CONSERVATION OF THE GENERIC NAME

BACTEROIUM AND THE FAMILY NAME BACTEROIACEAE

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Dr. Robert S. Breed
Geneva, New York

Dear Dr. Breed:

In a previous letter I filed certain objections to Opinion No. 4 of the Judicial Commission of the International Committee on Bacteriological Nomenclature of the International Association of Microbiologists as set forth in the INTERNATIONAL BULLETIN OF BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY, 1 (4): 145-146 (October 30, 1951). I am again writing to the Permanent Secretaries identical letters which are both a restatement and an amplification of the views expressed in the previous letter. I request that the opinions and arguments which follow be laid before the full Committee in preference to the rather sketchy presentation in my letter of November 30, 1951. The views expressed herein are my own but I feel certain that strong support for them will be found among American bacteriologists.

In considering the opinion, let us refer to that portion which conserves the generic name Bacterium Lehmann and Neumann 1896. The remarks which follow refer either to the opinion or to the Preliminary Statement, File No. 5, of the Judicial Commission (International Bulletin of Bacteriological Nomenclature and Taxonomy 1 (2): 16-31. (April 15 1951).

The Commission first had to consider whether or not Bacterium Ehrenberg 1828 should be conserved or rejected. This earliest use of the name was validly published since a type species, B. triloculare, was indicated by monotypy. The legitimacy of this species has been attacked on the grounds that it is now unrecognizable and no evidence has been brought forth which would aid in its recognition. Therefore, the Commission has ample grounds for rejecting Bacterium Ehrenberg as a nomen dubium which under the International Bacteriological Code of Nomenclature should be retained on the list of nomina rejicienda until evidence can be submitted to the Judicial Commission which clarifies the status of Bacterium triloculare (an unlikely possibility).

Having rejected Bacterium Ehrenberg, the Commission could proceed to consider the status of other generic names including homonyms which might otherwise be regarded as later synonyms. In considering the problem, validly published generic names covering species included in the genus Bacterium by Lehmann and Neumann should have been reviewed in turn. The Preliminary Statement (File No. 5) takes up the cases of the several homonyms published prior to 1896 and disposes of them efficaciously. It also refers briefly to Serratia Bizio 1823 as a name which might raise a nomenclatural problem but nowhere presents any argument to support or deny the validity or legitimacy of that generic name. Yet
the genus *Bacterium* Lehmann and Neumann 1896 may be regarded as superfluous since it included a species *Bacterium prodigiosum* synonymous with *Serratia marcescens* Bizio 1823. It seems that here the Commission has voted an exception to Rules 19 and 24 of the Code. It is also pertinent that the Commission has voted a similar exception with regard to *Klebsiella* Trevisan 1885 because *Bacterium pneumoniae*, a later synonym of *Klebsiella pneumoniae* (Schroeder) Trevisan, was included in the Lehmann and Neumann genus *Bacterium*. The same may be said with regard to the genus *Proteus* Hauser 1885 and to the genus *Pseudomonas* Migula 1894 because of the inclusion by Lehmann and Neumann of *Bacterium vulgare* (*Proteus vulgaris*) and *B. pyocyaneum* (*Pseudomonas aeruginosa*). It seems that application of the Code makes the genus *Bacterium* Lehmann and Neumann superfluous and therefore illegitimate on one count after another. Surely this means that the Commission must have had some compelling reason, of extraordinary scientific importance, for their decision to conserve the genus in question. This reason (or reasons) has not been stated.

Thus, one effect of Opinion No. 4, whether or not such was the intent of the Commission, will be to restrict taxonomists to certain pathways regardless of where their understanding of relationships among the organisms concerned would otherwise lead them. The Commission has not gone to extremes in this matter, to be sure. For example, it has not characterized *Serratia* Bizio, *Klebsiella* Trevisan, *Proteus* Hauser or *Pseudomonas* Migula as *Nomina rejicienda*, in effect authorizing a "conservative" group at one extreme to regard those genera, and another group, perhaps regarded as radicals by implication, to utilize those genera provided none of them are considered broad enough to include *Bacterium coli* (Migula) Lehmann and Neumann 1896. It would even seem inappropriate to utilize the names referred to as subgenera under the genus *Bacterium* since that would constitute an exception to Rule 19.

At this point an inconsistency in the Commission's position is apparent. There is considerable evidence to indicate that *Klebsiella* Trevisan and *Aerobacter* Beijerinck are too closely related to regard them as separate genera. There is equally weighty evidence linking in a similar manner *Escherichia* Castellani and Chalmers with *Aerobacter* Beijerinck. It is a logical approach to the taxonomic problem involved to consider grouping these into one genus. In that case *Bacterium coli* (*Escherichia coli; Colobactrum coli*) would be included so that Opinion No. 4 would require that the name *Bacterium* be used for the genus and that the type species be *B. coli*. Thus, the generic name *Klebsiella* Trevisan 1885 which would otherwise have priority under the Code for the genus must be rejected for use in such a case so that it would become unofficially but nevertheless effectively a *Nomina rejiciendum* under those circumstances.
The Opinion would also invalidate the genus Colobactrum Borman, Stuart and Wheeler 1944 which was proposed in anticipation of nomenclatural controversies attendant upon a grouping together of the forms discussed above. There seems no doubt that the Commission by its action must include this proposed generic name on the list of nomina rejiicienda in addition to the names Escherichia, Enterobacter, Colibacterium and Enterobacterium. To this I strongly object preferring to have the proposal considered on its own merit rather than by indirection.

These and other considerations lead to the following objections to Opinion 4:

1. Four generic homonyms of questionable legitimacy (Bacterium Ehrenberg 1828, Bacterium Cohn 1872, Bacterium Migula 1894 and Bacterium Lehmann and Neumann 1896) have been reviewed and one of them conserved without adequate review of the choices offered by the availability of other validly published names for the genus in question.

2. Conservation of the homonym Bacterium Lehmann and Neumann involves making the same exception to Rules 19 and 24 of the Code at least four times in passing over the availability and priority of the names, Serratia, Klebsiella, Proteus and Pseudomonas in that order.

3. No compelling scientific reason for so many exceptions has been advanced.

4. Many bacteriologists, who cannot accept the genus Bacterium Lehmann and Neumann sensu lato because it does not satisfy the present need for a more definitive taxonomic concept, are likewise unwilling to accept it in a more restricted sense because the name has been "vulgarized" by the uses to which it has been put both prior to and since Lehmann and Neumann, including its adoption in the Bergey's Manual as a genus of convenience for taxonomically troublesome forms for which an ultimate and more satisfying disposition is of no immediate importance.

5. The circumscription of the genus Bacterium given by Lehmann and Neumann is too broad and indefinite to be useful today; it has stimulated and will continue to invite emendation after emendation, continuing and intensifying the undesirable nomenclatural cleavage that now pertains.

6. The opinion is so sweeping and final that it will vitiate past efforts and stifle future efforts to reach broader international agreement on nomenclature and taxonomy of the organisms under discussion.

I request that this letter be given consideration by the International Com-
mittee and that the contentions contained herein be constructed as a plea that the Committee reject Opinion 4 of the Judicial Commission with or without instructions to review the matter more critically. To the end that further discussion and interchange of views may be evoked, I am requesting the editor of the INTERNATIONAL BULLETIN to print this communication in an early issue.

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