

Game Laws for 1922. The usual full synopsis of Messrs. Lawyer and Earnshaw of the Biological Survey. Also as a separate publication the 'Directory of Organizations Concerned with Bird and Game Protection.'

Canadian Department of the Interior has published a number of pamphlets 'Birds of a Manitoba Garden' by N. Criddle; 'Protection of Bird Neighbours' by Hoyes Lloyd; and 'Canada's Feathered Friends'; 'Lessons in Bird Protection,' 'Bird Houses,' by P. A. Taverner.

Fins, Feathers and Fur. September, 1922. Contains a paper by J. R. Nannestad on Bird Life on Albert Lee Lake.

The Gull. June, 1922 to February, 1923. Contains many local notes by members of the Audubon Society of the Pacific, also articles by Dr. Casey A. Wood on bird observations in British Guiana, Bermuda and Barbados.

Florida Audubon Bulletin . March, 1922. Describes efforts to save the Bobwhite by posting grounds.

Arbor Day and Bird Day. Penna. Dept. of Public Instruction. October, 1922. Is a very attractive pamphlet with excellent illustrations.

Iowa Conservation. VI, No. 2 and 3. Contains much of interest to the bird and forest lover.

CORRESPONDENCE

"Generic Subdivision".—"The Genus Debased."

Editor of 'THE AUK.'

Dear Sir:—While disclaiming any desire for controversy, I would like to present my personal views concerning the matter discussed under the above separate headings in the January 'Auk.' I hesitate to enter the ring against so formidable an array of opponents, but I cannot rest easy until I have "had my say" on the subject. I promise that this will be my last word on the subject!

In the first place, I cannot concede that "it is admittedly impossible to formulate an exact definition of such an elusive concept as a genus"; on the other hand, I maintain that such definition is not only possible but that there need be no difficulty in understanding what a genus, scientifically characterized, really is. I say *scientifically* characterized, because a genus not thus characterized—based simply on the criterion of "convenience," for example—is not a genus in the true sense of the word.

As long ago as 1901, in the Preface to Part I 'Birds of North and Middle America,' I defined the requisites of a genus in terms which, since I have no reason to modify them now, are quoted below:—"Accepting evolution as an established fact . . . there are no "hard and fast lines," no gaps, or "missing links" in the chain of existing animal forms except as they are caused by the extinction of certain intermediate types; there-

fore, there can be no such group as a family or genus (nor any other for that matter) unless it is cut off from other groups by the existence of such a gap; because unless thus isolated it cannot be defined, and therefore has no existence in fact. These gaps being very unequally distributed, it necessarily follows that the groups thus formed are very unequal in value; sometimes alternate links in the chain may be missing; again, several in continuous sequence are gone, while occasionally a series of several or even numerous links may be intact. It thus happens that some family or generic groups seem very natural or homogeneous, because the range of generic or specific variation is not great and there is no near approach to the characters of another coördinate group, while others seem very artificial or heterogeneous because among the many generic or specific forms none seem to have dropped out, and therefore, however great the range of variation in structural details, no division into trenchant groups is practicable—not because extreme division would result, but simply because there can be no proper definition of groups which do not exist. In short, no group, whether of generic, family, or higher rank, can be valid unless it can be defined by characters which serve to distinguish it from every other.

In a group of wide geographic range it is of course necessary to have all its components in hand in order to determine its limits and the number and boundaries of its subdivisions, for what seem distinct families or genera within the limits of a fauna may, when all the forms of an entire continent or zoögeographic "region," or the world at large, are examined, be found to be connected by intermediate extralimital forms. Sometimes, however, this test proves exactly the reverse to be true.

