

The Conquest of Science: Women and Science in Russia, 1860–1940

By *Olga Valkova**

ABSTRACT

This essay describes the growing number of women in science in Russia from 1860 to 1940, analyzing the development of a significant community in terms of three generations. These generations are defined by the removal of various obstacles to women's participation in the sciences. The decisive transitions took place with the creation of higher education for women in the 1870s and the establishment of formal gender equality by the Bolshevik regime after 1917. To develop a composite picture, many women's careers are examined.

INTRODUCTION

This article concerns women who entered the scientific profession, as well as women who participated in science on a regular basis, in the Russian empire and later in the Soviet Union. Although both in Europe and the United States there is a considerable national literature on this topic, in Russian historiography one cannot find a single monograph considering this question. There are a few books about the very first Russian women scientists working in different disciplines (physicians, geologists, meteorologists), but the majority of them are more reminiscences than historical explorations.¹ And aside from a few brief articles, there has been nothing at all about the “women in science” question since 1917; because there was no “woman's question” in the USSR, there was nothing to talk about.² There are, of course, more than a few biographies of Russian women scientists, but many more women scientists have been completely forgotten. Before the early 1990s, there were no biographical handbooks about women scientists in Russia, and even today there are very few.³

It appears that until the 1990s, Western historiography was more interested in this topic than Russian historiography was. There exist a number of books about Russian

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¹ A. A. Shibkov, *Pervye zhenshchiny-mediki Rossii* (Leningrad, 1961); D. V. Nalivkin, *Nashi pervye zhenshchiny-geologi* (Leningrad, 1979); and E. S. Selezneva, *Pervye zhenshchiny geofiziki i meteorologi* (Leningrad, 1989).

² See, e.g., V. A. Ribasov, “Russkie zhenshchiny v nauke,” *Nauka i zhizn'*, 1949, no. 3:27–9.

³ For example, there are two books published in Nizhi Novgorod: *Lichnost' v nauke: Zhenshchiny-uchenie Nizhnego Novgoroda; Sb. ocherkov i vospominanii*, 2 vols. (Nizhni Novgorod, 1997–99).

women in intellectual professions in different historical periods, but there are more books about women writers than about women scientists.⁴ This limited historiography is not uninteresting. For example, Ann Hibner Koblitz's *Science, Women, and Revolution in Russia* analyzes a conflict between two different impassioned aspirations of Russian women of the 1860s–70s: the choice between science and revolution.⁵ The remaining slim literature concerns women's roles in higher education.

Of course, women interested in mathematics and the natural sciences appeared in Russia much earlier than the 1860s. Their tracks can be found in memoirs and classical literature in the late eighteenth century. For example, the famous Russian memoirist Philip Vigel (1786–1856) wrote about one such woman, Anna Alexandrovna Turchaninova (1774–1848), whom he met in his childhood. He wrote:

At less than 20 years old she avoided society, dressed in a slovenly manner, was advantageously engaged in mathematics, knew Latin and Greek, was going to study Yiddish and even wrote verses from time to time—though very unsuccessfully. She was known under the name of Philosopher [*Filosofka*]. All Kiev scholarship hid at that time under monastic cloaks at the Brothers' monastery [*Bratskii monastir'*]. She discovered it and, being free from worldly weakness, was not afraid to make friends with some of the monks teaching sciences in the ecclesiastical academy. . . . Her conversation was very attractive for me. She readily told me about her relations with the honorable scientists, with the professors of Moscow University.⁶

Anna Turchaninova descended from a landowning family that had an estate in the Kiev region, a house in Moscow, and properties elsewhere. She published her poems in several magazines in 1798 and in a book in 1803. More relevant for us is that she translated from Latin and published in verse form a book called *Natural Ethics or the Laws of Morality, Directly Drawn from the Contemplation of Nature*.⁷ In 1817, she produced another book, *Lettres philosophiques de Mr. Fontaine et de m-lle Tourtchaniniff*, published in Paris.⁸

Another example was the princess Eudoxia Ivanovna Golitsyna (1780–1850), a woman whom the poet Aleksandr Pushkin ironically dubbed “an academician in a cap.” One of the most beautiful women of the time, Golitsyna also had the nicknames *Princesse Nocturne* and *Princesse Minuit*, and because young Aleksandr Pushkin dedicated some poems to her, she is often mentioned in the history of Russian literature. It well known that she conducted an open house at which the cream of society gathered nightly. Not so well known is the fact that her guests also included a member of the St. Petersburg Academy of Sciences, Michail Vasil'evich Ostrogradskii (1801–61), an outstanding Russian geometrician; professor of Moscow University

⁴ Among many other sources, see, e.g., Toby W. Clyman and Diana Green, eds., *Women Writers in Russian Literature* (Westport, Conn., 1994); Catriona Kelly, *A History of Russian Women's Writing, 1820–1992* (Oxford, 1994). Of course, there simply were more women writers than scientists: writers were the first women to struggle against men's monopoly on intellectual labor and the first to achieve success.

⁵ Ann Hibner Koblitz, *Science, Women, and Revolution in Russia* (Newark, N.J., 2000). One should also note her biographical study *A Convergence of Lives: So'fia Kovalevskaia, Scientist, Writer, Revolutionary* (New Brunswick, N.J., 1993).

⁶ Philip Vigel, *Zapiski*, vol. 1 (Moscow, 2003), 107.

⁷ Anna Aleksandrovna Turchaninova, *Natural'naia etika ili zakony npravstvennosti, ot sozertsaniia prirody neposredstvenno proistekaiushchie* (St. Petersburg, 1803).

⁸ Anna Aleksandrovna Turchaninova, *Lettres philosophiques de Mr. Fontaine et de m-lle Tourtchaniniff* (Paris, 1817).

and mathematician Nikolai Dmitrievich Brashman (1796–1866); Moris Destrem (1787–1855), a famous engineer; and mathematician, professor, and director of the Institute of Communications, Lieutenant General Pierre-Dominique Bazaine (1783–1838). This woman of fashion was fond of mathematics. She wrote *De l'analyse de la force* (St. Petersburg, 1835, 1837; Paris, 1844). A prestigious journal noted at the time that this book was a “remarkable act of reflection.”⁹ Famous Russian poet Fedor Glinka (1786–1880) said about this work: “In this book Princess Golitsyna showed such an opinion so exactly hers that it couldn't but appear very new and at the same time correct in its serious conclusions.”¹⁰

But these exceptions only emphasize the rule. A rich woman could afford an eccentric hobby especially if she was unmarried, was married but living separately from her husband, or was a widow. These cases of incidental interest are not the subject of this essay. Although the existence of such women was important, they could hardly be considered scientists and still less professionals. So what did it mean to be a “professional scientist” in Russia during this period? Might it be a person who was self-taught and never held a chair in any official scientific organization but had substantial knowledge in her chosen science, spending the majority of her time in scientific efforts, publishing the results of those investigations, and winning recognition from the scientific community?¹¹ The problem of Russian women integrating themselves into professional science has simply not been adequately explored. In this article, I shall make some preliminary efforts to fill this gap. I say “preliminary” because my investigation is not yet complete. I have been collecting data on this question, published and archival, for several years, but it is a very large project, especially for the Soviet period. Nevertheless, in the article I shall try to reconstruct the history of Russian women integrating themselves into professional science from 1860 to 1940, to elucidate some of the main characteristics of this process.

HOW DID WOMEN BECOME INTERESTED IN SCIENCE?

The first half of the 1860s was a unique time in Russian history. It was the age of the Great Reforms: serfdom was abolished (1861), and, among other very significant changes in Russian governance, jury trial and local government were promulgated (1864). For young male students, this was a time of freedom, energy, and hope. It was also a time when an interest in natural sciences spread in society, closely connected in their minds with their general situation. Thanks to their brothers, school teachers, and private tutors, and to the periodical press, young ladies were deeply involved with this newborn interest. It became fashionable to attend popular-science lectures, to be a part of a small youth circle that discussed natural sciences (as well as philosophy

⁹ “L'analyse de la force, par M-me la princesse Eudoxie Galitzine, née Izmaïloff. St.-Petersbourg, chez Hintze, 1837, 8-vo., pp. VI et 12,” *Biblioteka dlia chteniia* 25, nos. 11–12 (Moscow, 1837), 74.

¹⁰ Fedor Glinka, “Kniga kniagini Avdot'i Ivanovni Golitsiniy i vecherniaia beseda ee v Moskve,” in *Moskvitianin*, vol. 12 (Moscow, 1843), 538.

¹¹ This sounds a lot like the definition of an amateur. I argue that there is a small but important difference. If a person obtained a level that was strongly associated with the necessary professional skills, is it so important that he (or she) did not have an official document? If a person published a monograph that was acknowledged by his (or her) colleagues, is it important that the author did not have academic status? If exploration of nature was taking plenty of his (or her) time, is it important that a person was not receiving a salary? The answer to all of the questions: it might be vitally important to the person, but it made little difference for the sciences.

and politics) and read books on the natural sciences. In her famous memoirs, Elena Nikolaevna Vodovozova (1844–1923) wrote about the first months of 1862, when she had just graduated from Smol'nyi Institute for Young Ladies:

Studying the natural sciences was considered the first instrument for the self-education, for preparation for any activities and a really useful social life. They were taken as a necessary foundation of all occupations, without exception. . . . In the '60s, reverence for natural history spread among overwhelming sections of Russian society and had a special character. Extraordinarily useful results were awaited not only from the research activities of scientists but also from every popular book; it made no difference which field of knowledge it belonged to. It was thought that an educated person must draw his attainments first of all from this source. . . . Now it is difficult to imagine with what total enthusiasm the publishing of the translation of *Brehm's Life of Animals* was met. Not to read this book meant to invite reproaches and derision. But people were interested not only in zoology but in the others areas of knowledge as well: mineralogy, botany, physiology, chemistry, partly even in anatomy.¹²

Vodovozova was perhaps less than delighted with all this because she herself was a humanist. She described several situations in which a girl gifted in music or art forced herself to study chemistry and zoology without any success and sometimes with very sad consequences.¹³ The fashion persisted, supported by a strong European influence. The majority of Russian noble girls were taught from childhood to speak and read foreign languages. As a rule these languages were French, German, Italian, and sometimes English. Their knowledge of languages was much better than that of their male peers, so women could read almost any western European book in which they were interested without wasting time waiting for someone to translate it. And as male relatives had a habit of seeking their help with the translation of the most important books, girls had access to scientific literature. In addition, Russian noble families used to spend some time in Europe, and young girls and women often accompanied their fathers or husbands on these sojourns. Sometimes the family lived abroad long enough for the daughters to take classes in Italy or elsewhere. Returning home, they brought an acquired interest in natural sciences, antiquity, or fossils with them.

One such woman was Anna Mikhailovna Raevskaia (1820–83). As a lieutenant general's daughter, she received a very good education at home. Among her teachers was, for example, Ostrogradskii, who had a high opinion of her mathematical abilities. When she was eighteen, she married General Nikolay Nikolaevich Raevskii, commander of the Black Sea shoreline. After four years of marriage and the birth of two sons, Raevskaia was widowed. She spent the next five years traveling across Italy viewing antiquities. She was fond of antiquity, archaeology, ethnography, and anthropology and became acquainted with many experts in these fields.¹⁴

After returning home, Raevskaia corresponded with her European friends who were helping buy different artifacts for her. During her life, she assembled several very interesting anthropological and archaeological collections. For example, in Naples she bought a good mineralogical collection from Vesuvius and in Germany gathered a

¹² Elena N. Vodovozova, *Na zare zhizni: Memuarnye ocherki i portrety*, vol. 2 (Moscow, 1987), 80.

¹³ *Ibid.*, 82–3.

