INSTITUTE OF AGRICULTURE AND FORESTRY IN MARYMONT: EUROPEAN RESEARCH AND EDUCATIONAL PRACTICES IN THE CONDITIONS OF RUSSIAN CENTRALISM (1816-1861)

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Abstract: The aim of the work is to correct erroneous ideas about the Agronomical Institute in Marymont (Kingdom of Poland) in the history of agricultural education and sectoral experimentation, which are quite common in modern historical literature. Created following the example of the first European higher agricultural schools, this institute adopted the traditions of sectoral experimentation from the recognized ideologists of scientific agronomy of the modern era A. Thayer and F. Fellenberg. To carry out the research, a general scientific and comparative-chronological method was used, with the help of which the analysis of the constituent documents of the institute for 1820, 1835, 1840, and 1857 was carried out in order to study the evolution of the scientific and organizational foundations of experimental work. It is shown for the first time that the pan-European discussion between the followers of the autohumus theory of Thayer and the founder of agrochemistry Y. Liebig directly affected the development of the educational institution and predetermined personnel changes in it. The study of archival documents makes it possible to correct the established ideas about a certain primitivism of the educational institution in Poland in terms of its research work. It is proved that the initial formation of scientific experimentation on a long-term basis in the system of higher industrial education of the Russian Empire is associated with the Agronomic Institute in Marymont. The experimental field created there was the first in the system of higher agricultural education in the Russian Empire.

Keywords: Agricultural experimental work, Agronomic chemistry, Higher agricultural education, Humus theory, Mineral fertilizers, Principles of rational management.

1 Introduction

Among the many factors capable of ensuring the progressive development of agriculture, a prominent place belongs to science, in particular, its scientific research potential. In the historical literature, deep coverage was given to versatile problems associated with the formation and formalization of agricultural experimental work as an independent branch of natural science and organization. In Ukraine, Academician of the National Academy of Agrarian Sciences V. A. Vergunov and representatives of the scientific school founded by him work most consistently in this direction. In their works, various aspects of industry experimental activity are investigated from the activities of individual talented experimenters to the functioning of state research institutions. Scientists substantiated the idea of the leading role of higher educational institutions in the development of agricultural experimental activity [43, p. 6, 44]. However, the historical analysis of the literature makes it possible to state that the problem of the establishment and development of branch experimental work in the system of higher special education in Ukraine has not received an independent study.

The question of the beginning of systematic work on the creation of experimental fields is controversial. In recent years, the statement of Professor Viner about the priority of the experimental field of the Gory-Goretsk Agricultural Institute, created in the Mogilev province simultaneously with the institute in 1840, received recognition [42, p. 26-27]. The Gory-Goretsky Institute is called the first higher agricultural educational institution in the Russian Empire. This statement negates the activities of the Agronomical Institute in Marymont, created on the outskirts of Warsaw by the Decree of the Russian Emperor Alexander I in 1816. The Marymont Institute became the fourth higher agricultural educational institution in Europe and the first in the Russian Empire. It was created following the example of the first higher European agricultural schools: 1) The Academy of Agriculture "Georgikon", founded in 1797 by Count D. Festetics in the Keszthеiv estate of Hungary; 2) the school of F. von Felenberg, opened in the Swiss Hofwil, near Bern, in 1804; 3) Thayer's school, organized in 1806 in Möglin, near Brandenburg. The legal successor of the Marymont Institute is the Kharkiv National Agrarian University named after V.V. Dokuchaev (hereinafter KNAU). For more than two centuries of continuous development, the educational institution developed within the borders of different states: Poland (Marymont: 1816-1861; Novo-Alexandria: 1862-1914) and Ukraine (Kharkov: since 1914). KNAU has a common historical past with two modern Polish scientific institutions the State Research Institute of Plant Production and Soil Science in Pulawachi, and the Warsaw University of Life Sciences (the primary School of Agriculture in Warsaw).

Despite the fact that KNAU is the oldest higher agricultural educational institution in Ukraine, the Polish period of its history did not become a subject of independent comprehensive study, and the scientific literature contains multiple erroneous statements. The history of the Marymont experimental fields and the experimental activities of the professors of the institute also did not become the subject of independent study. Consequently, an objective coverage of the history of the Agronomic Institute in Marymont (since 1840 – the Institute of Agriculture and Forestry) on the basis of all documents available to a modern researcher is an urgent task.

