 1905. Type congeneric with *tritici*.

Thus we find three generic names available for the wheat eelworm namely, *Anguina* Scopoli, 1777, *Anguillulina* Gervais and Beneden, 1859, and *Tylenchus* Bastian, 1865.

Baylis and Daubney (1926, *Synop. Fam. and Gen. Nematoda*, p. 65) recognized *Anguillulina*, giving *Tylenchus* and *Anguina* as synonyms.

Goodey (*J. Helminth.* v. 10, p. 76) recognized *Anguillulina*, discarding both *Anguina* and *Tylenchus*, the former without stated reason, the latter as a synonym.

It appears to us that the action taken by Baylis and Daubney and by Goodey is illogical in view of the above data. On the grounds of priority the proper name should be *Anguina*. If priority is to be set aside *Tylenchus* should be recognized since this name is the best known and the most widely used. In our opinion *Anguillulina* has recently been injected into the literature on illogical grounds. At the present, the literature is in a state of flux. Either *Anguina* or *Tylenchus* should be recognized and put on the *Official List*. In our opinion *Tylenchus* would be preferable in that it would mean the return to a well established name. If *Tylenchus* is not retained, and some confusion is to prevail, then both *Anguillulina* and *Tylenchus* should be considered synonyms of *Anguina*.

We, the undersigned, hereby request the International Commission on Zoological Nomenclature, to set aside the rules of priority in this case, recognizing *Tylenchus*, and putting it on the *Official List*, on the grounds that enforcement of the rules would cause more confusion than would suspension of the rules.

G. Steiner,
 Senior Nematologist,
 Office of Nematology,
 Bureau of Plant Industry,
 U.S. Dept. of Agriculture

G. Thorne,
 Associate Nematologist,
 Bureau of Plant Industry,
 U.S. Dept. of Agriculture

M. C. Hall
 Chief, Zoological Division,
 Bureau of Animal Industry,
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B. G. Chitwood,
 Assistant Zoologist,
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 U.S. Dept. of Agriculture

J. R. Christie,
 Associate Nematologist,
 Bureau of Plant Industry,
 U.S. Dept. of Agriculture

II.—THE SUBSEQUENT HISTORY OF THE CASE.

2. Copies of the foregoing memorandum were communicated to members of the Commission by Commissioner C. W. Stiles, Secretary to the Commission, in January 1935. In a covering note Dr. Stiles informed the Commission that he was asking 15 specialists to furnish the Commission with their views on the proposal submitted. These specialists were resident in Sweden, England (3), Belgium, Denmark, U.S.S.R., Austria, Germany (3), Japan, Switzerland, Chile, and Holland.

3. In the same note Dr. Stiles made the following comment on

the passage in the present petition where it is stated that he (Dr. Stiles) and Hassall (1905) had erroneously quoted Gmelin (1790) as having credited Müller with making a genus *Anguillula* :—

The Secretary concurs with the statement that Müller, 1773, did not propose a new genus *Anguillula* but that he was dividing a species *anguillula* into varieties or subspecies. At the time (1905) Stiles and Hassall designated the type species of *Anguillula*, 1773, they based their decision on Gmelin, 1790, and Sherborn, 1902, since they could not obtain a copy of Müller, 1773. Quite recently the Secretary has been able to examine a photostat copy of Müller, 1773, and he concurs with the appellants that the premises accepted from literature by Stiles and Hassall were erroneous.

4. Eight of the specialists referred to in paragraph 2 above in due course furnished statements of their views for the consideration of the Commission. These are reproduced in the following paragraphs (paragraphs 5–14 below).

5. *Views of Dr. Carl Allgen (Jönköping, Sweden) :*

Dr. Allgen endorsed the request that the rules should be suspended and that *Tylenchus* Bastian should be placed on the *Official List*. He did not add any comments.

