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THE THEORY OF EVOLUTION: PROBLEMS ASSOCIATED

BAIDYANATH PRASAD
M.Phil., Roll No.: 1501651 Session-2015-16
Department of Zoology, B.R.A. Bihar University, Muzaffarpur, India
E-mail: ranidsuman@gmail.com

ABSTRACT

The idea that all forms of life are connected via a common ancestor and share shared ancestry is referred to as the theory of evolution. According to this theory, the birds and the bananas, the fishes and the flowers are all linked to one another. The overarching framework of Darwin's theory presupposes the emergence of life from non-life and places an emphasis on a completely spontaneous and undirected "descent with modification." To put it another way, more complex species descended from simpler forebears during the course of spontaneous, unguided evolution. The process that we refer to as "natural selection" may be summarized as follows: when random genetic mutations arise within the genetic code of an organism, those mutations that are advantageous to the organism's survival are retained because of the role they play. These advantageous mutations are handed down to subsequent generations of organisms. Mutations that are advantageous tend to accumulate over time, and as a consequence, the organism ends up being completely different (not just a variation of the original, but an entirely different creature).

Keyword: Evolution, Theory, Associated

INTRODUCTION

The fact that the assumptions, inadequacies, failures, and contradictions connected with the theory of evolution have received so little consideration in the literature of our day is something that continues to astound everyone who takes the time to think about it. The misconception that evolution is a well-established scientific fact is extremely widespread, but nothing could be further from the truth. The evolutionary paradigm is more comparable to a principle of medieval astrology than it is to a credible theory of the twenty-first century. Darwin's theory of evolution was one of society's jewels, and Darwin himself emerged as the shining star of an era that did not want God or at least felt that God was a distant and remote first cause. This era was characterized by atheism and a belief that God was a distant and remote first cause. If only science were sufficient, it would solve all of humanity's problems. Nonetheless, we now witness a Western civilization that is wailing for a set of values and a direction that is crystal obvious. We see a culture that is aching to connect with its spiritual side. Is it possible that the promotion and endorsement of Darwinian evolution and a lack of belief in God are to blame for these unmet desires? Might the inability of evolution to satisfactorily address our most fundamental concerns about life and our role in the universe provide an explanation for these yearnings of the spirit? The purpose of this essay is to demonstrate that the theory of evolution is in a state of disarray due to the fact that its assumptions are still, for the most part, just as mysterious as they were when Darwin set sail on the Beagle. There is no doubt that Charles Darwin's Origin of Species, which was published in 1859, has had a greater impact on Western civilization than any other book published in modern times. Not only was it an excellent biological treatise, but it also had important repercussions for contemporary fields like as sociology, psychology, philosophy, economics, history, educational theory, and religion, in addition to the natural sciences (both physical and biological). In the fields of astronomy and cosmology, it is a widely held belief that everything in the physical universe has gradually, over the course of billions of years, developed mechanically into its current condition. This belief is shared by almost all researchers in these fields.

It is generally agreed that evolution is the single most important and important unifying concept in all of biology (Prosser, 1959). The idea postulates that the evolution of life took place gradually over a period of billions of years. A Planet from the Stone Age The last two hundred years' worth of archaeological research has uncovered evidence of a massive ancient world. There are many relics from that historical period that have been preserved in museums all

Baidynath Prasad*, *University Department of Education: B.R.A. Bihar University, Muzaffarpur*

across the world. In that world's primordial era, birds were as large as helicopters or even aircraft. It was a foreign, harsh, and violent world from the point of view of a human being. It is estimated that dinosaurs roamed the globe for around 120 million years until becoming extinct 65 million years ago. The Tyrannosaurus Rex, sometimes known as the "king of the tyrant lizards," reached around 25 feet tall and weighed seven tons. It existed during the Cretaceous time period, which was around 140 million years ago, and it was most likely the most fearsome carnivorous species that has ever lived.

