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The Caucasian Sericulture Station – Its Foundation and Historical Significance

The establishment of silk production and research stations in the 19th century Europe responded to the needs that emerged on the continent during that time. The lack of scientific study of silk production became evident as early as the 1740-1760s when silkworms were affected by an epizootic disease, and the measures taken proved insufficient. The necessity arose to create a solid scientific foundation for silk production and its research, for which special stations were established. Germans, Austrians, and Italians were the first among European countries to set up sericulture stations. These institutions were essential not only for studying existing problems in sericulture but also to address the requirements for the future development of this field.[1]

The objectives of a sericulture station usually were to determine the conditions that would promote the development of sericulture in various geographical and climatic environments; furthermore, to develop specific methods for achieving the first goal, to study different diseases, to research new silkworm breeds through experiments, and in the end to provide necessary recommendations. The ultimate goal was to implement innovations in agriculture in order to raise general economic level. In Europe sericulture stations were often created based on demands presented by local commercial circles, which were interested in raising their countries' economic productivity. In other words, as will be described below, one of the main purposes of the stations was to disseminate scientific knowledge about sericulture. Moreover, the stations also aimed at the implementation of acquired knowledge in agriculture, particularly through providing information to the population on how to rear silkworms.

Among the stations, the example of Italy is particularly interesting. Similar to other European countries, creation of a sericulture station in Italy began in the 1870s, when at the initiative of the monarch of the unified Kingdom of Italy, Victor Emmanuel II (1861-1878), a special silk research institution was established in the city of Padua. The purpose of this institution was the scientific study of silkworm rearing, identification of various silkworm diseases, breeding of the new silkworm species, and, no less importantly, dissemination of the information about these innovations in a printed form. The researchers working in the station were also tasked with obtaining innovations related to sericulture across whole of Italy and spreading them throughout

[1] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1. Ustroistvo Stancii. C 39 Tablicami i 35 Risunkami v tekst. [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1. Structure of the station. With 39 tables and 35 figures in the text.] Tbilisi. 1906, 3-4. (in Russian)

the kingdom. Due to specific scientific objectives, students were to be admitted to the station for practical training.[2]

The European silk production stations, particularly the Padua institution, gained great popularity, that also influenced the Russian Empire, where favorable conditions for creating similar specialized stations developed throughout the 19th century. However, before moving on to the history of the foundation of a sericulture station in Tbilisi itself, let us briefly review the goals and interests of the Russian Empire in relation to sericulture and the South Caucasus.

The Russian Empire's interest in the region was driven by security and commercial interests. Silk production was one of such industries. By initially annexing the eastern part of Georgia and in the following years much of the adjacent territories, the Russian Empire gained control over regions with rich traditions of silk production. Therefore, it is not surprising that the imperial administration began implementing appropriate measures to increase the efficiency of silk production in the Caucasus from the very first years of the 19th century. As early as in 1802, a special official position – Silk Production Inspector – was established in the Russia imperial administration to study the state of silk production in the region. Headed by Marshal Biberstein, the new inspection service paid great attention to silkworm rearing. Despite these measures, the position of silk production inspector was soon abolished.[3]

In the 1820s, the first silk production factory was established on a special plot of land allocated near Tbilisi. The factory existed in one form or another until 1841, when it was finally decided to close it due to inefficient operations. In parallel, the imperial authorities announced the establishment of another company, which was located in Nukha (modern day Sheki, Azerbaijan). In 1841, the Russian government facilitated the establishment of the "Tzar-Abad" colony (*колония Царь-Абадъ*) near Nukha. There were many buildings, including the "Tzar-Abad" sericulture school. Young people from throughout the Caucasus were sent to this school, which was supported by the Viceroy of the Caucasus, Prince Mikhail Vorontsov (1844-1854). The school and the entire colony, however, ceased to exist in 1867.[4]

A qualitatively new stage in the development of sericulture in the Caucasus began in 1856, after the end of the Crimean War, when various diseases swept through the silk industry across the European continent. To improve the situation, Europeans often traveled to the Caucasus to purchase silkworm seeds (eggs). From the 1880s, yet another significant period began when the Russian royal authorities started working on eliminating the deficiencies in sericulture.

The Establishment of the Caucasian Sericulture Station

In the 1880s, sericulture in the Caucasus and generally throughout the Russian Empire was in a deplorable state, that manifested in a sharp decline in the scale of production and a significant deterioration in product quality. In the Caucasus and Central Asia, sericulture gradually shifted to foreign silk, the import of which was constantly increasing. In 1881, work began in Moscow on organizing the Arts and Industrial Exhibition. Due to the postponement of the exhibition until 1882, the organizing committee attempted to collect more detailed information about the state of

[2] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 11. (in Russian)

[3] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], *52-53.* (in Russian).

