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ARTÍCULOS

Arte, Individuo y Sociedad
ISSN: 1131-5598

EDICIONES COMPLUTENSE

https://dx.doi.org/10.5209/aris.79969

Russian scientific-animalistic images of the 20th century in the collection of biological museums. Their specific structure and meaning[1]

Irina Vasilevna-Portnova[2]

Recibido: 20 de enero de 2022 / Aceptado: 05 de mayo de 2022

Abstract. The article dwells on scientific animalistic images of the XX century, which are stored in natural science museums of the country representing the special art of animal paintings. They are featured in the "scientific illustration" category with an emphasis on objectivity, accuracy of fixation of each form, what didn't exclude the spotting of the characteristic and the main thing in scientific works. Due to the fruitful interaction of animal painters with biologists, their common understanding of the goals of art, scientific illustration has acquired the quality of an artistic image, not ceasing to meet scientific interests. It is noted that from the sphere of strict protocol drawing of previous centuries ("cabinet of curiosities drawing" of the XVIII century), it has turned into a work of art with a set of its specific features. Among these features, a special visualization of the image is underlined, with its typical typification of forms and elaboration of details. The article analyzes the works of famous animal painters of the XX century by the example of exhibits of the State Darwin Museum in Moscow, representing a special visual and graphic version of scientific and artistic works. The concept of animalistic image in various types of art is considered: in graphics, in painting and sculpture. In each of these types, which have their expressive properties, the artists V. Vatagin, A. Komarov, V. Trofimov, and others managed to realize scientific ideas within the framework of their artistic way of thinking, specific scientific themes in artistic images. The uniqueness of this kind of art consisted of both scientific, cognitive and aesthetic features.
Keywords: scientific illustration, animalistic, artistic image, image specifics, museum

[es] Imágenes científicas y animales rusas del siglo XX en la colección de museos biológicos. Su estructura especial y significado

Resumen. El artículo trata de imágenes animalísticas científicas del siglo XX, que se conservan en museos de ciencias naturales del país, representando un arte especial de la pintura animalista. Se presentan en la categoría de "ilustración científica" con énfasis en la objetividad, la precisión de fijar cada forma, lo que no excluye la identificación de la característica y lo principal en los trabajos científicos. Gracias a la fructífera interacción de los animalistas con los biólogos, su comprensión común de los objetivos del arte, la ilustración científica adquirió la calidad de una imagen artística, sin dejar de satisfacer los intereses científicos. Se advierte que del ámbito de un dibujo estrictamente protocolario de los siglos anteriores ("el dibujo de la Kunstkamera" del siglo XVIII), se ha convertido en una obra de arte con un conjunto de características propias. Entre estos rasgos se destaca una especial visualización de la imagen con su característica tipificación de formas y elaboración de

[1] Funding: This paper has been supported by The RUDN University Strategic Academic Leadership Program.

[2] Department of Architecture Civil Engineering, Peoples' Friendship University of Russia RUDN University (Moscow, Russia)
E-mail: irinaportnova@mail.ru
ORCID: https://orcid.org/0000-0002-9064-5288

detalles. El artículo analiza las obras de famosos artistas de animales del siglo XX en el ejemplo de las exhibiciones del Museo Estatal Darwin en Moscú, que son una versión pictórica y gráfica especial de obras científicas y artísticas. Se considera el concepto de una imagen animal en varios tipos de arte: en gráficos, en pintura y escultura. En cada uno de estos tipos, que tienen sus propias propiedades expresivas, los artistas V. Vatagin, A. Komarov, V. Trofimov y otros lograron incorporar ideas científicas, temas científicos específicos en imágenes artísticas en el marco de su pensamiento artístico. La singularidad de este tipo de arte radica en sus características científicas, educativas y estéticas.
Palabras clave: ilustración científica, animalística, imagen artística, especificidad de imagen, museo.

Summary: 1. Introduction. 2. From the history of scientific zoological illustration in Russia 3. Images of animals and birds in the exposition of the Darwin Museum in Moscow. 4. Conclusion. References.

Cómo citar: Vasilevna-Portnova, I. 2022. Russian scientific-animalistic images of the 20th century in the collection of biological museums. Their specific structure and meaning. *Arte, Individuo y Sociedad* 34 (4), 1517-1542, https://dx.doi.org/10.5209/aris.79969

1. Introduction

At the beginning of the XX century, Russian animalists enthusiastically began to develop a special area of the visual field - scientific illustration. It found its implementation in painting, graphics, sculpture. The artists' interest in the animalistic theme in its scientific and cognitive aspect wasn't accidental. At that time, wildlife sciences were actively getting developed in Russia, and art did not stand still, and searches for new themes and imaginative solutions were observed.

Yet in the 1850-80s, previously inexistent scientific societies were organized in Russia: "The Russian Society of the Acclimatization of Animals and Plants "(1857), "The Society of Natural Sciences, Anthropology and Ethnography" (1863) and "The Society of Lovers of Natural History" (1880s). These organizations arranged public readings, collected training collections and set up museums. So, based on the "Society of Natural Sciences, Anthropology, and Ethnography" in 1878, the Museum of Anthropology at the Moscow State University was created, organized by the famous professor of zoology A.P. Bogdanov. A whole galaxy of outstanding scientists, biologists, zoologists, anthropologists (D. Anuchin, P. Bogdanov, G. Dementiev, M. Menzbir, and others) graduated from Moscow State University. In 1905 the Darwin Museum was created in Moscow by efforts of the young biologist A.F. Cots, which contained an unusual exhibit - works of animal art in combination with biological exhibits. At that time, a whole system of zoological and zoopsychological research was organized. The results of experiments were systematized, a row of scientific papers was published on the pages of famous magazines and collections: "The News of the Acclimatization Committee", "The summary of the Moscow Zoo", "Russian anthropological magazine", "Materials for the study of flora and fauna of Russia" and others. The animal artist, D.V. Gorlov, described the process occurring in society as follows: "Scientific tasks got expanded and became more complicated. An illustrative material was required, which didn't exist in Russia. The period of foreign business trips, as well as expeditions around the native country, began, there was a need for qualified animal artists" (1965, p. 12, 13).