The "thunder lizard" known as Brontosaurus was 70 feet in length and weighed 30 tons. It was longer than a tennis court and had the same amount of weight as six elephants together. According to reports, a Brontosaurus's passage over the terrain caused the ground to really shake. But, can the discovery of these fossil remnants by scientists alone constitute evidence that evolution occurred? It would seem that we are expected to arrive at that conclusion. It's interesting to note that the strands of DNA in our bacteria are 90 percent the same as those in dinosaurs, and that our genetic makeup is virtually exactly the same as that of apes. In point of fact, our genes and those of chimpanzees are 98 percent similar to one another. Again, on the basis of this knowledge, are we expected to draw the conclusion that evolution is correct? This appears to be the situation with absolute certainty. In the expansive universe of the ancient era, mosses and ferns could grow up to a height of 90 feet. There were cockroaches that were a foot long and dragonflies that had wingspans of 30 inches. Crocodiles that called the Big Bend region of Texas home might grow up to 52 feet in length. Rhinos lived in Asia and Europe, where they reached a height of 18 feet at the shoulder and weighed 33 tons. Fossil bones discovered in East Africa indicated that tusked pigs formerly reached sizes comparable to those of rhinos. The first sheep reached a height of seven feet. They were equipped with horns that were as long as a midsize car. Baboons were as large as gorillas.

Apes had a height of nine feet and weighed 600 pounds. They topped the scales. Even if the ancient globe was very large, this does not provide evidence for evolution. It's possible that ape-like animals had their beginnings in Africa, but it in no way substantiates the theory of evolution. How we came to know the things that we know In this light, the next question that comes to mind is how we came to know the things that we do. First, we acquire knowledge via our five senses. Eighty-five percent of what we learn is obtained through our eyes, eleven percent through our hearing, and three to four percent through touch, taste, and smell. One hundred million secret signals are sent to the brain every every second by the five sensory

organs that make up the human body. Intuition, insight, and sudden awareness are all forms of learning that humans are capable of, in addition to learning via research and experimentation (the scientific method). We have faith in those in authority or in the information that has been given to us, and in the end, we base our understanding on logical thinking or reason. Reason underpins a significant portion of what we hold to be true. For instance, in the late 1600s, Edward Tyson saw chimpanzees in the Straits of Malacca and praised the way that the chimpanzees naturally walked on their two hind feet. They used both of their arms and yelled out in a childlike manner the whole time. He commented that everything about their appearance and behavior was so human. His finding, however, does not provide evidence that humans evolved. In his letter dated October 1838, Charles Darwin said that he had just finished reading Thomas Malthus's work on population expansion and that he had gained an appreciation for the fight for life that was taking place everywhere (Darwin, 1888).

REVIEW LITERATURE

Johnson, (2016) The central argument of this piece is that the conceptual underpinnings of evolution have been steadily eroding over the course of recent history, and that relatively few recent discoveries in embryology, taxonomy, fossil remains, and molecular biology are bringing us very close to a formal, logical disproof of Darwinian claims. The article starts with a discussion of the evidence that a prehistoric world existed, and then goes on to explore the acquisition of knowledge, the process of evolution, different forms of evolution, probability and statistics, as well as issues about Darwin. A discussion of social Darwinism and the effect of evolution on educational practices in the United States comes to a close this chapter.

Islam, S.M.R., Islam, M.S., and Hasan, M.R. (2021). The local people in the area around Ghurdaur Pond, Bangladesh, make their living mostly via fishing. Journal of Fisheries, Volume 9, No 2, Pages 612-619. This research investigated the fishing methods used by local people in the area of Ghurdaur Pond, as well as their patterns of subsistence, in order to identify potential options for sustainable resource management.