[4] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 54. (in Russian).

sericulture in the southern provinces of the Empire, and in 1881 it decided to send a prominent scientist, Nikolai Nikolaevich Shavrov[5], to the Caucasus to study the condition of the silk industry.[6]

Emphasizing the difficult situation of sericulture in the Caucasus, Shavrov pointed to the urgency of two main measures to support the declining field: 1. It was necessary to provide silk producers with the opportunity to consistently obtain healthy silkworm eggs; 2. Silk producers needed to learn the proper silkworm rearing and drying of silk cocoons, that required the establishment of a specialized sericulture institution in Georgia, or in Nukha[7]. For this purpose, in 1884, the Russian scientist presented a document to the Commissioner of the Minister of State Property, I. I. Tikhiev, regarding the immediate necessity of opening a sericulture station in Tbilisi. As a result, in the 1880s, Shavrov and zoologist, Aleksandr Andreyevich Tikhomirov, were sent to Austria-Hungary, Germany, Italy, and France to study the state of sericulture.[8]

The observations of the two scientists were presented to the Moscow Sericulture Committee, that developed conclusions about the fundamental principles for organizing and operating the Caucasian Sericulture Station in the Caucasus – the first such institution in the Russian Empire. For instance, the initial aim of the station was to publish articles and (often illustrated) brochures in the local languages on sericulture and related topics as a means of disseminating practical knowledge and theoretical information. The necessity of constructing special buildings was emphasized, that were to include a laboratory, main building, library, museum, and auditorium. Thus, it was envisioned that the Caucasian Sericulture Station would be the only state institution engaged in the systematic research of silkworms, the plants used to feed them, and the silk itself.[9] As a result, in 1887 the decision was made to establish the first silk research station in the Empire,[10] for which in Tbilisi an area near the Mtkvari River was selected. Initially, the assessment commission examined the proposed construction sites in Mushtaid Garden, Avlabari, and the area behind the railway station, which was offered by the city administration. The latter two locations were deemed unsuitable for sericulture, and ultimately the choice fell on the Mushtaid Garden.[11]

As the station was being established, the creation of a laboratory began in 1887, which was initially only modestly equipped. Nevertheless, by the end of 1888, the laboratory already

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[5] *Nikolai Nikolaevich Shavrov (1858-1915) was a member of the Russian Imperial Societies of Natural Science, Anthropology, Ethnography, Horticulture, Animal Husbandry, Sericulture, and Agriculture, and the direct founder of the Caucasian branch of the Imperial Russian Fisheries Society. He was the inspiration behind the establishment of the Caucasian Sericulture Station and led it until 1907, before moving to Central Asia. Through the Russian scientist's efforts, the first Sericulturists' Congress in the Caucasus was also convened. (This brief description is compiled according to an unpublished account of N. N. Shavrov's life, prepared and kindly provided by Maria Gonashvili, an employee of the State Silk Museum in Tbilisi).*

[6] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 65. (in Russian).

[7] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 65-66. (in Russian).

[8] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 67. (in Russian).

[9] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 68-70. (in Russian).

[10] *G. Nikoleishvili, E. Shapakidze. Meabreshumeoba – Shavi, Kaspiis Zghvebis da Tsentraluri Aziis Regionis Qvekhnebis (BAGSA) Saerto Sazrunavia. [Sericulture is a Common Concern for the Countries of the Black Sea, Caspian Sea, and Central Asian Region (BACSA)].* Tbilisi. 2014, 14 *(in Georgian).*

[11] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 65-66. (in Russian).

conducted nearly 30,000 studies, among which scientific research was predominant.[12] In 1889, a separate building was constructed for the service personnel. Subsequently, additional structures were built along a brick wall that ran through the perimeter of Mushtaid Garden.

In 1889, a crucial event occurred in the development of the sericulture station – the laying of the foundation for the main building.[13] In 1891 the construction of the main building and greenhouse was completed, special spaces for silkworm breeding were built, and agricultural equipment was brought in; large areas were set up for mulberry plantations and various garden plots were allocated. The building designated for the staff housing (accommodation), the library, laboratories, etc. were equipped with specialized inventory.[14] The construction of additional buildings continued until 1904.

