COMMENTS

by Readers

Taxonomists and zoologists whose work requires close attention to the scientific names of animals are frequently confronted with names that were badly formed when first proposed or that appear to be spelled erroneously in one way or another. Even more common are inadvertent errors and intentional emendations when names are cited subsequently to the original proposal. If only a few animals were named, these orthographic deviations would be of small consequence. The names could be emended to correspond with the best classical orthography (for the names must be Latin or latinized), and all would be well. But since there are many hundreds of thousands of named animals, the situation is not so simple. Obviously, each genus or species of animal can have only one valid name spelled in only one way, and no two may have the same name. Hence, since many names are inevitably very similar, great confusion can result if each author is free to spell any name in the way that pleases him most. Purely inadvertent errors in subsequent citations can likewise cause confusion.

Under Article 19 of the International Rules of Zoological Nomenclature the original orthography of a name is to be preserved, except that emendations may be made under certain restricted circumstances. Unfortunately, Article 19 is somewhat ambiguous as to what these circumstances are, and it likewise fails to cover fully the status of emendations and subsequent erroneous spellings. This ambiguous and incomplete coverage has led to widely varying practices among taxonomists and to considerable confusion.

In view of these considerations the undersigned subcommittee of the Smithsonian Institution Committee on Zoological Nomenclature, composed of taxonomists of the U. S. National Museum, the Bureau of Entomology and Plant Quarantine, the Geological Survey, and the Fish and Wildlife Service, gave many hours to considering the problem and has proposed the following suggestions for the rewording of Articles 19 and 20 of the present Code.

The full Committee approved the new interpretations and directed the subcommittee to publish them for consideration and discussion by zoologists. If substantial agreement can be reached, it may be in order to transmit the suggested articles to the International Commission for submission to the International Congress of Zoology, the only body with power to amend the Code, which will meet for the first time since 1935 at Paris during July 1948.

Discussion and constructive criticism by letter or publication would be welcomed by the Committee. The wording of these proposals, which are intended to bring together in a coherent and logical whole the present Articles and the pertinent Opinions of the International Commission, as well as one new corollary principle, has been very carefully studied in an attempt to cover in principle all contingencies. It is to be taken literally and strictly. The words "error" and "emendation" are defined in paragraph II.

Article 19. I. The original orthography of a name is to be preserved unless it can be demonstrated from the original publication itself that there has occurred a *lapsus calami*, a printer's error, or an error of transcription. Incorrect transliteration and misuse of connective letters are not errors in this sense. [See Opinions 8, 26, 36, 60, and 70. (Opinions 41, 61, and 63 appear to us to be inconsistent with the rest of the Rules and Opinions. We are unable to correlate them with the principles outlined above.)]

(a) When demonstrable from the original publication, such errors in original spelling are correctable and are to be treated as if corrected wherever they occur; the corrected spellings are justified emendations and take the place of the original (erroneous) spellings in all respects, including date and authorship. The erroneous spellings have no separate status in nomenclature, do not preoccupy, are not available as replacement names, and never acquire validity by citation in synonymy. [See Opinion 26.]

(b) If an original spelling is suspected of being erroneous but cannot be so demonstrated from the original publication itself, it is not subject to change and is to be treated in all respects as a properly formed name. [See Opinion 34.]

II. In subsequent publications variant spellings may occur either through intention or misadventure. For the purpose of this section emendations are defined as changes that are originally stated to be intentional, or are demonstrably so; errors are any changes that are not emendations, including those of doubtful status which cannot be demonstrated from the original publications to be emendations.

(a) Emendations that are justified under Section I above (see Ia).

(b) Emendations that are not justified under Section I above are separately validated and are objective junior synonyms of the name in its original form; they are available as replacement names; they preoccupy any later names of the same spellings; and their author is the one who proposed them as emendations. [See Opinions 34, 120, 125, and 148 (with supplementary note).]