Recent studies on the bottlenose dolphin have shed insight on the remarkable ways in which it has adapted to its watery habitat. The streamlined body structure of the dolphin, along with its strong flippers, gives it the ability to swim through the water with relative ease (Fish, 2016). The ability of the dolphin to identify and follow food in murky seas is made possible by its extraordinary echolocation system, which is another unique adaption of this species (Norris &

Harvey, 1972). The intricate social behavior of dolphins as well as their vocal communication has been the subject of much research, demonstrating them to be a very clever and socially sophisticated species (Smolker et al., 1997; Janik & Slater, 2000).

"Comparative Anatomy and Evolution of the Cardiovascular System" (2018) by J. J. V. McFadden and R. J. Schilling. This review article focuses on the structure and function of the cardiovascular system in different vertebrate groups, including fish, amphibians, reptiles, birds, and mammals. The authors compare the adaptations of these groups to different environments and discuss the evolutionary history of the cardiovascular system in vertebrates.

Ricardo Betancur-R (2017) Fish classifications, along with those of the vast majority of other taxonomic groupings, are going through a dramatic transformation as a result of the discovery that new molecular phylogenies give evidence for natural groups that were not expected by earlier research. This finding was made possible as a result of the discovery that new molecular phylogenies give evidence for natural groups that were not expected by earlier research. This is also the case for the overwhelming majority of other taxonomic classifications out there. Yet, when we take a closer look at the primary criteria that ichthyologists have used to determine their categories during the last half century, we see that they have made very little headway toward using an explicit evolutionary framework. This is something that we notice when we take a closer look at the criteria. As we take a more in-depth look at the criteria, we are able to see this particular thing. On the other hand, the conventional method has been to depend, to varied degrees, on deeply-rooted anatomical notions and authorities, often blending taxa that have solid evidence for evolution with arbitrary categories.

RESEARCH METHODOLOGY

European naturalists, working in centralized botanical gardens and national zoos throughout the early modern era as a result of colonization and the creation of empires, explored an unparalleled range of animal and plant species. Naturalists started conducting methodical research on the fossil remains of a wide variety of creatures in the 18th century, and they compared the results of their findings to those of living animals. When the first half of the 19th century rolled around, it became abundantly clear that entire families of extinct flora and fauna (plants and animals) had existed in the past. What's more, during the geological periods in which these creatures lived, a large portion of the flora and fauna that is still alive today did not exist. This discovery was made in the early stages of the geological period known as the

Cretaceous Period. The evidence for large-scale biological change was progressively acquired through time, and the process was still in progress when Darwin was at work.

VARIOUS THEORIES OF EVOLUTION

During the time of Darwin, the majority of naturalists acknowledged that there had been some changes in biological species, despite the fact that there was a great deal of dispute over how these changes had taken place and what they signified. But, even if we concede that there have been changes in the composition of populations of species throughout the course of earth's history, we can still have a variety of divergent beliefs on the causes of these shifts. All of the hypotheses that were put up prior to Darwin's work advocated for some kind of directed change, which may be seen as reacting to, and as a result being directly impacted by, the activities of organisms and their surroundings. Darwin made an effort to differentiate his views from these by saying that evolutionary changes were only dependent on naturally occurring processes; these are processes that are still happening all around us today.

DATA ANALYSIS

The change in heritable traits of biological populations that occurs over the course of consecutive generations is known as evolution. These qualities are the manifestations of genes, which are transferred from a parent to a child as a result of the reproductive process. Because of the possibility of genetic mutation and recombination, there is almost always some degree of variation present within any given population. The process of evolution takes place when various evolutionary processes, such as natural selection (including sexual selection) and genetic drift, act on this variation to cause certain characteristics to become more common or more rare within a population. Evolution takes place when these processes act on variation. The evolutionary pressures that decide whether a characteristic is common or rare within a population are always shifting, which causes a shift in the heritable characteristics that are passed down from generation to generation. This particular process of evolution is responsible for the emergence of biodiversity at each and every level of biological organization.