All sericulture operations were carried out at the station: silk cocoons were harvested – some used for egg production (grénage), and the rest for silk extraction. When the station was first established, there was not yet an adequate number of silk specialists in Tbilisi, and therefore, the recruitment of those wishing to work in this sphere was actively pursued from the very beginning. For this purpose, the recruits had to undergo extensive practical and theoretical training. Through this approach, within a few years, a whole team of specialists equipped with extensive knowledge in sericulture technology was formed at the Caucasian Sericulture Station.[15]

Despite the fact that the sericulture station was established in Tbilisi and it was expected that its geographical scope would primarily be the Caucasus, the knowledge accumulated there served the development of sericulture in other regions of the Russian Empire as well.[16] Indeed, raising general knowledge of sericulture was one of the main goals of the new station. Specifically, the station organized annual practical courses in sericulture and beekeeping,[17] which included lecture courses and practical training (often outside of Tbilisi as well), publication of acquired knowledge, etc.[18] The main deficiency in the Caucasian sericulture was silkworm feeding. For precisely this reason, the practical training sessions held in Tbilisi and other parts of Georgia were primarily directed at mitigating this weakness. It should also be noted that among the course attendees were residents of both the Caucasus and Turkestan (modern Central Asia). Interestingly,

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[12] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1887 i 1888 gg. Tom I. [Works of the Caucasian Sericulture Station. For 1887 and 1888. Volume I.].* Tbilisi. 1889, 209. (in Russian)

[13] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1889 g. Tom II. [Works of the Caucasian Sericulture Station. For 1889. Volume I I.].* Tbilisi. 1889, 1-2. (in Russian)

[14] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 85. (in Russian).

[15] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 191. (in Russian).

[16] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 2. Ustroistvo Stancii. C 5 tablicami. [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 2. Structure of the station. With 5 tables.] Tbilisi. 1907, 3-4. *(in Russian)*

[17] *The Caucasian Station made a significant contribution to the development of beekeeping. Beekeeping, in general, has always been one of the most widespread branches of agriculture. From works published by the station's employees, it is evident that in the 1880s, beekeeping was considerably declining. Until 1889, no tangible steps were taken to improve the situation, and only after the station and its beekeeping department became operational did proper study of the situation begin, along with offering necessary courses for knowledge dissemination (see* Caucasian Sericulture Station. Its Structure and Activities from 1887 to 1905. Part 2*, pp. 246-248; or, for example, courses offered in 1890. See: Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1890 g. Tom III [*Works of the Caucasian Sericulture Station for 1890. Volume III. (With 7 tables of drawings)]*. Tbilisi. 1892, pp. 7-8. Information about similar courses can be found in almost every annual report).*

[18] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 2.* [Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 2], 21 (in Russian)

among the attendees from the Caucasus, the majority were mainly from the governorates of Tbilisi, Kutaisi, and Elizavetpol.[19]

As mentioned above, one of the critical missions of the Caucasian Sericulture Station was to study silk production technologies in the Caucasus itself, to collect existing methods and implement them in practice. This aspect of the station is well reflected in the "*Works of the Caucasian Sericulture Station*", which provided an annual overview of the work of the Caucasian Sericulture Station from 1887. These works also provide valuable information regarding both the state of sericulture in Georgia and the annual activities or challenges that the station had to face.

In the 1887 report, we learn that K. A. Gorbachov, scientist working in the station, on the instructions of Shavrov, traveled to the districts of Ozurgeti and Zugdidi, where, according to the information he gathered, the silk production process was proceeding more or less correctly. In the settlement of Lanchkhuti the Russian scientist found vibrant production of silks known by the names "Daraya"[20] and "Shala-Abreshumi" (silk-blend).[21] The silk production of Lanchkhuti were considered the finest in the entire region, and the manufactured items were sold in Ozurgeti and at the railway station.[22]

Another interesting settlement was Khoni, where the purchase of silk cocoons was actively pursued. Generally, Gorbachov noted that an active phase of replacing local silkworms with European varieties was underway, which on one hand harmed local residents, but on the other created new commercial opportunities.[23] European eggs actively entered Georgia from the 1850s, and their initial area of distribution was the Kutaisi province, later expanding to the other regions of the Caucasus. The years 1856-1863 were considered as one of the best periods for sericulture in the region. However, in subsequent years, production began to decline sharply,[24] and to improve this deteriorated situation, between 1864-1872, the introduction of Japanese silk began, which completely covered the territories where European and local Caucasian varieties were widespread.[25] Despite the fact that the new kind of silk showed particular advantages, in the early 1870s, cases of pebrine disease increased significantly across large parts of the Caucasus.