(c) Errors, as defined above, are correctable and are to be treated as if corrected wherever they occur. They have no separate status in nomenclature, do not preoccupy, are not available as replacement names, and never acquire validity by citation in synonymy. [See Opinion 29.]

Example: The generic name *Oxytelus* has been written erroneously as *Otytelus*, *Oxitelus*, *Oxyletus*, *Oxyteius*, *Oxyteles*, *Oxytelius*, *Oxytellus*, *Oxytetus*, and *Oyxtelus*. These are all to be corrected and have no separate status.

Example: In 1833 Germar (*Rev. Entomol.*, **1**, 175) published the name *Dictyophara* (Homoptera). Among the numerous variant spellings of this name that have occurred is the *lapsus calami Dictyonota* of de Seabra 1930 (*Arq. Secc. Biol. Par.*, **1**, 347). This *lapsus* may have been caused by association with *Dictyonota* Curtis (Hemiptera), with which insect it could not have been confused. The error is to be corrected and has no separate status in nomenclature.

Article 20. In forming names based on sources using an expanded Latin alphabet, the exact spelling of the source *as quoted* is to be preserved, including diacritic marks. (The modern expanded

Latin alphabet contains many characters unknown to the Romans. Among these are: ö, ñ, ø, č, é, ç, å, ž, and many others. These are to be used whenever appropriate. Failure to use them in the name when they are quoted in the source will produce an erroneous spelling which is to be corrected to the proper form.) Names introduced in conflict with this principle are to be corrected in accordance with Article 19, Ia. [See Opinion 27; also Opinion 8, paragraph 4, of the Discussion.]

Example: In forming a name to honor the Swedish hemipterist, Carl Stål, the å should be used instead of a, as *Stålia*, but *Stalia*, if introduced without statement of source, would be acceptable. It could be corrected to *Stålia* only if proof of an error was in the original publication. (RICHARD E. BLACKWELDER, J. BROOKES KNIGHT, and CURTIS W. SABROSKY, *Washington, D. C.*)

The effects of a new class of antifilarial compounds, cyanines, on the metabolism of adult filariae and growth of bacteria have recently been described by Welch, *et al.* and by Brooker and Sweet (*Science*, May 9, pp. 486, 496). A striking similarity is obvious in the action of the cyanines and the antimalarial drug, atabrine.

Welch, *et al.* report that cyanine #348, (1-amyl-2,5-dimethyl-3-pyrrole)(1-6-dimethyl-2-quinoline) dimethinecyanine chloride, inhibited the respiratory activity of the filariae at low concentrations of the drug. This was associated with a compensatory increase in glycolysis. An analogous situation was reported in the action of atabrine in the glucose metabolism of *Plasmedium gallinaceum* (M. Silverman, *et al. J. inf. Dis.*, 1944, **75**, 212). Low concentrations of atabrine inhibited the respiratory activity of *P. gallinaceum*, with a resultant increase in glycolysis.

Brooker and Sweet reported that the growth inhibition of *Escherichia coli* by cyanine #348 was partially reversed by high concentrations of thiamine, riboflavin, nicotinic acid, and pantothenic acid but not by pyridoxine and p-aminobenzoic acid. Identical effects were obtained with these B vitamins in the growth inhibition of *E. coli* by atabrine by Silverman and Evans (*J. biol. Chem.*, 1944, **154**, 521). It was also shown that the naturally-occurring polyamines, spermine and spermidine, are active antagonists of the inhibitory effects of atabrine in the growth of *E. coli*. Both reports (Brooker and Sweet, Silverman and Evans) indicated that natural materials contain antagonists for cyanine #348 and atabrine whose activity cannot be replaced by the well-characterized B vitamins.

