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CLASSIFICATION

OF

BIRDS;

AN ATTEMPT TO DIAGNOSE THE SUBCLASSES, ORDERS, SUBORDERS
AND SOME OF THE FAMILIES OF EXISTING BIRDS.

BY

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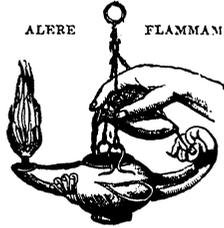
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INTRODUCTION.



THE following is an attempt to classify existing Birds in groups which are capable of being diagnosed. I have divided the Class Aves into six Subclasses, fourteen Orders, and thirty-six Suborders. These Subclasses, Orders, and Suborders are diagnosed by a series of characters *each* of which is believed to be found in *every* species contained in the group diagnosed, and the combination of which is believed not to occur in any species outside that group. In order to show that each combination is diagnostic, a list of the thirty-six suborders is attached to each diagnosis, and a star is placed under each suborder in which every species it contains is excluded by the character referred to by a letter at the side of the column in which the star is placed. In most cases a few additional characters are given to strengthen the diagnosis. In selecting characters I have been careful to choose those which are supposed to denote affinity—in other words, to be due to inheritance from common ancestors; and as far as possible to avoid such as only denote analogy, that is to say such as are only instances where like causes have produced like effects. It is, however, very difficult to tell which characters have been inherited and which have been independently acquired. In many cases it is only possible to guess, in others it is absolutely impossible to form any opinion at all. It may perhaps be fairly assumed that the more complicated a character is, the less chance is there that it can have been independently acquired by two groups. It may also be taken for granted that it is very much more difficult even for a simple character to be independently acquired than to be independently lost.

It must be remembered that, so far as the individual is concerned, every bird inherited *all* its characters, whether they may be adapted to its present needs or not, but that *all* characters were originally acquired either by the species or its ancestors because they were originally adapted to its needs.

If the first great difficulty of classification be to find out in each case whether a given character denotes affinity or only analogy, the second great difficulty is to ascertain the relative value of the different characters. Unfortunately no rule can be laid down; but there are certain laws which govern the operation of classification by diagnosis. The characters of each group must belong to every species in that group, otherwise it is obvious that artificial groups could be made to any extent. On the other hand, half the species in an outside group may be excluded by one character, and the other half by another character. For example, in diagnosing the Pico-Passeræ the absence of the ambiens muscle excludes part of the Columbæ, and the absence of the accessory femoro-caudal muscle excludes the rest. In diagnosing the Columbæ the presence of basipterygoid processes excludes all the Pico-Passeræ except the Trogonæ, and the schizorhinal character of the nasals excludes all the Pico-Passeræ except a few Passeræ. This is perfectly legitimate, but the converse would not be legitimate. To include amongst the characters of the Columbæ ambiens or accessory femoro-caudal muscles present, or to include amongst the characters of the Pico-Passeræ nasals not schizorhinal unless accompanied by the absence of basipterygoid processes, though perfectly true, is not admissible, as it would introduce a practice that would make the combination of widely separated groups into an unnatural group perfectly easy.

By strictly obeying this law the number of possible classifications becomes greatly restricted, and the danger of forming unnatural groups is greatly diminished.

The breaking-down of a character in one group is no reason why it should not be employed in groups where it does not break down. For example, the fact that some of the Tubinæræ possess basipterygoids whilst others are without those processes is no bar to the presence of basipterygoid processes in the Limicolæ being used as a character to exclude the Gaviæ.

The student who attempts to diagnose a group will probably begin by being very saucy in the selection of his characters, and will no doubt arrogantly reject many which are in his opinion too trivial. He will most likely end in gratefully accepting an apparently slight character if it will only run through all the species in the group he is trying to diagnose. He will discover that Nature has decided for him which characters are important and which are trivial, and in which groups they are important and in which groups they are trivial. It may almost be accepted as an axiom that every character breaks down somewhere. The range of variation in Birds is so small that there are scarcely any characters which are not passing through the process of being acquired or lost, as the case may be, in one of the thirty or forty suborders into which birds may be naturally divided.

Fossil birds throw little or no light on the relative age of the various characters.

In the first place fossil birds are very rare ; in the second place they tell us nothing beyond a few facts concerning their osteology ; and in the third place the few facts they do tell us only make the darkness more obscure. The oldest fossil birds, of which numerous and nearly perfect examples have been found, were discovered in the Cretaceous beds of North America. Even at that remote period some birds had lost the keel to the sternum and acquired heterocœlous dorsal vertebræ. So far as we know the oldest birds had teeth, amphicœlous or doubly concave vertebræ, powerful wings, a keel to the sternum, four toes (three in front and one behind), webbed feet, a schizognathous palate, basipterygoid processes, and many other characters too numerous to mention. The geological record is, however, so imperfect that many of these hypotheses are little more than guesses.

Once for all it must be noted that any attempt to bring all fossil birds into the same system of classification as those now living is bound to fail. Between every two closely-allied groups of existing birds there must have been birds now extinct, the common ancestors of both, most probably differing from both, and partly resembling both, and incapable of being classified with either. To encumber the classification of existing birds with a few scattered links in endless chains of intergrading forms can only create confusion. The classification of fossil birds is a most interesting inquiry, and might be called the study of a vertical section of the bird-life which has existed in past geological ages. The classification of existing birds is the study of a horizontal section of the great bird mass of the world, and ought to form a different and distinct system confined to the horizon of the present time.

If birds have all been derived from a common stock, which can scarcely be doubted, every species is in one sense of the same age ; but some have developed slowly, possibly where the conditions of life have been easy, whilst others have developed rapidly where the struggle for existence has been more severe. The various races of man are presumably all descended from one family: but "Quashy," thanks to his "pumpkin," has had a very easy time of it in tropical and semitropical Africa, and has consequently lagged behind wofully in the race ; whilst John Bull has had a hard fight for existence, especially since he was crowded in his tight little island, and in the same time has made rapid strides. The struggle for existence increases the pace of development, if it be not too severe. Where the fight is too hard, as it has been for the Esquimaux on his arctic tundra, the fittest only just survive, or a less highly organized race is most adapted to struggle with such difficulties, and consequently the changes gradually introduced by natural selection are in a retrograde direction.

It is impossible in a work of this kind, where so many facts have to be ascertained