

## GEORGE GAYLORD SIMPSON AND LAMARCK

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Jean Lamarck (1744-1829) a leading naturalist and philosopher participated in the French Revolution and was a product of the Enlightenment, Lamarck referred to a Supreme Being in his works only to appease the Church after the rise of Napoleon. The Emperor in sensitive negotiations with the Church would not tolerate any materialistic views expressed in the arts and sciences.

George Gaylord Simpson is one of the most outstanding scientists of our century. Simpson's critical analysis of Lamarck's writings leads his readers to believe that Lamarck was vitalist. Simpson as a renowned scholar has the responsibility to his colleagues and students to read Lamarck's manuscripts in the original nineteenth century French in order to understand the exact meaning of terms used in context, The current English translations of Lamarck's works are often poor and erroneous.

The process of inheritance of acquired characteristics can be explained in a mechanical fashion without the need of indicating the existence of a mystical driving force, The Lamarckians, early Darwinians and neo-Lamarckians demonstrated in the laboratory to successful conclusion the application of the concept of use and disuse. As a savant, Simpson is certainly aware of these facts and experiments which he can investigate for further studies. It appears that Simpson prefers to repeat the misrepresentation of Lamarck's theories in his books and papers and thus attempting to keep this phase of the history of science in a skewed picture. Investigators of science must assume this awesome obligation of correcting the distortions made about Lamarck's philosophy by the neo-Darwinians,

Jean Lamarck's (1744-1829) part in history of biology and evolutionary philosophy has been extolled by a few but condemned by most biologists especially by neo-Darwinians. George Gaylord Simpson (1902—) has taken a dim view of Lamarckian thinking, classifying him as a vitalist. This paper seeks to examine some of the views that Simpson has presented on Lamarck and to question whether they are truly indicative of these views.

Simpson is considered one of the greatest living authorities in the biological sciences. His over five hundred publications in the fields of biological science, geology, paleontology, history and philosophy of science, are the standard references of orthodox science. As early as 1924, at the age of twenty-two, he joined the American Museum of Natural History and was leading member of their staff until his departure in 1959. From 1944-59 he was a member of the Department of Geology and Paleontology at Columbia University. Upon leaving Columbia University, he became Louis Agassiz Professor in Paleontology at the Museum of Comparative Zoology, Harvard University, until 1970. In 1958 he received the Darwin-Wallace Medal from the Linnean Society. Since 1970 he has been professor of geo-science at the University of Arizona. Dubos considers Simpson, "one of the most thoughtful and learned American students of evolution".<sup>1</sup> In Simpson's publications dealing with evolutionary theory we find constant a demeaning approach to the thoughts of Jean Lamarck, French scientist and father of the modern theory of evolution. Simpson inaccurately interprets Lamarck by labeling him a vitalist, imputing a ladder of nature theory to Lamarck's scheme of evolution. He maintains that Lamarck believes that the mechanisms of adaptive evolution are driven by "an inner perfecting principle." Simpson is generally critical of Lamarck's contributions to evolutionary theory such as in the areas of anatomy, physiology and taxonomy.

Simpson categorizes previous evolutionists as materialists, vitalists, and finalists. He differentiates these schools of thought as follows :

There has been a great deal of misunderstanding and name calling among the materialists, vitalists, and finalists. The vitalists and finalists usually impute to the materialists the views that there is nothing in the universe but pure mechanism and that there is no essential difference between life and nonlife. Some materialists (in a strict sense) have accepted these imputations and have attempted to defend these propositions. Their purely or merely mechanistic view was more popular a generation or two ago, arising in the first enthusiasm over the great nineteenth-century discoveries in science, than it is today, but it still has able supporters. <sup>2</sup>

He continues to elaborate about current vitalists :

There are a few vitalists among competent students of evolution, especially in Europe, but an overwhelming majority in Europe as well as elsewhere are materialists. In the United States this is true to such an extent that most are inclined to consider the vitalist-materialist controversy a dead issue . . . The great appeal of vitalism to those poorly qualified to judge the issue was attested by the remarkable popular success of DuNouy's *Human Destiny* and more recently of Teilhard's *Phenomenon of Man*. Those works are both vitalistic and finalistic, adding to the usual

vitalistic thesis the idea of purpose in evolution, of a goal toward which the history of life has tended under divine guidance. The popularity of the theory in the face of its rejection by most specialists is clearly due to wishful thinking and prejudice, not to scientific merit. <sup>3</sup>