2 Materials and Methods

The history of the Agronomic Institute in Marymont has not received a comprehensive study due to various circumstances. Among them, there is the isolation of Russian historians' perception of the Polish educational institution, which before the anti-Russian uprising of 1830–1831 developed mainly on the basis of national traditions under the influence of German agrarian culture. For Polish historians, it was problematic to study the history of the Russian higher educational institution, which became the institute after it was relocated from Marymont to Novo-Alexandria in 1862. In addition, due to relocations and world wars, many of the institute's official documents were lost. Polish historians note that a significant part of the documents burned down together with the archive of old acts in Warsaw during the Second World War.

Many documents taken from Poland to Kharkov at the beginning of the First World War have also been lost. Nevertheless, in the State Archives of the Kharkiv Region (hereinafter – SAKR), little-studied documents of the official office work of the institute for 1816-1919 are preserved. Today these archival materials are presented in Fund 669 (New Alexandria Institute of Agriculture and Forestry). The Statutes of the Institute for different periods of its development are of particular interest. The constituent documents for 1820, 1835, 1840, and 1857 provide an opportunity for a scrupulous study of the process of forming the scientific and organizational foundations of experimental work in an educational institution. In the process of working on the documents, general scientific and interdisciplinary methods were comprehensively used, as well as the method of comparative chronological analysis.

3 Results

Agricultural experimental activity originated at the Marymont Institute from the very beginning of its activity in 1820 on the basis of the European practice of agricultural education, inseparable from research work. The beginning of the scientific and organizational design of the research activity was laid by the Charter of 1835. The specific content of scientific research activities and the methodology for their conduct are not yet subject to detailed study due to the narrowness of the source base. In the context of bringing the Polish education system to Russian educational standards and the lack of financial resources, the provision on compulsory scientific research was excluded from the Charter of 1840. The pan-European agrarian discussion between the supporters of the humus theory of Thayer and the founder of agrochemistry Liebig had a noticeable impact

on the development of the institute in general and experimental work in particular. The wide recognition of Liebig's ideas by the scientific community served as a prerequisite for reforming the Marymont Institute in accordance with the Charter of 1857. The spread of anti-Russian revolutionary sentiments among the students became an insurmountable obstacle to the transformation of the institute.

4 Discussion

We dare to assert that the experimental field at the Marymont Institute in the Kingdom of Poland was created earlier than the experimental field at the Gory-Goretsk Agricultural Institute in the Mogilev province, which scientists call the first experimental field in the Russian Empire. However, the loss of archival documents in Warsaw and Kharkov led to a certain oblivion of the Marymont Institute in the history of agricultural science and industry experimental activity. The content of research work and experimental techniques is of greatest interest. For further study of the issue, it is advisable to refer to the information contained in the Polish periodicals founded by the heads of the institute in Poland – “Ceres” and “Sylwan Warszawski”. Also, the expansion of the information field can be helped by referring to the scientific works of the leading professors of the Marymont Institute, most of which are written in Polish.

Warsaw became part of the Russian Empire after the Napoleonic Wars in accordance with the decisions of the Congress of Vienna in 1815. The following year, at the initiative of Polish public figures, in particular, the director of the government Department of Industry and Crafts, S. Stashits and the chairman of the Government Commission for Internal and Spiritual Affairs and Public Education, Count S. Pototsky, several higher educational institutions were established. Among them, there were the Institute of Agriculture, Institute of Practical Veterinary Medicine, and the School of Handicrafts in Marymont and Warsaw Forestry School (synonymous names – Forestry School or Institute), founded by the Decree of Emperor Alexander I, respectively, from October 5 and October 17, 1816. In accordance with the Decree of November 19, 1816, the Royal University in Warsaw (now the University of Warsaw) was founded. Unlike other Russian universities, Varshavsky's activities were subordinated to the task of administrative and economic restoration of the Kingdom of Poland after the Napoleonic wars, and, therefore, it is not surprising that the Warsaw Forestry School began its activities in its premises.

Educational institutions were created during the existence of the Kingdom of Poland as an autonomous state entity within the Russian. The establishment reflected the needs of Poland in training qualified agronomists and foresters in the conditions of “semi-statehood”, according to the Polish historian T. Lepkowski [22, p. 66–67]. Studying the prerequisites for the formation of educational institutions, historians for a long time ignored the circumstances of a planetary scale, the real influence of which on the European history of the early 19th century scientists were explained only two centuries later.