The Caucasian Sericulture Station continued to purchase the necessary quantities of silk cocoons for egg production in subsequent years as well. For example, in 1889, V. Zhmuydzinovich, another scientist based in the station in Tbilisi, was sent to the following settlements and cities of the Kutaisi Governorate: Khoni, Samtredia, Chokhatauri, Amaghleba, Ozurgeti, and others. In addition to purchasing silk cocoons, Zhmuydzinovich also tried to disseminate relevant knowledge about sericulture in the small sericulture schools that were scattered throughout the Kutaisi Governorate.[26] In 1891, Shavrov visited a large part of the Caucasus to assess the state of sericulture and beekeeping. The following year, V. P. Ivanov and

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[19] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 2. [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 2], 68 (in Russian).

[20] *Four varieties of "Daraia" were known*

[21] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1887 i 1888 gg. Tom I. [Works of the Caucasian Sericulture Station. For 1887 and 1888. Volume I.],* 94. (in Russian)

[22] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1887 i 1888 gg. Tom I. [Works of the Caucasian Sericulture Station. For 1887 and 1888. Volume I.],* 99. (in Russian)

[23] *French eggs were widespread in the Zugdidi district.*

[24] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 1, [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 1.], 59. (in Russian).

[25] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1887 i 1888 gg. Tom I. [Works of the Caucasian Sericulture Station. For 1887 and 1888. Volume I.],* 198-199. (in Russian)

[26] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1889 g. Tom II. [Works of the Caucasian Sericulture Station. For 1889. Volume I I.]*, 154-156. (in Russian*)*

S. N. Kamenski, likewise scientists associated with the station in Tbilisi, traveled to Ozurgeti, other parts of the Kutaisi Governorate, and the districts of Shusha and Jebrail. In 1893, Ivanov visited several districts of the Kutaisi and Elizavetopol Governorates. Similar scientific expeditions continued until 1904 and covered various parts of the Caucasus.[27]

In the last quarter of the 19th century, silk production, including silkworm rearing, was quite widespread in the Tbilisi and Kutaisi Governorates. Indeed, active sericulture was practiced in almost all districts of both governorates: for example, in 1887-1888, silk production was recorded in 502 settlements.[28] Naturally, the intensity of activity varied among these settlements. The production between entire regions differed as well, as some places had better natural conditions than others. However, the eastern part of Georgia was traditionally considered a more developed region in sericulture. For instance, according to the observations made by Shavrov in 1888, despite a rather low technological level, with proper supply of the eggs and successful marketing of the created product, it was possible to achieve a fairly high level of sericulture in Kakheti.[29]

By the end of the 19th century, a portion of the eggs in the Caucasus came from Central Asia and Persia, but it was primarily imported from Asia Minor and Western Europe via the Black Sea. The import of the eggs from foreign countries significantly increased annually.[30] The majority of the eggs came from Asia Minor and southern France, with a relatively insignificant percentage emanating from Italy and other countries. The eggs were mainly imported through the port city of Batumi, where it passed through customs and was only inspected to prevent smuggling. Most of the imported eggs were supplied to Tbilisi, from where it was sent to various parts of the Caucasus, Persia, or Central Asia. At the same time, the return of the eggs from Persia and Central Asia was also common when it could not be sold.[31]

Contacts Between the Caucasian Sericulture Station and the Padua Silk Station

In 1885 Shavrov was sent to Europe by the Ministry of State Property of the Russian Empire to study sericulture stations and silk production technologies in France, Austria-Hungary, and Italy. The Russian scientist paid special attention to the Padua station in Italy and in his works described its structure in detail[32]. He also focused on how the station worked to develop sericulture

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[27] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 2. [*Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 2], 161-163 (in Russian).

[28] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1887 i 1888 gg. Tom I. [Works of the Caucasian Sericulture Station. For 1887 and 1888. Volume I.],* 145-152. (in Russian)

[29] *Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1887 i 1888 gg. Tom I. [Works of the Caucasian Sericulture Station. For 1887 and 1888. Volume I.],* 189. (in Russian)

[30] *For example, in 1893, 52 447 poods of silk and "cocoons" passed through the South Caucasus railway. Products were transported both from Batumi toward Baku, as well as from Central Asia and Persia. See: Trudi Kavkazskoi Shelkovodstvennoi Stancii. Za 1890g. Tom VII. Vipuski I i II [*Works of the Caucasian Sericulture Station for 1890. Volume VII.-Issues I and II]. Tbilisi. 1894, p. 151.

