Raykov B. (1937). Essays on the History of the heliocentric views in Russia. From the past of the Russian science. Moscow-Leningrad: Publishing house of Academy of Science.

Raykov B. (1947). Essays on the history of evolutionary ideas in Russia before Darwin. Vol. 1. Moscow-Leningrad: Publishing house of Academy of Science.

Raykov B. (1952). Russian Evolutionary biologists before Darwin. Materials for the history of evolutionary ideas in Russia. Vol. II. Moscow-Leningrad: Publishing house of Academy of Science.

Raykov B. (1955). Russian Evolutionary biologists before Darwin. Materials for the history of evolutionary ideas in Russia. Vol. III. Moscow-Leningrad: Publishing house of Academy of Science.

Raykov B. (1959). Russian Evolutionary biologists before Darwin. Materials for the history of evolutionary ideas in Russia. Vol. IV. Moscow-Leningrad: Publishing house of Academy of Science.

Raykov B. (1969). German Evolutionary biologists before Darwin. Leningrad: Science.

Raykov B. (2012). On my way of life. SPb: Kolo.

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Pharmaceutical hunger and medicinal plants: Mobilization of the botanists during World War I

In my paper I will describe the involvement of Russian botanists in the collection and cultivation of medicinal plants as part of the war effort. In the autumn of 1914, when cut off from foreign suppliers, Russia was quickly faced with the situation of "pharmaceutical hunger". In 1915–1917, with advice or/and leadership of botanists, special meetings were organized, botanical trips were made, manuals and reference books were published, experimental stations and fields were created, lectures were read and so on. As a result of all these actions taken by the governmental and public organizations, high prices and steady demand were established. It made an enabling environment for the cultivation and collection of officinal plants. The structures created during WWI not only survived the war and revolutionary years but developed into large institutions. Many of those botanists who began to study medicinal plants during WWI successfully continued their work in the Soviet times.

Keywords: medicinal plants, Russian botanists, Pharmaceutical industry, Word War I.

Botany would seem to be an absolutely peaceful occupation. However, the World Wars in the 20th century disrupted normal life for the entire Old World and spared no one. Russian botanists worked in support of the military industry during the First World War on two important projects: the extraction of tannins from tree bark (mainly in the production of jackboots) and medicinal plants. I will emphasize the role of medicinal plants because the most active team of scientists in this area conducted their research in the Baltic region. Whereas most studies on tannins were concentrated in Crimea and the Caucasus, medicinal plants were studied in the whole territory of European Russia and the most active groups worked in St. Petersburg and Dorpat (Yuriev, now Tartu) University.

In the autumn of 1914 Russia realized that the enormous amount of goods it received from abroad, including Germany, compromised their national security. As professor of the Dorpat University, Karl K. Saint-Hilaire, said in his inaugural lecture in the autumn of 1914, "I used to speculate: what will we do if there is a war with Germany? But this suggestion seemed to be so fantastic that I left it at once" (Сент-Илер, 1915: 11).

In contrast to Russian industry, which was dependent on Europe, during the previous 3–4 decades Russian Universities had graduated an army of naturalists, including botanists — both 'pure' as well as applied specialists — and a number of small but effective research centers were created. During WWI, when the state was in need, botanists were able to adapt their pure scientific research quickly in service of the homeland to address applied problems. Botanists were involved in the war effort in several ways, but in this article I focus on medicinal plants. Botanists were involved in the project of studying the natural resources of the Russian Empire (e. g. tannins), the improvement of food preservation, sanitary and hygiene problems etc. (Федотова, 2007).

Cut off from their foreign suppliers, Russia quickly found itself in the tragic position of "pharmaceutical hunger". Therefore, collecting and cultivating medicinal plants became one of the highest priorities for the Agricultural offices and for the Agency of the High Chief of Medicine and Evacuation (Управление верховного начальника Санитарной и эвакуационной части). The head of the Office was Duke Alexander of Oldenburg (Голиков, Сапронов, 2010).

In March, 1915 the Department of Agriculture called the "Interagency Meeting on improving the production of medicinal plants in Russia" (Труды Междуведомственного... 1915).[1] As a result of the meeting the lists of appropriated plant species for every region were published, as well as information about the market of pharmaceutical raw materials, and essays on the cultivation of medicinal plants.