¹⁴ One of them was Professor Charles Adolphe Morlot (1820–1867), formerly a curator of the Bern Archaeological Museum in 1851 and later appointed professor of geology and mineralogy in Lausanne. He wrote on the Tertiary and Quaternary geology of Austria, Switzerland, and Denmark and acquainted Raevskaia with some details of prehistory.

valuable collection of fossilized ammonites. She also ordered copies of famous items from European museums and private collections. She maintained close relations with the St. Petersburg Academy of Sciences and several Russian museums, as she often presented her collections to them. A friend of academician Karl Ernst von Baer (1792–1876), one of the most outstanding naturalists of the time, she availed herself of his supervision during her anthropological and archaeological expeditions to the Baltic lands and Finland. She organized archaeological digs in the Petersburg region as well. On February 14, 1872, she was elected a corresponding member of the Imperial Moscow Archaeological Society in spite of the fact that its president, Count Alexei Uvarov (1828–84), strongly objected to the idea of mixing women and science and had never before made such an exception.¹⁵ Anna Raevskaia donated her collections to the Imperial Amateurs' Society for Nature, Anthropology and Ethnography. Contemporary anthropologist Dmitrii Anuchin wrote about her: "She was a master-spirit of a woman and had an analytical mind which is so rare among females."¹⁶

Even some women from the imperial family began to demonstrate interest in the sciences in the 1860s. One of them, grand duchess Maria Nikolaevna (1819–76), daughter of the emperor Nicholas I, for example, sent the Imperial Moscow Society for Naturalists the lower jaw of a fossilized rhinoceros in 1855. This jaw had been discovered near Tyumen' by someone named Shmotin.¹⁷ How it came to Maria Nikolaevna's hands was never mentioned. The society was particularly honored by this gesture because the event coincided with its fiftieth anniversary, so it asked for permission to "beautify the list of its honorable members by including the name of Her Highness."¹⁸ Whether permission was granted is an open question, but the name of Maria Nikolaevna can today be found in the card index of members of the Imperial Moscow Society for Naturalists.¹⁹

HOW TO BEGIN A CAREER?

In 1859–60, riding the wave of public enthusiasm for the natural sciences and political emancipation, several women asked for and received permission from the authorities to attend lectures at St. Petersburg University as irregular students, as well as at Kiev and Kharkiv universities. Simultaneously, a few young girls began to study at the St. Petersburg Medico-Surgical Academy. There is evidence that neither professors nor male students were opposed to women's presence in the universities. In 1861, Liudmila Ozhigina, who attended lectures at Kharkiv University (in medicine) and Mar'ia Mihailovna Korkunova at St. Petersburg University (in philology) made requests to the Ministry for Popular Enlightenment to permit them to pass state exams.²⁰ This action brought the whole question to the government's attention.

¹⁵ *Imperatorskoe Moskovskoe arkheologicheskoe obshchestvo v pervoe piatidesiatiletie ego sushchestvovaniia (1864–1914 gg.)*, vol. 2 (Moscow, 1915), 297–8.

¹⁶ Dmitrii N. Anuchin, "Anna Mikhailovna Raevskaia," *Izvestiia Obshchestva liubitelei estestvoznaniia, antropologii i etnographii* 90, no. 3 (*Trudy antropologicheskogo otdela* 18, no. 3 [1896], S513).

¹⁷ "Protokol zasedaniia Moskovskogo Obshchestva ispitatelyi prirody 20 oktiabria 1855 goda," d. 309, ll. 17–8, Archive of Moscow Society for Naturalists (hereafter cited as MOIP), Moscow.

¹⁸ *Ibid.*, 18.

¹⁹ Society members before 1953 card index in Library of the Imperial Moscow Society for Naturalists, Moscow.

²⁰ G. A. Tishkin, "Zhenskii vopros i pravitel'stvennaia politika 60–70-h godov XIX v.," in *Voprosy istorii Rossii XIX–nachala XX veka: Mezhvuzovskii sbornik* (Leningrad, 1983), 161–2.

The problem was more difficult than modern historians used to think. It was not only about traditional conservatism—for a conservative a noble woman surrounded by rough and ill-mannered students, including common people, was unacceptable—and the fact that some professors would not tolerate a young lady in the sacred walls of the university. If it were simply a question of allowing women to be present at the universities, the government probably would not have objected. State exams and thus official status were, however, another thing altogether.

The whole system of Russian universities was founded by the state. In the beginning, it was meant to prepare Russian tutors for future Russian specialized schools and more generally educated functionaries for state service.²¹ But soon after Moscow University was created in 1755, it became obvious that there were not enough noble sons who wanted to become students. The state had to give university students and future graduates a large assortment of privileges to induce young men from lower estates to enter a university. After more than a century and the foundation of several new universities (Kharkiv, Kazan', Iur'ev, St. Vladimir in Kiev, Novorossiysk in Odessa), and reorganizations (Vilensk), as well as several new unified charters for all Russian universities (1804, 1835), the system of privileges was still operative at the beginning of the 1860s, when a new university charter was discussed all over the country.

By the charter (*ustav*) of the "civil service,"²² it was open only to the sons from Russian noble families, sons of military officers, and government officials of specific ranks. But if a man successfully graduated from the university, he had a right to enter the civil service despite his origin. Theoretically, it was the only way to obtain the highest managerial positions in the state. With every new rank came new bonuses. For example, the rank of honorable citizen made a person free from taxation, hereditary nobility extended this status to one's heirs, and after twenty-five years of service a person (and after his death his widow and children) had the right to a state pension. Of course women wanted to enter universities to become future doctors, professors, and such, not officials. But sooner or later they would ask for state diplomas (as Ozhigina and Korkunova did) and next for teaching positions in the universities. The problem was that all universities in the country were state ones, and all positions in academia belonged, by statute, to the civil service. Every academic degree was equated with the civil Table of Ranks and the military command hierarchy. To give a woman the right to become a university professor automatically meant to give her access to all positions of the civil service, as there was no way to separate them. This, of course, was unthinkable. In the Russian empire, every subject (*poddannyi*) had a special place and duties depending on estate. Women also had their niche. Social ideals dictated that every girl should be raised to be a good wife and mother. That was her only social role.

After the Ozhigina and Korkunova cases, the Ministry of Popular Enlightenment sent a special letter (in October 1861) to all universities with the demand that their councils answer the three following questions:

²¹ S. Shevirev, *Istoriia Imperatorskogo Moskovskogo universiteta, napisannaia k stoletnemu ego iubileiu, 1755–1855* (Moscow, 1998), 12.

²² The so-called civil service was the most prestigious and elitist service in the state—in fact, a ruling bureaucratic hierarchy. Only sons of the nobility, military officers, and government officials could enter and take positions. A person who entered the civil service could achieve the highest administrative positions in the state. University graduates, even those descended from the lowest classes, were given the right (as the highest benefit) to enter the civil service.

1) Is it possible to permit women's presence at university lectures together with [male] students in all departments or not? 2) Which conditions should be put forward for that attendance? 3) Could such persons be admitted to the academic degrees examinations, and what rights should they enjoy if the test were successful?²³

All university councils, with the exception of those of Moscow and Iur'ev universities, responded affirmatively to the first question.²⁴ The discussion in the Medical Council of the Ministry of Internal Affairs about the request of Liudmila Ozhigina was also favorable, yet the government's final decision was negative. Although the new university charter (1863) contained no explicit item forbidding women's entering, the circular letter (July 20, 1863) strongly forbade women to attend universities in Russia even as irregular students.²⁵ This rule was in effect (with some exceptions in the revolutionary period of 1905–7) until the Bolshevik decree in 1918.²⁶

Since university doors were closed for women in Russia, young girls interested in the natural sciences had to look for other opportunities. There were three possible routes, and all of them were exploited. The first option was to begin a struggle with the bureaucracy in the hope that sooner or later the permission to enter universities would be granted. The second was to go abroad to European universities. The last, and easiest, was self-education. This way is perhaps the most interesting because it produced the first generation of Russian women scientists, but all three routes played a role in future developments.

Self-education usually was closely connected with the family and thus essentially required a scientifically oriented father or husband. The paternal variant was atypical for Russia, although there were examples of a professional scientist raising his daughter as his assistant. The most notable case of the period was that of Izmail Ivanovich Sreznevskii (1812–80), a specialist in Slavic philology. He was the personal teacher of his daughter Olga Izmailovna Sreznevskaiia (1845–1930), whom he trained to be his scientific secretary. For this purpose, her domestic education included such foreign languages as Latin, Italian, French, Provençal, Catalan, Spanish, English, German, Czech, and Serbian. From her youth, she accompanied her father on his travels in Europe, visiting museums, libraries, scientific conferences, and other such institutions and gatherings. She never married. Historian of Russian literature Nikolai Nikol'skii (1863–1936) accurately characterized her mode of life in her obituary:

For more than 20 years she was the closest and most tireless of her father's assistants in his numerous scientific activities, although her participation was not always noticeable to all at the time, and the list of her published works is very, very short. Bibliographers

²³ F. 418, op. 30, d. 630, l. 1, Central Historical Archive of Moscow (Tsentral'nyi Istoricheskii Arhiv Moskvy, hereafter cited as TSIAM), Moscow.

²⁴ *Zamechaniia na Proekt obshchego ustava imperatorskikh rossiiskikh universitetov* (St. Petersburg, 1861), parts 1–2.

²⁵ Tishkin, "Zhenskii vopros i pravitel'stvennaia politika" (cit. n. 20), 165.

²⁶ In 1864, all women were expelled from the universities and the St. Petersburg Medico-Surgical Academy (which was under the jurisdiction of the Ministry of War). Only one young woman, Varvara Aleksandrovna Kashevarova-Rudneva (1844–99), was allowed to finish the full course in the academy, and that was only because she had an obligation to serve six years in Bashkiria, as there was great need for treating syphilis there and Muslim women would not see male doctors. E. Likhacheva, *Materialy dlia istorii zhenskogo obrazovaniia v Rossii*, vol. 4 (St. Petersburg, 1901), 479.

would probably be unable to include more than 10–15 of her works in it. And even among them not all were published under her name.²⁷

Olga Sreznevskaiia's most important works were published under her father's name.²⁸ The most famous of Izmail Sreznevskii's scientific works is considered the preparation of the *Data for the Old Russian Language Dictionary Based on Written Monuments*.²⁹ The three volumes of the dictionary were republished several times and are still in use today. Yet before Sreznevskii's death in 1880, data for only the first two letters of the alphabet were ready. It took Olga Sreznevskaiia ten years of hard work before the first volume was ready for publication in 1890 and more than twenty years to complete the third volume, published in 1912. But her name is not mentioned anywhere. Contemporaries attempted to make up for the absence by voting her a corresponding member of the St. Petersburg Academy of Sciences in 1896.

In Russia during the second half of the nineteenth century, the cases of women becoming scientists under the guidance of their husbands were more common than those of women doing so under the guidance of their fathers. It was fairly usual for a young wife to want to help her husband in his everyday duties. Most Russian scientists' families were not rich. Ordinarily, a university professor could not afford a professional secretary. His wife—having as a rule a good knowledge of European languages, extensive practice in correspondence, a copybook hand, and skill in drawing (an obligatory part of young ladies' education), as well as being interested in his success, full of goodwill, and never asking for a salary—made for an excellent choice for this position. The level of her education in the natural sciences was not important because she could gain the necessary experience through her work. Being involved in her husband's researches meant a woman sometimes had to communicate with other scientists and even scientific societies; after a time, her own scientific interests might appear. However, without a deep interest in the natural sciences, the wife could find her enthusiasm vanishing with time, as her children dominated her attention. (The average number of children in a Russian high-class family was more than five, for common women closer to nine children—although hardly more than half survived.)