Volcanic eruptions brought many troubles to different countries of the world in the 10s of the 19th century. The largest of these occurred in April 1815 on the island of Sumbawa in present-day Indonesia, where the Tambora volcano began to operate. The explosion threw into the air 100 km³ of volcanic ash and sulfur, which formed a pillar 44 km high and caused the death of more than 70 thousand people [31, p. 2]. The eruption led to global climatic anomalies and cooling throughout the planet, which lasted for several years (the so-called volcanic winter). The year 1816 went down in history as “the year frozen to death” due to the unprecedented low temperatures in Europe and North America. In Europe, the temperature difference was accompanied by heavy rainfall, which damaged crops in many countries. In the spring of 1817, grain prices increased tenfold, and famine broke out among the population, which was accompanied by outbreaks of epidemic typhus [29, p. 230]. Under such circumstances, the patriotic Polish public, in order to accelerate economic, technical, and intellectual progress, initiated the opening of a whole network of educational institutions.

The founder and first director of the Institute of Agricultural Economy in Marymont (since 1820 Agronomical Institute) was a public figure, Professor Jerzy Beniamin Flatt (1768-1860). Despite the fact that this scientist-agronomist was at the very origins of European agricultural education, in historiography his work remains a poorly studied problem.

To get acquainted with the European practice of organizing agricultural institutions, Flatt attended the school of Thayer in Prussian Möglin, near Brandenburg, and school of Felenberg in Switzerland. The result of the scientific and educational trip was the “Plan for the founding of an agricultural school in Marymont”, drawn up on August 3, 1818 [25]. In Poland, the scientist argued, that, as in other European countries, it is necessary to provide training for three categories of farmers who need different “degrees of knowledge”: 1) elders, foremen and senior farm laborers; 2) housekeepers, clerks, and stewards for individual estates; 3) managers of large estates (both own or those belonging to others). The criterion for such specialization was the social affiliation of the students. Regulation on the simultaneous provision of different levels of education in one educational institution was adopted by Flatt from the experience of the Felenberg school; moreover, he borrowed the concept of organizing a separate school for the poor. Also, according to the results of the business trip, Flatt raised the issue of the director's independence in decision-making: “...in agriculture, a lot depends on timely and thorough work, and, therefore, only the director knows about the general course of affairs ... he alone can manage everything .. The less the director will be tied, the more responsible he will be, and the more success can be expected” [25]. This postulate of Flatt vividly reflected his enthusiasm for the Felenberg School, whose activities were completely directed by the head of the educational institution. Upon his return from abroad at the end of 1818, Flatt was appointed director of the Institute on January 1, 1819.

The regulation on different stages of educational training was reflected in the “Charter of the Institute and Agricultural School at the Institute” dated September 12, 1820, which was signed on behalf of the Government Commission for Internal and Spiritual Affairs and Public Education by State Councilor Stashits. The Charter of 1820 unambiguously defined the duties of professors to ensure the unity of theoretical and practical knowledge: “...information of a guessing nature should be left aside, for it is necessary to teach only that which is accessible to direct experiment” (section II) [5, p. 6]. Although the constituent document primarily regulated the educational process, it is quite obvious that the history of agricultural experimental work at the institute began namely with the “direct experiment” carried out by the professors.

At the same time, the Agronomic Institute in Marymont was created as an exemplary agricultural complex, the proven efficiency of which could serve as an example for organizing other estates on the principles of rational management. The issues of organizing an exemplary economy in the state estates Vavrzhishev, Marymont, Ruda, Belyany and Burakov allocated for the development of the institute were considered by Flatt in the “Plan for the founding of the agricultural school in Marymont” of August 3, 1818 [26, p. 4] and “Instructions for Economic Meetings at the Institute” dated March 18, 1819 [18]. Based on the experience gained in the Prussian Möglin and the Swiss Hofvili, Flatt suggested: 1) to ensure strict control of income and expenses on estates; 2) introduce fruit changes to increase the fertility of the plowed field; 3) sow the best fields with fodder grasses; 4) apply abundant fertilization of the fields; 5) bring Spanish sheep to farms; 6) to breed cows, “which are an integral part of the agricultural economy” [26]. According to the “Instructions for Economic Meetings”, a special central body called “Economic Meetings” was created to manage the estates of the Agronomic Institute, consisting of the following positions: the director of the institute, inspectors of the Marymont forests and agronomic farms, cashier and agronomists of state estates

[18]. Subsequently, the exemplary farms at the institute were transformed into experimental fields, the activities of which will also be subordinated to the task of improving the economy through the dissemination of effective agricultural technologies.

