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The role of philosophical thinking in the development of natural-scientific knowledge in the 18th century

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Annotation:
In this article deals with the status of natural-scientific knowledge developed along with technical sciences in the non-classical landscape of the world, and at the same time the differences between them are revealed. Also, theories such as uniformism, transformism, Lamarckism, and catastrophism were analyzed as a unique status of natural-scientific knowledge. In addition, the impact of the natural-scientific knowledge formed in this period on the way of thinking of the people of the next period is revealed.
Key words: mechanical landscape, uniformism, transformism, Lamarckism, catastrophism, "System of Nature", "fluids", evolution.

Introduction. From the middle of the 18th century, the process of proving the ideas of evolutionary development of natural phenomena to natural science was not just hypothetical ideas, but based on scientific evidence. O'.O'sarov writes: "The hypotheses and scientific works of I. Kant, M.V. Lomonosov, P. S. Laplace on the natural formation of the solar system are of great importance" (O'sarov O'.T., 2004. - B.20). Accordingly, in the opinion of N.A. Shermukhamedova: "in this period there is a non-interactive, unchanging and undeveloped metaphysical approach to the studied phenomena based on the mechanical view of the world" (Shermuhamedova N.A., 2021. - B.43). Without denying this point of view, on the contrary, it is necessary to mention one of the Swedish biologists, K. Linnaeus, who is a supporter of this point of view. In this sense, he can be recognized as one of the scientists who founded the concept of transformationism.

Methodology. In fact, it can be observed that during this period, scientists such as B.Juse, I.Gartner and M.Adanson put forward such doctrines as natural classification. If we look at it from this point of view, we can analyze that the concepts of transformation have entered the system of philosophical knowledge since this period. In fact, according to the views put forward by them, attention is paid to the fact that biological species remain unchanged and species can change. In particular, it is necessary to emphasize that the process of transition from transformationism to evolutionism in biology began at the border of the 18th and 19th centuries. In the process of specifying the ideas of development, a number of important theoretical hypotheses related to the theory of evolution were put forward. According to N.A. Shermukhamedova: "Lamarckism, catastrophism and uniformism are the most important and perfect of them" (N.A. Shermuhamedova, 2005. - B. 158.).

From the point of view of succession in science, the French naturalist Jean Lamarck, who continued the evolutionary ideas of Ch. Darwin, should be specially recognized. Based on the analysis, it is necessary to emphasize that in his book "Philosophy of Zoology" he was the first to scientifically substantiate the doctrine of the evolutionary (gradual) development of a living being. In particular, he introduces the concept of "biology" to science and puts forward the principle of development of complex organisms from simple organisms. If we look at it from this point of view, it can be observed that he proved the principle of classification of plants and animals in the form of a family tree. In our opinion, his idea that changes in the external environment surrounding a person can lead to the appearance of new properties in various organisms was a bold step in the development of science. In this sense, he says that, in his opinion, new properties are passed from generation to generation. In particular, he emphasizes that living things on earth arise from non-living matter through "fluids" (Latin word means "pupil").

He proposed that first the simplest forms and then complex forms appear. Including Charles Darwin, a naturalist who founded the theory of evolution in the field of biology during this period, based on his scientific observations, he put forward the idea that plant and animal species develop slowly. Thus, he proposes his theory that the gradual increase in complexity of the structure of living beings is the result of

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genetic variation and natural selection. From this point of view, Ch. Darwin states that the main principles of the evolutionary theory are as follows, i.e.: The first principle is that variation, i.e., constant improvement by dividing into species, is one of the indispensable properties of living nature;

- and in the second principle, all living organisms in nature increase in geometric progression, and as a result, very few of them remain;

- It is called the third principle of natural selection. Through this principle, it was explained that a small amount of living organisms can grow to adulthood. According to Darwin, the following law applies in living nature: the evolution of living nature takes place through the survival, change and strengthening of strong organisms, and the death of weak, weak organisms.