Before the meeting the Department of Agriculture sent to the provincial Zemstvo boards, agricultural societies, and agricultural inspectors a list of questions "on the current situation in Russia on collecting, cultivating and processing medicinal plants". The answers revealed a sad picture: the cultivation of medicinal plants was almost absent, the collection of wild plants was not organized, and the prices were random and dependent entirely on resellers. As the report stated, even in localities that had some production before the war, at the present time there was nothing. It turned out that all of the goods were exported to Germany and then a significant portion were returned back to Russia at a higher price after processing (or even without it) (Фаворский, 1917: 183).

In the spring of 1915 several botanists started developing projects to solve this problem. In Petrograd Botanical Garden a Department of medicinal plants was created. Its head was Nikolay A. Monteverde,[2] with Vladimir N. Lyubimenko[3] and Nikolay N. Monteverde employed as his assistants. The Department included an information office, laboratory, and test plot. The Department's staff made botanical excursions for the study of medicinal plants, distributed seeds, published manuals and popular articles to develop the Russian pharmaceutical industry.[4] The Department consulted the Agency of the High Chief of Medicine

[1] See also: Russian State Historical Archive. Fond. 382. Opis 9. № 189.

[2] Nikolay Avgustinovitch Monteverde (1856–1929) — plant physiologist, specialist in medicinal plants. See: Fedotova, 2011; binran.ru/botmus/foto/history.html.

[3] Vladimir Nikolayevitch Lubimenko (1873–1937) — plant physiologist. See: Манойленко, 1996.

[4] Some manuals and information editions published by Agricultural Department: Монтеверде, 1915; Сбор, сушка... 1915.

and Evacuation, the Military-Industrial Committee, the Ministry of Trade and Industry, KEPS, agricultural societies, zemstvos, agricultural experimental stations, and agronomy schools. "In general, the Department received requests from almost all regions [...] of the Russian Empire. It indicates a rapid advance in the development of collecting and cultivation of medicinal plants" (Отдел лекарственных... 1916).

Manuals and popular articles on medicinal plants were also published by the Commission for the Study of Natural Productive Forces at the Russian Academy of Sciences (Комиссия по изучению естественных производительных сил — KEPS, see: *Кольцов*, 1999) and the Bureau of Applied Botany of the Agricultural Academic Committee (see for example: Регель, 1916). KEPS included a number of eminent botanists: the members of the Academy of Science Andrey S. Famintsyn, Ivan P. Borodin, and Vladimir I. Palladin, as well as professors Vladimir N. Sukachev, Nikolay A. Busch, Dmitriy N. Prjanischnikov, Georgiy F. Morozov, and Nikolay A. Monteverde.

In February of 1916 the Agency of the High Chief of Medicine and Evacuation, prince Peter of Oldenburg, called a "Special meeting on cultivating and collecting medicinal plants" (Труды Особого... 1917). The professors of the Military Medical Academy and the Universities, the specialists of the Department of Agriculture, botanical gardens and research stations, delegates of provincial Zemstvos as well as pharmaceutical companies all participated. Several botanists were present at the Meeting: Alexandr A. Fischer von Waldheim (the head of St. Petersburg Botanical Garden), Nikolay I. Kuznetsov (the head of Nikita Botanical Garden), Alfred Rollov (the head of Tiflis Botanical Garden), V. V. Markovich (the head of Sukhum Botanical Garden), Jan Muszinski (the main gardener of Sukhum Botanical Garden), Vasiliy V. Pashkevich (the main gardener of St. Petersburg Botanical Garden) professors Voldemar K. Varlih, Vladimir L. Komarov, Vladimir N. Lyubimenko, as well as Nikolay A. Monteverde, Robert E. Regel and some others. The Agency for the High Chief of Medicine and Evacuation created the special department — the Agency for collecting and cultivating medicinal plants (Pharmaceutical Agency). The vice-director of the Department of Agriculture A.I. Shakhnazarov, was appointed as the commissioner for Russia. K. I. Shashkovskiy, A. I. Shcherbakov, V. G. Rostmistrov, A. D. Voeikov, V. V. Pashkevich, Ye. M. Val'nev and D. V. Antonov were all appointed as the Regional commissioners. To organize the chemical and pharmaceutical industry in Russia a special unit was established. Professor Vasiliy K. Anrep was appointed as its head, the members of the Academy of Science, V. S. Kurnakov and Vladimir I. Ipatiev, professors V. K. Varlikh, V. E. Tishchenko, A. E. Favorskiy, L. A. Chugayev and L. F. Ilyin as members.

