his approval. They relate not only to speciesless genera, but to genera based on a species, or on a group of congeneric species, designated only by a vernacular name, unaccompanied by a diagnosis, or by an inadequate one.

1. A generic name proposed without mention of any described species is invalid unless it is accompanied by a diagnosis of such a character as to indicate that it is based on a previously known species, or group of species, that can be unequivocally identified as the basis of the diagnosis. Examples: *Gavia* J. R. Forster (1788), based exclusively on the loons, a small group of strictly congeneric species; *Fregata* and *Picoides* Lacépède (1799), based on single species obviously indicated by the diagnosis.

2. A generic name, proposed with or without a diagnosis, may be accepted if a genotype is designated merely by a vernacular name of unequivocal significance. Examples: *Plautus* Brünnich (1771), based on an unmistakable diagnosis of the great auk with the addition of the Danish vernacular name of the species; *Regulus* Cuvier (1800), proposed, without diagnosis, for the kinglets ("les roitelets" = *Motacilla regulus* Linn., as shown by Cuvier's previous (1798) use of these names).

In cases like the one last mentioned, a vernacular name is to be accepted as a genotype only when the author thus employing it has used the vernacular name accompanied by the equivalent systematic name in a previously published work, thus defining it beyond question. A vernacular name is also (and not otherwise) available as a genotype when accompanied by a reference to a work or author where it has been defined.

It is believed that these recommendations can be accepted without risk of serious complications. The first has long been a part of the A. O. U. Code; the second is not formally adopted as a rule, but is implied in the "remarks" under Canon XXXII. (p. lxi) of the Revised A. O. U. Code, which relates to *nomina nuda*. The following has a direct bearing upon this proposition:

The names of genera and subgenera given without diagnosis or any other indication of a type than a vernacular name without a citation of its previous use, as in Cuvier's "Tableau Général des Classes des Animaux," in the first volume of his "Leçons d'Anatomie Comparée" (and in other similar cases), are tenable if the vernacular name is one that has been used and defined by a then current systematic name by the same author in a previous work; the vernacular name in such cases defines the type.

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STABLE NOMENCLATURE PRACTICALLY UNATTAINABLE

TO THE EDITOR OF SCIENCE: I have read with much interest Mr. Jonathan Dwight's article in a recent number of SCIENCE on "The Burden of Nomenclature." While I am in sympathy with this article, and with the general tendency of modern systematic biologists to formulate rules and codes to govern the application of generic and specific names, I wish to emphasize the point that no matter how perfect such a code may be we can not hope that stability will be the immediate result. A very important factor in the application of names is the study of the organisms to which the names are applied. The perfect code would indicate the application of the names when the study of a group of organisms had been completed. When the study of all organisms has been completed we may hope for a more or less stable nomenclature. Until that time we must accept as inevitable a certain amount of change as groups are critically studied. It is true that much of the change during the present era is due to the use of different codes, to misinterpretation of rules and to what some are pleased to call the juggling of names, that is, an attempt to fix names without carefully studying the group concerned. But aside from this there is what we must accept as legitimate and inevitable change due to increased knowledge of the organisms and their nomenclatorial history. It is not necessarily an adverse criticism of a code that different editions of a list show changes in nomenclature. In my own work I have found that absolute stability of nomenclature is practically unattainable. Starting with the traditional application of names in a given group, investigation may show that many of these names have been misapplied. Two authors studying the same group at different times may apply the names in different

ways even when following the same code. This difference may be due to the fact that one author has more abundant material upon which to base his conclusion, or it may be due to a difference of opinion as to the relation of the organisms, or in the interpretation of the work of others. Differences in the application of names due to these causes are not the result of imperfections in the code followed, and no code can eliminate such changes. In fact it would be very unwise to attempt such elimination. Students must not be handicapped in serious study. On the other hand, it is well to discourage the study of nomenclature as apart from the study of organisms. I believe it is impossible for any person or any committee, to prepare a list of organisms which shall be permanent; partly because such person, or committee, may not be sufficiently familiar with the organisms, and partly because the knowledge concerning these organisms is ever increasing. The value of a code of nomenclature should be judged by its usefulness in determining the application of names, rather than by the changes that may result.

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The Magnetic Storm of September 25, 1909

An exceedingly severe magnetic storm was recorded at the Cheltenham Magnetic Observatory on September 25, 1909, the first indications appearing as a slight disturbance of the magnets at 3:27 A.M., 75th meridian time.

The period of greatest disturbance began at 6:39 A.M. and lasted until about 4 P.M., and during most of this interval the movements of the recording magnets were so sudden and of so large amplitude that the spots of light failed to produce any impression on the photographic paper, except in the case of declination, where a partial record was secured.

From 6:39 to 8:17 A.M. the changes in the earth's magnetism were so great that the magnets were deflected far out of their normal positions and the spots of light passed beyond the limits of the photographic paper. During this interval the magnets which furnish a record of the changes in vertical intensity were upset by the variations in the earth's magnetism. These magnets are balanced on a knife-edge or a pair of fine points and are extremely sensitive.

As there was no observer on duty until 8:00 A.M. no estimate can be made of the changes during the interval of greatest disturbance. The actual ranges of the magnetic elements during this storm are therefore unknown.

Two complete magnetographs are in operation at this observatory and are arranged to give continuous photographic records. Each consists of three instruments arranged to give record of the variations in the three elements, declination, horizontal intensity and vertical intensity, respectively. One of the magnetographs, the "Adie," is also fitted with telescopes and scales, so that the position of each magnet may be observed and the actual value of the element determined at any instant. These scales cover a range in the position of the magnet about two and one half times as great as that covered by the paper.

DECLINATION (*West*)

75th mer. time h m	Value ° ′	Remarks
6 39 A.M.	6 29	Off paper.
8 00	6 46	Eye reading.
8 05	8 22	Eye-reading maximum.
8 19	3 25	Minimum.
1 18 P.M.	4 44	
1 52	6 29	
1 58	6 54	
2 38	6 40	
	5 36	Normal value.

HORIZONTAL INTENSITY

75th mer. time h m	Value c.g.s.	Remarks
8 05 A.M.	.17900	Estimated.
9 22	.19680	
10 41	.19187	Eye-reading minimum.
10 52	.19336	
1 19 P.M.	.20343	Eye-reading maximum.
1 58	.19397	
2 38	.19351	Change of 901 gammas in 5 minutes.
2 43	.20252	
2 46	.19481	
3 16	.20301	
	.19878	Normal value.