[31] *Kavkazskaia Shelkovodstvenaia Stancia. Eia Ustroistvo i Deatelnost s 1887 po 1905. Chast 2.* [Caucasian Sericulture Station. Its structure and activities from 1887 to 1905. Part 2], 186-187 (in Russian).

[32] *Dobivanie, obrabotka I uslovya sbita shelka i organizacya pravitelstvenix i obshestvenix uchrejhdeni po shelkovodstvo I shelkovoy promishlennosti v Avstro-vengrii, Italii, Francii I drugih shelkovodnih stranah. Atchet po zagranichney poezdke predstavlenniy ministerstvu Gosudarstvennih imushestv N. N. Shavrovim: s prilojeniem shelkovodtvennoy karti Evropi I alboma risunkov [Extraction, Processing and Sales Conditions of Silk and the Organization of Government and Public Institutions for Sericulture and Silk Industry in Austria-Hungary, Italy,*

in other parts of Italy. For this purpose, courses were frequently offered to the population, upon completion of which attendees received a special certification document. The staff of the Padua station were ready to provide assistance to any local resident who developed an interest in practicing sericulture, particularly in preparing the eggs. Shavrov identified and thoroughly studied three main directions in the functioning of the Padua station – administrative, pedagogical, and scientific.

Shavrov also devoted attention to microscopic research at the Padua station, the process of allocating space for the station, its technological equipment, methods for motivating the local staff, and many other details that would later be necessary for establishing a similar station in Tbilisi[33]. While in Italy, Shavrov also paid attention to the interconnection between the Padua station and the observatories under its jurisdiction spread across the northern part of Italy. Similarly, he studied the general purpose for creating silk observatories and how the Padua station controlled these institutions.[34] An interesting parallel can be drawn with Georgia, when after the establishment of the Caucasian Sericulture Station, several silk production buildings under the station's jurisdiction were set up in various places across the Kutaisi Governorate. Similar to Italy, the purpose of these locations was to prepare the eggs and maintain close connections with the Caucasian Sericulture Station. Although the Georgian "observatories" did not have adequate funding to create conditions similar to those in Italy, it is important to emphasize how the Russian scientist transferred this model to the station in Tbilisi.

During his time in Padua, Shavrov enjoyed close contact with the station's director, Enrico Verson, as well as his assistant, Enrico Quajat. The Russian scientist's reports show an abundance of details (such as the analysis of financial documents related to the station's economic profit)[35] that would have been impossible to obtain without the support of the station's leadership.[36] The connection with Padua is further evidenced by the fact that before building the station in Tbilisi, while research was still ongoing about the direction this new institution would take, it became necessary to build a silkworm nursery. For this purpose, eggs were ordered from Europe, and one of the senders was a private individual from Padua, Marquis Bertolucci.

Another researcher who worked at the Tbilisi station and maintained active relations with the Padua Station was the scientist Dmitri Rosinski. A letter preserved in the Padua archives from 1894 reveals[37] that Rosinski worked at the Tbilisi station together wit Shavrov.[38] In the same year,

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France and Other Sericulture Countries. Report on a Foreign Trip, Presented to the Ministry of State Property by N. N. Shavrov: With an Appendix of a Sericulture Map of Europe and an Album of Drawings]. St. Petersburg. 1890, 273-296.

[33] *Dobivanie, obrabotka I uslovya sbita shelka i organizacya pravitelstvenix i obshestvenix uchrejhdeni... [Extraction, Processing and Sales Conditions of Silk and the Organization of Government and Public Institutions…],* 276-282 (in Russian).

[34] *Dobivanie, obrabotka I uslovya sbita shelka i organizacya pravitelstvenix i obshestvenix uchrejhdeni... [Extraction, Processing and Sales Conditions of Silk and the Organization of Government and Public Institutions…],* 297-298 (in Russian).

[35] *Dobivanie, obrabotka I uslovya sbita shelka i organizacya pravitelstvenix i obshestvenix uchrejhdeni... [Extraction, Processing and Sales Conditions of Silk and the Organization of Government and Public Institutions…],* 287-289 (in Russian).