Created by the Decree of the Russian Emperor Alexander I of October 5, 1816, the Institute of Agricultural Economy began work on August 30, 1820 in Marymont, the former residence of Maria KazimiraSobieska, wife of the Polish king Jan III Sobieski. The term "Marymont" comes from the French "Marie-mont" and is translated as "Mount Mary" [3, p. 149]. The palace on the high bank of the Vistula was built by the outstanding Baroque architect TilmanavanGameren in 1692-1696. After the death of the Sobesskys, the palace changed its shape, owners, and purpose many times. For some time, it was the residence of the British ambassador. In 1820, the Italian architect Antonio Corazza (1792–1877) drew up a plan to adapt the palace to the needs of the institute and designed the main building of the institution. Now on the foundations of the palace, the Church of the Queen of Poland, Mother of God has been erected.

In practice, the idea of training specialists, taking into account the specifics of their future work, was transformed into a two-level training system the so-called higher and lower schools. The high school, or Agronomic Institute, trained scribes for economy offices, economists, and managers of large estates. The lower school, or Rural, opened at the Institute in 1824 for the training of elders, shepherds, distillers, gardeners older than farm laborers, which protected poor farmers from poverty in adulthood [7, 17]. Also, in 1824, a Veterinary School was founded on the Burakov estate, which trained military veterinarians. Summing up the results of the Institute's activities for ten years from 1820 to 1830 Professor Flatt noted that the educational institution in Marymont can be put on a par with the best foreign Agronomical institutes [17].

In the continuation of all life, the sphere of scientific and public interests of Professor Flatt was associated with Poland's agronomy and agricultural education. Acting as director, Flatt did not stop scientific work. He is the author of the following works: "Description of the Principality of Warsaw with a short sketch of the history of Poland to the present" (1809), "Description of the Institute of Poor Students in Hofwili" (1816), "On the state of horse breeding in the Kingdom of Poland" (Warsaw, 1829, in 2 volumes), etc. [14, p. 35-36]. Since 1824, the scientist edited the scientific journal "Ceres", dedicated to all branches of agricultural production [25, p. 127]. Now, in the Main School of Agriculture in Warsaw, which has a common historical past with Kharkov NAU, outstanding scientists and teachers are awarded the Jerzy Benjamin Flatt medal [15].

During the anti-Russian uprising of 1830-1831, the Institute in Marymont and the Forestry School in Warsaw were at the center of revolutionary events. The number of students in "both institutions" has significantly decreased [16]. The buildings of the Agronomical Institute were destroyed. Due to the small number of students and the lack of funds, the government suspended funding for educational institutions in 1832. During the period from 1820 to 1830, 71 specialists for agriculture were trained at the Agronomic Institute [17, p. 2]. In the period from 1818 to 1830, at the Forestry Institute in Warsaw, 56 specialists were trained for the management of state forests [23, p. 4].

The closure of the first and only agricultural institute at that time in the Russian Empire worried primarily the Polish public. By order of the Board of Governors of the Kingdom of Poland, the Agronomic Institute in Marymont resumed its work. According to the new Statute of October 13, 1835, the educational institution was supposed to train experienced masters of the highest and lower ranks who would be able to choose, through "studying theory and acquiring practice ... the most correct path in achieving the goal assumed in the agricultural industry, which is possible increment in net profit" [4]. It is quite obvious that in this version, the purpose of the Institute's activities coincided with the definition of the essence of the concept of "agriculture", which Thayer outlined in his work Fundamentals of Rational Agriculture: based on the study of theory and the acquisition of practice, to obtain the expected increase in the agricultural industry net profit. Thus, the ideas of sustainable agriculture were the foundation of special training at the Agronomical Institute in Marymont at this stage of its activity.

The third clause of the Charter of October 13, 1835 formalized the conduct of agricultural experiments: "...the Institute will carry out the most important observations and experiments in relation to a certain area; each time, such experiments are repeated several times on soil with different properties and under the influence of different circumstances; any new method that contributes to the improvement of any branch of agriculture, and which can be usefully used for any part of the local region, should be initially subjected to detailed consideration and experiments, and the results of such research will be made public in full for general information" [4]. In fact, this norm of the constituent document laid the foundation for the process of scientific and organizational formalization of research at the institute.

In the following sections of the Charter of 1835, the principles of the organization and purpose of model fields (§26) and economic and botanical gardens (§27) are determined [4]. The document notes that, for the cultivation of new plants for the local climate, it is necessary to allocate several plots of land in different places up to ten or more morgues in order to carry out "different economic experiments on the method of processing and the order of sowing fruit," for the unpredictability of the expected results. In the economic botanical garden, according to the Charter, "plants that are useful or harmful in agriculture, forestry and horticulture, as well as some medicinal plants" must be grown under the supervision of an experienced gardener who "will show pupils through experiments how to cultivate fruit trees and care of greenhouses". None of the subsequent statutory documents of the Marymont Institute contained such instructions on the experience activities.