In his essay *The History of Life*, Simpson comments that Lamarck belongs to a school which advocates a divinely ordered universe. He explains, "His evolutionary biology...involved a given, pre-existing, or eternal configuration of the organic realm."<sup>4</sup> In Simpson's eminent paleontological work, *Horses*, he again asserts that Lamarck assumes an ordained visionary plan as part of the design of evolutionary development. In Simpson's synopsis of paleontological evolution he states that, "Another part of Lamarck's theory was the idea that living things have an inherent tendency to evolve, that their changes tend to follow some sort of ordained plan regardless of any merely material interactions of organism and environment."<sup>5</sup> Simpson classifies Lamarckian thinking as idealistic and vitalistic and includes a theory of a "ladder of nature." Lamarck's "ladder of nature" purportedly displays a straight chain of being for life's development from the simple to the complex. Simpson typically labels Lamarck and his followers as nonmechanists who deny cause and effect as the agent for evolutionary change. He announces for Lamarck, "the controlling factor of adaptation and of evolution in general is nonmechanical, they name this factor ("entelechy," "aristogenesis," and so forth), but no explanation is provided, and the definitions of their terms say little more than that they designate unknown causes of known phenomena."<sup>6</sup>

In *Tempo and Mode in Evolution* he discredits the validity of neo-Lamarckian experiments which emphasize the influence of the environment rather than selective processes. "...that adaptive structures are not selected, but are caused by environmental influences and by individual efforts to meet the exigencies of life ...Experiments in heredity in the present century, however, not only have failed to corroborate that there is such a process but also have shown that it is highly improbable, if not impossible."<sup>7</sup> In *Life*, Simpson and his fellow neo-Darwinians artlessly fashion a link between Lamarck's theory of adaptation and Aristotle's "inner perfecting principle." Simpson informs us "there is an Aristotelian and non-scientific element"<sup>8</sup> in Lamarckian rational. This position is one in which creatures adapt to the environment through a mechanism akin to the sage's philosophy of an "inner perfecting principle." George Gaylord Simpson's views on Lamarck may be taken as characteristic of the wide spread judgements relating to Lamarck and his publications. "Lamarck's literary style was not brilliant, and his remarks on anatomy and physiology include much that was even then recognizable as nonsense. This helps to explain why his influence on his contemporaries was virtually

nil."<sup>9</sup> "As a matter of historical fact, Lamarck's evolutionism did not promote and may even have retarded the development of an evolutionary taxonomy."<sup>10</sup>

The authority of Simpson and his followers has made it difficult to examine objectively what Lamarck actually said and to evaluate the validity of those convictions. Jean Piaget, philosopher and philologist recalls a case in point. "Around 1930 I happened to make two disquieting observations. A famous American biologist with whom I was exchanging ideas, as one may do, during an Atlantic crossing, finally brought himself to admit to his conviction there is a large measure of truth in Lamarckism. He went on to say, however, that it was impossible for him to announce such views publicly (he was still a young man at the time) because of the uproar it would cause."<sup>11</sup>

What did Lamarck veritably proclaim ? His position clearly emerges in *Zoological Philosophy* :

The ancient philosophers felt the necessity for a special exciting cause of organic movements ; but not having sufficiently studied nature, they sought it beyond her ; they imagined a vital principle, a perishable soul for animals, and even attributed the same to plants ; thus in place of positive knowledge, which they could not attain from want of observations, they created mere words to which are attached only vague and unreal ideas.

Whenever we abandon nature, and give ourselves up to the fantastic flights of our imagination, we become lost in vagueness, and our efforts culminate only in errors. The only knowledge that it is possible for us to acquire is and always will be confined to what we have derived from a continued study of nature's laws ; beyond nature all is bewilderment and delusion : such is my belief.<sup>12</sup>

In 1901, Alpheus S. Packard, Professor of Zoology at Brown University, and interpreter of Lamarckian theory advanced the position in his major study *Lamarck*, that Lamarck believes that time is a crucial element in evolutionary change. "Lamarck insists that time without limit and favorable conditions are the two principal means or factors in the production of plants and animals."<sup>13</sup> Earlier Ernst Haeckel, the famous German biologist, writer and professor at the University of Jena elucidates Lamarck's thoughts as believing that life is a physical phenomenon only.