A good example of such a case was that of Elena Vasil'evna Bogdanova, wife of zoologist and Moscow University professor Anatolii Petrovich Bogdanov (1834–96). We do not have much information about her life, but one can find her name as well as a description of her scientific activities in the minutes of the Imperial Amateurs' Society for Nature, Anthropology and Ethnography. Professor Bogdanov was one of the society's founders and among its most active members. Society activity was at a peak from 1860 to 1880. During this time, the society (created in 1864) organized three large exhibitions in Moscow, attracting the attention of thousands of people: an Ethnographical Exhibition (1867), simultaneously with the Slavonic Congress; a

²⁷ N. Nikol'skii, "O. I. Sreznevskaiia: Nekrolog," *Izvestiia*, USSR Academy of Sciences (Otdeleniia Obshchestvennikh Nauk), ser. 7, 1931, no. 7:776–7.

²⁸ For example, she translated into Russian and published with commentary a very interesting medieval text: Rjui Gonsales de Klavixo, *A Journal of a Trip to Timur's Court in Samarkand in 1403–1406* (St. Petersburg, 1881). In the actual publication, Izmail Sreznevskii was named as editor and commentator and the name of the translator is absent, although all biographers affirm that this publication was Olga Sreznevskaiia's work.

²⁹ Izmail Sreznevskii, *Materialy dlia slovaria drevnerusskogo iazika po pis'mennim pamiatnikam*, vols. 1–3 (St. Petersburg, 1890–1912; repr., Moscow, 1958).

Polytechnical Exhibition (1872); and an Anthropological Exhibition (1879). Considerable effort resulted in extensive collections of scientific items, and a few museums were founded as a consequence (among them the famous Moscow Polytechnical Museum). Bogdanov took part in all this, and I assume that he involved his wife in the organizational work. Be that as it may, on March 23, 1874, some society members suggested electing Madam Bogdanova to the list of the society's members because:

Elena Vasil'evna Bogdanova always took part in the work of the Society, beginning when a few members started to explore entomological fauna of the regions belonging to the Moscow educational district soon after the Society's foundation. She helped to gather collections for the Zoological Museum. During the Ethnographical Exhibition and after it, Bogdanova put a lot of energy into making pictures from university's craniological collection, and later when the Polytechnical Exhibition was prepared, she was a constant participant in composition and organization of the different collections.³⁰

Elena Bogdanova was unanimously voted an ordinary (*nepremennyi*) member of the Imperial Amateurs' Society for Nature, Anthropology and Ethnography.³¹ But later one cannot locate her name among its active members or find scientific papers published under her name or with her participation; nor did she attend scientific congresses. It seems that her interest faded with time.

To avoid such a case, Elie (Il'ya Il'ich) Metchnikov (1845–1916) created a whole theory about how a scientist should choose a future wife. From early youth, he dreamed of meeting a school age girl, marrying her, and then tutoring her according to his scientific ideals. At twenty-two, he became fond of a thirteen-year-old girl but soon realized that she did not love him. So he married a woman of his own age, but she was already fatally ill and died shortly afterward. A little later, he returned to his original plan. He found a girl of school age from a neighbor's family and became her tutor in zoology and soon proposed marriage. Olga Nikolaevna Metchnikova (1858–1944) remembered that her father was against these lessons and was happy to hear a proposal of marriage. Her mother was a little anxious about the young age of her daughter, but Metchnikov managed to persuade her. It seems that nobody asked Olga. She wrote:

I had no suspicions about my teacher's feelings and was very embarrassed when I learned about them. I absolutely could not understand how so clever and educated a man could marry a paltry girl. The thought that he was mistaken in me frightened me, and it seemed to me that I was going to sit for an exam for which I was not at all ready.³²

The morning after the wedding, she spent preparing her zoological work in order to surprise to her husband. After passing secondary school exams, she began to study biology under her husband's direction. They worked together during many long years, but later (after his death) she wrote: "Though I was always interested in science, art was my life's passion."³³ In spite of all Metchnikov's diligence, his second wife never became a scientist.

³⁰ 73rd Session of the Natural Sciences Amateurs Society [Records], 23 March 1874, f. 455, op. 1, d. 12., ll. 151–2, TSIAM.

³¹ Voting list for session 23 March 1874, f. 455, op. 1, d. 9, ll. 66–7, TSIAM.

³² O. N. Metchnikova, *Zhizn' Il' i Il'icha Metchnikova* (Moscow, 1926), 72.

³³ *Ibid.*, 75.

But sometimes a successful marriage opened before a woman a real path toward scientific investigations. There were cases in which a woman, after beginning as her husband's assistant, developed independent explorations; there were also cases in which a woman, when choosing her husband, took into account the possibility that he could assist her scientific interests and work. One such woman was Alexandra Viktorovna Potanina (1843–93), wife of Grigorii Nikolaevich Potanin (1835–1920), a renowned Russian traveler and explorer of Central Asia and Siberia. Practically uneducated and the daughter of a clergyman without any fortune, she understood that her prospects were very poor. She met her future husband when she was visiting her brother, who was serving a sentence in the little town Nikolsk, in the Vologodskaya region. Potanin also lived in exile there. He had taken part in the 1861 student disorders in St. Petersburg, was exiled to Siberia, and later became a member of the so-called Society for Siberian Independence. In a break between these political activities, in 1863–64 he took part in the expedition to the South Altai and Tarbagatai organized by the Russian Geographical Society and made a good showing. In 1874, upon a petition from the Russian Geographical Society, he was pardoned and got married. Together, Potanina and Potanin organized expeditions to northwestern Mongolia and Tuva in 1876–77 and into northern China, eastern Tibet, and central Mongolia in 1884–86 and 1892–93. They collected a great deal of geographic data about unknown regions of Central Asia, herbaria, and zoological collections, as well as data about the culture of Turkic and Mongolian nations. At first, Alexandra Viktorovna played the role of her husband's assistant, but later she began her own investigations. She had a unique opportunity to explore women's lives among the nations they came across. Potanina published several articles on the ethnography of the peoples of Siberia and Central Asia. Living in Irkutsk between journeys, Potanina played the role of salon hostess. When she and her husband were preparing for their last expedition in 1891, she was already seriously ill; she refused to stay home, however, and died on the way to Shanghai in 1893.³⁴

Other young ladies began their lives in better circumstances than Potanina had. One of them was Olga Armfeld (1845–1921), daughter of Alexander Armfeld, professor of medicine at Moscow University. A graduate from the Nikolaevskii Sirotskii Institute (a Moscow secondary school for young ladies), she was seeking an opportunity to continue her scientific education. In 1864–68, she spent time at the Zoological Museum of Moscow University ordering its collections, assisting experiments, helping with the translation of the biological books, and corresponding with foreign scientists. She befriended a group of young naturalists, university graduates dreaming about scientific careers. In 1867, one of them, Alexei Pavlovich Fedchenko (1844–72), became her husband. The following year, the Imperial Amateurs' Society for Nature, Anthropology and Ethnography recommended him to a Turkestan governor-general, Konstantin Petrovich von Kaufman (1818–82), as a scientist needed to explore Turkestan—a new and almost unexplored acquisition for Russia. It was clear from the very beginning that Olga Fedchenko would accompany her husband. But, unlike Potanina, she had her own individual tasks. Scientists from the Imperial Amateurs' Society for Nature, Anthropology and Ethnography treated her as an equal member of the expedition and made her responsible for all botanical

³⁴ A. V. Potanina, *Iz puteshestviy po Vostochnoy Sibiri, Mongolii, Tibetu i Kitaiu: Chornik statey* (Moscow, 1895); V. M. Zarin and E. A. Zarina, *Puteshestviia A. V. Potaninoy* (Moscow, 1950).

aspects of it. One can find confirmation of her official status in a letter von Kaufman sent on October 4, 1868, to General Abramov, commander of the Zeravshniskii region (the starting point of the expedition): “I propose, dear Sir, to provide any assistance to Mr. Fedchenko and his wife who is also to accompany him as a scientist in a commission given to him.”³⁵

Of course, in reality no official status (and no salary) was stated in any official document, but the work and the responsibility were real. She was not only a plant collector but also the only painter for the expedition. During the famous Turkestan expedition (1868–71), Olga Fedchenko also found time to help her husband make maps, collect insects, correspond with fellow scientists, and manage accounts. Participation in such an important expedition would be considered a very successful beginning for the scientific career of any researcher.

Thus the early 1860s produced a few young women with strong enough interests in the natural sciences to choose it as their main occupation. Under the pressure of circumstances or because of practicality or traditional thinking, they preferred marriage as the easiest way to fulfill their plans. But while Fedchenko and Potanina were looking for suitable husbands according to the old rules, some of their peers were trying to change those rules. Being cut off from Russian universities, they turned to Europe—another typical path for a segment of the Russian intelligentsia.

One of the first on that road was Nadezhda Prokofievna Suslova (1843–1918), the daughter of a serf (but a rich one, a steward at Count Sheremet’ev’s estate who was later freed and became the owner of a textile factory). Suslova attended a Moscow private school for young ladies and later (in 1860) lectures at St. Petersburg University and at the St. Petersburg Medico-Surgical Academy. In 1862, she published her first original scientific paper. But in 1864, after expulsion from both St. Petersburg University and the St. Petersburg Medico-Surgical Academy under the order of the Russian government, Suslova and one of her friends, Maria Aleksandrovna Obrucheva (1839–1919) (in the future Bokova-Sechenova, wife of the famous physiologist Ivan Sechenov), went to Zurich to attend school there. In 1867, Suslova passed her doctoral exam at Zurich University and became a Doctor of Medicine.³⁶ This event generated a big response in liberal circles of Russian society, as many magazines published reports about it, and famous people, beginning with Aleksandr Herzen, greeted Suslova when she returned home in 1867. In 1868, her doctoral dissertation was published in Russia. Suslova’s example was very attractive to some other young women, including Sofia Vasil’evna Kovalevskaja.

The first problem on this new path was parental permission. By Russian law, a woman (even one of full legal age) could not travel anywhere without a special *vid* (passport)—permission given by her parents, husband, or a state functionary (if she was a widow). The second problem was money. Parents were rarely supportive, so ruses such as pro forma marriages were developed to secure the passport. This was the choice made by Sofia Korwin-Krukovskaia (1850–91) when she married Vladimir Kovalevskii in 1868 (although later this marriage became real). Having the status of a married woman, she induced the parents of her cousin Iuliia Vsevolodovna

³⁵ “1868 г. October 4. Pis’mo Turkestanskogo general-gubernatora K. P. fon Kaufmana k nachal’niky Zeravshanskogo okruga A. K. Abramovu,” in A. P. Fedchenko: *Sbornik dokumentov* (Tashkent, 1956), 53.

³⁶ E. A. Pavliuchenko, *Zhenshchiny v russkom osvoboditel’ nom dvizhenii ot Marii Volkonskoi do Very Figner* (Moscow, 1988), 152.

Lermontova (1846–1919) to allow their daughter to accompany her to Heidelberg. Kovalevskaia and her husband left for Heidelberg in spring 1869; in autumn 1869, Lermontova arrived in Heidelberg. Their other companion, Anna Mikhailovna Evreinova (1844–1919), had to run away from home with neither passport nor money and cross the border illegally; she reached Heidelberg on January 10, 1869.

The Heidelberg women's commune of 1869 was very important in the history of higher education for women as three of its members achieved doctoral degrees. In 1872, Anna Evreinova received permission from Leipzig University and in 1873 prepared a dissertation, passed the necessary exams, and attained the rank of Doctor of Laws, the first among Russian women to do so. In spring 1874, Göttingen University granted Sofia Kovalevskaia the rank of a Doctor of Philosophy *honoris causa* for her mathematical studies. In autumn 1874, Iuliia Lermontova completed her dissertation and passed her exams at Göttingen University, becoming a Doctor of Chemistry. After returning home, all of them were at the center of public attention.