That same year botanists at the request of the Pharmaceutical Agency initiated expeditions: V. I. Lipsky and V. A. Dubyanskiy — to Russian Turkistan, N. N. Monteverde — to Middle and Lower Volga, V. N. Lyubimenko — to the Crimea, and so on.[5] These surveys made it possible, first, to immediately begin a planned procurement of raw materials, and secondly, to prepare the ground for further work on the collection and culture of medicinal plants.

Medicinal plants were not an entirely new subject of research for the Russian botanists. Vladimir N. Lyubimenko, working in the Crimea in the Nikita Botanical Garden in 1908–1912, experimented to determine the influence of external factors on the formation of essential oils from aromatic plants. Experiments on the cultivation of some medicinal

[5] See preliminary reports of this expeditions: Дубянский, 1917; Липский, 1917; Монтеверде, 1917; Любименко, 1918; Федченко, 1917.

plants were organized by the St. Petersburg Pharmaceutical Society, by V. K. Ferrein (the head of the pharmaceutical company) in the Crimea and on his estate in Butovo near Moscow. During Soviet times, at the Butovo estate, the first Soviet courses for the breeding of medicinal plants was organized in 1919, and later VILAR — the Institute of Medicinal and Aromatic Plants was created.

Before the war, scientific societies and botanical gardens tried to persuade the government to fully support this important pharmaceutical work. For example, in 1913 St. Petersburg Botanical Garden attempted to get funding to create a special experimental station of medicinal plants. But management decided that a special station would be excessive and that it was sufficient to incorporate this program into the functions of the Bureau of Applied Botany and Museum of the Botanical Garden (Отдел лекарственных... 1916). Only the critical situation of war had finally convinced the authorities of the need to fund this research.

During the war years work on medicinal plants commenced in many botanical institutions with financial support from the Ministry of Agriculture, the Pharmaceutical Agency, as well as some zemstvos. At the Nikita Botanical Garden this work was conducted under the leadership of Nicolay Kuznetsov, Eugenii Wulff and V. N. Lubimenko, who regularly visited Nikita from St Petersburg. It was conducted at Tiflis (by D. I. Sosnovskiy, A. A. Mayorov, A. H. Rollov) and Sukhum (by V. V. Markovich and Jan Muszinski) Botanical Gardens.

In Kiev, professor of zoology Nikolay F. Kashchenko, funded by the Department of Agriculture, developed an experimental garden of medicinal plants. Kashchenko, whereas before the war such research was merely a hobby, afterwards he became a dedicated and successful experimentalist and was later elected a member of the Ukrainian Academy of Sciences. In 1916, Kashchenko organized courses on the collection and cultivation of medicinal plants, with an enrollment of 35 students (Липшиц, 1952; Пашкевич, 1917).

An experimental nursery of medicinal plants for demonstration purposes was established at Moscow Zoo (Указатель к показательному... 1915). P. I. Gavsevich and N. N. Voroshilov organized an experimental station at Lubeny Agricultural Society (Poltava province), which operated successfully into the Soviet years (Гавсевич, 1916; Львов, 1926). Nurseries and experiments on the culturing of medicinal plants were organized at the Voronezh Agricultural Institute, in Penza and in Uman Agricultural Colleges, in Botanic Gardens of Kharkov, Moscow and Dorpat University, in Gagra, Tashkent, in Kovno agricultural societies, etc (Komarov, 1916).

An important issue was the improvement in the botanical education of pharmacists, gardeners, and agronomists. Botanists, pharmacists and physicians organized courses and popular lectures in many cities, such as in Moscow at the Imperial and at the People's Universities, at Petrograd Botanic Garden, at the Odessa experimental station, etc (Изучение лекарственных... 1916).