6. *Views of Dr. J. H. Schurmans Steekhoven (Zoological Laboratory, University of Utrecht, The Netherlands) :*

Having read your interesting manuscript I have the honour to tell you that I quite agree with the premises as set forth in this document and that I am in favour for the last sentence, whereby you [i.e. the petitioners] do request the International Commission on Zoological Nomenclature to set aside the rules of priority in this case, recognising *Tylenchus* and putting it on the *Official List*, on grounds that enforcement of the rules would cause more confusion than would suspension of the rules.

7. *Views of Dr. H. A. Baylis (British Museum (Natural History), London) :*

My answers to your questions are as follows :—

- (1) I do *not* agree with the premises as set forth in the document.
- (2) My reasons for this are : (a) that *Anguina* Scopoli, 1777, has no status, and (b) that *Anguillulina* has clear priority over *Tylenchus*.

The question of the validity of *Anguina* seems to depend on the question whether Scopoli, in this instance, “applied the principles of binary nomenclature” (Art. 25, condition (b)). I have carefully studied Scopoli, *loc. cit.*, and also the passage in Linnaeus’ 12th edition, p. 326, to which he seems to refer. It seems to me that it cannot be maintained that Scopoli here used a “binary” system even of classification, while his nomenclature is certainly not “binary,” his ultimate unit being the genus. Nor is it at all clear that Linnaeus intended to name the “vermiculum” referred to in his footnote. Apparently it is included in the species *Chaos ustilago*.³

³ Here followed a short discussion of the meaning to be applied to the term “binary nomenclature,” which has been omitted for the reason that, as explained in section (d) of paragraph 16 of the present *Opinion*, the decision embodied in this *Opinion* (in paragraph 17) was expressly taken by the Commission without prejudice to the meaning of that term. See also footnote 7.

(4) I see no reason for not accepting *Anguillulina*, which has clear priority over *Tylenchus*, and has, in consequence of its acceptance by Dr. Goodey, already begun to be accepted by those who work on plant pathology. I am definitely opposed to the principle of *nomina conservanda*, and do not consider there is a good case in favour of retaining *Tylenchus*.

8. Later Dr. Baylis wrote :—

I am unconvinced by Chitwood's statement (1935, *Proc. helm. Soc. Wash.* 2:53) that "the international rules . . . do not invalidate old genera which have been described without a specific name being mentioned." This statement does not seem to me to be in accordance with the intention of Article 25.

Incidentally, I might mention that the frequent quotation (as in the original memorandum of Steiner, Hall and others) of "Ehrenberg, 1828" as the author of *Anguillulina*, is incorrect. Sherborn has shown that although Ehrenberg's plates were published in 1828 (containing no mention of this name) the text was not published until 1831.

9. *Views of Dr. T. Goodey (St. Albans, England)* :

My answers to your points are :—

(1) I do not agree with the premises set forth in the document especially with regard to the alleged status and suggested validity of *Anguina* Scopoli, 1777.

(2) I have closely studied Scopoli, 1777, to determine whether he satisfies the Law of Priority, Art. 25 of the International Rules of Zoological Nomenclature and find that though it may be conceded that he satisfies condition (a) he entirely fails to satisfy condition (b) in that he did not apply the principles of "binary nomenclature." He merely put forward the generic name *Anguina* without an accompanying "nomen triviale" which is essential to satisfy "binary" principles.⁴ Since he failed to satisfy condition (b) I consider that *Anguina* has no status. I have also studied the passage in Linnaeus, 1767, and conclude that he did not propose a name for the "vermiculum." The footnote on p. 1326 is, in my view, merely a slightly expanded description of the material from deformed wheat grains which is included under the species *Chaos ustilago*.

(3) For reasons stated above, I do not admit that under priority *Anguina* is the correct name, and therefore, the second part of the question does not call for discussion.

(4) I am not in favour of a suspension of the rules which would involve the displacement of *Anguillulina* in favor of *Tylenchus* over which it has clear priority. I dissent from the view that "At present the literature is in a state of flux" for, in my opinion, the position with regard to these two names is now well established since the name *Anguillulina* has been adopted in much recent specialist and non-specialist literature dealing with plant-parasitic nematodes both in this country and on the continent of Europe. In the U.S.A. also and in Canada the name has been adopted in recent papers. It would, therefore, serve no useful purpose but would result in added confusion to revert to the use of the name *Tylenchus*.