It is, unfortunately, quite true that "in practice the genus is little more than an arbitrary grouping for convenience"; it is also true—unfortunately—that "its relative value to the family on the one hand and the species on the other is purely conventional, and is a matter of expediency and not a scientific fact." It is equally true, however, that belief in or practice of the fallacy that the concept of a genus is a matter of convenience only is directly responsible for this condition. Many ornithologists of the last and earlier generations considered superficial likeness or resemblance between two or more species as indicating congeneric relationship.¹ Even at the present time some authors merge *Nettion* with *Querquedula*, apparently placing them together on account of their small size alone, for they possess no other characters in common except those shared by the entire subfamily Anatinae. Such very different Hawks as *Odontriorchis* and *Chondrohierax* are even now not unfrequently put in the same genus—why, it is difficult to understand. There are numerous other instances proving the inability of some recent or comparatively recent authors to appreciate or understand generic limits, among which the following may be cited; *Sarcoramphus* to include *Vultur* (formerly *Sarcoramphus*) and *Sarcor-*

¹ In many cases, however, why such resemblance was imagined is little less than a psychological puzzle.

amphus (formerly *Gypagus*); *Cathartes* to include, besides *Cathartes* proper, *Coragyps* and *Gymnogyps*; *Ibycter* to include *Phalacrocorax* and *Senex*; *Gallinula* to include *Ionornis*; *Mimus* to include *Dumetella*; *Guiraca* to include *Zamelodia*. Even worse associations have been made. For example, *Buteo solitarius*, which the original describer properly placed in *Buteo*, was referred to *Pandion* by Cassin, who also placed the species of *Parabuteo* in "Craxirex" (= *Buteo*). G. R. Gray referred to *Pandion* the genus *Polioptila* (belonging to an entirely different family) and also, following Cassin, referred *Buteo solitarius* to *Pandion*; his *Circus* included *Harpyhaliaetus*, and his "Nauclerus" (= *Elanoides*) included *Chelictinia*, a form far more related to *Ictinia* but exceedingly distinct from either. *Podiceps major* (Boddaert)¹ is quite generally called *Aechmophorus major*, evidently because of its large size and long neck and bill, for it certainly is only distantly related to the type of *Aechmophorus*.

Superficial resemblances, or supposed resemblances, especially in coloration have been wrongly interpreted in another way also; Cassin, for example, placed *Buteo borealis* in four genera² (*Buteo*, *Leucopternis*, *Poecilopternis*, and *Tachytriorchis*), and *B. swainsoni* in three (*Buteo*, *Leucopternis*, and *Poecilopternis*)!

Numerous additional cases could easily be cited, but the foregoing are enough to show that the idea of what constitutes a genus has often, even among authors of high rank, been an exceedingly "hazy" one; supposedly "important facts of likeness" having to their eyes completely obscured the points of radical difference, with a result wholly unscientific, an unsatisfactory except, perhaps, from the point of view of "convenience."

Beyond doubt, many of the current genera are, in their composition, really not natural genera at all, but more or less heterogeneous lots of species which resemble one another more or less, and constitute artificial groups which it is impossible to characterize by a diagnosis clearly distinguishing them from allied groups and at the same time applying to all the component species; because they each contain one or more species which no more fit the generic diagnosis than does a square plug fit a round hole. Such "genera" cannot be of any use (on the other hand are only obstacles to scientific progress and perversions of the truth) until some reviser ejects the misfits and places them where they belong, even if it be necessary to make more monotypic genera.

It is perfectly true that "the original genus of Linnaeus was but little less than the family as recognized today," and "that the value [co-ordinate] of the genus has been consistently and progressively lowered [co-ordinately] since it was first established." This is as it should be, for the fact simply

¹ I do not know to what modern genus, if any, *P. major* should be referred; quite possibly it may be necessary to make one of those horrid monotypic genera specially for it.

² He called them subgenera, but three of the four are now recognized as genera, as two of them certainly are.

represents the progressive evolution of science. Evolution of the genus concept is directly the result of progressively increasing knowledge resulting from continual additions to the material studied; as it must be remembered that the forms of birds known to Linnæus and other earlier systematists were vastly fewer than those known at the present time, and that the earlier systematists knew nothing of the anatomy of birds.