In addition to botanists in Petrograd and Moscow, there were also several groups in the provinces. Every region published reports on the year's work in 1916. In some cases the commissioners of the districts mostly complained about the difficulties that came from a lack of funding and personnel, for example Pashkevich — the head of the Pharmaceutical Agency in the North-West region (Пашкевич, 1917), while in other regions a great deal was accomplished, especially in Caucasus and Crimea — in Tiflis, Nikita and Sukhum Botanical Gardens. Additional work was also successfully carried out by the botanists from Dorpat University — the region with the least favorable climatic conditions and located close to the front line. The work of the Dorpat botanists was successful partly due to the fact that the head of

the Agency for collecting medicinal plants in the Northern District, A. I. Shcherbakov, was a trustee of the Riga educational circuit. Another reason, I believe, lies in the fact that in the late 19th — early 20th century there was a very active group of botanists led by Nikolai I. Kuznetsov. Kuznetsov left to Crimea in late 1914, but many of his young researchers remained active and they were able to organize the work of the Pharmaceutical Agency.

At Dorpat University courses for the recognition, collection and cultivation of medicinal plants were funded by the Ministry of Agriculture in the spring of 1916 for pharmacists and school teachers. They included Botanical and Pharmaceutical divisions. The courses were headed by assistant professor of botany Nikolay P. Popov (he was also the head of the botanical division, his assistants were N. I. Borshchov and A. M. Kolpinsky) and Adolf K. Kessler, a lecturer for the Physiological Institute was head of the Pharmacology Department. The Kiev courses were organized on a voluntary basis, but in Dorpat instructors were paid. Courses were conducted at the University Botanical Garden. The two-month course trained 75 people. The program included excursions in the vicinity of Dorpat, practical exercises were conducted on special plots, and it concluded with a botanical excursion to Dagestan.[6]

The success of the spring courses helped to obtain funds from the Pharmaceutical Agency to conduct more extensive one-year courses and to create a demonstration factory. New courses started in September 1916 and were equipped with a factory in the University riding hall. This building could be obtained only through direct intervention of Shcherbakov. During the early months of the war it was utilized as a military warehouse.[7] In Tartu Archive I've managed to find a correspondence between Shcherbakov and the rector of Dorpat University. Having achieved success in acquiring this building, Shcherbakov continued advocating for additional resources. The rector sometimes granted his requests, but in other cases, especially with the more outlandish requests, they were denied. In January 1917 Shcherbakov asked the rector to provide a stable with a loft and a plot of land adjacent to the building containing the riding hall to expand the factory and warehouse for him. To this the rector had to respond that the stable was to be used as a stable, hay would continue to be stored in the loft because the University required the stable for its normal activities.[8]

The factory provided practical training for course participants, conducted numerous tours with detailed explanations and demonstrations for schoolchildren, farmers, etc. The Pharmaceutical Agency provided students with the work of collecting medicinal plants. Graduates extended this work to the peasants. In addition, the Pharmaceutical Agency funded the creation of an experimental and demonstration plot for the cultivation of medicinal plants (Организация по сбору... 1917).

Similar short-term courses were set up in Yekaterinburg, Syzran horticultural school, at the Tiflis Botanical Garden, etc. In 1916 this helped to prepare the required number of employees for the Pharmaceutical Agency.

Pharmacists and physicians likewise participated in this work. In the spring of 1915 at the therapeutic clinic of Moscow University there was an exhibition of medicines. The laboratory of V. K. Ferrein's Pharmaceutical Company estimated the quality of Russian pharmaceutical raw materials. In 1915 Bekhterev Psychoneurological Research Institute in Petrograd initiated the three-year pharmaceutical curriculum (Акименко, Шерешевский,

[6] Вестник русской флоры. 1916. Т. 2. Вып. 4. С. 291–292.

[7] Estonian Historical Archives. Fond. 402. Opis. 5. № 1988. List. 7, 8, 24–25.

[8] Ibid. List 28, 30–31.

1999). Botanists of Petrograd Botanical Garden took an active part in its organization and Vladimir L. Komarov had a leading role. The department later became the independent Chemical and Pharmaceutical Institute.

Of course, none of the professionals believed that the problems could be solved in the immediate future, but it was during the war years that this development of a Russian pharmaceutical industry shifted forward. Many of the initiatives of those years not only survived the First World War and revolutionary upheaval, but grew into large institutions. Thus, a small nursery of medicinal plants, founded in Saratov Experimental Agricultural Station in the spring of 1917, survived the Civil War and successfully developed in the 1920s. In 1931 it became one of the main zonal stations of the newly created VILAR (Institute of Medicinal and Aromatic Plants). The Department of Medicinal Plants in Petrograd Botanical Garden continued successfully for many years. N. A. Monteverde remained its head until his death. In 1919 the Department was transformed into a laboratory for the study of plant foods and medicinal plants. Many botanists continued these successful endeavors — V. V. Pashkevich, A. D. Wojeikow, F. A. Satsyperov, N. F. Kashchenko (he was the director of experimental garden of the Ukrainian Academy of Science until his death in 1935) and others. It was during the Second World War that many "pure" or academic botanists put their knowledge into application for the development of medicinal plants.