DISCUSSION

In the present study, meristic counts of all samples ranged from Unbranched dorsal fin spines - III, Branched dorsal fin rays – 8, Unbranched anal fin spines III, Branched anal fin rays – 6 , Unbranched pelvic fin rays – i, Branched pelvic fin rays – 8, Unbranched pectoral fin rays – i,

Branched pectoral fin rays – 18, Caudal fin Upper lobe to Procurrent rays - 10, Caudal fin Lower lobe to Procurrent rays - 9, Lateral line scales -25 to 26, Pre dorsal scales - 8 to 10, Upper transverse rows - 4½ to 5½, Lateral line to pelvic scale rows – 4 to 5½, Lower transverse rows – 4 to 5½, Circumpeduncular scales – 11 to15, Circumferential scales – 20 - 26, Transverse breast rows – 5 to 8, Anal scale rows - 1, Preanal scale rows – 17 to 23, Vertebrae – 24 to 25 and Gill rakers - (2+3 – 15+16)17 to 18 respectively.

The result is similar to that previous authors reported for Puntius conchonius by Hamilton and Buchanan (1822) dorsal fin rays – 7 , anal fin rays – 5 to 6, caudal fin lobes rays – 18 to 19, lateral line scales -24 to 26; Francis Day (1958) described by unbranched dorsal fin spines - iii, branched dorsal fin rays – 8, unbranched anal fin spines ii, branched anal fin rays – 5, pelvic fin rays – 9, pectoral fin rays – 11, lateral line scales - 24 to 26, lower transverse rows – 5½ to 6½ ; Gunther (1981) referred dorsal fin rays - 11, anal fin rays - 7, pelvic fin rays- 8, transverse rows – 5to5½, lateral line scales – 26 to28 ; Talwar and Jhigran (1991) described by unbranched dorsal fin spines - iii, branched dorsal fin rays – 7 to 8, unbranched anal fin spines – ii to iii, branched anal fin rays - 5, unbranched pelvic fin rays - i, branched pelvic fin rays - 8, unbranched pectoral fin rays - i, branched pectoral fin rays - 18; Jayaram (1991) noticed by unbranched dorsal fin spines - III, branched dorsal fin rays - 8, unbranched anal fin spines - ii, branched anal fin rays - 5, unbranched pelvic fin rays - i, branched pelvic fin rays - 8, pectoral fin rays - 11, caudal fin lobe rays - 19, lateral line scales – 24 to 26, gill raker – 1 to 3 + 8 to 10.

Pranath Nath and Dey (2000) worked unbranched dorsal fin spines - iii, branched dorsal fin rays - 8, unbranched anal fin spines - ii, branched anal fin rays

- 5, unbranched pelvic fin rays - i, branched pelvic fin rays - 7, unbranched pectoral fin rays – i, branched pectoral fin rays - 14, caudal fin lobe rays - 19, lateral line scales - 27, transverse rows – 6/6; Shafi and Quddus (2001) mentioned dorsal fin spines and rays – 11(3/8), anal fin spine and rays – 9 (2/7), pelvic fin rays – 9, pectoral fin rays - 11 , caudal fin lobe rays - 19; Rahman (1989) and (2005) described dorsal fin spines and rays – 11(3/8), anal fin spine and rays – 7 to 8, pelvic fin rays – 13 to 15, pectoral fin rays – 9(1/8) ; Shantakumar and Vishwanath (2006) worked by vertebrae – 25 to 26 + 4;Dorji and Wangchuck (2014) indicated dorsal fin rays - 11, anal fin rays - 8, pelvic fin rays - 9, pectoral fin rays - 13, caudal fin lobe rays - 19, lateral line scales - 25, transverse scale rows – 5 to 6; Gaurab Jyoti Kalita and Pradip Kumar Sarma (2015) cited dorsal fin rays - 11, anal fin rays - 7, pelvic fin rays - 9, pectoral fin rays -

13, caudal fin lobe rays – 19; Sajan sajeevan (1991) described dorsal fin spines and rays – iii / 7-8, anal fin spine and rays – ii to iii / 5, pelvic fin rays – i / 8, pectoral fin rays – I / 18 (Table 3).