If the number of monotypic genera is now much greater than formerly it is not the fault of the systematist, who expresses, or tries to express, the facts as he finds them. Nature has made these genera monotypic by extermination of connecting links, and nothing is to be gained by trying to force a species into a genus where it obviously does not belong; and I utterly fail to see that by weeding out these misfits "the advantage of the binomial system is thereby lost" or that "the generic name might almost as well be abandoned." Nor can I understand why it should be so inconvenient or obnoxious to anyone who, presumably, is searching for the truth to find that a species long included in a certain genus has been taken out of that genus and placed in one by itself. If "convenience" be the only, or principal, criterion, why not assort all the species of a family in lots of, say, five or ten, and call each one a genus? Such a plan would certainly simplify matters!

Personally, I regard genera containing a very large number of species as exceedingly inconvenient; nevertheless, I would not subdivide such a genus without good reason, even for the sake of convenience. Fortunately there are few such genera among birds.¹

As to subgenera, I believe that subgeneric names merely complicate nomenclature. Their use most certainly would not make the handling of names more easy. If trinomials, as applied to subspecies, are a "necessary evil," as I believe they are (even if used with discretion), subgeneric names are, in my opinion, an evil without compensating features. If we fully realize, and take for granted, that genera (as well as species, subspecies, and higher groups) are of very unequal value—as they must necessarily be—it seems to me that subgeneric names can easily be dispensed with as being both inconvenient and unnecessary.

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[While we agree with most of Mr. Ridgway's views we think he, like several other systematists, has missed the point in the wide-spread objection to generic division, viz: that our generic names serve two purposes (a) a tag by which to indicate what we are talking about, (b) an indication of the evolution of the group, and it is the sacrifice of the former in exploiting the latter that causes opposition. Furthermore it is just as important from the viewpoint of evolution, to indicate a common resemblance as a well defined difference, and every time we divide a group of species into two, on some differential character, we lose, in our name, all trace of

¹ Botanists, however, have to struggle with several such, as, for example, *Carex* and *Cratægus*, the species of which are so numerous that unless the names are arranged alphabetically it is almost impossible to deal with them.

several common characters which bind these two groups together as distinguished from other groups. Here again there are good grounds for protest. No objection can be made to taking a species out of a genus to which it has little or no affinity, but we gain nothing by dividing a genus into two genera which we still admit are closer to each other than to any third genus.

Moreover no two experts will agree on what characters or how many are necessary to separate a genus. We have evidence on all sides of this diversity of opinion, and it is not due to ignorance but to the weight that different authorities give to characters.

How our names may be maintained, with any value *as names*, and still reflect evolutionary relationship, expressing both resemblances and differences, is the problem, and subgenera have been suggested as the only expedient that seemed possible. The only other method would seem to be to abandon the use of scientific names entirely except for technical systematic work, a course which is already being forced upon us more and more as our Latin names become meaningless, to all but a comparatively few experts.—W. S.

A Plea for Caution in Use of Trinomials.

Editor of 'THE AUK:

Prior to the year 1872, the catalogue of North American birds consisted practically of binomials only; but during the early "seventies" there was great activity in the systematic study of our birds, resulting in two important publications, Dr. Coues' 'Key to North American Birds (1872),' his 'Check List' (1873), and Baird, Brewer, and Ridgway's 'History of North American Birds' (1874), and in these the nomenclature presented a very different aspect, a very large proportion of the forms being designated by trinomials.¹ The reduction of what had previously been considered species to the rank of subspecies, or "varieties" as they were then called, was carried to an extent unwarranted by the evidence; close resemblance to another form being considered, in many cases, as indicating specific identity of the two. The idea was a comparatively new one, quite fascinating at the time, and there was somewhat of a rivalry between Dr. Coues and the other authors as to who should spring the first surprise in that line.² Afterward, however, when much additional material, from more numerous geographic areas, had accumulated and been carefully studied it was found that many forms must be reinstated as species, and so a healthy reaction took place.

Unfortunately there has been a somewhat recent recrudescence of the fad of reducing forms on what seems to be purely theoretical grounds, the

¹ Not however, the simple trinomial of present-day usage, but with the term "var." interposed between the specific and subspecific names.

² It should be explained that while there was a difference of two years in the publications of the 'Key to North American Birds' and the 'History of North American Birds,' the authors were actually working contemporaneously.