10. Later Dr. Goodey notified the Secretary to the Commission that he favoured the suppression of the name *Anguina* Scopoli, 1777.

⁴ See, however, paragraph 16(e) of the present *Opinion*.

II. Views of Dr. Halmar Ditlevson (Zoological Museum, Copenhagen, Denmark) :

I thank you very much for your communication as to the priority of the names *Anguina*, *Anguillulina*, and *Tylenchus*.

My answer is the following :

(1) Yes, I agree with the premises set forth in your document.

(3) My opinion is that an application of the rules of priority in this respect would produce greater confusion than conformity.

(4) I vote for suspension of the rules in this case and I vote for the discarding of the name *Anguillulina* and the retaining of the name *Tylenchus* as this name will produce the lesser confusion.

12. Views of Dr. W. Schneider (Friedrichsfeld, Germany) :

Leider steht mir hier die Literatur vor 1866 (A. Schneider, Monogr.) nicht zur Verfügung, so dass ich mich zu den Fragen $\frac{1}{2}$ nicht selbständig äussern kann. Aber auch dann, wenn dem Genus nach den Prioritätsregeln der Name *Anguina* mit Recht zustände, würde ich dennoch vorschlagen, den Namen *Tylenchus* beizubehalten. Diese Bezeichnung ist in der neueren Literatur die allgemein gebräuchliche, und es würde nur zu weiterer Verwirrung beitragen, wenn sie aus Gründen der Priorität durch *Anguina* ersetzt würde.

Ebenso wenig vermag ich Peters zuzustimmen, wenn er für das Genus *Anguillula* den Namen *Turbatrix* einführen will. Auch in diesem Falle ist der bisherige Name allgemein üblich. Aus dem Vorgehen von Peters zu schliessen, dass die Frage der Umbenennung zur Zeit im Fluss sei, halte ich nicht für richtig.

Meine Meinung ist also, dass man *Anguina* und *Anguillulina* wegfällen lassen sollte, dass aber *Tylenchus* Bastian (Type *T. davainii* Ba.) und *Anguillula* Ehrenberg (Type *A. aceti*) beibehalten werden müssen.

13. Views of Dr. H. Goffart (Biolog. Reichsanstalt, Kitzberg b. Kiel, Germany) :

Ich bin grundsätzlich der Ansicht, dass das Gesetz der Priorität geachtet wird und halte es nicht für richtig, wenn von diesem Grundsatz abgewichen wird, auch dann nicht, wenn ein bestimmter Name—in diesem Falle *Tylenchus*—bekannter sein sollte als ein anderer. Die Frage, ob dem Namen *Anguina* die Priorität vor *Anguillulina* gebührt, muss ich strenggenommen verneinen, weil es sich bei *Anguina* um einen Namen handelt, der zwar dem 25 Absatz (a) der Internationalen Regeln entspricht, aber nicht der binären Nomenklatur folgt (Absatz (b)). Würde man in diesem Falle eine Ausnahme schaffen, und den Namen *Anguina* anerkennen, weil aus der von Scopoli gegebenen Beschreibung hervorgeht, dass ihm dieselbe Form vorgelegen hat, so würde man damit einen Präcedenzfall schaffen, auf den man sich bei anderen Nomenklaturfragen berufen kann. Aus diesem Grunde halte ich es nicht für richtig, wenn der Name *Anguillulina* abgeändert wird.

14. Views of Dr. I. N. Filippjev (Branch of the Academy of Sciences, Almata Krazekstau, U.S.S.R.) :

I think that the reasons submitted to the International Commission on Zoological Nomenclature for the inclusion of *Tylenchus* as the official name for this genus are sound enough if one considers the genus not divisible in further ones.