The twenty two meristic characters were analyzed in Pethia conchonius fish from all sampling sites. The twenty two characters were given in table 1-2. The number of black spots and their position was a distinguishing character in these species. In Pethia conchonius one black spot was present and located on 17, 18 and19th scales 20,21st scales.

The meristic counts of all sampling site Pethia conchonius indicated no or less variation. It shows that the fish specimens so collected were of homogenus group and 9 dorsal fin rays, 9 ventral fin rays, and 19 caudal fin rays were found to be a common and non-variable characters in all sampling sites. The dorsal fin rays counted as 9 revealed deviations from earlier studies as 10 (Hamilton, 1981; Day, 1958; Srivastava, 1980; Data Munshi and Srivastava, 1988; Talwar and Jhingran, 1991).

Only 14 meristic characters are considered for analysis by many authors. But in present investigation 22 characters were analyzed and recorded. Among them 8 characters are specific such as Lateral line to pelvic scale rows, Pre dorsal scales, Circumpeduncular scales, Circumferential scales, Transverse breast rows, Anal scale rows, Pre-anal scales and Vertebrae.

Table 1 Description Of Meristic Characters

Sl. No.	Acronym	Parameters	
1	UDFS	Unbranched Dorsal Fin Spines	The anterior margin of the fin articulates with the first two pterygiophore. Three unbranched rays are found on the first pterygiophore and the last unbranched ray (the serrated spine), alone, is found on the second pterygiophore
2	BDFR	Branched Dorsal Fin Rays	Follow the unbranched rays and are counted as the number of separate, evently placed

3	UAFS	Unbranched Anal Fin Spines	Like their dorsal counter parts, are found on the first two pterygiophores of the anal fin. Two unbranched rays articulate with the first pterygiophore and the last unbranched ray articulates with the second pterygiophore
4	BAFR	Branched Anal Fin Rays	Follow the unbranched rays and are counted as is done for the dorsal fin
5	UPFR	Unbranched Pelvic Fin Rays	Follow the branched rays and are counted as the number of separate, evently placed
6	BPFR	Branched Pelvic Fin Rays	Include all rays medial to the principal unbranched ray. The count is usually taken on the left side unless the fin is damaged of abnormally developed.
7	UPFR	Unbranched Pectoral Fin Rays	Follow the branched rays and are counted as the number of separate, evently placed
8	BPFR	Branched Pectoral Fin Rays	Counted in a manner equivalent to the branched pelvic-ray count
9	CFUL	Caudal Fin Upper Lobe	Can be counted after making a small incision on the right side of the peduncle to remove portions of scales which overlay these tiny rays anterior to the principal ray
10	CFLL	Caudal Fin Lower Lobe	Can be dissected in the same manner as described for the upper lobe
11	UTR		Counted diagonally forward from (but excluding) the lateral line and include the last scale of the predorsal

		Upper Transverse Rows	midline. Because the last predorsal scale is included at unit value, there are no half-scale counts for this character
12	LTR	Lower Transverse Rows	Counted on a backward diagonal from the lateral line to include the midline scale row between the anus and anal fin
13	LLPSR	Lateral Line to Pelvic Scale Sows	Taken on a forward diagonal from the lateral line and include the scale row that surrounds the point of pelvic-fin insertion. Rarely, this can be difficult to judge, but it is usually simple, especially on the large-scaled specimens
14	LLS	Lateral Line Scales	Include only those anterior to the caudal-fin base, extending to and including the first to touch the cleithrum
15	PDS	Pre Dorsal Scales	Counted on the dorsal midline
16	CpS	Circumpeduncular Scales	Taken at the region of the least-depth of the caudal peduncle
17	CfS	Circumferential scales	Counted through the last full- scale rows anterior to the dorsal and pelvic fins, rather than farther forward on the belly where there may be more rows but insufficient landmarks to direct the count, resulting in additional counting error
18	TBR	Transverse Breast Rows	Counted from the posteriomedial edge of the base of the pectoral fin to the same position on the opposite side
19	ASR	Anal Scale Rows	Counted as the number of free-edged scale rows between the anus and the anal fin