We should pay attention to the fact that since the 19th century, various concepts criticizing the ideas of evolution have been put forward in natural sciences. For example, according to A. Gorelov: “During this period, concepts such as creationist (theistic), anthropological theory, genetic population evolutionary theory, mutational evolutionary theory, synthetic evolutionary theory appeared” (Gorelov A.A. 2006. - B. 23). In our opinion, the evolutionary theory he put forward emphasizes the evolution of the organic world through linear development. However, if we apply this idea to the process of synergetic development, that is, if we approach it as a self-organizing and non-linear developing system, we will have a more perfect approach. In this concept, we read professor B.O. Torayev books has written that: “Charles Darwin discovered the main driving forces of the evolution of the organic world. But we believe that his opinion that he could not show the spiritual and social factors in the creation of a person is reasonable. In particular, according to him, through variation between plants and animals, the same organisms adapt to unfavorable conditions and the rest are destroyed. Based on his analysis, in his book “Man's Emergence and Sexual Selection”, he tried to scientifically substantiate such natural ideas as the origin of the human race from ape-like ancestors, genetic variation, biological conditions of man, and the evolution of natural selection. In particular, Darwin emphasizes that important traits in living organisms are passed from generation to generation through heredity. In our opinion, his theory that man descended from ape-like ancestors is biased and erroneous. After all, there is also a religious theory about the origin of man against this theory. According to this theory, the descent of the human race from Adam and Eve is absolute, and this view is very correct from a religious point of view. However, Darwin's views on natural selection and genetic variation are one-sided, and despite this, we must mention that his theory paved the way for the development of the science of genetics.

Based on the above analytical thoughts, we can guess that since the 19th century, the ideas of evolution were introduced in some fields of knowledge, and from this period, the general scientific views that formed the basis of the non-classical scientific view of the world were created. A clear example of this is that the idea of evolution developed by Darwin is accepted as the main principle of biology. According to N.A. Shermukhammedova conclude that: “The paradigmatic incompatibility of classical physics and biology was manifested in the XIX century in the form of a contradiction between the rules of Darwin's theory of evolution and the rules of the second law of thermodynamics” (N.A. Shermukhamedova, 2005. - B. 157). Also, his scientific proof of the theoretical basis of several factors leading to evolution led to a number of changes in the natural-scientific landscape of the world.

In 1865, G. Mendel established the laws of heredity, but this law was not proven until 1900. It should be noted that the further development of genetics was developed by De-Fries (1901-1903). According to the analysis of the literature, he describes the chromosomal theory of heredity founded by him in his work “Mendelism and mutation theory”. In later periods, the chromosomal theory of heredity was fully developed and put into practice by G. Morgan and his students. In our opinion, both the theory of evolution put forward by Charles Darwin and the theory of catastrophes put forward by J. Cuve have a one-sided character to a certain extent. After all, in the evolutionary theory of Ch. Darwin, the process of natural evolution was absolute and its consequences were not paid attention to, while J. Cuve recognized catastrophes, but denied evolution. It can be concluded that by the time of post-noclassical science, the errors of these two theories were identified and caused the emergence of synergistic paradigms.

In our opinion, another direction in the field of biology in this period is uniformitarianism. In particular, it is possible to say that its founders, scientists such as J. Getton and Ch. Lyel, were against the theory of

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catastrophism of Cuve. According to uniformists, “Earth does not develop in a certain direction, but changes in a random, unrelated manner” (Shermuhamedova N.A., 2005. - B. 158-159.). In our opinion, one of the shortcomings of the theory of uniformitarianism is the absolutization of the category of chance and, on the contrary, the wrongness of the denial of causality, which will later be identified by biological scientists. After all, from a philosophical point of view, we must admit that the categories of chance and necessity are related to each other.