Such a division is attempted by me first on p. 32⁵ of my paper on "The Classification of the free-living Nematodes" of 1934, where a division in 8 genera is proposed (some species are referred to old genera) as follows:

.....
 (5) *Tylenchus* Bast. *T. davainii* type :

(8) *Anguillulina* G. & B., or *Anguina* Scop. type *tritici*.

The nomenclatorial problem would arise practically in regard only to the 8th genus where one of the two names is to be changed. On purely practical grounds *Anguina* would be preferable, because today *Anguillulina* and *Tylenchus* are treated invariably as being synonymous. *Anguina* would signify a use of the proposed generic division. *Tylenchus* s.str. cannot, it seems, be avoided. My opinion is, therefore, that the rules of nomenclature in this case should not be suspended and that *Anguina* should be fixed for *tritici*, *Anguillulina* falling into synonymy.

In the case of *Anguillula*, I come to a conclusion different from that of the authors of the present petition. Specific and subgeneric nomenclature is not always clearly separated in the papers of the XVIIIth century, including the works of Linnaeus himself. Müller quotes both *Vibrio anguillula* and *Anguillula aceti*. Both meanings of *Anguillula*—species with varieties or subgenus with species—are acceptable. The latter meaning has the advantage of being a binary naming and can therefore be accepted. It would secure the saving of an old—and prior to Bastian—universally used name, the rejection of which should be avoided if at all possible.

15. A Progress Report on various outstanding problems circulated by Dr. Stiles to the Members of the Commission in June 1935 for use at the Session due to be held at Lisbon in September of that year contained the following extract from a letter from Commissioner Karl Jordan:—

As shown by his previous publications, Scopoli was a binary and binomial author. In his *Introductio ad Historiam naturalem*, wherein *Anguina* appears as a new generic name, Scopoli gives a classification of Minerals, Plants and Animals down to genera, as stated on the title-page. There was no need for him to mention species, though he did so in many instances.

III.—THE CONCLUSION REACHED BY THE INTERNATIONAL COMMISSION.

16. This case was considered by the International Commission at Lisbon at their meeting held on Tuesday, 17th September 1935. In the course of the discussion of the problems involved attention was drawn to the following considerations:—

- (a) There was complete lack of unanimity among the specialists who had advised on this case:—
- (i) Some accepted *Anguina* Scopoli, 1777, as available nomenclatorially; others considered that it was not available, since, in their opinion, it had been published in a work, the author

⁵ Filipjev, 1934, *Smithson. misc. Coll.* 89 (No. 6): 1-63, 8 pls.

of which had not applied the principles of binary nomenclature within the meaning of Article 25 of the International Code.

