

sirable for consciousness or thought. I have suggested 'Personal Selection' (8) for the selection of individual persons by personal choice, analogous to 'Sexual Selection' (9) in the animal world. Furthermore, Darwin's 'Artificial Selection' should be used, as he used it, with reference only to securing results by induced mating.

"10, 11, 12. In all sorts of so-called 'selection,' considered as factors in progress from generation to generation, in which the laws of natural selection and physical reproduction do not operate together, I think it is extremely desirable that we discard the word 'selection' *in toto*, and give to each case a name which shall apply to it alone. The cases of the preservation of individuals and groups by reason of their social endowments do illustrate natural selection with physical reproduction, so I propose 'Social Selection' (10) for that. But in the instances in which either physical heredity is not operative (12), or in which it is not the only means of transmission (11), we cannot secure clearness without new terms; for these two cases I have suggested 'Social Suppression' (11), and 'Social Generalization' (12). The phrase 'Imitative Selection' is given in the table alternately for the latter (12), seeing that the discussions of the topic usually employ the term 'Selection' and use (wrongly) the 'Natural Selection' analogy. Selection may be used also when there is no reference to race-progress (and so no danger of the misuse of the biological analogy); since it then means presumably the 'conscious choice' of psychology and of pre-Darwinian theory."\*

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PRINCETON, October 20, 1897.

#### AMPHIBIA VS. BATRACHIA.

I HAVE been much interested in reading the communications of Dr. Gill and Dr. Baur on the above subject, and having developed certain

\* It may be well to add that this table is not intended to be altogether exhaustive from the biological standpoint. For example, Professor Minot's 'Post-Selection' and Romanes' 'Physiological Selection' do not fall readily into the scheme. Nor are the different headings in all cases exclusive of one another, *e.g.*, Darwin really included both the cases (I. and II.) of Natural Selection under the single phrase; and justly so, seeing that they illustrate a single principle.

convictions thereon I beg leave to state them. Before proceeding to do this I wish to express my appreciation of the reasonableness of the condition of doubt in which Dr. Wilder finds himself.

Formerly I employed the term *Batrachia*. Later I became inclined to regard *Amphibia* as having superior claims, principally because it has been used and insisted on by many careful writers. I trust that my present views rest upon a better foundation.

In Dr. Baur's communication of July 20th his conclusion is summed up in the following words:

"Three years later Latreille used the Latin names *Reptilia* and *Amphibia* for de Blainville's classes *Reptiles* and *Amphibiens*, and these names ought to be used."

However, it appears to me that he has failed to tell us why they ought to be used; that is, he has not stated the principles which make it obligatory on us to use them. He has only given us an excellent history of the case and his conclusion. We have definite laws governing the formation and use of generic and specific names, but the only law cited by Dr. Baur which applies to appellatives of higher rank is that which deprives of binding authority all vernacular names, even though they may seem to imply the Latin forms. This rule, which most naturalists will endorse, materially clears the ground in the present case. Chéloniens, Ophidiens, Batraciens, and Amphibiens stand on the same footing as Schildkröten, Schlangen, Toads, and Turtles.

It might be supposed that Dr. Baur relies on the law of priority to sustain him, since he is so careful, and properly so, to give the dates of proposal of each of the names employed; but the fact that he rejects *Ranæ* as a name for the frogs, etc., makes it evident that he demands something more. Dr. Gill says that we must be guided by the law of priority in the selection of names.

One thing is very certain, and that is that we cannot rigidly enforce, with respect to the appellatives of higher rank, the same rules that apply to genera. Common usage must and does determine much in the case of the former terms. The law of priority and a desire to

preserve Linnæus' names would probably impel us to overthrow the usurping title *Elasmo-branchii* in favor of Linnæus' quite appropriate word *Nantes*. Linnæus' apt *Testacea* has been crowded out of all authority by the upstart *Mollusca*, which, originally ruling over a petty section of heterogeneous elements, now stands at the head of a vast sub-kingdom. Linnæus' beautiful name *Zoophytes* is now replaced by *Cœlenterata*, suggestive of famine. The strict law of priority applied to the term *Reptilia* would result in restricting it to ordinal rank or in worse consequences. Laurenti, 1768, employed it to include Linnæus' *Amphibia* minus the *Nantes*. It then either became a synonym of *Amphibia* or restricted the latter term to the *Nantes*. But the man who at this day attempts to oust *Reptilia* from its position in nomenclature will shed his ink in vain. Furthermore, the contest for the headship of the class embracing the frogs and salamanders lies between *Amphibia* and *Batrachia*. No *Ranæ*, *Ichthyoidæa* or *Nudipellifera* need apply.

A word now regarding the use of the word *Amphibia*. Linnæus and some of his disciples included under it not only the reptiles and batrachians, but also various fishes. These being at length excluded, the term was employed for nearly a hundred years by various writers of standing to embrace all the reptiles and ranine and salamandrine forms. In 1825 it seems to have been used for the first time by Latreille, to designate what are now commonly called the batrachians, or amphibians. This is the date given by Dr. Baur, and is most probably the correct one.

In 1804 Latreille recognized the fact that the frogs and salamanders form a natural group, and he called this group the order *Batrachii*. We can hardly suppose that this name will be rejected because of its masculine ending. But if so, the honor of giving the name to the group belongs to Gravenhorst, who in 1807 called it *Batrachia*. But the advocates of *Amphibia* reject Gravenhorst's name, because it was used for the group as an order. Then, must every group be rechristened whenever its rank is changed? I know of no rule of nomenclature requiring this, nor does common usage demand it. Most ichthyologists regard the *Elasmo-*

*branchii* as a subclass of *Pisces*. Must those who consider it a distinct class seek a new name? Whenever the word *Mollusca* was applied to the group of mollusks the name dated from that time, even though the group may still have been looked upon as an order of *Vermes*. In the words of Professor Cope (*Batrachians* N. A., p. 20), 'the rank assigned to such division is immaterial; the idea of the division itself is everything.'

But even in case it were necessary to estimate correctly the value of a group when its name is applied to it, the term *Batrachia* may yet succeed in running the gauntlet. In 1820 Merrem recognized in Linnæus' *Amphibia*, minus the *Nantes*, two distinct classes. These he named and adequately defined. The one, *Pholidota*, corresponds to our *Reptilia*; the other he called the *Batrachia*, and it corresponds with the group now so-called. What rule or practice of nomenclature was not complied with by Merrem in this case? This was five years before Latreille restricted the title *Amphibia* to the same class.

If I correctly understand Dr. Baur, he rejects Merrem's name because the latter writer still considered his classes as holding such a relation to each other that they might be brought under the name *Amphibia*, regarded, perhaps, somewhat in the sense of a super-class. Is there any law against this? Such a law would have to be formulated somewhat thus: A class name to be acceptable must originally have been applied to the group regarded as a class, and the author must have entertained opinions now held as orthodox regarding the relationships of his class to other classes.

In conclusion, I will say that, from the evidence now in, it appears to be a very plain case in favor of the defendant, *Batrachia*. I should say that it dates, as a name, from Latreille, 1804, or from Gravenhorst, 1807; most certainly not later than Merrem, 1820. *Amphibia* has been employed in so many senses that it leads to confusion. It should be reserved for those who may now or hereafter hold there is some special relation between the reptiles and batrachians.

I am sorry to differ with my friends, Dr. Gill and Dr. Baur.

O. P. HAY.

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