To enable my readers to judge of the great value of the *Philosophie Zoologique*, I shall here briefly mention some of the most important of Lamarck's ideas. According to him, there is no essential difference between animate and inanimate nature ; all nature is a single world of connected phenomena, and the same causes which form and transform inanimate natural bodies are alone those which are at work in animate nature. Hence, we must apply the same methods of investigation and explanation to both. Life is only a physical phenomenon.<sup>14</sup>

Lamarck's observation that life is a product of physical phenomenon served as a precursor to Darwin's evolutionary theory.

The view that Lamarck agrees to a fixed order in nature is challenged by Frans A. Stafleu in his essay, "Lamarck : The Birth of Biology." He affirms that Lamarck accepts that the *scala naturae* is in continuum with natural transformation. Stafleu observes that Lamarck's contributions to taxonomy was not destructive to this new developing discipline. In a pithy style he states, "Lamarck's own contributions toward taxonomy remained traditional to a great extent : the advanced elements of his cosmology, on the contrary, cleared the way towards evolutionary thinking. He was not to witness the final victory of evolutionary thought : for this he was born half a century too early."<sup>15</sup>

Charles Coulston Gillispie, Professor of the History of Science at Princeton University and contemporary of Simpson clearly refutes Simpson's interpretation of Lamarck's "chain or ladder." Gillispie comments, "The position is simply that species do not exist, and what interests Lamarck is rather the whole tableau of the animal series. We are to see it, not as the chain or ladder, but as the escalator of being. For nature is constantly creating life at the bottom."<sup>16</sup> Gillispie further denies that Lamarck is a vitalist, "Life is a purely physical phenomenon in Lamarck, and it is only because science has (quite rightly) left behind his conception of the physical that he has been systematically misunderstood, and assimilated to a theistic or vitalistic tradition which in fact he held in abhorrence."<sup>17</sup>

An additional rebuttal to Simpson's claim of Lamarck's interest in a perfecting tendency can be found in the 1894 work of Henry Fairfield Osborn, Professor in Biology at Columbia College and Curator at the American Museum of Natural History, "Lamarck denied, absolutely, the existence of any 'perfecting tendency' in Nature, and regarded Evolution as the final necessary effect of surrounding conditions on life."<sup>18</sup>

An examination of neo-Lamarckian experiments does not support the image that Simpson has propounded about this position. Such experiments include : J. T. Cunningham (1893, 1895-97) on Flatfishes, A. Hyatt (1894) on Planorbis, M. Standfuss (1898) on Vanessa, G. Ferroniere (1901) on Tubifex, E. Fischer (1902, 1907) on *Arctia caja*, V. L. Kellogg and R. G. Bell (1903) on Mulberry Silkworm, V. L. Kellogg (1904) on *Philosomia*, W. L. Tower (1907) on Chrysomelid beetles, R. Woltereck (1908, 1911, 1928) on *Daphnia*, A. Pictet (1910) on *Lymantria*, W. E. Agar (1913) on *Simoncephalus vetulus*, P. Kammerer (1923) on *Ciona*, and A. C. Wladimirsky (1928) on *Plutella*.<sup>19</sup>

## CONCLUSION

Lamarck's ideas seem to have fallen victim to both social causes as well as developments within biology itself. Lamarck's biology emerged against the background of the Enlightenment and general acceptance of the idea of progress. The reaction against progressive change during the post-Napoleonic period help to reinstitute a static view of the natural world. Lamarck's beliefs have been mistakenly associated with this motionless outlook of the post-revolutionary era. In the study of the history of biology the development of Darwinian thinking has overshadowed the contributions of other evolutionists and this has tended to obscure Lamarck's role in the development of this field.

Simpson has ridden a crest of anti-Lamarckian thought. This position has disregarded or ignored indubitable facts which present Lamarck as a nonvitalist. The time has come to seriously reexamine what Lamarck as a matter of fact said and supported.

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