- (ii) Of those that accepted *Anguina* Scopoli as a available nomenclatorially, some favoured its suppression by the Commission under their plenary powers; others considered that it should be definitely brought into use for *Vibrio tritici*.
 - (iii) Among those who either rejected *Anguina* Scopoli or recommended that it should be suppressed, there was disagreement as to the name which should take its place. Some favoured *Anguillulina* Gervais and Beneden, 1859; others considered that that name should be suppressed in order to validate *Tylenchus* Bastian, 1865.
- (b) The plenary powers granted to the International Commission by the Ninth International Congress of Zoology at Monaco in 1913 were only exercisable in cases where, in the judgment of the Commission, the strict application of the rules would clearly result in greater confusion than uniformity. The International Congress, in granting these powers, had deliberately so defined them as to exclude their use in cases where no more than inconvenience would result from the strict application of the rules.
 - (c) The powers granted to the Commission to suspend the rules could therefore only be used where the Commission were satisfied that certain conditions were fulfilled. The evidence brought forward in the present case did not satisfy those conditions; there was, therefore, no case for the suspension of the rules for the purpose either of invalidating *Anguina* Scopoli and validating *Anguillulina* Gervais and Beneden, 1859, or of invalidating both *Anguina* Scopoli and *Anguillulina* Gervais and Beneden and validating *Tylenchus* Bastian.
 - (d) The status of the name *Anguina* Scopoli depended on the question whether in the work in which that name had been published Scopoli had applied the principles of "binary nomenclature." The answer to that question in turn depended on the meaning to be applied to that term. This latter was a general question that was at present under consideration by the Permanent Committee of the International Zoological Congresses in connection with the procedure to be adopted in regard to the resolution on this subject that had been voted upon by the Eleventh International Congress of Zoology at Padua in 1930. It would clearly be improper for the International Commission to prejudge whatever decision might ultimately be reached on this matter; in consequence the Commission had in the meanwhile no option but to interpret that term in the sense that had been approved by previous meetings of the International Congress and had therefore been recognised as the correct interpretation prior to the question being raised at the Padua meeting of the Congress. For the present therefore at least, the Commission were bound by the interpretation given in *Opinion 20* and later *Opinions* dealing with the same subject. Pending a final decision on this subject, the position was that generic names published by authors who adopted a system of nomenclature, which, though "binary" in the sense that Gronovius, 1763, was "binary" (*Opinion 20*) was not a binominal system of nomenclature must be regarded as satisfying the requirements of Article 25 of the International Code.
 - (e) If at some later date it were decided to redefine the term "binary nomenclature" in the sense proposed at Padua, i.e. to secure that that term was identical in meaning with the term "binominal nomenclature," it would be necessary to re-examine Scopoli's *Introductio ad Historiam naturalem* to ascertain whether it fell within the revised definition or whether it was excluded thereby. It was

argued by some of the specialists who had expressed views on the present case that the narrower interpretation of the term "binary nomenclature" would render this work of Scopoli's unavailable for nomenclatorial purposes; but this proposition had not been clearly established. Scopoli, for whom Linnaeus had had a high regard, had published in 1763 a work, the *Entomologia carniolica*, which was undoubtedly the work of an author who accepted the binominal system of nomenclature. In order therefore to reject the *Introductio ad Historiam naturalem*, it would be necessary to prove that between 1763 and 1777 Scopoli had ceased to accept the binominal system of nomenclature; it would not be sufficient for this purpose to show that in that work or in parts of it he had not given particulars below the level of genera. Moreover, in some parts of the *Introductio* Scopoli had without doubt employed a strictly binominal system of nomenclature (e.g. in the portion relating to the Lepidoptera Rhopalocera).

17. At the conclusion of the discussion summarised in the preceding paragraph, the Commission agreed (Lisbon Session, 4th Meeting, Conclusion II⁶):—

- (a) that, for so long as generic names published by authors using a binary, though not a binominal, system of nomenclature were recognised as complying with the requirements of Article 25 of the International Code,⁷ the generic names published by Scopoli in 1777 in his *Introductio ad Historiam naturalem* should be accepted as available nomenclatorially, but that the position should be re-examined if later it were decided to reject generic names published by authors not applying the binominal system;
- (b) that no case had been established for the "suspension of the rules" for the purpose of:—
 - (i) invalidating either *Anguina* Scopoli, 1777, or that name and *Anguillulina* Gervais and Beneden, 1859, and
 - (ii) validating *Anguillulina* Gervais and Beneden or *Tylenchus Bastian*, 1865, as the case might be;
- (c) to render an *Opinion* in the sense of (a) and (b) above.

⁶ See 1943, *Bull. zool. Nomencl.* 1: 37-38.

⁷ At the time that this decision was taken by the Commission, the action to be taken in regard to the meaning to be attached to the term "binary nomenclature," on which a resolution had been voted upon at the Eleventh International Congress of Zoology at Padua in 1930, was still under consideration by the Permanent Committee of the International Zoological Congresses. As stated in paragraph 14 of the Report submitted by the Commission to the Twelfth International Congress of Zoology at Lisbon (for the text of which see *Bull. zool. Nomencl.* 1: 55), the Permanent Committee finally decided to refer the question dealt with in the resolution referred to above to the Chairman of the Section on Nomenclature of the (Lisbon) Congress. The Chairman of that Section, in turn, submitted it to the Commission for deliberation and report. This invitation was accepted by the Commission (Lisbon Session, 5th Meeting, Conclusion 3(b)) (for the text of which see *Bull. zool. Nomencl.* 1: 45). In accordance with that decision, a report on this subject will therefore be submitted by the Commission to the International Congress of Zoology at its next meeting. At the present time, therefore, the question of the meaning of the expression "binary nomenclature" ("nomenclature binaire") is *sub judice*.