From the early 1870s on, more and more Russian girls chose the same path. In 1872, Sofia Mikhailovna Pereiaslvtseva (1849–1903) arrived in Zurich and in four short years earned a Doctor of Philosophy, with a specialization in zoology and embryology. Elizaveta Fedorovna Litvinova (1845–1919/1922) also arrived in Zurich in 1872³⁷ and received a doctoral degree in 1876, hers in mathematics, philosophy, and mineralogy from Berne University. All the women mentioned above were born in the mid-1840s, but already women born in the 1850s—five or ten years younger—were even more active. Vera Figner (1852–1942), who studied in Zurich in 1872, wrote that if earlier there had been 15–20 Russian girls in Zurich during a year, in 1873 at Zurich University and the Polytechnic School alone 103 Russian women were studying.³⁸ Some modern historians consider this number to be correct, others believe it was much larger.³⁹ The well-known Soviet historian of biology Leonid Iakovlevich Bliakher argued that in 1873 there were no fewer than 130 Russian women studying in Zurich.⁴⁰ One should not forget the other European universities: German, northern European, French. Thus from the late 1860s and early 1870s onward, an educational tour through European universities became very popular among Russian young women. This popularity did not diminish until the First World War, in 1914.

Yet one should not confuse the history of the higher education for women with the history of women scientists. Only a minority among these women wanted to become scientists. For others it was an opportunity to have a full, sensible life or to work for humankind's benefit (that is why there were a lot of future physicians), practicality, or even fashion. Obtaining permission to attend lectures was not easy, studies were long and difficult, not to mention the doctoral dissertation and exams. There was a potentially easier way. Nearly half from this very first cohort of female students I mentioned above put aside their studies and turned to revolutionary activity. Vera Figner herself was the best example of such behavior, as she left the university a few months

³⁷ Litvinova was already a widow; her maiden name was Ivashkina. She married in 1866, but her husband, a doctor, died in 1872.

³⁸ V. N. Figner, "Ocherki avtobiograficheskie. Zurich," in *Polnoe sobranie sochinenii*, 2nd ed., vol. 5 (Moscow, 1932), 47.

³⁹ F. E. Ivanov, *Studenchestvo v Rossii kontsa XIX–nachala XX veka: Sotsial'no-istoricheskaia sud'ba* (Moscow, 1999), 105.

⁴⁰ L. Ia. Bliakher, "Sofia Mikhailovna Pereiaslvtseva i ee rol' v razvitiu otechestvennoi zoologii i embriologii," *Trudy Instituta istorii estestvoznaniia i tekhniki* 4 (Moscow, 1955): 170.

before receiving her doctoral diploma in medicine and returned to Russia because her comrade revolutionists needed her. So women's urge for the highest education should not necessarily be equated with the urge for professional scientific work. One should also grant that a doctoral degree itself did not guarantee the possibility of scientific work in Russia, not only in the nineteenth but also in the twentieth century.

HOW TO GET A RESEARCH POSITION IN RUSSIA

After obtaining an appropriate education, professional skills, and in some cases academic status, a person who was really interested in the natural sciences looked for a position in some university or equivalent institution. Nadezhda Suslova returned to Russia in 1867 with a degree from a foreign university and was not allowed to practice medicine immediately. As was the case for any foreign doctor in Russia, she had to ask for permission to confirm her status. In 1868, Suslova successfully passed an examination before a special medical commission and won the right to a private medical practice.⁴¹ This served as a strong example for future Russian women doctors, but there was no such thing as a private practice for mathematicians, zoologists, botanists, or chemists in Russia. If a woman was married to a scientist, then his work opened doors for her own investigations, as well as providing an income. But in this case, a woman depended completely on her husband's goodwill, as her first role was as his assistant. This was not easy. For example, the famous archaeologist Countess Praskovia Sergeevna Uvarova (1840–1924) always spoke about her husband, Count Alexei Sergeevich Uvarov (1825–84), who was already an authoritative archaeologist before their wedding, with great respect, as if he were her sun and moon: her teacher, companion, and colleague. Yet we also have Dmitrii Anuchin's account:

The life of Countess Praskovia Sergeevna Uvarova naturally divides in two parts. The first—from 1840 until 1885—is a period of development, education, participation in the *beau monde*, marriage, assisting her husband, preparing for future work, and the second—the next thirty and we hope a long line of further years—serving the Moscow Archaeological Society as its president, working on the collection, preservation, exploration, and publication of old documents, and in the whole tireless work for the understanding of antiquity and for the success of Russian archaeology. For all of us . . . , the second part of the Countess's life is more interesting.⁴²

The first part of her life (before her husband died in 1885) was counted as “preparation for the public service”—a preparation that took forty-five years. At the age of forty-five she became a widow and was well known in the scientific community because during many previous years she was a chief organizer not only of the regular meetings of the Moscow Archaeological Society (founded by Count Uvarov) but of the All-Russian Archaeological Congresses. In spite of all this, before her husband's death she was not even a member of the society, as he disapproved of learning for women and did not want to make an exception for his wife. After his death, however, society members elected her not only a member of the Moscow Archaeological Society but its president. So in addition to renown, she obtained official status. After

⁴¹ Pavliuchenko, *Zhenshchiny v russkom osvoboditel' nom dvizhenii* (cit. n. 36), 153.

⁴² Dmitrii N. Anuchin, “Grafinia P. S. Uvarova v ee sluzhenii nauke o drevnostiakh na postu predsedatelia Imperatorskogo Moskovskogo arkhelogicheskogo obshchestva,” in *Sbornik statei v chest' grafini Praskov'ii Sergeevny Uvarovoi* (Moscow, 1916), ix.

that, Uvarova published more than eighty scientific works and was the editor for many more, organized nine All-Russian Archaeological Congresses, and was voted an honorary member of the St. Petersburg Academy of Sciences and an honorary professor of Moscow University. Of course, after her husband's death she was a very rich woman and could permit herself anything she wanted. And she wanted to be a professional archaeologist.

In general, newly founded Russian scientific societies (the majority of them were created after 1863) were glad to give some space to women scientists. In 1864, Olga Armfeld became a founding member (*chlen-osnovatel'*) of the Imperial Amateurs' Society for Nature, Anthropology and Ethnography. On January 16, 1868, Varvara Kashevarova-Rudneva read a paper at a session of the Society of Russian Physicians.⁴³ On October 17, 1874, one of the oldest and most respected Russian societies, the Imperial Moscow Society for Naturalists, elected Olga Fedchenko (Armfeld) as a corresponding member.⁴⁴ On October 15, 1875, she was elected as an honorary member of the Imperial Amateurs' Society for Nature, Anthropology and Ethnography.⁴⁵ In 1875, Lermontova became a member of the Russian Chemical Society in St. Petersburg.⁴⁶ The Russian Geographical Society elected its two first women as collaborating members on May 20, 1877.⁴⁷ In 1880, Sophia Pereiaslavl'tseva was elected a head of the Sevastopol biological station, which belonged to the Novorossiysk Society of Naturalists. During the next ten years, she fulfilled these duties; it was also a time of intensive exploration work for her.⁴⁸ To my knowledge, this was the first time a woman headed a scientific institution in Russia. In 1889, the Eighth Congress of Russian Naturalists and Physicians chose Pereiaslavl'tseva as the chair of the zoological section.⁴⁹

Thus the Russian scientific community welcomed women; membership in the societies meant the possibility of attending sessions and giving papers, having access to the societies' libraries, to their natural collections, and (even more important) to their periodicals. Already in the late 1870s, one can see women's names in the pages of scientific journals, and during the 1890s their number rose noticeably. Women's presence at scientific meetings also stopped being unusual. But the one thing the societies could not give women (nor men) was a salary. (Pereiaslavl'tseva was an exception.) If one looks at the membership lists of the Congresses of Russian Naturalists and Physicians of the time, one notes that the majority were *gymnasium* teachers or local government (*zemskii*) physicians. Although the second positions were open to women with doctoral degrees (the payment was paltry) during the late nineteenth century, the first were barred to women until the twentieth century. One reason for this was that gymnasiums for girls were established much later than those for boys. Initially, women were allowed there only as form masters (*klassnaia dama*), then after several years as teachers for the junior class. All other positions

⁴³ S. M. Dionesov, V.A. Kashevarova-Rudneva—*pervaia russkaia zhenshchina—doktor meditsiny* (Moscow, 1965), 38–9.

⁴⁴ Record [Protokol] of Moscow Society for Naturalists, 17 Oct. 1874, d. 482, l. 25, MOIP.

⁴⁵ "Protokoly zasedanii Moskovskogo Obshchestva liubitelei estestvoznaniia, antropologii i etnologii s sentiabria 1874 po oktiabr' 1876 g.," *Izvestiia Obshchestva liubitelei estestvoznaniia, antropologii i etnologii* 24 (Moscow, 1876), 57–8.

⁴⁶ Iu. S. Musabekov, *Iuliia Vsevolodovna Lermontova, 1846–1919* (Moscow, 1967), 47.

⁴⁷ L. S. Berg, *Vsesoiuznoe geographicheskoe obshchestvo za sto let* (Moscow, 1946), 203.

⁴⁸ Bliakher, "Sophia Mikhailovna Pereiaslavl'tseva" (cit. n. 40), 181–4.

⁴⁹ *Ibid.*, 186.

were for men with university degrees. Boys' gymnasiums were closed to women. Even before 1914, there was a struggle for women's right to teach the highest classes at boys' gymnasiums. Salaries in all other primary and secondary schools were inadequate.

Sometimes it was possible for a woman to get into the state system with the help of a close friend or her husband. For example, Maria Vasil'evna Pavlova (1854–1938) after her marriage (1886) was allowed to work in the Geological Office of Moscow University “only thanks to a personal authority of her husband, Professor A. P. Pavlov (1854–1929), and Professor V. I. Vernadskii.”⁵⁰ After returning from Europe, Iuliia Lermontova was invited by Aleksandr Mikhailovich Butlerov (1828–86), in 1877, to work in his small private laboratory at St. Petersburg University. In 1880, she was working in the laboratory of Moscow chemist V. V. Markovnikov (1837–1904).⁵¹ But all these jobs were on a volunteer basis. When Lermontova's father died, she had to manage her almost ruined family property in order to salvage what was left, so she had no time for a job and put aside her scientific interests.

When in 1891, after a tremendous confrontation with Aleksandr Kovalevskii, a professor at Novorossiysk University and the secretary of the Novorossiysk Society of Naturalists, Sofia Pereiaslvtseva sent in her resignation and lost her position at the Sevastopol biological station, she found herself in a very difficult situation. Without any means of support, she spent some time with her relatives in St. Petersburg trying translation jobs (the only way, besides teaching, for educated women to earn some money) but could not make a living at it. The following year, however, the Imperial Moscow Society for Naturalists gave her a grant for a foreign journey, and she spent a year at the Naples zoological station. Then in 1893, the Ninth Congress of Russian Naturalists and Physicians set up a collection for one of her monographs, thanks to which she was able to spend a year or more in Paris working in its Museum of Natural History.⁵² But when these funds ran out, she was right back where she started, with no means of support. In 1903, she went to Odessa hoping to continue her explorations but fell seriously ill. The situation was so tragic that her old friend, Novorossiysk University professor of botany Liudvig Al'bertovich Rishavi (1851–?), published a note in the city paper *Odesskii listok*:

Without any means for living, earning her slender bread by translations from foreign languages, among unbelievable pecuniary destitution, sometimes half-starving, Sofia Mikhailovna continued her scientific work, continued publishing her scientific articles, which gave her a European reputation . . . As an old friend of S. M. Pereiaslvtseva's, I believe that my duty is to inform by this letter all her acquaintances and well wishers and also all educated women aspiring to higher education about Pereiaslvtseva's hard, almost hopeless situation.⁵³

The St. Petersburg Academy of Sciences sent some money for her as well as a “Literary Fund.” But it was too late—she died on December 1, 1903. Some of her friends insisted it was from starvation.