The scientific processes taking place in Russia are not the only case. Here are the opinions of some researchers. Louise Lippincott and Andress Blum (2005, p. 160) highlight the Enlightenment as a complex period. The philosophical legacy of the 18th and 19th centuries, the impact of the Industrial Revolution, and the intellectual transformation brought about by Charles Darwin produced dramatic changes in the minds of thinkers. Undermined traditional foundations in the views of man and animals. The authors explore how artists have reflected modern changes in the perception of animals by incorporating the latest developments in geographical research and comparative anatomy into their work. In the 20th century, within the framework of various scientific discoveries, biology turned out to be a very dynamic field. Scientists collect and interpret data again and again to test their hypotheses about the living world. (Peter J. Russell, Paul E. Gertz, Beverly MacMillan, 2013, p. 528). David Aftandilyan (2007, p. 343) offers different approaches to the study of animals, a new understanding of a number of topics, including the environment - the habitat of animals, their behavior and interpretation in the visual arts. In the aspect of our topic, the book Animal Life: Revealing the Mysteries of the Animal Kingdom (Foreword by Charlotte Uhlenbroek, 2011, p. 888) is of interest. It describes the consistent behavioral actions of animals that amaze with their new movements acquired in the process of evolution. In turn, Jacques Vauclair (1996, p. 232) characterizes several aspects of animal behavior in detail: social behavior is how animals manage their lives. the communicative sphere, the language of animals and birds, the various levels of imitation in the animal world and, of course, the theory of mind. B. Zhukov also asks what drives animals and how to correctly understand their behavior (2016, p. 328). In the process of studying nature, which was complex and multi-level and included an appeal to related disciplines: psychology, zoology, physiology, the theory of evolution, photographs and sketches were used to understand various behavioral movements. (Hanken James, 2018, p. 352). This indisputable fact led to the discovery of an interesting visual direction - scientific illustration depicting the rich world of flora and fauna. Researchers of our time write about it. You can name the illustrated editions of Dorothea Barlow, Cy Barlow (2012). William Swainson (1838), Bernhard Grzimek (2003), Charles Frederick Partington (1837). So, on the pages of her colorful book The Illustrated Encyclopedia of "Ugly" Animals, Sami Bailey (2020) introduces the reader to the amazing, unique appearance of animals. The publications of Carol Belanger Grafton (2016) by Georges-Louis Leclerc, comte de Buffon (1993) also attract readers with a large number of illustrations, complemented by animal drawings by such famous artists as the Limburg brothers, A. Dürer, D. Audubon, A. Wilson, engraved images wild and domestic animals in their natural habitat. All these images can claim to be reference material. The catalog of George E. Ball (2005) can even be used to trace the progress of printing technology, which since the 16th century has contributed to the development of etymological knowledge and scientific illustration. To develop special powers of observation and purposefulness, John Lowe (2018, p. 304) suggests keeping an artistic diary of observations of nature. He gives advice on what methods and materials to achieve today a high level of accuracy of observations. From his point of view, a retrospective look at scientific images allows one to assess the state of science: at what level of development it was and how accurate the drawings were. The author notes that such a retro-analysis is very instructive, because, by tracing the "family tree" of images, one can identify the main, time-tested patterns and include them in the field of modern knowledge.

We, in our turn, will continue the conversation about scientific animalistic illustration, its essence, and nature, the tasks that it performs. We'll consider the example of the most interesting from our point of view, animalistic "museum exhibits", designed primarily to acquaint, educate, teach the masses the natural sciences, as well as their place in the exposition and the role they play, clearly going beyond the borders its narrow purpose in a wider field of knowledge, history and cultural studies. Our target is also to identify the role of science in the formation of an animalistic image and specific features of scientific images in painting, drawing, sculpture, the contribution of masters in this field.

The *scientific novelty* of the article is determined by the fact that previously not considered scientific images, in particular, stored in the state Darwin Museum in Moscow, unpublished archival materials, are introduced into scientific circulation. Analysis of the works of artists allowed to clarify the Dating of many unknown works. Their attribution contributed to the identification of new facts of the creative activity of masters, the definition of their contribution to the scientific and artistic field of creativity.

As the most appropriate *method* selected art criticism analysis, which involves the study of two levels: the historical-problematic (with the formulation of the scientific problems of animal images), art-historical, allows us to consider works in a typological, iconographic, and comparative-descriptive, narrative, figurative and stylistic and other aspects, to characterize its specific features, to identify the structure of the artistic image.

2. From the history of scientific zoological illustration in Russia

Let's start with a small excursion into history. Scientific illustration, like drawing in general in Russia, had deep roots. "Coming out of a manuscript book, a Russian drawing of the turn of the XVII-XVIII centuries, - E.I. Gavrilova noted, "is connected with the experience of miniature painters who worked in the workshops of the Armory and the Polish Order, the main art centers of Moscow in the second half of the XVII century" (1983, p.3). Essentially, the origins of Russian scientific drawing go back to the so-called "cabinet of curiosities" drawing of the XVIII century. In the Petrine era, such interest was felt in reproducing all kinds of "straight people" that were exhibits of the first Russian museum - the Kunstkamera in St. Petersburg - a museum-laboratory, collection of which became the basis of scientific research in Russia (Figure 1, 2.).

Peter I, acquired a large collection of anatomical preparations of various animals, birds, amphibians, insects, grasses, etc. from the Dutch anatomist F. Ruysch, especially for the museum. It was interesting, instructive, and contributed to the direct study of wildlife. Describing the "cabinet of rarities", the librarian and curator of the museum, I. G. Bakmeister, referred to this fact as an important source of knowledge. "Nothing strikes our senses like a spectacle of nature, – he said. … If science contributes to the well-being of peoples and if national monuments increase the fame of states, then knowledge of nature and the storage of its wonders contribute to this the most" (Backmeister, 1779, pp.107,108).

Figure 1. Drawing of the facade of the Kunstkamera building. St. Petersburg of the XVIII century https://pastvu.com/_p/a/d/o/b/dob84j0h20mqkvus85.jpg

Figure 2. Peter the Great's Museum of Anthropology and Ethnography of the Russian Academy of Sciences (MAE RAS). Kunstkamera. Modern look. St. Petersburg. https://www.liveinternet.ru/users/4968747/post354854979/

At the beginning of the XVIII century, the study of nature in Russia began to prevail over all kinds of traditions, and the driving force in this process was curiosity - the desire to discover reality through observation and experience of life. To watch and learn - this was the task of Peter, organizing a natural science museum. For science, in the absence of other methods of fixation from various natural objects, they were supposed to make drawings. The collections were constantly replenished, they needed to be systematized and extensive material was supposed to be recorded and listed. So, that's how the "kunstkamera or cabinet of curiosities" drawing was created, based on which the origin of zoological illustration began. Numerous expeditions conducted by natural scientists contributed to the accumulation of facts in which artists took a lively part - they sketched known and little-known to the science of that time species of animals and plants, in direct contact with the natural world.

The museum owns watercolor paintings of plants and insects by the XVIII century German artist, entomologist, book illustrator, and author of the book Metamorphoses of Surinamese Insects, (1705) Maria Sibylla Merian, acquired for the Kunstkamera. There are also drawings by the spouses Georg Gsel and Maria-Dorothea Gsel, who worked at the Academy of Sciences at the invitation of Peter I, the botanical sketches of the German naturalist I.Kh. Buksbaum, who became the first botanical academician of the St. Petersburg Academy of Sciences, recommended by Peter to describe the Russian flora and work of Russian masters (Figure 3, 4, 5).