Taking into account the fact that almost a third of the real estate in the Kingdom of Poland consists of forests, and there were not enough qualified specialists to manage them, the Government Commission of Finance and Treasury and the Government Commission of Internal and Spiritual Affairs and Public Education made a motion to restore forestry education in the Kingdom of Poland. The Chief Director of the Government Commission on Internal Affairs and Public Education Adjutant General Shipov argued that neglect of the training of foresters could lead in the future to incalculable losses for the region, because "...forests have a great influence on the formation of climate and soil fertility; they are the most important material for construction and heating, as well as for factories and manufactures; forests are one of the main sources of government revenue; the benefits of forestry are not limited to the short duration of the era, but its results are sometimes discovered through the centuries" [23]. General Shipov also had the idea of establishing a "special department" at the institute, which would collect statistical information on agriculture and forestry and publish scientific works on agriculture [23, p. 6].

As noted above, the Warsaw Forestry School was founded on October 17, 1816. The grand opening took place on March 26, 1818 at the University of Warsaw, where the Forestry School operated in the first year of its activity. The initiator of its discovery was Count Ludwig August Plater-de-Broel (1775-1846). In the State Archives of the Kharkiv region, several documents have been preserved with his signature: "Regulations on the internal organization of the Council of the Warsaw Forestry School", approved on March 20, 1818, and "Instruction of the Government Commission for the Corps of Foresters" dated December 23, 1823 [19, 33]. The pro-Polish orientation of all his activities (despite certain periods of rapprochement with the Russian government) was an insurmountable obstacle for historians of the 19-20 centuries on the path of an unbiased study of his role in the development of forestry and forest education [16, p. 87–88]. In 1794, Plater took part in the uprising under the leadership of T. Kostyushko against Russia and Prussia, the

main goal of which was the restoration of the Commonwealth within the borders of 1772. Only in recent years, works by Russian authors have appeared, which reflect the activities of Count Plater on the preparation of the draft Constitution of the Kingdom of Poland [9].

At the beginning of the reign of Alexander I, Count L.-A. Plater, through the mediation of Prince A.-E. Czartoryski got access to the so-called Unspoken committee. It is known that L.-A. Plater developed an innovative project for the creation of ministries in Russia at the request of a member of the committee N.N. Novosiltsev [24]. At the same time, the government's "Review of the actions of the Department of Agriculture" for 1844-1854 states that L.-A. Plater is the author of the draft of the first state Charter on forests in Russia (1802), which covered all the main issues of state forest management. In particular, the draft Charter stated: "The Forestry Department was instructed to establish schools in appropriate places for the education and training of people in forestry sciences [35, part II, p. 2]. As a result, on May 19, 1803, following the example of the corresponding German institutions, the first Practical Forestry School in the Russian Empire was opened (now the St. Petersburg State Forestry University). In 1803-1804, Plater studied the experience of forest management in Germany and France, and in 1807 published the first work in Poland on forestry, which laid the foundation for modern scientific forest terminology. In 1816 he was appointed Director General of the state forests, and later the State property of the Kingdom of Poland. In order to streamline forestry and increase fixed income, L.-A. Plater developed a program of inexhaustible use of forest property and a detailed forest management plan. Professor of the St. Petersburg Forestry Institute P.N. Verekha emphasized that the further development of forestry science recognized the introduction of Count L.-A. Plater forest management in the Vistula region (as the empire called Poland) is undoubtedly correct [24]. In 1820, LudovikKonstantinovich founded the publication of a special journal on forestry "SylwanWarszawski", which is still being published. During the November 1830 anti-Russian uprising, Senator L.-A. Plater supported the A.-E. Czartoryski National Government. After the defeat of the uprising, he appeared in exile in France, then in Prussia, where he died on October 6, 1846 [24]. The Forestry School founded by him in Warsaw did not function until 1840.