⁵⁰ “Pamiati M. V. Pavlovoi,” *Paleontologicheskoe obozrenie*, 1939, no. 1:1. Mariia Vasil'evna Pavlova graduated from the Sorbonne in 1884 as a paleozoologist. In 1886, she married Aleksei Petrovich Pavlov, geologist, professor of Moscow University, and head of the university's Geological Office.

⁵¹ Musabekov, *Iuliia Vsevolodovna Lermontova* (cit. n. 46), 39–47.

⁵² Bliakher, “Sofia Mikhailovna Pereiaslvtseva” (cit. n. 40), 194–5.

⁵³ F. 575, op. 2, d. 14, l. 9, Manuscript Department of the Russian State Library, Moscow.

Thus the first generation of Russian women scientists were mainly young ladies from noble families or (more rarely) clerical daughters. They achieved education, professional skills, even academic status, authority in the scientific community, and reputations. They became professional scientists in every respect except one very important one: they had no right to take a position at a university or at any other scientific institution. Without this opportunity, the majority of them had to put aside scientific investigations and look for other work (if they could find it) or live in poverty. Actually only a rich or fanatical woman could allow herself such a hobby. And as time passed, more and more Russian noble families became impoverished, and their daughters had to be practical.

THE THIRD WAY

When I mentioned the possibilities open to Russian women after they were expelled from the universities in 1864, I named three different ways they could realize their goals. The first two were described above. While some women were taking root in the scientific community with the help of their husbands and others sought degrees in European universities, a group of women struggled with the Russian bureaucracy for the possibility of higher education for women in Russia. It was a long and difficult dance. In 1861, when the possibility of women's studying in universities was being discussed, the idea of a separate women's higher school emerged. From the "Opinion" written by Alexander Armfeld to the Professors' Council of Moscow University, one can see that professors discussed such an option during their meeting on September 23, 1861.⁵⁴ The majority believed that such a course would better satisfy morality and tradition than would allowing women to study at the present universities. Armfeld thought that there was no need to wait while new universities were organized, as there were already old ones: "One cannot but support such a generous and modern conception . . . But between the moment ideas arise and the moment they can be realized a long time can pass, while our university auditoriums are ready and waiting only for a single word to open to everyone wanting to come in."⁵⁵

Armfeld was certainly right about one thing: living his whole life in Russia, he knew the way business was done—slowly, very slowly. Seven years passed without any movement. Then on December 28, 1867, when the First Congress of Russian Naturalists was opened, Evgeniia Ivanovna Konradi (1838–98) sent a letter asking the delegates to support the concept of higher education for women. She argued that women as future mothers and mentors of their children determined the education of future generations. To teach their children, women should be educated, and education in the natural sciences was impossible without special equipment and professional guidance accessible only in the universities. After reading the letter, the session's chairman, professor of botany Andrei Nikolaevich Beketov (1825–1902), answered that although the congress completely sympathized with these thoughts it was not able to discuss them.⁵⁶ The idea was revived the following year. In autumn 1868, several women—led by Anna Pavlovna Filosofova, Nadezhda Vasil'evna Stasova, and

⁵⁴ A. O. Armfeld, "An Opinion Written by Professor Alexander Armfeld to the Professors' Council of Moscow University," f. 418, op. 30, d. 630, ll. 11, TSIAM.

⁵⁵ *Ibid.*

⁵⁶ *Trudy pervogo s' ezda russkikh estestvoispytatelei v Peterburge, proiskhodivshem s 28 dekabria 1867 goda po 4 ianvaria 1868* (St. Petersburg, 1868), 29–30.

Maria Vasil'evna Trubnikova (all three already active figures in the nascent Russian women's movement)—collected nearly 400 signatures on a petition to create a higher school for women.

In 1869, after several maneuvers, governmental permission was granted, and on April 1, 1869, the first Russian educational courses for women opened in St. Petersburg. The school was not a university, of course; the primary aim was to prepare women for university studies to the level of a boys' gymnasium curriculum. In 1870, more public courses opened in St. Petersburg with the same aim, but they invited men as well as women (the so-called Vladimirskie Courses). Simultaneously, a group of Moscow ladies tried to organize something similar in Moscow (Lubianskie Courses). At last in 1872, the first Higher Women's Courses were opened in Moscow (they are known as Courses of Professor Gerie after their founder). They were opened in Kazan in 1876 and in Kiev in 1878, but the Ministry of Popular Enlightenment barred them in Odessa in 1879 and in Warsaw and Kharkov in 1881. In 1878, in St. Petersburg, Higher Women's Courses (Bestuzhevskie) were created with a systematic university curriculum. All these institutions were collective projects without governmental support. On the contrary, the government forbade even publishing announcements with the call for donations for the courses. Furthermore, courses were allowed only in so-called university cities, and only university graduates with academic status could teach there. For example, Sofia Kovalevskia, who took an active part in the organization of Bestuzhevskie Courses, was not invited to teach there.⁵⁷ But the process had begun. Then suddenly in 1886, all courses except the Bestuzhevskie were closed by governmental decree under the pretence of the necessity of a new policy in this area. And even in St. Petersburg, the admission of new students was closed until 1889.

Only in 1900 did the State Council confirm the law about the reconstruction of the Moscow Higher Women's Courses under the control of the Minister of Popular Enlightenment, and in 1901, they reopened. From this time until 1917, several Higher Women's Courses were founded in different cities of the Russian empire, as well as a Women's Medical Institute and a Women's Pedagogical Institute in St. Petersburg. For a short period during the revolution of 1905–7, women were allowed into the universities as irregular students. In 1906–7, there were 1,949 women in attendance at all the imperial universities (except Warsaw), including the St. Petersburg and Kiev Polytechnical Institutions and the Tomsk Technological Institute. After several transformations (in 1908 the permission to attend was rescinded), in 1911 there were 960 women in Russian universities.⁵⁸

At the very beginning, the Higher Women's Courses could not compete with the universities. They had no buildings, laboratories, libraries, or equipment. The educational level of the women students was lower than that of the men. But as the time passed, buildings were erected, laboratories were organized, equipment was purchased, and young girls arrived with better preparation. In the first decade of the twentieth century, the Bestuzhevskie Courses were already equivalent to a university. In

⁵⁷ E. F. Litvinova, *S. V. Kovalevskiaia (zhenshchina-matematik): Ee zhizn' i deiatel'nost'* (St. Petersburg, 1894), 48.

⁵⁸ N. I. Shilova, "Zhenshchiny v russkikh universitetakh i tekhnicheskikh uchebnykh zavedeniiakh v 1906–1912," in *Trudy I Vserossiiskogo s' ezda po obrazovaniiu zhenshchin, organizovannogo Rossiiskoi Ligoi Ravnopraviia Zhenshchin v S.-Peterburge*, vol. 1 (St. Petersburg, 1914), 31–2.

1912, the Moscow Higher Women's Courses admitted 2,000 girls every year, and the total number of students was 7,000.⁵⁹

But there was one thing that ruined this educational picture of success for women. The Higher Women's Courses in Russia had no right to grant any degrees to their graduates. All they could offer was a certificate, but unlike the universities' degrees, it conferred no rights. A woman with the certificate of the Higher Women's Courses had the same rights as a gymnasium graduate—the right to work as a teacher in a secondary school. So there were no practical benefits for a woman's spending up to four expensive years only to satisfy her curiosity. Nevertheless, the Higher Women's Courses in St. Petersburg from 1878–1912 (twenty-eight graduating classes) gave 3,995 certificates to those who passed all exams, and many more students took the Courses but left without certificates.

For this essay, the most important question is what influence the development of higher education for women had on women's entering science. In 1909, a special poll was taken among Moscow students of the Courses. One question concerned their future plans. In the Department of Physics and Mathematics, of the 481 girls who answered, only 4.1 percent said they were planning to look for a scientific job, and 14.7 percent said that they would do so if there were real opportunities to find such a job with an acceptable salary.⁶⁰ There is statistical data about employment of graduates of the St. Petersburg Courses from the first year until 1912 (3,171 out of 3,995, including people from the last class of 1912 who had not yet had time to find a job). The most typical occupation was teaching in different types of secondary schools: 1,567 did this, and 76 of them were working as assistants or teachers in the Higher Schools of different cities. One hundred seventy-six worked in medicine (141 physicians, 35 paramedical personnel), 147 made literary careers, 118 were engaged in "private service" in different offices, 16 turned to art, 191 were continuing their education elsewhere, and 84 served in factories, observatories, and zoological stations.⁶¹ So 160 women who graduated from Bestuzhevskie Higher Women Courses had positions equivalent to those in the higher schools or scientific investigations.

Some industries found that it was very profitable to hire women for calculating or technical work or as a laboratory assistants. They were quite competent and more assiduous than men, and their salary was very low. University professors teaching at the Higher Women's Courses found the same thing. Women trying to build scientific careers in a masculine mold sometimes could stay at the Courses "for preparation for a professor's title." They worked as assistants for their professors much harder than men would. But nevertheless they had no chances. After several years, the majority of such women came to understand that they would remain eternal assistants and left. But as always there were some who wanted to become scientists. The whole generation was caught in this trap, the fate of the second generation of Russian women scientists. The luckiest among them married their professors. After that they could work at the Courses, although usually without payment. A few gained master's degrees in the 1900s, when that became possible. A good example is the case of mathematician

⁵⁹ "Rech' professora A.N. Reformatskogo," in *Trudy I Vserossiiskogo s'ezda po obrazovaniiu zhenshchin* (cit. n. 58), xxxiii.

⁶⁰ *Slushatel' nitsi St. Peterburgskikh visshih jenskih (Besstujevskih) kursov: Po dannim perepisi* (St. Petersburg, 1912), 140.

⁶¹ E. Shepkina, "Deiatel'nost' okonchivshikh S.-Peterburgskie Vysshie Zhenskie Kursy," *Vestnik evropy*, Aug. 1913, 342–54.

Liubov' Nikolaevna Zapol'skaia (1871–1943). She was a daughter of a noble family, but her father had to teach. She graduated from the girls' gymnasium in 1887 with a gold medal, completed three years of pedagogical courses, and at last entered Bestuzhevskie Higher Women's Courses in the Physical and Mathematical Department. Then after graduating from the Bestuzhevskie Courses in 1894, she went to Göttingen University in 1895 and in 1902 became a Doctor of Philosophy. After returning home in 1903, she was invited to teach in the Moscow Higher Women's Courses. Subsequently, she published a mathematical book and in 1906 defended a thesis at Moscow University and received a master's degree in abstract mathematics (the first woman to do so in Russia).⁶² But a more usual example was the fate of Anna Boleslavovna Missuna (1868–1922), who was a well-known geologist and author of seventeen published scientific works and who worked as only an assistant in the Geological Office of the Moscow Higher Women's Courses (from 1907 until her death). By 1914, almost all assistants and a few professors at the Women's Courses were women. In 1903, a booklet was published by the Bestuzhevskie Higher Women's Courses with an appendix containing a bibliography of their graduates' published works: there were ninety-four names in the list and several hundred items.⁶³

In the period 1860–1917, Russian women interested in scientific investigations explored many possible ways to include themselves in the profession. They tried “scientific marriages,” European universities, and the establishment of women's education in Russia. And they were successful.