18. At their meeting held at Lisbon on the morning of Tuesday, 17th September 1935 (Lisbon Session, 4th Meeting, Conclusion 17), Commissioner Francis Hemming, who, in the absence through ill-health of Dr. C. W. Stiles, Secretary to the Commission, had been charged with the duty of preparing the report to be submitted by the Commission to the Twelfth International Congress of Zoology, reported that, in accordance with the request made by the Commission on the previous day (Lisbon Session, 3rd Meeting, Conclusion 3(b)), he had made a start with the drafting of the Commission's report; that he had made considerable progress in spite of being hampered by the lack of standard works of reference; and that he did not doubt that he would be in a position to lay a draft report before the Commission at their next meeting, though in the time available it would be quite impracticable to prepare the drafts of paragraphs relating to all the matters on which decisions had been reached during the Lisbon meetings of the Commission. As agreed upon at the meeting referred to above (Lisbon Session, 3rd Meeting, Conclusion 3(a) (iii)), he was therefore concentrating upon those matters that appeared to be the more important. Commissioner Hemming proposed that those matters which it was found impossible to include in the report, owing to the shortness of the time available, should be dealt with after the Congress on the basis of the records in the *Official Record of Proceedings of the Commission* during their Lisbon Session. For this purpose, Commissioner Hemming proposed that all matters unanimously agreed upon during the Lisbon Session should be treated in the same manner, whether or not it was found possible to include references to them in the report to be submitted to the Congress, and therefore that every such decision should be treated as having been participated in by all the Commissioners and Alternates present at Lisbon. The Commission took note of, and approved, the statement by Commissioner Hemming, and adopted the proposals submitted by him, as recorded above, in regard both to the selection of items to be included in their report to the Twelfth International Congress of Zoology and to the procedure to be adopted after the Congress in regard to those matters with which, for the reasons explained, it was found impossible to deal in their report.

19. The question dealt with in the present *Opinion* was one of the matters to which it was found impossible, in the time available, to include a reference in the report submitted by the Commission to the Twelfth International Congress of Zoology at Lisbon. It

is therefore one of the matters which falls to be dealt with under the procedure agreed upon by the Commission as set out in paragraph 18 above.

20. The present *Opinion* was concurred in by the twelve (12) Commissioners and Alternates present at the Lisbon Session of the International Commission, namely :—

Commissioners :—Calman'; Hemming; Jordan; Pellegrin; Peters; and Stejneger.
 Alternates :—do Amaral *vice* Cabrera; Ohshima *vice* Esaki; Bradley *vice* Stone; Beier *vice* Handlirsch; Arndt *vice* Richter; and Mortensen *vice* Apstein.

21. The present *Opinion* was dissented from by no Commissioner or Alternate present at the Lisbon Session. The following five (5) Commissioners who were not present at Lisbon nor represented thereat by Alternates did not vote on the present *Opinion* :—

Bolivar y Pieltain; Chapman; Fantham; Silvestri; and Stiles.

22. At the time when the vote was taken on the present *Opinion*, there was one (1) vacancy in the Commission consequent upon the death of Commissioner Horváth.

IV.—AUTHORITY FOR THE ISSUE OF THE PRESENT *OPINION*.