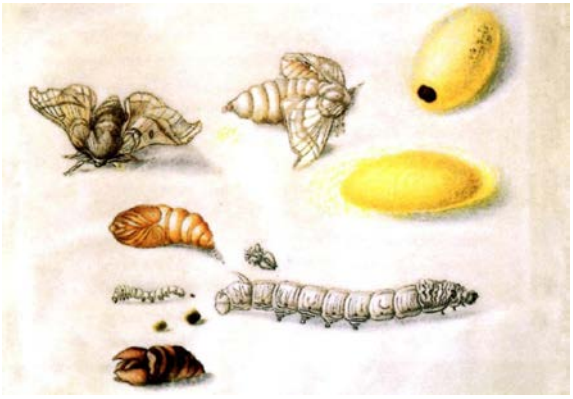

Figure 3. Maria Sibylla Merian. Acanthacee, Falter und Puppe eines Caligofalters und andere insekten 1700-02. Aquarell und Deckfarben Aquarell und Deckfarben auf Pergamen. https://zen.yandex.ru/media/iskusstvoved_eretik/iskusstvo-nauka-i-metamorfozy-babochki-marii-sibilly-merian-5

Figure 4. Maria Sibylla Merian. Gartenhyazinthe, Brauner Bar und Schlupfwespen, vor 1679. Aquarell und Deckfarben auf Pergament. http://www.luckytoys.ru/mclass/view/12/udivitelnye_kartiny_marii_sibilly_merian__kartinki_dlya_dekupazha_1703.html

Figure 5. Maria Sibylla Merian. Maniok, Schwärmer, Buckelzirpe und Riesenschlange, 1700-02. Aquarell und Deckfarben auf Pergament. http://www.luckytoys.ru/mclass/view/12/udivitelnye_kartiny_marii_sibilly_merian__kartinki_dlya_dekupazha_1703.html

These images clearly demonstrate the first experiments of the depiction of plants, insects, and birds. Many finely executed watercolors, pen sketches, sketches, etc. depicting the exhibits of the museum acted as a necessary reference tool and met the practical needs of science of that time - "to serve the urgent needs of the scientific corps" (Gavrilova, 1983, p. 34). The best drawings were copied and then engraved. Engravings were valuable because they showed the subject in a visual form that couldn›t be fully reflected in the scientific description. The engraved image matched well with the documentary drawing. Both types of graphics were characterized by clarity in displaying "naturals" in all their structural features, as T.V. Stanyukevich noted: "It was necessary to sketch animals and birds in such a way that the features of their structure and appearance were clearly visible. In addition, the artist must sketch so, that the most accurate and definite picture of the object could be formed according to the drawing" (1953, p.74).

Already in the early stages, the specifics of the scientific image were highlighted. Let's try to figure it out. M. Kogan wrote that a scientific drawing "carries information of a scientific, not artistic kind" (1968, p. 29). This is true. To give a visual picture of an object according to a scientific-enlightening idea is the first task of a scientific image. Therefore, the function of scientific drawing, first of all, is descriptive, illustrative. In other words, a scientific drawing can be considered as a kind of document. The creator of the scientific image should eliminate the subjective moment as much as possible. His task is to explain the properties of the material world, independent of the personality of the author. A scientific image must have the unity of two requirements - external accuracy and scientific certain-

ty. Such a picture gives the visibility of an identical, adequate image of the model. In this regard, it is appropriate to compare scientific drawing and documentary photography. They are close to their visual basis, even though the techniques of creation of them are different. The need for documentary photography just as scientific drawing "is generated by the need to know exactly what the object looks like. Accordingly, the documentary image implements a certain installation of the photographer - installation on the utmost objectivity of the image, on the maximum shutdown of any subjective refraction of the object". However, as M. Kogan correctly pointed out, "a hand-drawn image cannot be documented in the full sense of the word, it can only create the illusion of documentary" (1968, p 22). Kogan believed that a photographic image, unlike a drawing, most accurately captures reality. In this regard, we cite the studies of Lorraine Daston and Peter Galison, who take a different point of view. (2018). Offering a model for the development of science in the New Age (XVIII-XX), they use scientific atlases with drawn and photographic images. They explain their choice by the fact that since the 18th century the atlas has become an independent popular science genre and is constantly evolving. Atlases are a kind of research document, in which reality is recorded, described, explained, and analyzed. Here the question arises of the degree of clarity and full correspondence of the depicted model and reality, comprehension of its essence in the three historical "virtues" described by Lorraine Daston and Peter Galison: "truth-to-nature" (truth-to-nature), "mechanical objectivity" (mechanical objectivity) and "trained judgment" (trained judgment). The scientific drawing of the 18th century was an important tool for understanding the natural world. In the era of "mechanical objectivity" of the 19th century, the camera acted as an additional tool for cognition. Together with a scientific drawing, he fixed reality, sometimes surpassing it in fixing accuracy. Sometimes a dilemma arose: what is better a color drawing or a black and white photograph. In order to minimize any subjective factor, some atlas creators and scientists themselves leaned towards photography, believing that it gives a more correct vision, most accurately, without distortion, represents the subject. (A.V. Baeva 2018 pp. 42-51). The experiments of the British physicist Arthur Worthington with drops of water, mercury and milk, described in the book Objectivity, cast doubt on this point of view. Capturing the impact of a drop with the help of a photograph, the scientist came to the conclusion about some identity, the coincidence of drawings and photographs in many details, but at the same time noted that the photograph demonstrates irregularity, to a much greater extent than one would expect. The "objective physical picture of the world" appeared before Worthington and other scientists in all its complexity and individuality. In explaining its laws, sketches and photographs were insufficient. Generalization and comprehension of experience was required, the era of "training judgment" (XX), described in the book "Objectivity", has come. In addition to a descriptive picture of objective reality, scientists faced the task of formulating conclusions and judgments that would lead to the development of practical guidelines in the field of scientific illustration.

These "virtues", according to the researchers, demonstrate the history of the objectivity of scientific knowledge, starting from the drawings of the mechanical fixation of an object on the way to its more meaningful synthetic expression. The authors conclude that the objective goes in parallel with the subjective perception. They always form a pair.

Considering scientific illustration, it is necessary to touch on one more issue arising from the previous discussions: the relationship between the artist and the client-scientist.

The possibilities of the author of a work of art and a photographer are much wider than the artist creating a scientific drawing. The choice of plot and the very process of creating work are largely subordinate to the creative intent of the master. The activity of a scientific illustrator mainly depends on the customer-scientist, whose role in this area is significant, since it's he who determines the idea and monitors its implementation. What character the scientific drawing will take depends on the requirements of the scientist. An image has always been considered as the scientific one, which most accurately and closely conveys the idea of the customer. The co-authorship of the scientist and artist was the unity of their goals and tasks. This fact was pointed out by Lorraine Daston and Peter Galison in their book Objectivity. They talked about the relationship between the scientist and the illustrator. In their activities, they saw a positive moment of cooperation, the exchange of results of work and the accumulation of experience (Lorraine Daston and Peter Galison 2018 p 584).