As a result of the merger of the Institute of Agriculture in Marymont with the Forestry School in Warsaw, on March 14, 1840, the Institute of Agriculture and Forestry in Marymont was created, consisting of two departments – Agricultural and Forestry. On August 31, 1840, the Russian Emperor Nicholas I approved a new constituent document "Regulations on the Institute of Agriculture and Forestry". The institute was freed from the leadership of the Polish government commissions and was subordinated directly to the Russian Ministry of Public Education, which had its trustee in Warsaw (Article 6). According to the new "Regulations ..." of 1840, the division of the institute into the highest category (Agricultural and Forestry departments of the institute) remained, where they trained managers of large estates, state and private forests, and the lower category (the so-called Rural School), in which they taught shepherds, distillers, gardeners, etc. [12, 25, 34.]. According to this "Regulation", the purpose of the institution's activities was adjusted. The task of "increasing net profit", which contained the Charter of 1835, was removed from it. The main purpose of the Agricultural Department was determined to train practical owners who, through the study of theory and practice, "could set in motion a plan for improved agriculture," and would also be able to manage large estates (Art. 2). The forestry department was supposed to train experienced foresters for the management of state and private forests (Art. 3). The document carefully regulated various aspects of the institute's activities, first of all, educational work and student practice. However, the provisions of the Charter of 1835, which regulated the scientific and organizational design of the experimental activities, were removed from it. The statutory document of 1840 laconically defined that the institute "will conduct observations and experiments in agriculture and forestry, which are published for public viewing" (Article 5). At the same time, the experimental fields, economic and botanical gardens, together with the natural history cabinet and the household tools cabinet, the library, model estates, institute forests, chemical and technical laboratories, etc. were classified as "teaching aids" so to speak, tools of educational work (Art. 34) [34]. In our opinion, such a step back in the organization of agricultural experimental business, along with other factors, was caused by the strengthening of the reaction of tsarism after the suppression of the November uprising of 1830. This was expressed in bringing the Polish education system to the then Russian requirements, for which in 1839 the tenth Warsaw educational district in the empire was created, and all Polish educational institutions in 1840 were subordinated to the Russian Ministry of Public Education. In fact, such actions led to the elimination of the autonomy of the Kingdom of Poland in the field of education and science and marked the beginning of a slow Russification.

At the same time, the idea of the priority of theoretical and practical training in the activities of special educational institutions as the only true principle of training "practical masters" dominated in the highest state leadership of the empire. In the conditions of reaction, many scientific societies were forced to suspend their work. Finally, there was simply not enough money to organize a pilot business – sectoral experimentation required significant material resources and did not give a quick economic effect. Moreover, there was not enough finance even for current affairs. On March 20, 1839, on the proposal of the Board of Governance of the Kingdom of Poland, the emperor signed a decision on the financial support of the Marymont Institute. In order for the institution "to have a decent degree of perfection in agricultural terms, without burdening the treasury of the Kingdom", the emperor allowed the Marymont estates of Vavrzhishev, Ruda, Belyany, as well as the Burakov estate, to be pledged to the Zemstvo credit society, and the money thus obtained to be used to improve the material and technical base of the institute [23].

Nevertheless, agricultural experimental research was carried out at the institute even after the approval of the "Regulations" of August 31, 1840. They were inspired by the real leading figures of agriculture and natural science in general.

From November 27, 1835 to November 1853, the Institute in Marymont was headed by Professor Mikhail Nikolaevich Ochapovsky (in Polish – Michał Oczapowski; 1788-1854) a talented scientist, researcher, recognized ideologist and organizer of agricultural education. A whole period in the development of agrarian science and education in Russia and Poland is associated with his activities.

A native of the Slutsk district of the Minsk province, a graduate of the physics and mathematics faculty of Vilnius University in 1810, an agronomist, biologist, economist Michal Ochapovsky, is considered as compatriot by Polish [21, 28], Ukrainian [43], Belarusian [1, 2], and Russian [31] scientists. After defending his 1812 dissertation in soil science, he received his Ph.D. The dissertation work with additions was published in Vilna under the title "Principles of Agronomy, or Earth Science" in 1819. This work, based on the ideas of his teacher, the German agronomist Thayer, was the first Polish textbook on soil science and the only one until 1901.

During 1812-1819, Ochapovsky was the manager of the estates of Baron A. Renne in Lithuania and the Kingdom of Poland. The scientist achieved outstanding results thanks to the organization of the economy "on the rules of rational agriculture" [29]. Serfdom was abolished on the Renova estate of the Telshevsky district (now the Telsiai district in the north-west of Lithuania), and hired labor was introduced on the new estates. Although such transformations cannot be called systemic, they contributed to the formation of new principles of the agrarian economy and a new social ethics. Ochapovsky outlined his views on this issue in the article "It is more useful for the owners to cultivate the land with the help of hired labor as opposed to serfdom." Also, the scientist translated Thayer's work Fundamentals of Rational

Agriculture and the work of the outstanding English agrochemist and physicist Humphry Davy Fundamentals of Agricultural Chemistry into Polish. Students of the Institute of Agriculture and Forestry in Marymont studied this book [20, p. 10]. In 1818-1819, these works were published in the popular science and literary magazine "Vilensky Diary" ("Dziennik Wilenskis"; publication of the Vilnius University, and since 1818 – the Vilnius Society of Printers). Polish scientists note that Ochapovsky did not evoke special affection from the Polish and Lithuanian professors because of the great number of his published works, while he was very popular among local farming, for which he wrote his works [6, p. 18].