Analysis And Results. Non-Euclidean geometry, created at the beginning of the 19th century, fundamentally changed people's ideas about the structure of the universe. In this geometry, on the one hand, a new point of view was put forward that reality does not consist of an absolutely flat (smooth) surface, and on the other hand, geometric relationships change on curved surfaces. According to B. Torayev, the first teachings in this regard were given by: “The great German mathematician K. Gauss, then the Russian mathematician-scientist N.I.Lobachevsky, the German B. Riemann and the Hungarian Ya. Bolyai” (Turayev B.O., 2022. - B.39) tried to justify. Based on the above ideas, one of the Russian scientists who developed new rules of Euclidean geometry, N.I. Lobachevskyi, can be said to have developed the main theories of non-classical physics. In particular, he focused on justifying the fact that the geometry of space and time differs from the geometry developed by Euclid, that is, space and time can pass differently in different material systems. Indeed, in 1826, he expressed the opinion that “Time itself is inextricably linked with forces and masses, the structure of space, that is, its geometry, also depends on them” (Shermukhamedova N.A., 2005. - B 46). In this regard, it should be mentioned that as a result of his grounding of several axioms of geometry, it led to a number of changes in the exact sciences.

In the geometry of the negatively curved, saddle-shaped surface proposed by N.I. Lobachevsky, it was proved that the sum of the internal angles of the triangles is less than 180. In the geometry of B. Riemann's positively inclined spherical surface, it was scientifically proven that the sum of the internal angles of a triangle is greater than two right angles, that is, 180. In this way, “Euclid's axiom of parallel lines, which dominated non-Euclidean geometry, was rejected” (Turayev B.O., 2022. - B. 39-40).

It should be said that according to Lobachevsky, a) If the angles of a triangle are equal, then the triangles are also equal; b) The sum of all angles of an arbitrary triangle is less than “3.14..” and close to “0”; s) An infinite number of straight lines can cross through the point "O", which does not lie on the given straight line “a”. According to O. Fayzullayev: “A revolutionary doctrine was created in the field of geometry: it was proved by N. Lobachevsky that Euclidean geometry, which has been ruling for centuries, is not the only one, but that there are also non-Euclidean geometries” (O. Fayzullayev, 2006. - P. 18). Based on the above views, it can be said that the new rules developed by Labachovsky are a great basis for looking at the exact sciences from a unique perspective. It can be concluded that this led to the denial of the metaphysical understanding of classical physics.

By the end of the 19th century, all natural sciences improved and developed. After mechanics, the theoretical sciences include chemistry, thermodynamics, and electricity. Especially by this period, scientific knowledge about electricity begins to be put into practice in various interpretations. From this point of view, the Italian physicist Luigi Galvani should be mentioned separately. In particular, he scientifically proves the effect of electricity on the physiological state and biocurrent in the world of scientific knowledge. In fact, the fact that he started conducting experiments on animals with electric current is of primary importance. Accordingly, he experimentally investigated the phenomenon of contraction of isolated frog muscles under the influence of electric current. Based on his analysis, he tries to substantiate the theory of “animal electricity” from a scientific point of view in his work “Treatise on electric forces in the movement of muscles”. As a result, through this theory he developed, it leads to the invention of a new source of current - the galvanic cell. Because, in our opinion, it is no exaggeration to say that his views created the basis for the development of certain scientific theories of non-classical physics at that time. Even the discovery made by him has been used until now through the concept called “galvanism”.

Conclusion. In conclusion, it should be emphasized that natural-scientific knowledge in the non-classical view of the world developed in a sinusoidal model, if coincidences were denied in the classical view of the

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world, coincidences were assumed to exist in the non-classical view, the dynamics of natural-scientific knowledge in the non-classical view is not only in the field of physics, but also in chemistry. also had a clear shape, that is, the discovery of the periodic system of chemical elements by M.Lomonosov was the basis for the development of fields such as pharmacology, alkaloids, chemical polymers, and organic chemistry.
A distinctive feature of the non-classical landscape of the world was recognized in it the joint activity of the fields of natural and humanitarian sciences. Also, each field has influenced the philosophical way of thinking of people through its own methods. This is important because it is aimed at ensuring a decent life of people and human well-being. These processes are manifested in a new way in the post-noclassical landscape of the world.

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