In the very first stages of the formation of the New Culture, when reliable information about nature was in the early phases of being accumulated, it is probably too early to speak about a large degree of objective value of scientific images. These requirements will be formed at the beginning of the XX century, and in the XVIII century, scientific illustration was literally influenced by the pathos of knowledge, which permeated all spheres of life of that time and "oreflected the encyclopedism of the interests of young culture" (Evangulova, 1990, p.119).

Later, in the second half of the XVIII century, the foundations of this art, which took place in various workshops in Moscow and St. Petersburg, penetrated the academic system of education. Then at the Academy of Arts (St. Petersburg), the most studied living nature was a human and a horse. Due to a strictly worked out drawing system, they mastered all their features. The scientific approach to the model in the academic drawing was predetermined not only by educational tasks. The techniques of the classic image also required this: clarity of forms, the accuracy of the contour, rigor, and clarity of modeling.

The origins of the scientific drawing can also be found in the book scientific illustration of the XVIII century (Figure 6, 7).

At this time, the scientific drawing in the book (botanical, zoological, ethnographic) performed the main, explanatory function. During the XVIII century, interest in the real world of animals and birds had already been traced, then in the XIX-XX centuries, living nature has become the primary link in the work of the animal artist. The painting of the XIX century is characterized by a great desire to convey the objective properties of the model. At this time, the scientific drawing in the book (botanical, zoological, ethnographic) performed the main, explanatory function. Knowledge about nature is getting deeper, descriptive science is becoming explanatory one, trying to give a materialistic interpretation of life. The Russian academic school kept on playing an important role. Thus, due to the European, not medieval, system of art education (the opening of the Academy of Sciences in 1724, and 1757 the Academy of Arts), it became possible in Russia to talk about the formation of a secular type artist, such as the animalists.

Figure 6. M. Shalaurov. Duck 1771, paper, watercolor, gouache.
https://cmp24.ru/p/1791216-domashnie-i-dikie-animalistika-v-russkom-iskusstve-fgbuk-gosudarstvennyiy-russkiy-muzey

Figure 7. N. Chizhov. Bullfinch 1776, paper, watercolor, gouache, ink.
https://cmp24.ru/p/1791216-domashnie-i-dikie-animalistika-v-russkom-iskusstve-fgbuk-gosudarstvennyiy-russkiy-muzey

In the XX century, the principles of scientific image weren't fundamentally changed initially. They were still required to have objective accuracy, concreteness, and thoroughness. Rather, it's about designing an appropriate system of methods than inventing them again and it wasn't always possible to rely on traditions. For example, there was not much experience in creating visual spreadsheets in Russia. So, Russian artists were orientated on the work of West European animal painters of the XIX century, where animals were portrayed with a big part of elaboration and thoroughness. For example, the English master John Stubbs is famous for his numerous anatomical spreadsheets of animals and birds, R. Worth accurately drawn cows and horses, the Swede E. Landseer and German V. Kunert presented scenes full of romantic pathos depicting deer, lions and other animals. Wilhelm Kunert and A. E. Brem were tireless travelers and singers of nature and animals of Africa. They reflected all their impressions in solid books: V. Gaake *The origin of the animal world* in 3 volumes (1903), Bram A.E. "Birds" in 3 volumes (1893). The multivolume edition of A. E. Brem was especially popular in society and not only in the scientific sphere. "The Animal Life" в 13-и томах (St. Petersburg, 1911-1915), in 13 volumes (St. Petersburg, 1911-1915), which also contained prints by Gustav Metzel, Friedrich Specht, and other artists. Vivid colorful pictures of the existence of animals in their natural habitat by V. Kunert are also complemented by detailed drawings of German masters, attracting attention with the subtlety of performance and naturalism in the elaboration of forms.

Similar to foreign-sourced spreadsheets, the works of Russian artists were sometimes not aesthetically attractive. Only some of them, such as G. Leytman's zoological spreadsheets, met the requirements of an adequate visual aid. By the beginning of the XX century, Russia had had a definite canonical system for depicting animals, which was represented as a theoretically and figuratively formulated model, implying rigor in the image of figures, a certain order of their location, linear and color interpretation. For purposes of clarity, it was customary to depict animals in close-up, in simple angles, mainly enhance the principle of depicting figures repeating each other in poses. The figures of animals were interpreted either planarly (spreadsheets) or with a certain proportion of volume and spatiality (pictorial paintings). Per the nature of the interpretation of the models, the background was either conditionally planned or absent altogether (spreadsheets), or developed with some signs of a light-air environment (paintings). Sometimes the author used the expressive means characteristic of a particular type of art: the grace of the line, the saturation of tone, light-tone contrast, etc. Then a soundly made scientific drawing, the picture was presented by the guardians of the best artisan traditions. The scientific image, which allowed a certain step back from the generally accepted requirements of the scientist in the direction of the freedom of the author, acquired aesthetic significance, began to have greater attractiveness, which sometimes was appreciated by the customer. Of course, the master couldn't freely own his ideas, accessible for him when creating a work of art. The artist was more likely to imagine only the objective, regardless of his subjective thoughts. As an optimal option, a special kind of scientific image arose where scientific and artistic tasks were reconciled through their mutual enrichment. A sense of proportion allowed us to maintain the boundaries of these two areas of creativity.

In our reasoning, we conclude that there had been a problem with the ratio of scientific and artistic features, which was perfectly solved in animalistic museum

compositions. Probably the theme, the museum approach, and exhibit methods also oriented artists to new visual options.

3. Images of animals and birds in the exposition of the Darwin Museum in Moscow

The most complete impression is the collection of animal works stored in the Darwin Museum in Moscow. This museum is one of the oldest in Moscow. It is over 90 years old. In 1905, when a young biologist, subsequently Professor Alexander Kots, came up with an idea to create an exposition that would present the works of the great English natural scientist, C. Darwin, on the evolution of the organic world in its entirety, but with unusual means. He wanted the stuffed animals to be accompanied by works of artists that help to penetrate deeper into the psychology of the "smaller brothers", to understand the features of their behavior, habits, and instincts. (Kots, 1930-40th, Vol. 3, p.13). Kots visited major museums in Europe, personally met many scientists, saw research interest in the eyes of his Western colleagues. It's worth to say that today the interest in museums, in particular, the natural sciences, remains everywhere. Stephen T. Asma (2003, p.320) notes that the Natural History Museum is a kind of fine line between a "high" and "low" culture. Everything disappears when we revere nature and crave knowledge.