WHEREAS the By-Laws of the International Commission on Zoological Nomenclature provide that, except in cases involving the suspension of the rules, an *Opinion* is to be deemed to have been adopted by the said International Commission as soon as a majority of the Members of the Commission, that is to say ten (10) Members of the said Commission, have recorded their votes in favour thereof, provided that, where any proposed *Opinion* involves a reversal of any former *Opinion* rendered by the Commission, such proposed *Opinion* shall obtain the concurrence of at least fourteen (14) Members of the Commission voting on the same before such *Opinion* is to be deemed to have been adopted by the Commission; and

WHEREAS the present *Opinion*, as set out in the summary thereof, neither requires, in order to be valid, the suspension of the rules, nor involves a reversal of any former *Opinion* rendered by the Commission; and

WHEREAS twelve (12) Members of the Commission have signified their concurrence in the present *Opinion* either in person or through Alternates at the Session of the Commission held in Lisbon in September 1935;

NOW, THEREFORE,

I, FRANCIS HEMMING, Secretary to the International Commission on Zoological Nomenclature, acting in virtue of all and every the powers conferred upon me in that behalf by reason of holding the said Office of Secretary to the International Commission, hereby announce the said *Opinion* on behalf of the International Commission, acting for the International Congress of Zoology, and direct that it be rendered and printed as *Opinion* Number One Hundred and Sixty (*Opinion* 160) of the said Commission.

In faith whereof I, the undersigned FRANCIS HEMMING, Secretary to the International Commission on Zoological Nomenclature, have signed the present *Opinion*.

DONE in London, this twentieth day of May, Nineteen Hundred and Forty Three, in a single copy, which shall remain deposited in the archives of the International Commission on Zoological Nomenclature.

*Secretary to the International Commission
on Zoological Nomenclature.*

FRANCIS HEMMING

THE PUBLICATIONS OF THE COMMISSION.

(obtainable at the Publications Office of the Commission at 41, Queen's Gate, London, S.W.7.)

Bulletin of Zoological Nomenclature.

This journal has been established by the International Commission as their Official Organ in order to provide a medium for the publication of :—

- (a) proposals on zoological nomenclature submitted to the International Commission for deliberation and decision;
- (b) comments received from, and correspondence by the Secretary with, zoologists on proposals published in the *Bulletin* under (a) above; and
- (c) papers on nomenclatorial implications of developments in taxonomic theory and practice.

The *Bulletin* was established in 1943, in which year three Parts were published. Part 4 was published in 1944. Parts 5 and 6 are in the press.

Opinions and Declarations Rendered by the International Commission on Zoological Nomenclature.

The above work is being published in three volumes concurrently, namely :—

Volume 1. This volume will contain *Declarations* 1-9 (which have never previously been published) and *Opinions* 1-133 (the original issue of which is now out of print). Parts 1-20 (containing *Declarations* 1-9 and *Opinions* 1-11) have now been published. Further Parts will be published shortly.

Volume 2. This volume will be issued in 52 Parts, comprising all the decisions taken by the International Commission at their meeting at Lisbon in 1935, namely *Declarations* 10-12 (with Roman pagination) and *Opinions* 134-181 (with Arabic pagination). Part 52 will contain the index and title page of the volume. Parts 1-30, containing *Declarations* 10-12 and *Opinions* 134-160, have now been published. Further Parts will be published shortly.

Volume 3. This volume, which commenced with *Opinion* 182, will contain the *Opinions* adopted by the International Commission since their meeting at Lisbon in 1935. Parts 1-5 (containing *Opinions* 182-186) have now been published. Further Parts will be published as soon as possible.

APPEAL FOR FUNDS

The International Commission appeal earnestly to all institutions and individuals interested in the development of zoological nomenclature to contribute, according to their means, to the Commission's Special (Publications) Fund. Of the total sum of £1,800 required to enable the Commission to issue all the publications now awaiting printing, donations amounting to £819 8s. 7d. were received up to 31st December 1944. Additional contributions are urgently needed in order to enable the Commission to continue their work without interruption. Contributions of any amount, however small, will be most gratefully received.

Contributions should be sent to the International Commission at their Publications Office, 41, Queen's Gate, London, S.W. 7, and made payable to the "International Commission on Zoological Nomenclature or Order" and crossed "Account payee. Coutts & Co."