It seems quite possible that when the modes of action of cyanine #348 and atabrine are established, the fundamental mechanisms involved will be essentially the same. (MILTON SILVERMAN, *Division of Physiology, National Institute of Health, Bethesda, Maryland.*)

The results of determinations of the growth hormones of several species of plants, native and exotic, including trees, by M. Kramer and K. Silberschmidt have recently appeared (*Arg. Inst. Biol. Dept. Def. San. Agric.* (São Paulo), November 1946, 17, Art. 7).

Extractions were made from segments of organs and sections of cambium by contacts with agar, and measurements were made by the conventicnal *Avena* coleoptile bending test. Relative concentrations from leaves, inflorescences, etc. with expected gradients from regions of origin to growing tracts in stems and elsewhere were found.

Since climatic, seasonal, and geographic features were taken into account, it seems necessary to correct the erroneous assumptions that my own results, expressed as dendrographic measurements of *Salix* and *Populus*, were obtained by experiments in Washington, and that I found the behavior of the two trees parallel.

Dendrographic records of *Populus* were made of one of seven species native to the region, under regulated irrigation, through several of the long, dry, hot summers characteristic of the Tucson area. Similar observations on *Salix lasiolepis* were made from 1922 to 1935 at Carmel, California, at which place this tree is native (Carnegie Institution of Washington, Publ. 462, 1936, 152–158). The maritime climate, with equable temperatures, humidity, and unvarying soil moisture and with the implied longer growing season, forms a basis for a dendrographic record widely different from that of *Populus* in the Arizona desert. The divergent features of the hydrostatic meshwork of the two trees might be expected to cause their divergent behavior if cultivated together in a neutral region (*Amer. J. Bot.*, 1946, **33**, 318–328). (D. T. MACDOUGAL, *R.F.D. #1, Box 170, Carmel, California.*)

Certain parts of the recent paper of Taplin and Bryan on the use of micronized therapeutic agents by inhalation (*Science*, May 9, p. 502) merit comment.

(1) Taplin and Bryan indicate that their patients prefer the inhalation of penicillin dust to penicillin aerosol. It should be called to the attention of readers of *Science* that penicillin dust having particles 1 μ in diameter, as reported by these authors, is also an aerosol. Suspension of fine, solid particles in a gas constitutes aerosols very commonly used both in industry and in medicine. For example, burning asthma powder produces an aerosol which has been known and used for many years in the therapy of asthma.

(2) The arguments advanced by Taplin and Bryan on the advantages of administering penicillin and other antibiotics as fine powders 1 μ in radius are not necessarily correct. The mass of a particle 1 μ in radius is proportional to the cube of the radius. Assuming that the particle is 100 per cent penicillin, the mass is proportional to 1.0, or equal to 1 mass unit. The writer has utilized penicillin dissolved in water containing approximately 1,000,000 units/cc. with the DeVilbiss No. 640 nebulizer. With this nebulizer most of the dose is administered in particles from 1 to 2 μ in radius (*Ann. Allergy*, 1946, **4**, 440). It is evident that particles 1 μ in radius will have approximately 60 per cent of the mass of the liquid particle as penicillin, or each particle will contain approximately 0.6 mass unit. This is somewhat, but not much, less than the solid particles of the aerosol of Taplin and Bryan. However, this difference is more than compensated by the presence of many particles reaching 2 μ in radius. The dose of penicillin in these particles is 60 per cent of $(2.0)^3$ or 4.8 mass units of penicillin per particle. This is more than four times the amount of penicillin per particle of solid penicillin in a penicillin dust having particles 1 μ in radius.

(3) The loss of penicillin dust by deposit in the mouth and upper respiratory tract is not described.

In view of (a) the simplicity of using penicillin dissolved in a liquid, (b) the availability of ordinary commercial nebulizers, and (c) the difficulty of maintaining penicillin particles without aggregation in tropical storage, it is believed that, for the present, the use of penicillin aerosols in the form of liquid droplets is to be recommended for routine procedures. (HAROLD A. ABRAMSON, *The Biological Laboratory, Cold Spring Harbor, New York.*)