After unsuccessful attempt to occupy the vacant position of professor of the Department of Agriculture (created in 1803) at Vilnius University in 1819, with the assistance of Baron A. Renne and the curator of the University, Prince A.-E. Czartoryski, the scientist made an educational and agronomic journey to the Kingdom of Poland and Germany. He visited the newly opened Agronomic Institute in Marymont in 1820. For almost a year, he trained at the Möglinu estate of Thayer, and then corresponded with him until the end of his life. He visited well-managed farms in Saxony, Mecklenburg, and Holstein. In the winter of 1820-1821, he studied veterinary medicine, forestry and agricultural engineering in Berlin. According to Polish sources, thanks to the petition of the first rector of the Royal Warsaw University, Wojciech Szewikowski, Ochapovsky, on November 30, 1820, was elected professor of the Department of Agriculture at Warsaw University and director of the Marymont Institute [28, p. 523] (although according to the documents of the State Agricultural Academy, on January 1, 1819, Professor Flatt was appointed director of the institute). At the same time, at the expense of the Government Commission for Internal and Spiritual Affairs and Public Education of the Kingdom, he was sent abroad, where in 1821-1822 he visited centers of agricultural knowledge in Austria, France, the Netherlands, and England.

In 1822, through the efforts of Prince A.-E. Czartoryski scientist was elected professor of the Department of Agriculture at Vilnius University. As evidenced by the Polish Biographical Dictionary, Ochapovsky's teaching activity was not successful: his lectures, mainly of theoretical content, were not popular with students. However, the research work was effective. During 1824-1827, the scientist carried out experiments in the remote state estate of Svitnik in Trakai (now a city 27 km west of Vilnius) and the Zameczek estate acquired by the university in 1827 for practical training of students. The director of this farm was the former teacher of agriculture at the Kremenets Lyceum, Mikhail Fryczynski (1794–1859) [10, p. 18]. In 1829-1832, he worked as a professor of agronomy at Vilnius University [12, p. 75–76, 457]. Based on the results of experimental observations, Ochapovsky wrote a work "A look at the current state of agriculture in the northern climate, in particular in the provinces of Lithuania and Poland", dedicated to the cultivation of industrial plants flax and hemp (Vilno, 1828-1830; for this work, the scientist was awarded the Highest award with a diamond ring). Ochapovskiy's book On the Role of Caring for Agricultural Plants became a popular scientific publication and at the same time a textbook for district schools. Written succinctly in the form of questions and answers, this work contained basic knowledge of agricultural technology (Vilno, 1825). During 1822-1832, Ochapovsky worked on the creation of the Agronomical Institute at the University of Vilnius, a detailed project of which he developed. Belarusian sources report that the head of this institute in the Zamechek estate was Professor Frichinsky. Ochapovsky's plan to create the Agronomical Institute did not receive substantial support, and the anti-Russian uprising of 1831–1832 finally put an end to it.

After Ochapovsky moved from Vilna to Warsaw in 1834, the Government Commission for Internal and Spiritual Affairs and Public Education appointed him manager of the educational economy of the Agronomic Institute in Marymont, and in 1835 the director of this institute. Thanks to his efforts from the Higher Preparatory School, which operated at the Warsaw Polytechnic in 1826–1831, teachers were transferred to Marymont and models of agricultural machinery, as well as carpentry and turning workshops were transferred [36, p. 98]. The director lectured on agriculture and crop production; he combined the presentation of the material with field studies and demonstration of experiments. Graduates received diplomas only after passing a one-year internship and qualifying exam.