A NEW OLD LIFE

Soviet historiography usually has argued that 1917 suddenly changed the whole life of the country and that the scientific community was no exception. At first glance this appears to be correct, but careful exploration shows another picture. From May 1918 until October 1919, the Bolshevik government produced several decrees connected to the Higher Women's Schools. The first, from May 31, 1918, declared in its first point: “Co-education of students belonging to both sexes is introduced in all educational institutions.”⁶⁴ The second one, from August 2, 1918, read: “Every person irrespective of his (her) citizenship and sex can become a student of any academy without showing a diploma and a secondary (or other) certificate of completion of school.”⁶⁵ These two sentences were the result of more than fifty years of struggle. The Provisional Government of 1917 had come close to this decision but did not cross the line. Vladimir Lenin was a strategist. In this case, he wanted to have the students' support, or at least their loyalty, and the demand of coeducation was a way of harnessing active forces.

The third decree, from October 1, 1919, had another target. If young people were potential allies, university professors were potential enemies. They were a privileged

⁶² A. M. Pavlov, “Pervaia russkaia zhenshchina magistr matematiki,” *Istoriko-matematicheskie issledovaniia* 32–3 (1990): 235–41.

⁶³ *Pamiatnaia knizhka okonchivshikh kurs na S.-Peterburgskikh Vysshikh Zhenskikh Kursakh: 1882–1889; 1893–1903* (St. Petersburg, 1903), 217–42.

⁶⁴ “Postanovleniia Narodnogo Komissariata Prosveshcheniia: O vvedenii obiazatel'nogo sovmejnogo obucheniiia,” in *Sobranie zakononii i raspriazhenii rabochego i krest'ianskogo pravitel'stva*, no. 38 (Moscow, 1918), otdel 1, 473.

⁶⁵ “2 Avgusta. Dekret o pravilakh priema v vysshie uchebnye zavedeniia RSFSR,” in *Dekrety sovet'skoi vlasti*, vol. 3 (Moscow, 1964), 141.

class, an integral part of the ruling elite, with their own ideas about state structure. The strategy on this front was to train a new generation of professors from young people who supported the new authorities. Of course, it was not possible to fulfill such a plan immediately. The new decree rescinded all special academic privileges, and as the Bolsheviks strongly associated academic status with doctoral degrees, master's degrees were abolished. Now the right to become a professor and to head a university department belonged to any persons known for their scientific investigations. All professors having ten years of service as of November 25, 1917, were dismissed and had to be reelected.⁶⁶

In winter 1918–19, the Higher Women's Courses in Petrograd and Moscow were united with the universities or turned into universities. Those women who had a position at the Courses at once became university professors. Of course, the right to pass state examinations, to obtain academic status, and to teach had been granted to women already in 1911,⁶⁷ and some of them had hurried to take advantage. For example, Aleksandra Andreevna Glagoleva-Arkadieva (1881–1945) graduated from Moscow Higher Women's Courses in 1910 and remained as an assistant in the Department of Physics. In her free time, she prepared for the state examinations and passed them in 1914.⁶⁸ Maria Aleksandrovna Bolkhovitinova (1877–1957) entered Moscow Higher Women's Courses in 1912 and passed state examinations in geology in 1917.⁶⁹ Lidiia Karlovna Lepin' (1891–1985) graduated from the Physico-Mathematical Department of Moscow Higher Women Courses in 1917 and passed examinations in November 1917.⁷⁰ But there were few opportunities to become a university professor if female students were still not allowed in the university. So now all the women mentioned immediately above and those who were a little older instantly became full members of university faculties.

After this first interference, however, the new authorities did not pay much attention to the “women in science” question. Why would they? If women students or women who would be students were already a serious power, especially in the capitals, before 1917, women in science were still a tiny group with no organization. They could become neither strong allies nor important enemies. Thus women pressing toward careers as scientists were left alone to pave the way in the labyrinths of the universities, research institutes, and other scientific institutions. The beginning of a scientific career (getting higher education, entering graduate school, passing state examinations, participating in scientific projects or expeditions) became much easier after 1918. But women soon discovered that the attitude of the scientific community could frustrate any career even better than the old laws had.

Those women who were in the mainstream of scientific life very soon realized

⁶⁶“1 Oktiabria. Dekret o nekotorykh izmeneniiakh v sostave i ustroistve gosudarstvennikh uchenykh i vysshikh uchebnykh zavedenii,” in *Dekrety sovetskoi vlasti* (cit. n. 65), 3:381–2.

⁶⁷“Statia 36226. Dekabria 19. Ob ispytaniakh lits zhenskogo pola v znanii imi kursa vysshikh uchebnykh zavedenii i o poriadke priobreteniia imi uchenykh stepenei i zvaniia uchitel'nitsy srednikh uchebnykh zavedenii,” in *Polnoe sobranie zakonov Rossiiskoi imperii, sobranie 3*, vol. 31, pt. 1 (St. Petersburg, 1914), 1297–1300.

⁶⁸F. 641, op. 6, d. 122, l. 19, Archive of Russian Academy of Sciences (hereafter cited as ARAN), Moscow.

⁶⁹F. 311, op. 1, d. 98, l. 85, ARAN.

⁷⁰Interview with Lidiia Karlovna Lepin' [1938], in the private collection of Olga Valkova, 4. About Lepin', see *Professora Moskovskogo Universiteta, 1755–2004: Biograficheskii slovar'*, vol. 1 (Moscow, 2005), 745–6.

that with the changes of their status the treatment of the community changed, too. Maria Pavlova, now a professor in the Geology and Mineralogy Department of Moscow University (as of March 13, 1919), described one painful but relatively common situation. In 1920, she began training a talented student named Esfir Falkova, who successfully graduated from Moscow University in 1924. During her studies, Falkova took part in four geologic and paleontological field expeditions, presented a few papers, and passed all necessary exams. She wanted to continue her scientific studies, and Pavlova recommended her for the position of junior research officer at the Research Geological Scientific Institute of Moscow University. The first session of the Subject Commission (where such decisions were made) rejected the entire question because Pavlova had not sent them the application beforehand. The next session (on February 25, 1925) first decided that every candidate for such a position as Falkova had applied for should have at least one scientific publication and then turned Falkova down. After another university professor, Vera Aleksandrovna Varšanofieva, spoke in support of Falkova, whom she knew personally, some people began saying that Falkova was untalented, rude with students, and indifferent to social questions. During voting, eleven members of the Subject Commission were against (two professors and nine students), five in favor (among them all four women present who were professors and researchers), and four abstained from voting (all four were male professors). Pavlova was strongly insulted, especially because all this intrigue was organized by her old fellow professor Andrei Arkhangelskii (1879–1940) and because her colleagues were too cowardly to support her.⁷¹ Describing the voting results in her memoirs, Pavlova wrote: “Here is the result of the appreciation of my scientific work from those closest to my scientific activities. Here are the indignities A. D. Arkhangelskii wanted to put upon me after 25 years of my friendly trust in him. Yes, today I’m feeling as if I returned from a very hard funeral.”⁷²

Thus, after the Bolshevik decrees of 1918–19, women were fully included into academic life and had to learn that the success of a scientific career depended not only on their success in investigations. They also had to understand that to secure the possibility of scientific research and necessary funding, they needed to gain enough influence and to have a commanding position in the hierarchy of the scientific bureaucracy. With this came an understanding (perhaps an unconscious one) that women were the weakest pieces on the chessboard. Although there were more women scientists in the 1920s than there had been before, they were still a minority among the scientific community; the old opinion that a woman was less clever than a man did not disappear; and women in Russia were still much more occupied than men with household chores and care for parents, children, and spouses, thus having less time for the work.

Those women scientists who were not connected with the educational system mainly continued working as they had before. Analysis of such women’s curricula during 1914–25 shows that the majority of them did not stop expeditionary researches or laboratory investigations. For example, Olga Evertovna Neustroeva-Knorring (1887–1978), who participated in botanical expeditions organized by the Emigrant

⁷¹ “Memories of M. V. Pavlova,” f. 311, op. 1a, d. 99, ll. 1–7, ARAN.

⁷² *Ibid.*, 7.

Table 1. Neustroeva-Knorrning Field Expeditions

Date	Location
1914	Khodzhenkii district, Samarkand region
1916	Mountainous Bukhara
1917–18	Orenburgskaya province (<i>guberniia</i>)
1919	Kanskii district (Kargatskaia dubrava)
1920	Eastern part of the Omskii district
1924	Leningrad district; Northern Caucasus
1925	Kara-Kalpak autonomous region

Administration (*Pereselencheskoe upravlenie*), spent every summer of 1908–14 in expeditions.⁷³ In table 1, I have listed her field expeditions during 1914–25.

From 1926 until 1943, annual expeditions took place (with the exception of 1934).⁷⁴ Geologist Vera Alexandrovna Varsanofieva (1889–1976),⁷⁵ Olga Knorrning's contemporary, who had been a student of the Moscow Higher Women Courses in 1907–15 and became a graduate student in 1916, participated in geologic expeditions every summer in 1911–16, in winter 1917, and again in summer 1918. Between 1919 and 1922, the serious illness of her father and her own injuries prevented her from joining any expeditions. Then from 1923 until 1936 (except 1929 and 1935), she made geologic surveys every summer for a 124-page USSR general geological map.⁷⁶ Knorrning's and Varsanofieva's expeditionary experiences were typical for women scientists in their positions.

In general, the state of affairs in science did not change much during 1914–25 for both women and men. In spite of the fact that the First World War brought some inconveniences (one of the greatest being the rupture of international communications) before 1917, everyday life remained little altered. However the winters of 1918 and 1919 were different. It was a time of civil war, and communications broke down within the country. Many scientists working or studying in Moscow and St. Petersburg lost contact with near relatives. For women this was more important than for men, as in Russia the woman was usually the person taking care of elder family members. In summer 1917, Vera Varsanofieva received a letter from the geologist Maria

⁷³ The Emigrant Administration was founded in 1896 under the Main Administration of Land Management and Agriculture (*Glavnoe Upravlenie Zemleustroistva i zemledel'ia*). Between 1908 and 1914, it organized eighty-four botanical expeditions. A. A. Shcherbakova, N. A. Bazilevskaia, and K. F. Kalmikov, *Istoriia botaniki v Rossii (Darvinovskii period, 1861–1917)* (Novosibirsk, 1983), 277–81.

⁷⁴ S. Iu. Lipshits, *Russkie botaniki (Botaniki Rossii–SSSR): Biografio-bibliograficheskii slovar'*, vol. 4 (Moscow, 1952), 209–10.

⁷⁵ Vera Aleksandrovna Varsanofieva (1889–1976) was an outstanding geologist, explorer of the northern lands, historian of science, and science popularizer. She was the first Russian woman to obtain a Doctor of Geology and Mineralogy (1936) and served as vice president of the Moscow Society for Naturalists (from 1943), as well as corresponding member of USSR Academy of Pedagogical Sciences (from 1945).

⁷⁶ Curriculum vitae of V. A. Varsanofieva, f. 3, op. 1, d. 461, ll. 13–4, Russian State Archive of Economics, Moscow.

