**The Theory of Evolution: Historical**

**Objections in the Time of Darwin.**

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(Written in 1972 as a college freshman)

NOTE: this was written for my University of Michigan freshman biology class; at the time, I did research in the OLD Graduate Library, and dusted off the old books from the 1890’s. There was no internet for research. Regarding objections to Evolution, I had no idea at the time that creationism, for example, would be resurrected decades later as a “real” concept. When I wrote this 48 years ago, there were not many objections to Darwin.

Objections to the Theory of Natural Selection

The theory of natural selection, as presented by Charles Darwin, encompasses many areas of science. Hence, his theory naturally came under attack by the learned men of several sciences. With the addition of the various objections presented by the noted clergymen of the nineteenth century, these objections and rebuttals by the men of Darwin’s era will be presented objectively. Subjective presentation of these objections and rebuttals can best be called a tenuous attempt at hindsight, for to present them with a critical view would require a recreation of the actual situation in which the statements were made. To allow the reader to appreciate the attacks and counter-attacks fully, Darwin’s theory of natural selection will follow.

There is not nearly enough food, space, shelter, and other necessities for all the offspring that living things can produce. Living things, therefore, compete with each other to live. In the struggle to live, some animals will be a little better suited to live and have young. They have favorable variations. Others will be a little more likely to die off. This process is always going on so that species lose unfavorable variations and keep the favorable ones. After many thousands of years, the surviving members may be greatly different from their ancestors. The phrase “survival of the fittest” is often applied to this process. 1

When Darwin presented this theory, he also conveniently presented several of his colleagues’ leading arguments opposing his theory. One of the most forceful arguments was the question presented as to why there not intermediate varieties of animals living side by side with one another. Darwin’s rebuttal to this argument is extremely interesting, for he attacks it in several manners. His main thrust is that conditions in the environment change sharply, such as the burning of a protective forest or the dying a life-giving lake, and therefore varieties naturally tend to become rather well defined. Moreover, the remaining ones in a transitional state soon become extinct because of the fewness of their numbers.2

A second objection presented by Darwin was put forth by many scientists. This objection queried Darwin as to why many characteristics of an organism appear to be of no useful service to their possessor. Darwin refuted this by saying that it is hard to determine which structures are useful and, furthermore, he said that when one part of an organism is changed by natural selection it may adversely affect another part. This situation, if occurring, would result in the appearance of some structure that seems useless or harmless.3 This rebuttal by Darwin seems paradoxical because at first glance he seems to be hedging somewhat on this point. However, upon deeper inspection his explanation shows his deep consternation for the fact that man often judges life and components of life at face value.

However, returning to Darwin’s objections, he presents a third objection, originally presented by the German biologist Bronn, which queries Darwin as to why distinct specimens differ from one another in several distinctive manners. Darwin adequately replies that there can exist a multitude of small transformations occurring simultaneously in one organism.4

Continuing with objections presented by Darwin, all of which he, of course, conveniently has an answer to, the scientist Jean Mivart says that the motivation for natural selection can only occur because of some mysterious “internal force”. 5 Darwin all but laughs at this specious argument by attacking it at convincing length in several manners. The main thrust of his rebuttal is his recitation of the mathematics of the problem. Darwin asserts that the odds against the same internal force occurring at the same time to the same species so that the change can be passed on astronomical. A further objection by Mivart, suggesting that bad features still remain in all organisms, is attacked by Darwin’s suggestion selection continues to occur. 6

Many rebuttals and counter-rebuttals resulted from objections to Darwin’s theory presented in his book, The Origin of Species. The rebuttals are often long and tedious but several of the objections were natural selection cannot cope with the situation of two organs, used for the same purpose, which originated from one source, that natural selection does not handle the occurring situation where varieties live side by side with parent species, and that some useful structures contain incipient stages. 7 Darwin answers each presented difficulty of the theory with a history of that particular animal, and he generously concedes exceptions to the rules of his theory. 8

As opposed to the preceding biological objections, the physicist’s objections to the theory of natural selection were based more on mathematics and reason than conjecture. The pre-mendelian physicists (those presenting their arguments before Gregor Mendel’s genetics experiments in the late 1060’s) conceded that the theory accounted for the extinction of some organisms, the persistence of others by survival of the fittest, but they pointed out that the theory threw no light on the “arrival of the fittest”. This argument was valid in view of their lack of detailed knowledge of the laws of genetics and heredity.9

 The main physicists’ objection to Darwin’s theory was that the element of almost unlimited time, which Darwin concedes is necessary for his theory, is not available to the organisms.10 This attack by the physicists centered around proving that the Earth had not livid log enough for natural selection to occur. It seems paradoxical that Lord Kelvin, the outstanding physicist of the nineteenth century, used mathematics to “prove” that Darwin did not have his concept of unlimited geological time. Kelvin went so far as to “prove” that the earth had lived as few as fifteen million years, thereby making the theory of natural selection seem ridiculous.11

 It now been proven that the physicists were hopelessly and arrogantly wrong. However, by 1890 Lord Salisbury, an English phycist, had presented a new objection to natural selection. He suggested that it was impossible to demonstrate natural selection in detail.12 This mute argument was the outcome of cosmic evolution, which was an obscure nineteenth century philosophy of life and science. 13