But ideas, even the most wise and valuable ones, would have stayed being just ideas if not a stroke of good luck - a meeting in Moscow with talented taxidermy masters and artists: D.J. Fedulov, V.A. Vatagin, V.V. Trofimov, K.K. Flerov, A.N. Komarov, and others. A difficult organizational work began. The premises were provided by the Higher Women's Courses, founded in Moscow in 1872, where A.F. Kots used to give lectures about Darwinism and in 1922 the museum was opened. Since then, this institution has turned from an educational and auxiliary one into an independent scientific and educational institution, the collection has grown, and the funds have been enriched.

To avoid a dry academic principle of material arrangement, the basis of the construction was a comprehensive display of the entire exposition. Kots wrote about this: "In every animal, in each animalistic sculpture, in each of the countless paintings, we saw not just things that were valuable only in their own right, not rare stuffed animals, gypsum, but arguments that were closely, organically connected with the main task of the Darwin Museum: to give a clear and bright illustration of the theory of evolution on earth" (Kots 1930-40th, p. 1).

Visibility, clarity, accessibility of the visual language - these are the basic requirements for the works of masters. Works should have been easily and naturally integrated into the world of displayed phenomena. Kots's expression "museum-exposure laconicism" (Kots 1946), that was applied to the planning of expositions, characterized the techniques of depicting animals from illustrators just as accurately. However, this doesn't mean that the masters used to create their works according to once and forever established rules. Without breaking the requirements for a scientific image, developing in the framework of these trends, they more or less showed their individuality. Alexander Fedorovich, who became its director, encouraged such a principle, attracted talented, enthusiastic people to work.

As a result, in the art workshop of the natural science museum, an original Russian animal school was formed. The purpose of the workshop didn't include the selection and education of art personnel. Nevertheless, the museum contributed to this goal as much as the forces and capabilities allowed. Artists were interested in the opportunity to show complex patterns in the life of animals and birds, the diversity of their forms. Zoology, zoopsychology, paleontology, anthropology - these are the scientific disciplines where themes and ideas for drawings, paintings, and sculptures were taken from.

The collections of the Darwin Museum contain numerous graphic works by V.A. Vatagin, V.V. Trofimov performed on white and tinted sheets of paper made with graphite, colored pencil, ink, watercolor, illustrating the sphere of visual perception of animals, their ability to recognize color, shape, number of objects, identification of their signs, etc. Scientific drawings were intended to give a clear picture of theoretical and practical research of scientists, in particular, N.N. Ladygina-Kots, to display the entire kaleidoscope of animal behavior. Some of the drawings played the role of sketch material for future paintings and sculptures of the museum.

A small modest museum room with a wardrobe, table, and chairs. All kinds of objects of various shapes and colors are abundant, and there are many drawings with images of dogs, wolves, monkeys, parrots, and other animals nearby. In some, a solid dynamic line dominates, in others - a shaded soft touch, in the third - a stand of light strokes, in the fourth - an expressive contrasting silhouette. Most of the figures aren't dated. Only in a few of them in the corner we can read the half-erased: "V. Vatagin." The room we mentioned is the zoopsychological laboratory of the State Darwin Museum. Then a fragile, dark-haired young woman with delicate facial features (in the future, a well-known scientific zoopsychologist) N.N. Ladygina-Kots conducted unique studies in animal science in Russian science. Despite all the hardships of the time of the harsh post-revolutionary Moscow, day after day, from morning to evening, she worked with great patience with her beloved pets. A few years later, Nadezhda Nikolaevna writes: "As if through a dream I recall four-legged, four-armed ... now helpers of those old years. It was a motley family of noisy parrots, huddling from the cold in the unheated museum walls ... so eagerly betraying for the last sunflower seed all the ability to distinguish colors and shapes ... a dozen unrequited, dutifully loyal dogs and even more sticky wolves ... a little grumpy, always ready to bite monkey Daisy in which, in between the endless unlocking of locks in a melancholic, submissive posture of her hands and gaze of her eyes, so much of half-human melancholy and sadness was coming through. And the little fidget is the chimpanzee Ioni" (Kots, 1930-40th . Vol.3, p.21,22).

The researcher was first of all interested in the ability of animals to distinguish colors, shape, number of various objects and, like humans, to identify, distract, generalize their signs, to aesthetic perception, as well as a wide range of emotional reactions. After all, before animals were either completely denied the right to rational activity, or their mind was likened to human, the motives of behavior were explained from a human point of view. Now there is no doubt how smart and emotional animals are (Bekoff Marc, 2013, p.400). **(**Figure 8.)

And what about the drawings? What role did they play in the scientific process? They were designed to visually display the entire behavioral kaleidoscope of animal movements. Many of the drawings are sketches of future paintings for exposure or the development of illustrations for the works of N.N. Ladyginoy-Kots.

Figure 8. Experiments of N.N. Ladygina-Kohts with parrots and dogs. 1920s. http://www.darwinmuseum.ru/projects/exhibition/bratya-po-razumu-eksperimentalnoe-izuchenie-intellekta-zhivotnykh

We will try to trace the theoretical studies of Ladyginoy-Kots, which opened a window into an interesting and peculiar world of emotions, relationships and mental abilities of animals, using these images. Their author, as it has already been mentioned, is Vasily Alekseevich Vatagin. The language of science, although accurate and strict, seems to him unimpressive. The artist wants to capture on a piece of paper the whole gamut of animal feelings and the variety of their manifestations. And with a pencil in his hands, he spends many hours in zoos, first in Moscow and St. Petersburg, then in foreign ones. Nothing escapes from his attention - posture, head turn, wingspan, different states, different situations, etc. First of all, the common interests of Vatagin and Ladygina-Kots were monkeys. It's easy to understand - they, especially anthropoids (closer to a person) are one of the most highly organized creatures with the beginnings of intelligence. Keeping track of their behavior is exciting. Every their action gives the interesting material. And the rich emotional field of these animals, and their surprisingly mobile facial expressions! N.N. Ladygina-Kots called the "face" of the monkey a "mimic keyboard" and saw in it a "primitive, wild, exotic symphony of emotional life". (Kots, 1930-40th, p. 21). For the artist, the monkey is a wonderful model. And here is the real luck. In 1913, the one-year-old chimpanzee Ioni appeared in the museum's laboratory. "With a deep touching feeling, - A.F. Kots will write later, - I recall the little culprit of the museum's future triumph, the object of its countless cares - the chimpanzee Ioni. It wasn't thought then that the little tomboy would be allowed to reveal the spiritual world of his distant African relatives, walled up in his dark and unknown psyche". (Kots, 1935, Vol. 3, p. 34.).

No doubt, the credibility of the material was attractive. This mischievous student seemed to exist and act specifically for the pencil and brush of V.A. Vatagin. Here, Ioni chose a color bar. A hand reaches out timidly. In the eyes, there is the focus of thoughts. In another drawing, the chimpanzee has an expression of fear on his face, his fur is reared: there is an unfamiliar object in front of him - a stuffed magpie. But curiosity prevails. Ioni fearfully tries to touch the scarecrow. And in the third figure - nothing can stop his riotous fun. (Figure 9, 10, 11, 12).