As a result of actions taken by the Agricultural Agencies and Pharmaceutical Agency in 1916, high prices and strong demand created fertile ground for the cultivation and collection of medicinal plants. However, in 1917, due to the complete destabilization of society this sector was nearly decimated. In place of the once fertile fields of medicinal plants now potatoes and rye were planted. The Soviet government began to take steps towards the development of a pharmaceutical industry in 1919 and since 1922 has resumed exports of medicinal plants.

The activity of the Pharmaceutical Agency, as instituted in Russia, faced many bureaucratic obstacles. For example, A. D. Wojeikow (Commissioner of the South-Eastern District) attempted to place Nikolay I. Kuznetsov (not to be confused with the Dorpat professor, but "Kuznetsov of Vladimir", known for his work on the flora of Siberia, Central and Northern Russia) as his senior assistant. In the spring of 1916 Kuznetsov was serving as an enlisted serviceman in the division of grain procurement for the Army. His transfer into the Pharmaceutical Agency was denied. Of course, this was a more fortunate outcome than Wojeikow's other assistant, A. A. Gorbovsky, who was sent into active duty and killed on the front.

Conclusion

Botany would seem to be the science furthest away from militarism, but the pharmaceutical requirements that arose during two World Wars demonstrate that even this "peaceful" occupation can be forced into the service of armed conflict. Botanical knowledge was essential to a state and an economy totally transformed by war. No one was immune. Richard Howard (2000) in his article "The role of botanists during World War II in the Pacific theatre" showed that during the Second World War, this trend had reached its highest point.

In recent years historians have contended that it was during the First World War that the modern form of interaction between science and government began to take shape

(Колчинский, Кольцов, 2003). This strengthened relations with the central government and later turned into a complete bureaucratization of science, promoting the separation of national scientific communities. Botany is a good illustration for this hypothesis (Федотова, 2007). The hunger for pharmaceuticals during the First World War was as great a threat as any military assault. This national crisis drafted botanists and agricultural specialists into the war effort and the defense of the state.

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References

Акименко М. А., Шерешевский А. М. История института имени В. М. Бехтерева. СПб., 1999. 217 с. (*Akimenko M. A., Shershevskiy A. M.* The History of Bekhterev Institute. St Petersburg, 1999. 217 p.)

Гавсевич П. И. Собирание и культура лекарственных трав на Лубенщине. Вып. 2. Лубны, 1916. 98 с. (*Gavsevich P. I.* The collection and cultivation of medicinal plants in the Lubny region. Lubny, 1916. 98 p.)

Голиков Ю. П., Сапронов Ю. С. Попечитель Императорского Института экспериментальной медицины принц Александр Петрович Ольденбургский. СПб.: Росток, 2010. 240 с. (*Golikov Yu. P., Sapronov Yu. S.* Trustee of the Imperial Institute for Experimental Medicine, Prince Alexander of Oldenburg. St Petersburg: Rostok, 2010. 240 p.)

Дубянский В. А. Исследования лекарственной флоры Закаспийской области. Пг., 1917. 11 с. (*Dubyansky V. A.* Studies of medicinal flora in the Trans-Caspian region. Peterograd, 1917. 11 p.)

Изучение лекарственных растений России // Вестник русской флоры. 1916. Т. 2. Вып. 4. С. 290–292. (The studies of medicinal plants in Russia // Bulletin of Russian Flora. 1916. Vol. 2. № 4. P. 290–292.)

Колчинский Э. И., Кольцов А. В. Российская наука и революционные кризисы в начале XX в. // Наука и кризисы. Историко-сравнительные очерки / ред.-составитель Э. И. Колчинский. СПб.: Дмитрий Буланин, 2003. С. 291–334. (*Kolchinsky E. I., Koltsov A. V.* Russian science and revolutionary crises in the early 20th century // Science and Crises. Historical-comparative issues / ed. by E. I. Kolchinsky. St Petersburg: Dmitry Bulanin, 2003. P. 291–334.)