It is interesting to consider the objections of one physicist, Dr. A. R. Wallace, as he slowly changed allegiance from Darwin’s camp to that of the opponents of natural selection. At the time of the presentation of Darwin’s theory of natural selection, in 1860, the Western world was ethnocentric. 14 Wallace attacked this ethnocentricity, and indirectly natural selection, by proving that the savage of Africa owns a brain equal in learning capacity to a Western man. Darwin refuted this by saying that the savage was a living fossil destined to be swept away in the struggle for existence because of feeble archaic intellect.15 Because of this confrontation, Wallace began to break from the Darwinian camp in 1875. While not breaking completely with Darwin, he concluded that “natural selection and its purely utilitarian approach to life would not account for many aspects and capacities of the human brain.”16

As opposed to the apparent reason and logic of the physicists’ objections, the religious objections were based more on conjecture and imagination. The objections posed by the theologians can be divided into two classes: positive objections and negative objections. When any theory was presented such that it constituted not simply an attack on Darwin’s philosophy but rather a genuine theory in its own right, then that theory can be classified as positive. However, most of the theologians’ objections were attacks on natural selection without the presentation of a sound theory.

The main positive objection was voiced by the French theological world. This attack centered around the belief in catastrophism. This concept embodies the belief that a divine being had generated the earlier forms of life and subsequently destroyed certain ones by the employment of catastrophes, so as to produce a more perfect species. The credibility of catastrophism was soon undermined, however, by discovery that different kinds of similar groups of organisms succeeded one another in an orderly progression of changes. Furthermore, catastrophism was cut down by the acknowledgment that few species become entirely extinct with no ancestors. 17

A second major positive objection to natural selection centered around the concept of a grand design in the natural world, sometimes termed a “divine guidance”. The American scientist Asa Gray stated that natural selection could actually be compatible with theism if the stream of variations themselves were some part of a grand design.18 In arguing with the theologians, Darwin hedged by suggesting the there could be divine guidance in variation, but that the more divine guidance there was the less real natural selection. Privately, however, he was convinced that the variations were from no design. Despite Darwin’s compromising, the arguments between him and the clergymen often digressed into a hopeless muddle.19

The theologians’ negative objections to Darwin’s theory simply attacked natural selection. They coincided with certain of the phychisists’ attacks because these objections centered around the thought that chance could not possibly play such a large factor in the rational world. Moreover, certain theologians, such as the British clergymen Herschel, agreed with the phycisists when they suggested that one could not actually observe natural selection at work, the theory resulted in mere speculation.20

Charles Darwin’s revolutionary theory of natural selection incurred the wrath of prominent nineteenth century biologists, phycisists, clergymen, and many other varied groups of people. 21 Some objections were reasonable arguments, and others were not so reasonable. However, all the arguments and counter-arguments contributed to making the late nineteenth century one of the most productive periods in the history of science, for the many arguments led to the betterment of Darwin’s theory. For this reason, therefore, science is grateful not only to the proposers of a theory but also to the attackers of that theory as well. Natural selection has withstood all of the attacks and, because of the completeness of those attacks, it has emerged as the generally excepted theory behind evolution.

Notes

1 Benjamin Farrington, What Darwin really said (New York, Schaken Books, 1966), pp. 44-45

2 Charles Darwin, Charles Darwin (Great Books of the Western World Series, ed. By Robert Hutchins, New York, E.P Dutton & Company, 1952), pp. 80-82.

3 Ibid., p. 196.

4 Ibid., pp. 194-195.

5 Ibid., p. 211.

6 Ibid., pp. 194-195.

7 Ibid., p. 224.

8 Ibid., p. 225.

9 “Evolution,” Encyclopaedia Britannica (1967 ed.), vol. 8, p. 917.

10 Loren Eiseley, Evolution and the Men Who Discovered It (Garden City, New York, Doubleday & Company, Inc., 1958), pp. 244-245.

11 Ibid., pp. 244-245

12 Ibid., pp. 244-245

13 Ibid., pp. 244-245

14 Ibid., p. 309.

15 Ibid., p. 309.

16 Ibid., pp. 309-310.

17 Herbert H. Ross, A synthesis of evolutionary theory (New Jersey, Prentice-Hall, 1962), p. 5.

18 William Irvine, Apes, Angels, and Victorians; the story of Darwin, Huxley, and Evolution (New York, McGraw-Hill, 1955), p. 108.

19 Ibid., pp. 108-109.

20 Ibid., p. 108.

21 Ruth Moore, Charles Darwin (New York, Alfred A. Knopf, 1955), pp. 135-137.

Bibliography

1. Darwin, Charles, The Origin of Species (Great Books of the Western World Series, ed. by Robert Hutchins), New York, E. P. Dutton and Company, 1952, pp. 3-68.
2. Eisely Loren, Evolution and the Men Who Discovered It, Garden City, New York, Doubleday & Company, inc., 1958, pp.236, 244-245, 309.
3. “Evolution,” Encyclopaedia Britannica, 1967 ed., vol. 8, p. 317.
4. Farrington, Benjamin, What Darwin really said, New York, Schaken Books, 1966, pp. 44-45.
5. Irvine, William, Apes, Angels, and Victorians; the story of Darwin, Huxley, and Evolution, New York, McGraw-Hill, 1955, pp. 108-109.
6. Moore, Ruth, Charles Darwin, New York, Alfred A. Knopf, 1955, pp. 135-138.
7. Ross, Herbert H., A synthesis of evolution theory, New Jersey, Prentice-Hall, 1962, pp. 4-5