

Comments and Communications

On the Mental Ability of the Dog

As part of a long range research program on the relation between genetics and behavior, we are very much interested in the problem of mental ability in the dog. We therefore read the communication entitled "Concerning a Dog's Word Comprehension" (*Science*, May 13, p. 494) with great interest. While we are probably sufficiently biased to believe that the reported word comprehension ability is true, we are not convinced that the evidence is sufficient to be passed off as a scientific fact. There can be no question but that the dog is an intelligent animal—how intelligent, and what factors of intelligence it possesses remain to be experimentally demonstrated. We are assembling a battery of mental tests for the dog by means of which we believe it may be possible eventually to demonstrate the existence of the factors of space perception, memory, reasoning, and movement perception.

The point to be made here is that there can be no question that the dog is capable of what we might call intelligent behavior. The question is whether the dog's understanding moves over into the realm of our particular language. The report of Eckstein smacks of the "anecdotal" period of comparative psychology and is replete with lack of even obvious controls. As examples, no mention is made of the "Clever Hans" error, apparently no trials were made in which the experimenter said (in the same tone of voice) "La mesa, Topper," or "Borscht, Topper," not to mention the fact that there is complete lack of any statistical consideration of the element of chance with respect to the animal's behavior.

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Citation of Botanical References

The present confusion in citing botanical references, with some publications following several conflicting systems and others without consistent practice, is absurd in an orderly science. A standard system is badly needed. Perhaps a simple set of rules for citation could be formulated and adopted by representatives of botanical societies, editors of botanical publications, and bibliographers at an annual scientific meeting, such as that of Section G of the American Association for the Advancement of Science at New York City this month.¹ Then, at the Seventh International Botanical Congress at Stockholm next year, further efforts should be made to obtain international agreement upon a uniform system for citations

¹ An open discussion meeting on botanical citations in the literature now has been scheduled for the New York City meeting at 9:30 p.m., Tuesday, December 27, in the Colonial Room of Hotel McAlpin under sponsorship of the Committee on Publications of the American Institute of Biological Sciences.

which the majority of botanists in many countries will accept and follow voluntarily.

Some years ago, E. D. Merrill (*Science*, 1925, 62, 419) suggested shorter and simpler ways of citing scientific references, remarking that the average editors and authors were ultraconservative. As he stated, an author preparing a paper for a certain journal and then later submitting it to another frequently has to rewrite parts to conform to the different style of citations used in the second. Some authors have the attitude, "What's the use of having an editor, if not to do these chores?" An editor quoting that remark, C. A. Shull (*Scienc*, 1931, 73, 363), justly criticized authors for carelessness and mistakes in spelling, citing titles, volumes, years, etc.

An anonymous university scientist (*Amer. Sci.*, 1947, 35, 306 ff.) has advocated that, instead of striving for consistency in citations and other details, editors should relax and accept an author's own tastes and print the manuscripts as they come, provided they are done in some regular manner. As a possible solution he suggested the voluntary adoption of a uniform standard by journals generally or by separate branches of science through a representative body, such as The Society of the Sigma Xi or the AAAS.

Apparently the only system for citations officially accepted by a representative group of botanists in the U. S. was the *Rules for Citation* adopted in 1893 by the Botanical Congress in Madison, Wisconsin, and by Section G, AAAS (reprinted in *Bull. Torrey bot. Club*, 1895, 22, 130). These *Rules*, only two pages long, were summarized in a paragraph by Lazella Schwarten and H. W. Rickett (*Bull. Torrey bot. Club*, 1947, 74, 348).

Noting that the good, widely used Madison *Rules* have stood the test of time, Rickett (*Bull. Torrey bot. Club*, 1948, 75, 166) has proposed that, with certain desirable modifications, they be given international authority by the next International Botanical Congress. He has further proposed that the editors of the next edition of the *International rules of botanical nomenclature* be instructed to bring its present inconsistent citations into conformity and that the rules for citation be inserted as an appendix to serve as a model for future use (Camp, W. H., Rickett, H. W., and Weatherby, C. A., compilers. *Brittonia*, 1947, 6, 3; and *ibid.*, 1949, 7, 51).

However, the Madison *Rules* seem rather brief for covering the enormous volume of botanical literature with complex citations which has arisen in the present century. A system which has been in use more than 50 years should be improved by some revision, anyway. I urge the botanists within the U. S. to act promptly now and agree upon a set of rules for citation before requesting international approval at the Stockholm Congress in 1950.

First, several more or less obvious general principles should be established. In nontechnical publications for general readers it may be best to list references in full.