Ivanovna Shulga-Nesterenko (1891–1964), a close friend and colleague who had returned to Kiev to support her mother, father, and sister—all seriously ill:

A horrible time, some unknown epidemic falls on the people of the past, on the generation of our fathers. You know it is everywhere, everyone, all families are being wrecked because of peculiar diseases, peculiar disasters fall on the people of the old century. And if we are somehow struggling, trying to stand in the violent storm, they no longer have the necessary strength. And the most horrible thing is our weakness, the impossibility of helping them.⁷⁷

In Moscow and Petrograd, times were hard, too. Many women, especially those who had children, had left for the provinces and returned to the cities only after 1920.⁷⁸ Many women scientists from the oldest generation and even from the second one did not survive. There were some well-known names in this mournful list, such as Nadezhda Suslova (1918), Elizaveta Litvinova (1919/1922), Olga Fedchenko (1921), Vera Iosifovna Shiff (?–1919)—graduate of the first Bestuzhevskie Higher Women's Courses (1882), Doctor of Abstract Mathematics of the Göttingen University (1901), and from 1901 a junior teacher of the Bestuzhevskie Courses, and author of a large number of mathematical books—Anna Missuna (1922). But those who were young and free from family and had some professional or personal support never interrupted their investigations. From the notes of Moscow physicist Vera Aleksandrovna Glagoleva-Arkadieva, one learns that there was no central heating in her house until winter 1927–28. Before then, beginning with winter 1919–20, she and her husband had to make do with one and later three stoves.⁷⁹ From the same notes, it is clear that all this time she was busy with teaching and research.

After 1921, life returned to normal little by little: the New Economic Policy was proclaimed in March 1921; the civil war was ending at last; connections between different regions were reestablished; cultural, intellectual, and artistic life flourished in the capitals. At the same time, men were demobilizing from the army, and horrible unemployment ensued. Since 1917, women and men had equal political and economic rights, but mass ideology never changes as quickly, and women found themselves in a much worse situation than men did. The Bolsheviks clearly understood that women amounted to half the country's population, and even without the electoral franchise, they were an important labor force; after obtaining the franchise, they became a political force, too.⁸⁰ So the new government worked hard to attract women's support, especially that of working-class women. Among other arrangements, the government organized a large propagandistic campaign in which an item concerning the new rights and opportunities women received after the revolution was one of the

⁷⁷ M. I. Shulga-Nesterenko to V. A. Varsonofieva, 25 June 1917, Kiev, f. 3, op. 1, d. 286, ll. 7–8, Russian State Archive of Economics, Moscow.

⁷⁸ For example, that was the decision of Evgenia Vasil'evna Krakau (1886–1977). She graduated from the Bestuzhevskie Higher Women's Courses in 1914, passed the state examinations at St. Petersburg University in 1915, and then married. In 1918, when she left Petrograd for her native Smolensk district looking for pedagogical work, she already had two daughters. She and her family returned to Petrograd in 1922, and she began working at the Main Physical Observatory. In 1938, she became a PhD in physical and mathematical sciences. Selezneva, *Pervye zhenshchiny geofiziki i meteorologi* (cit. n. 1), 68–70.

⁷⁹ F. 641, op. 6, d. 122a, ll. 19–20, ARAN.

⁸⁰ According to the Population Census made on January 28, 1897, there were 99.8 women for every 100 men in the Russian empire (*Rossia: Entsiklopedicheskii slovar'* [Leningrad, 1991], 86–90), and after two wars this ratio obviously would have shifted in favor of women.

most important. All women in traditionally male professions became a part of this campaign; women scientists were no exception. For example, one of the most popular Soviet journals, *Ogonek*, with a circulation of more than 3 million in the 1920s, published articles about women scientists regularly alongside articles about women pilots, sea captains, and so on.⁸¹ The author of one such article told his readers about visiting the Institute for Applied Botany in Leningrad and a conversation with its director, N. I. Vavilov. He wrote about how Vavilov introduced the most successful institute employees to him, among whom there were many women:

“Didn’t you know,” N. I. Vavilov said, “that thirty percent of all research fellows of the experimental agricultural stations of the USSR are women? Didn’t you know that in the fight of the humanity with nature, in this fight for the renovated earth, women in the USSR total up to one third?” . . .

“Can you tell me,” I asked one young woman scientist, “is it true that women usually choose secondary crops for investigations and in whole are better as doers than as leaders? . . . They are good as the scientists’ ‘right hands’ but weaker in independent work?”

“It is not true,” answered the young professor. “We women rushed into all aspects of the agricultural experimental work.” . . .

I looked at the young woman scientist, at the certainty with which the girl was classifying and arranging new varieties of humanity’s corn, at her eyes, in which one could see the happiness of her future investigations and triumphs and silently apologized for my silly thoughts about bluestockings, silently delighted with the wise fire in this beautiful person, silently bowed to women fighters for the better of the future days.

30 percent of the fighters. . . .

Bravo!⁸²

And so on. Such publications were typical. Of course they had an influence on public opinion and on young girls planning their futures, but I cannot argue that they had a noticeable influence on the scientific community. Nevertheless, the official position of the government proclaimed so widely gave women some confidence in their position. During the first decades of the Soviet state, the number of women scientists and students in higher education grew. Statistics of this growth became a part of the propagandistic strategy intended not only for the Russian people but also for foreigners. For example, in the album *USSR—Country of Women’s Equality* (Moscow, 1938), one can read: “There is no single area of scientific exploration in which woman couldn’t take part like a leader and organizer, like a teacher, researcher and scientific worker.”⁸³ Then the following numbers are given:⁸⁴ 1929—5,100 women worked as researchers in scientific institutions (institutes and branches); 1936—11,800 women did so.

There is no information about how these numbers were generated, so they remain suspect. But we can assume that they were not entirely fabricated. And if this assumption is correct, then the number of women scientists doubled in less than ten years. Fortunately, we have data on American women scientists for almost the same period for

⁸¹ For example, in 1927 alone the following were published: M. Sandomirskii, “Vuzovka,” *Ogonek*, 20 Feb. 1927, no. 8 (204):9; A. Bragin, “Tridtsat’ protsentov boitsov,” *Ogonek*, 6 March 1927, no. 10 (206):3; M. G., “Zhenshchina-konstruktor,” *Ogonek*, 6 March 1927, no. 10 (206):4; A. Shabanova, “Pervaia Zhenshchina-Vrach,” *Ogonek*, 9 Oct. 1927, no. 41 (237):14; E. V. Kozlova, “On Horseback across Mongolia: Impressions of an Expedition Member,” *Ogonek*, 9 Oct. 1927, no. 41 (237):12; V. Komarova, “Avtobiografii V. D. Stasovoi-Komarovoi,” *Ogonek*, 16 Oct. 1927, no. 42 (238):12.

⁸² Bragin, “Tridtsat’ protsentov boitsov” (cit. n. 81), 3.

⁸³ SSSR—*Strana Ravnopraviiia Zhenshchin: Al’bom-vystavka* (Moscow, 1938), 23.

⁸⁴ *Ibid.*

comparison. Margaret W. Rossiter gave the following values in her well-known book *Women Scientists in America. Struggles and Strategies to 1940*: 1921—450 female scientists; 1938—1,912 female scientists.⁸⁵ We can assume that such a difference in the number of Soviet women and the number of American women was partly the result of the publicity campaign provided by the Soviet government and its policy in the field.

At the same time, scientific organizations and their professional unions were collecting statistical data, too, although information is also lacking about their methods. Tables 2–5 present information I have compiled from several sources. Table 2 lists information on the numbers of men versus women in three regions.⁸⁶

Information in the USSR as a whole (in scientific institutions—and it seems that the Higher Educational Institutions were not included) is shown in table 3.⁸⁷ I should also mention that it is possible that this data includes also specialists in humanities. Sometimes one finds information about the women's professions,⁸⁸ but very rarely are there data about women's positions inside institutions. We do have such information about Irkutsk in 1927, as shown in table 4.⁸⁹

There is also information about the women staff of the Higher Educational Institutions in April 1935 (percentage from the total occupying the given positions), which is shown in table 5.⁹⁰

And finally we have data about girl students in higher education (percentage of all students): 1928—28.1 percent female; 1935—38.0 percent female; 1937—41.0 percent female.⁹¹

Even if this data is not representative, one notices a growing trend. Yet the majority of these women occupied positions as junior members of teaching and research staffs. Even without any formal barriers, they could not advance. One of the reasons was that the large group of women scientists of the time was very young and at the beginning of their careers.

One also notes a change in the character of the women. In the first two generations (and chiefly in the second one), they used to be diligent, assiduous, almost invisible, never looking for anything for themselves except the opportunity to work—or so many of their obituaries characterized them. But some women—representatives of the third generation (by my count)—were not of the same mettle. They were young, active, full of force and ambition, and believed in the political support of the new authorities. They did not want to stay invisible. They were ready to learn new rules, to change them if necessary, and to take an active part in the very old game played by the scientific community. It is possible to surmise that in such conditions, women scientists had to create some new strategies to advance their careers.

The first strategy that could lead to high-ranking positions and influence on the development of the sciences consisted in supporting the new authorities by disseminating the new Marxist ideology and in becoming active members of the ruling Bol-

⁸⁵ Margaret W. Rossiter, *Women Scientists in America: Struggles and Strategies to 1940* (Baltimore, 1981), 136.

⁸⁶ *Nauchnye Rabotniki Irkutsk* (Irkutsk, 1927), 41; *Nauka i Nauchnye Rabotniki SSSR*, vol. 4, *Nauchnye Rabotniki SSSR bez Moskvy i Leningrada* (Leningrad, 1928), 801; *Nauchnye Rabotniki Moskvy* (Leningrad, 1930), 6.

⁸⁷ I. A. Kraval', ed., *Zhenshchina v SSSR: Statisticheskii sbornik* (Moscow, 1936), 98.

⁸⁸ *Nauchnye Rabotniki Krimea: Spravochnik* (Simferopol, 1927).

⁸⁹ *Nauchnye Rabotniki Irkutsk* (cit. n. 86), 41.

⁹⁰ Kraval', *Zhenshchina v SSSR* (cit. n. 87), 97.

⁹¹ *SSSR—Strana ravnopraviiia zhenshchin* (cit. n. 83), 34; Kraval', *Zhenshchina v SSSR* (cit. n. 87), 109.

Table 2. Scientists by Region

Year	Region	Number of men scientists	Number of women scientists
1927	Irkutsk	235	63
1928	USSR (except Moscow and Leningrad)	9,609	1,588
1930	Moscow	8,056	1,484

Table 3. Researchers and Graduate Students in USSR

Date	Total number of researchers	Number of women	Total number of graduate students	Number of women graduate students
1 April 1929	22,600	5,153	1,000	233
1 Jan. 1933	47,900	12,358	6,400	1,480
1 Jan. 1935	38,200	11,116	4,300	1,157

Table 4. Researchers in Irkutsk (1927)

Position	Total number	Men	Women
All researchers in the city	235	172	63
Professors	40	40	0
Senior lecturers, teaching main courses	15	14	1
Readers and junior members of teaching or research staff	105	74	31
Graduate students	16	10	6
Attending physicians	11	7	4

Table 5. Higher Educational Institutions (April 1935)

Position	Women staff (%)
Total number of women	15.0
Directors and deputy directors	3.1
Professors	2.9
Senior lecturers, teaching main courses	11.3
Readers and junior members of teaching staff	22.3

shevik Party. The latter strategy, however, was not very popular in the 1920s. It is possible that the reason for this was the traditional indifference towards politics adopted by Russian women scientists of the older generations or in the foreignness of the very notion that political activities could assist the success of a scientific career. There are no complete statistics, but from data collected by the Moscow Regional Committee of the USSR Higher School and Scientific Institutions Professional Union during