Figure 9. N.N. Ladygina-Kohts with chimpanzee Ioni. http://www.darwinmuseum.ru/projects/exhibition/bratya-po-razumu-eksperimentalnoe-izuchenie-intellekta-zhivotnykh

Figure 10. V. A. Vatagin. Chimpanzee Ioni (indicative-research activity). 1913 paper, pencil. http://foundations.nathist.ru/node/77525

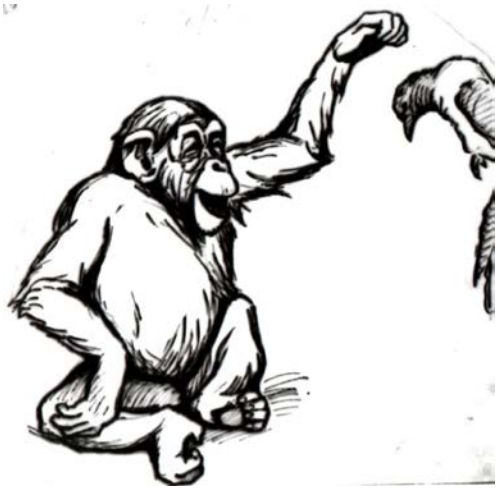

Figure 11 V. A. Vatagin. Chimpanzee Ioni. Reaction to a magpie scarecrow. 1913. Ink, paper. http://foundations.nathist.ru/node/77088

Figure 12. V. A. Vatagin. Expression of sadness and excitement of chimpanzee Ioni. 1913. Paper, black pencil. http://foundations.nathist.ru/node/77088

Just in a few minutes, Vatagin sketched all its movements, the whole gamut of a kind of pantomime, with a graphite pencil. One can be rendered amazed by the skill with which the elusive turns of the monkey are conveyed. However, the researcher's approach was behind the apparent sketchiness. After all, the drawings served scientific purposes - they were intended for the book by N.N. Ladygina-Kots "The child of a chimpanzee and the child of a human in their instincts, games, habits and expressive movements" (M., 1935). So, the accuracy and reliability of the image were necessary and, according to the narration of the author of the book, an abundance of details. All this is here. At the same time, the drawings are so tagged and concise that,

acting as scientific illustrations, they acquire independent value. So, Ioni is depicted on them - as alive as the pulsation of life itself. Objective, accurate information is combined with amazing emotionality. There is no literal, detailed transfer of details in the works. On the contrary, only a few lines quickly and accurately captured the main, characteristic. A.F. Kots compared this skill of the artist with the Russian writer A.P. Chekhov, seeing a kinship in the expression "the breadth of the search for images and the conciseness of their identification" (Kots, 1946, V.5, p.370).

The creation of this kind of scientific illustration about animals in the first half of the XX century in Russia was essentially a revolution. Some analogies with Vatagin's graphic works can be noted in V. Trofimov's ones. In the 1930s, by order of Ladygina-Kots, the artist also completed a large number of sketches of chimpanzee monkeys, which were kept at the Moscow and Tbilisi zoos at that time. The drawings that were made during the experiments of the famous researcher capture the monkey at the time of its manipulation with various objects, that is constructive-tool activity. The bold strokes of a dark pencil underline all the moments of the animal's postures and movements. But unlike Vatagin's drawings, they focus not on the line, but on the black-and-white modeling. Trofimov tried to conform the first impressions with a concrete, complete vision of reality. And here is another series of Vatagin's drawings. The basis for creation of them, again, was the experiments of Ladygina-Kots. Their theme is the instinctive activity of animals. Observations took place on the territory of the Moscow Zoological Garden (now the Moscow Zoo). He became the second laboratory. Thick folders tied with cords, piles of manuscripts, equipped with spreadsheets, photographs, frayed and faded from time, which are stored in the museum's archive, reveal the full scope of this research work. But even more valuable material is Vatagin's drawings. There are many of them, as always. These are mostly multi-figure compositions made with a pencil and watercolor. Various animals are captured: hens, ducks, pheasants, foxes, fallow deer, rabbits, bears, and many others. (Figure 13, 14, 15).

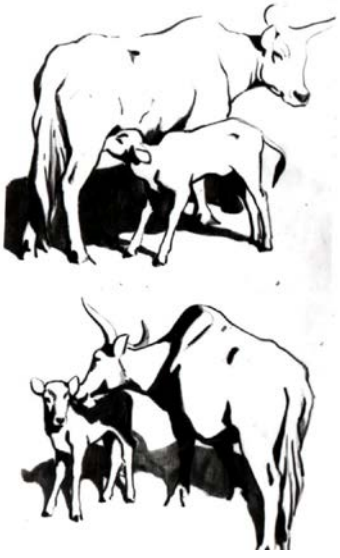

Figure 13. Vatagin V.A. Zebu with calf. 1923. Watercolor, paper.
http://foundations.nathist.ru/node/35751

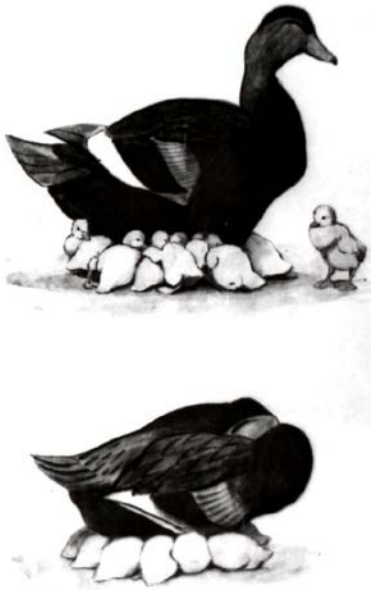

Figure 14. Vatagin V.A. Duck with ducklings. 1923. Paper, pencil, watercolor.
http://foundations.nathist.ru/node/77263

Figure 15. Vatagin V.A. Puppies in a submission position. 1923. Paper, pencil, watercolor.
http://foundations.nathist.ru/node/34218

They are, as if by themselves, grouped by topics: children's games depicting frolicking babies; courtship games, representing an interesting gamut of ritual courtship of individuals; maternal instinct - various methods of feeding in animals and further care for the offspring; nesting, protection from enemies ... After the end of scientific work, favorite themes still captivate the artist. The experience accumulated earlier is materialized in literary works. The State Russian Museum in St. Petersburg and the Tretyakov Gallery in Moscow contain sculptural works by Vatagin. In them - the same deep penetration into the psychology of animals, the same subtlety and accuracy of observations. Of course, both Vatagin's drawings and sculptural images reveal only a small fraction of the secrets that science is full of. But perhaps this lies beyond the usual. After many years, A.F. Kots writes: "V.A. Vatagin is the admitted head of our animalists, for 40 years of work for the museum he managed to provide a whole pantheon to his work ..., admitting with an amazing range, breadth of themes, from mammoths to moth, monumental statues and portrait busts, from the thoughts of Darwin to the grin and the smile of a baboon. " (Kots, 1940, Vol. 3, p.25). The ability to combine two seemingly so different areas - science and art - allowed Vatagin to get away from the traditional interpretation of bespoke scientific works.