Кольцов А. В. Создание и деятельность комиссии по изучению естественных производительных сил России (1915–1930 гг.). СПб.: Наука, 1999. 184 с. (*Koltsov A. V.* The establishment and activities of the Commission for the Study of Natural Productive Forces of Russia (1915–1930). St Petersburg: Nauka, 1999. 184 p.)

Комаров В. Л. Что сделано в России в 1915 г. по культуре лекарственных растений. Пг., 1916. 12 с. (*Komarov V. L.* What has been done on the cultivation of medicinal plants in Russia in 1915. Peterograd, 1916. 12 p.)

Липский В. И. Исследование флоры Туркестана в смысле техническом и лекарственном. Пг., 1917 6 с. (*Lipsky V. I.* The studies of medicinal and technical plants of Turkestan flora. Peterograd, 1917. 6 p.)

Липшиц С. Ю. Кащенко Николай Феофанович // Русские ботаники. Биографо-библиографический словарь. Т. 4. М.: Изд-во МОИП, 1952. С. 113–116. (*Lipshits S. Yu.* Kashchenko Nikolay Feofanovitch // Russian Botanists. Biographical and bibliographical dictionary. Vol. 4. Moscow: MOIP, 1952. P. 113–116.)

Львов Н. А. Культура лекарственных растений на Полтавщине, ее перспективы и современное положение // Лекарственные и технические растения СССР. Труды I Всесоюзного совещания по лекарственным и техническим растениям и лекарственному сырью,

состоявшегося при Госплане СССР в Москве 28.05–01.06 1925 г. М., 1926. С. 183–193. (*L'vov N. A.* Cultivation of medicinal plants in the Poltava region, its prospects and the current situation // Medicinal and Technical Plants of the USSR. Proceedings of the First All-Union Conference on Medicinal and Technical Plants and Medicinal Raw Plant Materials, held at Gosplan USSR in Moscow, 28.05–01.06. 1925. Moscow, 1926. P. 183–196.)

Любименко В. Н. Обследование возможности развития промысла, сбора и культуры лекарственных растений в Таврической губернии. Пг., 1918. 7 с. (*Lubmenko V. N.* Exploring the possibilities for the collection and cultivation of medicinal plants in the Tauride province. Peterograd, 1918. 7 p.)

Манойленко К. В. В. Н. Любименко: эволюционные, эколого-физиологические, историконаучные аспекты деятельности. СПб.: Наука, 1996. 168 с. (*Manoilenko K. V.* V. N. Lyubimenko: evolutionary, ecological, physiological and historical aspects of his research activity. St Petersburg: Nauka, 1996. 168 p.)

Монтеверде Н. А. Порайонный обзор лекарственных растений Европейской России, Кавказа и Туркестана. Юрьев, 1915. № 1–7. (*Monteverde N. A.* Survey of medicinal plants in different regions of European Russia, the Caucasus and Turkestan. Dorpat, 1915. № 1–7.)

Монтеверде Н. Н. Исследования лекарственной флоры Среднего и Нижнего Поволжья. Пг., 1917. 62 с. (*Monteverde N. N.* The studies of medicinal flora of the Middle and Lower Volga. Petrograd, 1917. 62 p.)

Организация по сбору, заготовке и культуре лекарственных растений в Северном районе. Отчет по Северному району. Юрьев, 1917. 21 с. (Organization for the collecting, processing and cultivation of medicinal plants in the Northern Region. Report on the North Region. Dorpat, 1917. 21 p.)

Отдел лекарственных растений // Отчет о состоянии и деятельности имп. Ботанического сада Петра Великого за 1915 г. Пг., 1916. С. 130–144. (Department of Medicinal Plants // Report on the situation and activities of the Imperial Botanical Garden of Peter the Great in 1915. Peterograd, 1916. P. 130–144.)

Пашкевич В. В. Деятельность организации по заготовке лекарственных растений Северо-Западного района. Отчет за 1916 г. Пг., 1917. 14 с. (*Pashkevitch V. V.* The organization on the collecting of medicinal plants in the North-West Region. Report for 1916. Peterograd, 1917. 14 p.)

Регель Р. Э. О ромашке и клещевине // Труды Бюро по прикладной ботанике. 1916. Т. 9. Вып. 1. С. 26–30. (*Regel R. E.* On chamomile and castor-oil plants // Proceedings of the Bureau of Applied Botany. 1916. Vol. 9. № 1. P. 26–30.)