February–March 1940 (lists of women scientists who were professors, doctors and PhDs working in nineteen Moscow scientific and educational institutes), one can see that the majority of women born in the 1880s and 1890s had no relations with the Communist Party, at the same time those born in 1900s were party members (or candidate members or members of Leninist Young Communist League).⁹² Nevertheless, among women born in the nineteenth century, there were some who made their careers working with the new authorities. Take the case of the mathematician and professor of Moscow University Sofia Aleksandrovna Ianovskaia (1896–1966). She was born in Odessa, studied there first in a women’s gymnasium, then at the faculty of mathematics of the Higher Women’s Courses in Odessa (1914–18). She began to take part in revolutionary activity in 1916. In 1918, during German occupation of the city, she joined the Bolshevik Party, fulfilling a variety of missions, including editing revolutionary periodicals. In 1919 she served in the Red Army. As she wrote in her autobiography:

From 1920 until 1923 I worked in the District Party Committee [Gubkom] in Odessa mastering the communications and statistical department [*Informatsionno-statisticheskii otdel*] . . . In 1923 (at the insistence of the Department of Culture and Propaganda [*Kul'trop*] of the Central Committee) I was sent to the natural sciences department of the Red Professors’ Institute in Moscow. But since that opened only in 1924, for a year I studied at Moscow State University . . . In 1924 I entered the natural sciences department of the Red Professors’ Institute planning to specialize in the philosophy of mathematics. Simultaneously I taught a course of natural dialectics at the physico-mathematical department of Moscow University for mathematics students and graduates. From 1927 I was taken on in the mathematical section of the Communist Academy as a senior staff scientist . . . In 1929 I graduated from the Red Professors’ Institute and from the Communist Academy. From 1930 I was confirmed in the position of professor both at Moscow State University and at the Red Professors’ Institute where I have been working until recently.⁹³

In 1935, she became a Doctor of Physico-Mathematical Sciences. In the 1930s, she was one of the most notorious “red professors” of Moscow University, writing for such journals as *Under the Banner of Marxism* (*Pod znamenem marksizma*), *Natural Sciences and Marxism* (*Estestvoznaniie i marksizm*), and so on. She was the first to publish the mathematical manuscripts of Karl Marx with extensive commentary. Later, however, she became a well-known historian of mathematics and an active propagandist for mathematical logic in Russia.⁹⁴ So she began her career in politics and turned to science with the blessing of her political supervisors.

Two other successful strategies shared one similarity: a woman should choose for her investigations a discipline so essential for the government that all specialists were welcomed (e.g., geology), or she should work in a region whose development was a priority (e.g., Central Asia), or both. Geologic exploration was developing rapidly in this period. As a result, there was a whole constellation of women geologists who became doctors or professors. One example is Elizaveta Dmitrievna Soshkina (1889–1963), a graduate of the Moscow Higher Women’s Courses (1915), a geologist and

⁹² F. 6733, op. 2, d. 14., Central State Archive of Moscow Region, Moscow.

⁹³ “Autobiography of S. A. Ianovskaia,” f. 641, op. 6, d. 161, l. 56, ARAN.

⁹⁴ For more about S. A. Ianovskaia, see: I. G. Zenkevich, *Sud'ba Talanta* (*Ocherki o zhenshchinakh-matematikakh*) (Briansk, 1968), 71–8; I. G. Bashmakova, S. S. Demidov and V. A. Uspenskii, “Zhazhda Iasnosti,” *Voprosi istorii estestvoznaniia i tekhniki*, 1999, no. 4:108–19.

paleontologist who received her master's in 1937 and doctoral degree in 1946. In 1948, she became a professor, and for several years she was the head of the laboratory in Paleontology Institute of the USSR Academy of Sciences.

There were other scientific institutions where one could find women among the junior research staff in the 1920s–30s, but the percentage of women doctors, professors, and heads of departments was much lower. For example, in the State Astronomical Institute of P. K. Shternberg in 1936–37, there were five women among senior staff scientists (four PhDs) and four women research assistants. Pavel Karlovich Shternberg (1865–1920), who took the position of observatory director in 1916, was a supporter of the women's higher education and started teaching as a professor in the Moscow Higher Women's Courses in 1901. He invited some of his students to work in the observatory (for example, Anna Sergeevna Miroliubova [1886–1978] and Maria Aleksandrovna Smirnova [1892–1986], who spent their entire lives at the observatory and then at the institute). But it seems that among all the women who worked at the institute in the 1920s–1930s, only one later became a professor and received her doctoral degree: Evgeniia Iakovlevna Boguslavskaia (1899–1960).⁹⁵

The final way Soviet women became scientists was the most traditional, the most successful, and the most common: “scientific marriages.” Marriages between female students and university professors were common in Russia from the very beginning of higher education for women. With the advent of coeducation, marriages between students continued to be frequent occurrences. As the outstanding physiologist and full member of the USSR Academy of Sciences Lina Solomonovna Shtern (1878–1968) wrote in her unpublished article “Woman's Role and Significance in Science” (1957):

A woman has not only rights but obligations to develop all her gifts in full measure in order to promote humanity's progress. But unfortunately a woman satisfies her potential in accordance with that of her spouse, holding herself back to give him headway. Even today one can come across situations when a woman holds herself back to create suitable conditions for the man standing near her, and this lies very deeply in one's consciousness; an urge to push him forward even becomes unconscious. When business concerns a man, she puts a man forward before herself and above other talented women. From my own experience from the time when I directed a large collective of scientists, I had to struggle with this . . . I always aspired to put women up to the mark and met opposition from those women whom I considered necessary to move forward. They held themselves back somehow.

The equal rights given to us mostly have a declarative character. A woman has to give more time and strength to her family than a man does, so he can give all his strength to science. And science as is well known is very jealous and demands the whole human being. It is impossible to serve the Lord and Mammon at the same time. A woman trying to do that doesn't employ her equality in full measure. Cases when women find it permissible to place her family's cares on her husband are very rare.⁹⁶

But sometimes when a woman was energetic and talented, her career was made much easier with the support of her husband, and as he advanced in position her capabilities grew. There are examples of very successful couples, such as Aleksandr Fedorovich Kots (1880–1964) and his wife, Nadezhda Nikolaevna Ladigina-Kots

⁹⁵ This list may be incomplete. See: “List of women—senior staff scientists and list of women research assistants of the State Astronomical Institute of P. K. Shternberg,” f. 641, op. 6, d. 161, ll. 46–7, ARAN.

⁹⁶ Personal Collection of L. S. Shtern, f. 1565, op. 1, d. 367, ll. 4–5, ARAN.

(1889–1963). He was a doctor in biological sciences, professor and founder of the State Darwinian Museum (1913) in Moscow. They married in 1911, when she was a third-year student of the Moscow Higher Women's Coursers and he was one of her teachers. She assisted Kots in all stages of the foundation of the museum while simultaneously exploring animal psychology. In 1913, she organized a laboratory for animal psychology at the museum. In 1917, Ladigina-Kots became a full member of the Institute of Psychology of Moscow University. She published several interesting works in this field and in 1941 received her doctorate in biology, becoming one of the most well-known animal psychologists in the USSR. It was Kots who had roused her interest in the doctrine of evolution, took her along on foreign trips, and gave her an opportunity to work in his museum. In turn, Ladigina-Kots helped her husband with technical work at the museum (not to mention providing him with a family).⁹⁷ Surveying the most noted Russian women scientists of the first half of the twentieth century, one finds that the majority of them not only were married but had husbands who occupied high positions in the scientific hierarchy (although the data is only preliminary and not statistical).

CONCLUSION

The article analyzes the history of Russian women entering the sciences from the 1860s to the 1940s. Of course, it was a slow process. It began with the complete unavailability of higher education for women in Russia, not to mention academic positions, and it ended with a state of formal equality (although obviously this was quite far from true equality). I argue that there were three “generations” of women scientists during this period.

The first generation followed the wave of general interest in the natural sciences in the early 1860s, typically women born in the 1840s or early 1850s. This generation may have been small numerically, but they nevertheless made significant contributions. Without formal education or academic status but with energy and persistence, they not only demonstrated the possibility of becoming a woman scientist but gained support from the scientific community. Some of these women were the first to receive doctoral degrees (all except one of them in Europe). Together they demonstrated that women were able both to study successfully in universities and to participate in the sciences. They became an example to a large number of women. Simultaneously, Russian women began a struggle for access to higher education.

The second generation consists of women ten to twenty years younger than the first. On the one hand, they already had examples of successful female scientific careers before them; on the other hand, they hoped that they would get an opportunity to build traditional scientific careers and to take research positions at scientific institutions, especially after Higher Women's Courses were permitted in several Russian cities. The majority of women belonging to this generation began their careers successfully at the Higher Women's Courses and continued them at European universities. A European doctoral degree became the standard path for this generation. But they underestimated the conservatism of the Russian bureaucracy. So those who still wanted to work as scientists had either to become volunteers (as their predecessors

⁹⁷N. N. Ladigina-Kots, “Avtobiografiia,” in *Gosudarstvennii Darvinovskii muzei. Stranitsy istorii: Osnovateli muzeia* (Mozhaisk, 1993), 73–83.

did) or to stay in a role of assistant or laboratory technician their entire lives. Yet when young women from the *third* generation arrived in auditoriums of the Higher Women's Courses, they met women who had already worked there on a regular basis. They might occupy positions much lower than their professional skills would indicate, but their presence had become ordinary. It was clear that sooner or later the barrier would fall.

In the 1890s and 1900s, some limitations were abolished. By 1917, women who had graduated from the Higher Women's Courses received the right to take state exams in the universities and to obtain university degrees with the right to prepare doctoral dissertations. After the doctorate, they could obtain positions at scientific institutions. Certainly, they were still excluded from the benefits of the civil service, and many of these new rights did not exist in practice. But this changed with the October Revolution of 1917, when the new government equalized all rights for women in the course of looking for allies. It was a long-awaited moment, and many women hurried to make use of it.

But very soon they found out that equality produced new problems. Living standards in academia collapsed after the revolution, and the treatment of women in the scientific community changed now that they had become real competitors. Women had to learn new rules and create new ways of successfully participating in science. Teaching and other duties often left too little time for investigations. In fact, teaching often left no time as the majority of academics worked in several institutions just to eke out a living. So scientific investigations remained an individual initiative for women.

Since the Soviet government had declared that there was no "woman's question" in the USSR, it did not specifically address the issue of "women in science." Nevertheless, in 1929 the Women's Department (*Zhenotdel*) of the CPSU Central Committee collected information about women scientists.⁹⁸ Unfortunately, right at that time the department closed, and documentation of the last period of its activity did not survive, so it is difficult to uncover the purpose of this endeavor. On November 19–20, 1936, the Moscow Regional Union of the Higher School and Scientific Institutions Workers organized a Creative Conference of Women Scientists, whose purpose was to "report for the Congress of Soviets about the achievements of women scientists in the development of Soviet sciences."⁹⁹ In November 1937, a similar conference was held in Leningrad.¹⁰⁰ It was shown that not only were the number of women in science growing but among them some had reached positions of very high academic status.

The number of women in Russian science seriously began to grow from the late 1880s onward. When it became easier for women to become scientists, it turned into a mass profession, and many undertook this path for whom science was not a high mission but simply a potential route to a secure life. And they brought a very old mindset with them: a man (a husband) as a worker was much more important to a family so his career must be developed first and women should take care of him, his children, and his home and support him in any way (at home and at the scientific institution). But it was impossible to change mass psychology immediately. That was a task for future generations of Russian women scientists.

⁹⁸ For example, see the letter from Rudzit (a functionary in the Women's Department [*Zhenotdel*] of the CPSU Central Committee) to M. V. Pavlova, 2 Dec. 1929, f. 311, op. 1a, d. 98, l. 70, ARAN.

⁹⁹ Letter from Rudzit to A. A. Glagoleva-Arkadieva, 2 Nov. 1936, f. 641, op. 6, d. 98, l. 147, ARAN.

¹⁰⁰ Papers of L. S. Shtern, f. 1565, op. 1, d. 324, l. 3, ARAN.