In essence, the drawings by V.Vatagin and V. Trofimov could be called "ethological" ones. This is a special kind of scientific image when important characteristics of animal life, the so-called demonstrative ritual poses, are transmitted through characteristic poses and movements. Biologists characterize them as a stereotypical sequence of peculiar movements designed to influence the partner and other members of the community. Possessing catchiness and conspicuity, enclosing a specific content, as the main informational and communicative principle, these poses, depicted in a very solid and concise manner, acquire a symbolic character corresponding to their sign-in real life. In the process of using these pos-symbols, the abstract-symbolic nature of the graphic turned out to be most preferable. The line, silhouette, and spot appearing on the white field of paper have great expressiveness. Through them, the artist gets the opportunity to sharpen the main idea and abstract from everything superfluous.

These drawings were also useful for the master-taxidermist (the one who makes stuffed animals). The artist's accurate, right and laconic reproduction of the animal's behavioral poses allows the taxidermist to understand and recreate these poses in the composite biological group at the preliminary stages of work.

It is impossible not to mention the paintings that are stored in the funds of the Darwin Museum of the already famous V.A.Vatagin, as well as A.N. Komarov, N.N. Kondakov, K.K. Flerov. Here, artists worked on large monumental and decorative panels. They were painted mostly on plywood with oil, which was at hand, for lack of other things, sometimes on canvas.Vatagin used to create paintings on topics of zoogeography, biopsychology, animal childhood, A. Komarov - on themes of variability in the animal world, horses and service dogs, K. Flerov used to be interested in the origin of domestic animals, animals in the environment, and fossil animals. N. Kondakov used to prefer the image of the underwater world of the deep sea.

Interesting topics are realized in picturesque paintings. Artists connect color to convey all the richness of the natural world, necessarily the environment in which animals and birds live. The environment is now the organizing element of all the paintings because it indicates the habitat of animals, characterizes their home. Therefore, with great accuracy, all the characteristic elements of a particular geographical area are

transmitted, especially in Vatagin's ones, who, by the nature of his profession as a zoologist, was always tend to follow to thoroughness in the image. This is the first quality that is observed in the paintings. The second one, no less important is the skill of masters to convey the image-type of animals with clearly identified characteristic features of the species because they must be biologically recognizable. Here, animals and birds even begin to perceive the features of an ideal image. They seem to be afraid of strong movements to not disrupt the construction of all the scenes.

So, in the paintings of A. Komarov "Geographical variability of the wolf", "Geographical variability of the bear" (1930s), similar to Vatagin's ones, animals and the environment are united by a common idea and appear to a greater extent as a single picturesque whole. According to the correct expression of A.F. Kots, Komarov felt the animal "like a piece of landscape, and landscape as a personal experience", he first brought up "a genuine" brushstroke "and a genuine" oil ", a genuine wild, not a" zoo " animal into the Darwin Museum" (Kots, V.3, p. 5).

If the concept of the Vatagin painting is characterized by the artist's commitment to zoological accuracy, which creates the desire for structural completeness, isolation, and balance of the whole, then the concept of the Komarov painting in Plein air. So, it begs the analogy with the works of the Swedish painter of the late XIX - early XX century Bruno Liljefors, who managed to paint animals and nature in all the colorful, sophisticated color combinations and freshness of the first impression. His numerous heroes, hunting, feeding their offspring, resting in the thickets of forests, meadows, snow-covered glades, introduce the viewer to the world of animals in the wide geographical expanses of the globe. Even though Komarov was limited by scientific topics, in his series of paintings he showed skill in capturing life scenes not so much employing a detailed scientific illustration of a biological topic, but by emphasizing the action itself characterizing the theme and the characters. For example: "Doberman on search", "English Hounds with a Hare", " West European Pointing Dog", "Setter Laverac and the Irish Setter on the Hunt", "Fox Terriers with a Fox", "Newfoundland with Children", "Great Dane", "Collie Sander dog", " Mine detecting dogs ", "Tank Exploding Dogs" and others. **(**Figure 16, 17, 18, 19**)**.

Figure 16. Komarov A.N. Great dane. 1936-39, oil, canvas.
https://proza.ru/pics/2016/09/10/589.jpg

Figure 17. Komarov A.N. Mine detecting dogs, oil,canvas.
https://bogdan-63.livejournal.com/7991586.html

Figure 18. Komarov A.N. Tank Exploding Dogs, oil, canvas.
https://bogdan-63.livejournal.com/7991586.html

Figure 19. Komarov A.N. Collie dog nurse. 1937, oil, canvas.
https://vk.com/wall-48113854_1753

According to Kots, "this amazing assortment of suits, forms, mores, and instincts" (Kots, V.3, p. 15), is presented in everyday subjects. A colorful, close to Plein air scenic interpretation of Komarov's works without details gives the scenes a sense of living reality. If V. Vatagin emphasized this feeling more by tone and its gradations, then A. Komarov, as well as K. Flerov, by color and strokes. With all the differences in manners, the artists solved one problem - to create an extremely tangible picture of natural life, showing real animals on a real landscape background with all the expressive means of painting available to them.

Along with paintings, sculptural works were created for the museum, which Vatagin, Trofimov, Flerov worked on. This aspect of scientific and pictorial activity, unusual for scientific illustration, also had the goal of revealing the main ideas of Ch. Darwin and played the role of an exhibit. Artists had to turn concrete scientific ideas into plastic images. "Adaptation", "Variability", "Anthropogenesis" are scientific topics that were supposed to appear in a sculptured shape. (Figure 20, 21).

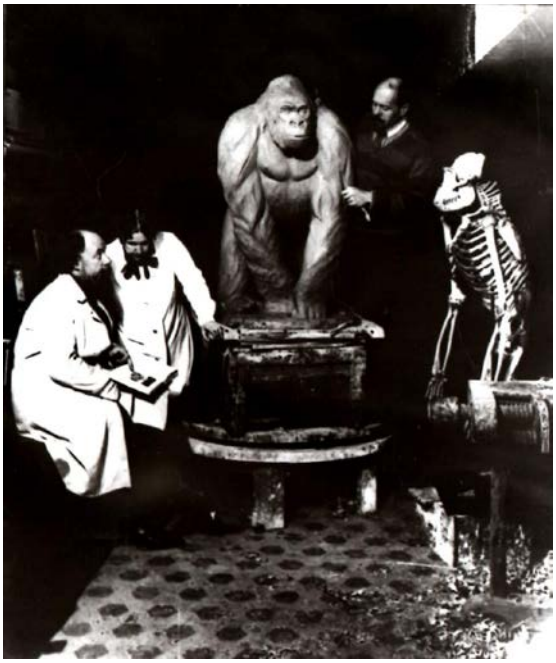

Figure 20. Vatagin V.A. at work. The creation of the sculpture "Mountain Gorilla". At the left side: A.F. Kots and N.N. Ladygina-Kots. https://www.mos.ru/upload/newsfeed/newsfeed/GL-AF-Kots-NN-Ladigina-Kots-i-VA-Vatagin-1929-g(9).jpg

In the mid-1930s, K. Flerov performed several voluminous reconstructions of the shapes of fossil animals - the forerunners of the modern proboscis, managing to "sculpturally scale in natural sizes the faces of the giant monsters that inhabited the once scattered corners of the globe, now inhabited by their small relatives" (Kots, 1930-40th, Vol. 3, p. 11). V. Trofimov presented the evolutionary series from tapir to the horse, as well as some sculptures depicting various animals (elephant, hippopotamus, lion, Capricorn, anteater, and others) to the department "Adaptation".