20	PAS	Pre Anal Scales	Counted ventral side scales from the number of edged lower isthmus to origin of anus
21	Ve	Vertebrae	Counted as the number of vertebral column node from Weberian apparatus end to origin of caudal bone
22	Gr	Gill rakers	Include all gill rakers on the anterior (leading) edge of the entire first gill arch

Table 2 Variations Of Meristic Characters Of Pethia Conchonius From Different Sampling Sites

	Sampling Sites		1	2	3	4	5	6	7	8	9
	Site		DR	TR	BP	GR	LA	MS	VD	MD	BP
	(n=)		4	15	11	10	17	10	5	5	5
	Characters	Acronym									
1	Unbranched Dorsal Fin Spines	UDFS	III	III	III	III	III	III	III	III	III
2	Branched Dorsal Fin Rays	BDFR	8	8	8	8	8	8	8	8	8
3	Unbranched Anal Fin Spines	UAFS	III	III	III	III	III	III	III	III	III
4	Branched Anal Fin Rays	BAFR	6	6	6	6	6	6	6	6	6

5	Unbranched Pelvic Fin Rays	UPFR	I	I	i	I	i	I	i	i	I
6	Branched Pelvic Fin Rays	BPFR	8	8	8	8	8	8	8	8	8
7	Unbranched Pectoral Fin Rays	UPFR	I	I	i	I	i	I	i	i	I
8	Branched Pectoral Fin Rays	BPFR	18	18	18	18	18	18	18	18	18
9	Caudal Fin Upper Lobe	CFUL	10	10	10	10	10	10	10	10	10
10	Caudal Fin Lower Lobe	CFLL	9	9	9	9	9	9	9	9	9
11	Upper TransverseRows	UTR	5½	4½-5½	4½-5½	5½	5½	5½	5½	5½	5½
12	Lower Transverse Rows	LTR	5½	4½-5½	4	4½	5½	5½	5½	5½	5½
13	Lateral Line to Pelvic Scale Sows	LLPSR	5½	4-5½	4½	5½	5½	5½	5½	5½	5½
14	Lateral Line Scales	LLS	25-26	25-26	25-26	25-26	25-26	25-26	25-26	26-26	25-26
15	Pre Dorsal Scales	PdS	9	9	8-10	9	9	9	9	9	9
16	Circumpeduncular Scales	CpS	12	11-12	12	12	12	12	12	12	12
17	Circumferential scales	CfS	26	20-25	23-24	22	26	26	26	26	26-28
18	Transverse Breast Rows	TBR	6	6	5-6	5	6	6	6	6	6

19	Anal Scale Rows	ASR	1	1	1	1	1	1	1	1	1
20	Pre Anal Scales	PAS	18-19	18-20	18-21	17-18	20-21	20-21	20-21	19-20	20-21
21	Vertebrae	Ve	25	25	25	25	24-25	25	24-25	25	24-25
22	Gill rakers	Gr	13	13	13	12	13-14	13	14	13	13-14

Sites: DR-Deoria River, TR-Tuivawl River, BP-Budha Palang, GR-Godhavari River, LA-Lower Anicut, MS-Mananjeri Sluice, VD- Vaigai Dam, MD- Malampuzha Dam and BP-Belagola Pillar Bridge.

