Current Issues in Taxonomic Theory

Twenty-five years ago it was the (British) Systematics Association that sponsored the famous volume *The New Systematics*, edited by J. S. (now Sir Julian) Huxley. In introducing this latest publication of the Association—**Phenetic and Phylogenetic Classification** (Systematics Association, London, 1964. 176 pp.; paper, $2.50), edited by V. H. Heywood and J. McNeill—Heywood mentions that earlier work, but in a deprecatory way: Its "effect on practical classification has been much less than at one time seemed likely." The measuring stick provided is of indeterminate length—"Seemed" how "likely"? and "Likely" to whom? The implication is dubious, for in fact the practical effect on monographic revisions and new classifications has been great when the principles of (what was once) the new systematics really have been applied. However that may be, appetite is whetted by Heywood's assurance that *now*, and presumably by this volume, we are about to enter another new and this time a "genuinely *taxonomic* revolution."

What follows, however, is not so much a revolution as an explosion. Nine articles plus three introductions and some terse discussion bring in so many points of view and so many rigorously undefined terms that the impression to a nontaxonomist, say a philosopher of science, must be that taxonomy is in a state of confusion. In fact the discussants seem on occasion to have confused each other and even themselves.

We have evolutionary, phyletic, phylogenetic, patristic, and cladistic classification; classical classification; omnispective classification; taximetry and taxometry (*not* the same thing); natural classifications (also *not* all the same thing, but all things to all taxonomists, or to each his own); phenetic classification and numerical classification; morphological and typological taxonomy ("It is not easy to know exactly what these two words mean"); Adansonian classification (the principles of the 18th century fed to an electronic computer); and more. As for points of view: usual methods, sometimes called phylogenetic, are fine but are not phylogenetic (R. E. Blackwelder); phylogenetic classification is not phylogenetic enough (T. Delevoryas); affinity logically has nothing to do with phylogeny (A. J. Boyce, among others); classification should be based on many characters, "50 to 100 at least" (P. H. A. Sneath); it is adequately, if not best based "on a single (or very few) characters" (B. L. Burtt); and so on.

It would be quite unfair to characterize this symposium as only an example of current confusion and agitation among a few taxonomists, although it is that among other things. It also makes at least three important positive contributions. First, in spite of its title, it corrects a widespread impression that the only issue in current taxonomic theory is between phenetic (or numerical) and phylogenetic (or evolutionary) classification. The volume demonstrates that such a distinction not only does not include the whole field of taxonomic theory but also is a false dichotomy. From this point of view, the most important statements in the book may be the following: "There is therefore no conflict between phenetic and phyletic approaches" (P. H. A. Sneath, perhaps the most distinguished numerical taxonomist); "Numerical taxonomy in my view is essentially a tool that can be used for a wide variety of purposes" (G. A. Harrison, with A. J. Cain the founder of phenetic taxonomy, or at any rate of the term); and "The results of analyses by the [phenetic, numerical] programme should be considered as one type of information for classification. No more than any other kind of data can they be considered final and conclusive" (E. C. Olson, who, as he puts it, is "not . . . a numerical taxonomist but a taxonomist who has acquired some mathematics").

A second achievement of the symposium is that it illustrates methods and points of view which, however one might judge them in other respects, are certain to enrich a taxonomist's background, to cause serious thought, and to enlarge the repertory available for carrying out any accepted basic principle. The longest essay in the symposium is Olson's exemplification of a perhaps even unduly elaborate correction of the failure to weight characters in phenetic classification. (Incidentally, the success of these elaborate methods is judged, in part, by agreement of the results with one intuitive, nonnumerical phyletic classification.)

The third general contribution of the symposium should perhaps be considered negative after all. It both warns against and exemplifies the folly of dependence on a single taxonomic routine and especially of supposing that the illusory "objectivity" of automatism is a substitute for intelligent analysis and individual skill. That point is amusingly illustrated on both sides of the title's dichotomy. A statistical method for automatically reconstructing phylogeny shows to A. W. F. Edwards and L. L. Cavalli-Sforza that the Maoris of New Zealand stem phylogenetically from the natives of Alaska. On the other side, phenetic numerical taxonomy has enabled A. J. Boyce to discover that female gorillas have closer "affinities" (sic!) with male *Homo sapiens* than with male gorillas.

Practical taxonomists continue to get on with their tasks. All evidence to the contrary notwithstanding, most of them do have a fair idea of what they are doing, which is rarely either the extreme stereotype of numerical taxonomy opposed to the evolutionists or the straw man of phylogenetic taxonomy invented by some pheneticists. This thoughtful and stimulating symposium is certainly welcome, but one suspects that it is considerably less than "a genuinely taxonomic revolution," and that its "effect on practical classification [will be] much less than [to its editor and some of the authors has] seemed likely."

In addition to authors previously mentioned, L. G. Silvestri and L. R. Hill, W. B. Kendrick, and A. D. J. Meeuse have contributed valuable essays on various aspects of numerical procedures in taxonomy; Heywood, K. A. Joysey, P. H. A. Sneath, W. T. Williams, W. T. Stearn, and S. M. Walters introduced sessions or led discussions.

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