[36] *N. N. Shavrov completed his scientific mission to Europe in 1886 and, together with his colleague A. A. Tikhomirov, compiled a final report discussing the establishment of a European-type silk research station. Data of interest to us was preserved in the unpublished report "Caucasian Sericulture Station" by Darejan Demetrashvili, the late employee of the State Silk Museum in Tbilisi.*

[37] *CREA-AA Padova Laboratorio di Gelsibachicoltura (CPLG), 8 Rossinski to Quajat. 23.06.1894.*

[38] *As it turns out, D. Rosinski worked at the Caucasian Sericulture Station until 1898.* Caucasian Sericulture Station. Its Structure and Activities from 1887 to 1905. Part 1, p. 196.

Rosinski wrote another letter to the administration of the Padua Station regarding the publication of an academic article, though he notes that he wished to publish his work anonymously.[39] In 1891, the Russia scientist visited the Padua Station, which helped him complete his research at that time.[40]

Connections with Padua continued in subsequent years, when in August 1897 Ivanov traveled to Europe for nine months to gain experience, particularly to study the extraction of thread from cocoons and the processing of silk and silk waste. Additionally, he decided to study sericulture and mulberry cultivation in general, as these two directions were qualitatively closely linked to each other.[41] Following the visits to the silk production centers in Germany and France, the Russian scientist traveled to the Padua Sericulture Station and nearby silk factories. In Padua he maintained active relations with Verson and Quajat. For instance, in a review published in 1897 regarding his scientific activities in Europe, Ivanov expresses special gratitude to the two Italians scientists.[42] The level of cooperation is evident by the fact that when discussing assistance provided to him in Europe regarding sericulture, the Russian scientist was more grateful to the Italians than to the others.[43]

Overall, Ivanov evaluated his mission to Europe positively and was grateful to the Ministry of Land Management and State Property Administration of the Russian Empire, which extended his stay from six to nine months. Despite the fact that the Russian scientist went to western Europe well-prepared, having familiarized himself with the relevant literature on sericulture, which accelerated and facilitated the completion of the task set before him, he still considered that six-month-period was insufficient to acquire the knowledge about the processing of silk waste – a well-guarded secret in European countries.[44]

Conclusion

The establishment of the Caucasian Sericulture Station in Tbilisi was a culmination of a long-drawn imperial project to elevate the economic situation in Russia's southern provinces. It also shows that in the 19th century, the Empire's southward expansion, along with security interests, was driven by geoeconomic imperatives. The rich tradition of silk production in the Caucasus and especially its southern part, which dated back to the early Middle Ages, prompted the Russian imperial administration to devote more attention to developing this industry in the region, in order to effectively compete with the European empires of the age. In the second half of the 19th century, the struggle was less about capturing new trade routes (since most territories in Eurasia had already been divided between big powers) and more about industrially developing a

[39] *This information (brief translation of the letters), which is still unpublished, was kindly provided by Italian scientist Barbara di Gennaro Splendore, a researcher at the Padua Silk Station.*

[40] *CREA-AA Padova Laboratorio di Gelsibachicoltura (CPLG), 9 Rossinski to Quajat 16.07.1891 and 24.07.1891.*

[41] *Information about I. V. Ivanov was kindly provided by Maria Gonashvili, an employee of the State Silk Museum in Tbilisi.*

[42] *Obzor Shelkovodstva i Shelkovoi promishlennosti v Zapadnoy Evrope v 1897 g. [Review of Sericulture and Silk Industry in Western Europe in 1897],* 9 (in Russian).

[43] *Obzor Shelkovodstva i Shelkovoi promishlennosti v Zapadnoy Evrope v 1897 g. Otchet o Komandirovk v Zapadnuyu Evropu dlya izuchenya Razmotki Kokonov, Obrabotki Shelka i Shelkovix ostatkov i Shelkovodstva Voobshe. V. P.* Ivanov [*Review of Sericulture and Silk Industry in Western Europe in 1897. Report on a Mission to Western Europe for the Study of Cocoon Unwinding, Processing of Silk and Silk Residues, and Sericulture in General*. V. P. Ivanov], Tbilisi. 1899, 3-9 (in Russian)

[44] *The data presented in this paragraph was likewise provided by Maria Gonashvili.*

whole range of trade and economic sectors. Sericulture was one of them[45] and the Russian Empire sought to not fall behind its European peers that by 1880 had already made significant advancements in the scientific study and factory production of silk. Moreover, there was an even more practical reason for sericulture development in the Caucasus. In the first half of the 19th century, the silk products in the Russian Empire were mostly imported from the West, and the complicated political relations with the European countries that emerged in the aftermath of the Crimean War pushed the Russian rulers to replace foreign products with local ones. In this process, the Caucasian silk was meant to play a leading role and to become a primary supplier for the developing Russian silk industry.[46]

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