Сбор, сушка и разведение лекарственных растений в России: очередные задачи. Пг.: Департамент земледелия, 1915. 134 с. (Collecting, processing and cultivation of medicinal plants. Peterograd, 1915. 134 p.)

Сент-Илер К. К. Вступительная лекция к общему курсу зоологии прочитанная 3 сентября 1914 г. // Труды Юрьевского университета. 1915. № 5. С. 1–12. (*Saint-Hilaire K. K.* Inaugural lecture for the course of general zoology, read September 3, 1914 // Proceedings of Dorpat University.1915. № 5. P. 1–12.)

Труды Междуведомственного совещания 14–16 марта по вопросу об улучшении производства в России лекарственных растений. Стенографический отчет. Пг., 1915. 363 с. (Proceedings of the Interdepartmental Meeting on improving production of medicinal plants in Russia, March 14–16. Verbatim report. Peterograd, 1915. 363 p.)

Труды Особого совещания созванного по повелению принца А. П. Ольденбургского по вопросу о культуре и сборе лекарственных растений и организации и их использования и сбыта 22–28 февраля 1916 г. Стенографический отчет, журналы Совещания и материалы / сост. Б. А. Андреевым, А. Д. Будогодским и Ф. А. Сацыперовым под ред. А. И. Шахназарова. Пг., 1917. 412 с. (Proceedings of the special meeting convened by Duke of Oldenburg on the cultivation and collection of medicinal plants, their use and marketing, February, 22–28, 1916. Verbatim records, proceedings and meeting materials / compiled by B. A. Andreev, A. D. Budogodsky and F. A. Satsyperov; ed. by A. I. Shakhnazarov. Peterograd, 1917. 412 p.)

Указатель к показательному питомнику лекарственных растений в Московском зоологическом саду. М.: Русское общество акклиматизации животных и растений, 1915. 56 с. (Index of the exponential nursery of medicinal plants in the Moscow Zoo. Moscow: Russian Society of Plants and Animals Acclimatization, 1915. 56 p.)

Фаворский А. Е. Некоторые соображения по организации учреждения для исследования эфирных масел и лекарственных растений // Отчеты о деятельности КЕПС. 1917. № 8. С. 183–187. (*Favorsky A. Ye.* Some considerations on the organization for the study of essential oils and medicinal plants // KEPS'Annual Reports. 1917. № 8. P. 183–187.)

Федотова А. А. Монтеверде Николай Августинович // Биология в Санкт-Петербурге. 1703–2008. Энциклопедический справочник. СПб.: Нестор-история, 2011. С. 315. (*Fedotova A. A.* Monteverde Nikolay Avgustinovitch // Biology in St. Petersburg. 1703–2008. Encyclopedic Dictionary / ed. by E. I. Kolchinsky, compiled by E. I. Kolchinsky, A. A. Fedotova. St Petersburg: Nestor-Historia, 2011. P. 315.)

Федотова А. А. Российские ботанико-географы во «второй отечественной» // Наука, техника и общество России и Германии во время Первой мировой войны. СПб., 2007. С. 364–390. (*Fedotova A. A.* Russian Phytogeoraphers during the "Second Patriotic War" // Science Technology and Society in Russia and Germany during the WWI. Saint-Petersburg, 2007. P. 364–390.)

Федченко Б. А. Изучение лекарственных растений Южного Туркестана. Пг., 1917. 10 с. (*Fedtchenko B. A.* The studies of medicinal plants in South Turkestan. Peterograd, 1917. 10 p.)

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Expedition of the Russian Academy of Sciences and the Study of China in the first half of the XIX Century, the documentary-organizational aspects

This article shows, by means of several examples, how the Academy of science implemented its expeditionary programs actively collaborate with various agencies, companies and academic institutions both within the country and abroad. The joint expeditions were one of the forms of the mutual cooperation. Thanks this cooperation the Academy of Sciences could to conduct research in remote or enclosed areas to researchers (the Caucasus, Central Asia, and China).

***Keywords*:** Russian Academy of Sciences, China, expeditions, first half of the XIX century, documentary aspects.

The first contacts of Russia and China were in the XVI century. Russia has received the reliable data about China, when Russia began to explore the lands of the Far East and Siberia. In the XVII century a question about the exact definition of the Russian-Chinese border