Figure 21. Vatagin V.A. Gorilla Gobbi. 1937. Gypsum.
https://www.mos.ru/news/item/85820073/

The theme of adaptation to the habitat of animals was already detailed, phased disclosed in the series of paintings by Vatagin. Showing the environment (an important condition for adapting to the life of animals) in sculpture, as you know, is difficult and, implying an inevitable convention, the master risks entering into dissonance with a documentary-accurate depiction of the main object - the animal. Therefore, it was supposed to show each individual as a certain integral type of an early form, freed from the late layers of evolution. For example, a generalized image of a fox in a plaster sculpture of Vatagin (1913), and not an animal with its subspecies, an image-type of a kangaroo, sea lion, brown bear, white-tailed eagle (1917), the ancestors of modern horses V. Trofimov (1936-38), extinct Flerov's fossil animals (1937-40), etc.

This was a task that had to be solved, taking into account the limited museum space. Clay served for model sketches, including the size of the final version. The large sculpture was created with gypsum, which was a universal material in the museum. In addition, gypsum made it possible to convey all the details of the clay model. Using this property, artists already in the clay model were looking for a complete solution. Though, the disadvantage of this material was that it not always corresponded to the nature of the animalistic image. Its grayish-white color gave it conventionality and abstraction. Such a sculpture required tinting. Some of Vatagin's sculptures for the section "Anthropogenesis" are tinted like a dark wood; sculptures of Trofimov and Flerov have no tinting.

It is characteristic that the stylistics of the sculptures of these masters, subject to the tasks of graphic popularization, is distinguished by a tendency towards naturalness. Generalized forms are softly modeled, details are accurately conveyed. Such a sculpture won't look alien and inappropriate in the exposition of the biological museum, since the elements of generalization, as well as its entire formative structure,

are subordinated to the expression of scientific content. The distinction of typification in scientific and artistic sculptural images comes from here. In the first case, the degree of generalization of visible real forms is regulated by the need to convey a scientific idea to the viewer, in the second case, this process depends both on the individual artistic conception of the author and on his involvement in a particular style phenomenon. The advantage of these compositions is that they are not talking about freely chosen subjects (at the request of the artist himself), but about topics dictated entirely by the interests of science.

By this time relevant experience of combining the traditions of painting and science within the museum exposition has already been in Russian culture. In this sense, the monumental works of V. Vasnetsov for the halls of the State Historical Museum in Moscow (panel "Stone Age" 1883-1885) can be called the original forerunner of Vatagin and Flerov. The tasks of reconstructing the appearance of a primitive human of the Stone Age (Vasnetsov) and fossil animals (Vatagin, Flerov) bring artists together in an appropriate search for fine solutions by studying archaeological materials. Of course, Vasnetsov's frieze isn't a literal scientific reconstruction because the master achieved his goal without resorting to precise archaeological details, but went on an intuitive path, relying on his creative imagination.

Considering the paintings, sculptures, and drawings of the masters as scientific and visual exhibits, we note their important place in the museum. To avoid a dry academic principle of material arrangement, the basis of the construction was a comprehensive display of the entire exposition. Kots wrote about this: "In every animal, in each animalistic sculpture, in each of the countless paintings, we saw not things that were valuable only in their own right, not rare stuffed animals, gypsum, but arguments that were closely, organically related to the main goal of the Darwin Museum: to give a clear and bright illustration of the theory of evolution on the Earth" (Kots, 1930-40th, Vol. 2. p. 1). This theory ensured the integrity of the organization of the museum. Individual topics are closely intertwined, complement and naturally pass into each other. Each exhibit was perceived as part of the ensemble. The so-called "biological groups" − taxidermy models - stuffed animals (most of them were carried out by master taxidermist K. Fedulov) and sculptures were arranged together. On the walls above the sculptures, paintings were put in a detailed plan revealing a scientific theme. Biological groups and sculpture, located in the lower exposition row, logically correlated with tables and paintings. To ensure this connection, each hall was supposed to be set aside for display and explanation of one topic (individual variability, geographical variability, age-related variability, adaptation in nature, heredity, etc.). Kots explained this in such a way: "According to the well-known comparison of a museum with a book, each of the museum's halls matches a chapter, a department of a book, a wall, to the groups of theories presented, each cabinet to theories, each shelf or group of exhibits to a group of arguments. The objects located in this way can be perceived meaningfully only when they're reviewed in a certain external and ideological-internal order" (Kots, 1930-40th, p. 13).

4. Conclusion

Thus, we can come to a conclusion regarding the emerging scientific trends in Russian animalisticism. If the formation of animalism of the XVIII century was happen-

ing through the accumulation of real facts, the introduction of new topics in the field of scientific drawing, then in the XIX century scientific trends were fixed and laid the foundation for academic art, which was oriented towards a consistent, serious reflection of the subject. After graduating from a school of professional skill, Russian animal painters of the XIX century worked out the basic principles of drawing, color, studying samples of classical art and living nature. The cult of science in the XX century especially brightly affected the artistic concept of the animalistic image. The knowledge of the model allowed artists to accentuate the characteristic in drawing, painting, and sculpture. Graphic, pictorial, sculptural works created as an exposition for the biological museum, seemingly far from setting actual artistic tasks, fully revealed the nature of animal art of the first half of the XX century, an important feature of which was a steady interest in studying animals in the field of science. Reliance on the achievements of the natural sciences, primarily biology, the scientific knowledge of the animal world, which was observed in the works of V.A. Vatagin, N.N. Kondakov, K.K. Flerov, A.N. Komarov, V.V. Trofimov, was one of the conditions of Russian animal art of the XX century. In other words, artistic intuition relied on solid knowledge. An eloquent evidence of this approach was the vast legacy of artists in the field of scientific illustration, which in many respects influenced the subsequent development of this interesting field of animalistics, expanding the boundaries of the genre, opening the way for new philosophical reflections on the theme "nature-animals-human".

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