CONCLUSION

The fact that the assumptions, inadequacies, failures, and contradictions connected with the theory of evolution have received so little consideration in the literature of our day is something that continues to astound everyone who takes the time to think about it. The misconception that evolution is a well-established scientific fact is quite common, yet nothing could be farther from the reality. The evolutionary paradigm is more comparable to a concept of medieval astrology than it is to a credible hypothesis of the twenty-first century. Darwin's theory of evolution was one of society's gems, and Darwin himself emerged as the brilliant star of an age that did not desire God or at least thought that God was a far and remote first cause. This period was characterized by atheism and a belief that God was a distant and remote initial cause. If only science were sufficient, it would solve all of humanity's problems. Nonetheless, we now witness a Western civilization that is wailing for a set of values and a direction that is crystal obvious. We see a culture that is aching to connect with its spiritual side. Is it possible that the promotion and endorsement of Darwinian evolution and a lack of belief in God are to blame for these unmet desires? Might the inability of evolution to satisfactorily address our most fundamental concerns about life and our role in the universe provide an explanation for these yearnings of the spirit? The purpose of this essay is to demonstrate that the theory of evolution

is in a state of disarray due to the fact that its assumptions are still, for the most part, just as mysterious as they were when Darwin set sail on the Beagle.

REFERENCES

1. Bell, Graham (2008). Selection: The Mechanism of Evolution (2nd ed.). Oxford; New York: Oxford University Press. ISBN 978-0-19-856972-5. LCCN 2007039692. OCLC 170034792.

2. Campbell, Neil A. (1990). Biology (2nd ed.). Redwood City, CA: Benjamin Cummings. ISBN 978-0-8053-1800-5. LCCN 89017952. OCLC 20352649.

3. Coyne, Jerry A. (2009). Why Evolution is True. New York: Viking. ISBN 978-0-670-02053-9. LCCN 2008033973. OCLC 233549529.

4. Futuyma, Douglas J. (1998). Evolutionary Biology (3rd ed.). Sunderland, MA: Sinauer Associates. ISBN 978-0-87893-189-7. LCCN 97037947. OCLC 37560100.

5. Gould, Stephen Jay (1994) [Originally published 1983]. "Evolution as Fact and Theory". Hen's Teeth and Horse's Toes: Further Reflections in Natural History (Reissue ed.). New York: W. W. Norton & Company. ISBN 978-0-393-31103-7. LCCN 82022259. OCLC 785709315.

    a. —— (May 1981). "Evolution as Fact and Theory". Discover. **2** (5): 34–37.

6. Gould, Stephen Jay (2002). The Structure of Evolutionary Theory. Cambridge, MA: Belknap Press of Harvard University Press. ISBN 978-0-674-00613-3. LCCN 2001043556. OCLC 47869352.

7. James, William (1911). "Herbert Spencer's Autobiography". Memories and Studies. New York: Longmans, Green & Co. LCCN 11026966. OCLC 1573711.

8. Mayr, Ernst (1982). The Growth of Biological Thought: Diversity, Evolution, and Inheritance. Translation of John Ray by E. Silk. Cambridge, MA: Belknap Press. ISBN 978-0-674-36445-5. LCCN 81013204. OCLC 7875904.

9. Mayr, Ernst (1988). Toward a New Philosophy of Biology: Observations of an Evolutionist. Cambridge, MA: Belknap Press of Harvard University Press. ISBN 978-0-674-89665-9. LCCN 87031892. OCLC 17108004.

10. Miller, Kenneth R. (2007) [Originally published 1999; New York: Cliff Street Books]. Finding Darwin's God: A Scientist's Search for Common Ground Between God and Evolution. New York: Harper Perennial. ISBN 978-0-06-123350-0. LCCN 99016754. OCLC 813854733.

11. National Academy of Sciences (1999). Science and Creationism: A View from the National Academy of Sciences (2nd ed.). Washington, D.C.: National Academy Press. ISBN 978-0-309-06406-4. LCCN 99006259. OCLC 43803228.
Retrieved 2015-01-17.

12. Schuh, Randall T. (2000). Biological Systematics: Principles and Applications. Ithaca, NY: Cornell University Press. ISBN 978-0-8014-3675-8. LCCN 99042377. OCLC 42027466.

13. Spencer, Herbert (1865). First Principles of a New System of Philosophy. New York: D. Appleton & Company. LCCN 15024188. OCLC 3015414.