Ochapovsky proved to be a successful administrator. Under his leadership, a chemical and technological laboratory, a new main building were built, as well as an experimental field, a botanical garden, a museum of agricultural machines and tools, and a library were created. At the same time, as a director, he was unable to provide the Forestry Department with development conditions equal to those that the Agricultural Department had (according to the Charter of December 29, 1857. The Forestry Department was liquidated). Unlike Professor Flatt, Mikhail Nikolaevich somewhat depreciated the value of the Rural (lower) school and considered its students as a source of labor for the Marymont households. Due to financial difficulties, he was unable to implement the idea of a long-term experiment on an experimental field. However, the flourishing of the Agronomic Institute in Marymont is associated with his name. Under his leadership, more than 2,000 graduates received diplomas of qualified agronomists and foresters [28, p. 523].

Professor Ochapovsky was an active participant in the pan-European discussion between two spiritual leaders of agrarian science of modern times the author of the humus theory Thayer, whose student and follower he was, and the German agrochemist, the creator of the theory of mineral nutrition of plants, professor at the University of Giessen, Justus von Liebig (1803-1873). Thanks to the research and propaganda activities of Liebig, the idea of chemical regulation of the crop by applying mineral fertilizers became widespread. At the same time, the scientist severely criticized Thayer's doctrine of dividing plants into those that deplete the soil and those that enrich it. Liebig very convincingly proved that any plants deplete the soil, albeit to varying degrees, and, therefore, persistently defended the idea of returning mineral substances to the soil. Liebig's ideas were very popular among Russian scientists. In the first half and middle of the 19th century, Russian universities, technical educational institutions and the Ministry of Public Education of Russia widely practiced long-term foreign business trips to train qualified specialists. At various times, outstanding scientists worked in the Giessen laboratory of Liebig, among whom were the well-known ideologists of mineral fertilizers: the patriarch of Russian chemical science, teacher D.I. Mendeleev, N.N. Beketov, A.N. Engelhardt, rector of St. Petersburg University in 1861-1863 and 1865-1867 Professor A. A. Voskresensky, as well as other prominent figures [25, p. 169, 180].

The theory of mineral nutrition of plants by Liebig won increasingly more adherents. At the same time, the conservative views of Professor Ochapovsky and traditional teaching methods were increasingly criticized by his opponents, who at the same time accused the scientist of excessive adherence to the Russian government. The Polish agrochemist, Mecheslav Koter, showed that the director of the Marymont Institute was not a principled opponent of Liebig's theory. Ochapovskii believed that the basis of a successful economy was the mechanical cultivation of the soil and its replenishment through animal husbandry and the use of fertilizers. As fertilizers, the scientist considered any organisms of plant and animal origin, "which, after the final decomposition into humus, increase the fertility of the soil." At the same time, he did not deny the importance of such mineral compounds as "sulfur, lime, phosphorus; they are always and constantly included in the composition of plants, and, therefore, are necessary for their organic formation" [21, p. 28-29].

The significance of Ochapovsky's activities goes far beyond the agrarian discussion between Thayer's followers and Liebikh's apologists. In the research works of Ochapovsky, experts distinguish two directions. The first is theoretical and experimental, the purpose of which was to improve the principles of practical agriculture. As a theoretician and

practitioner, Ochapovsky possessed the unique skill of an experimenter, which allowed him to develop the author's concept of the development of agriculture based on his own observations. To a certain extent, this activity of the scientist was oriented towards the future. The second direction is purely practical, aimed at raising the efficiency of the agricultural industry as a whole in its modern era [39, p. 19].

The most famous work of the scientist is the reference book Agriculture, Which Unites All Branches of Arable Farming (synonymous names – Farmhouse or Farm) in 10 volumes, published in 1834-1844 and republished in 1848-1849, and also the work The Science of Economy, or Economic Management, which is actually a continuation of the above work (in 2 volumes; 1856-1857). The publication covers all branches of agriculture in theoretical and practical aspects. This scientific handbook on many issues was ahead of its time and contributed to the development of agriculture in the Kingdom of Poland, Lithuania, Galicia.

In November 1853, Professor Ochapovsky was dismissed, and the next year he died in Warsaw. The scientist was buried, according to his will, in Marymont. He bequeathed his own library, which he collected throughout his life, to the institute.

During 1853-1860, the Institute of Agriculture and Forestry in Marymont was headed by Josip-Severin Stanislavovich Zdzitowiecki (1802-1879). A talented theoretical chemist, in 1842 he worked in the laboratory of Liebig at the University of Giessen, and before being appointed director of the institute, he studied the experience of agricultural schools in Germany and France [14, p. 37]. As an agrochemist, Zdzitovetsky linked the progress of agriculture primarily with the results obtained in the chemical laboratory, denying experimental observations in nature [40, p. 430].

There were many talented scientists among the teachers of the Agronomical Institute. Among them, there was Wojciech Bogumił Jastrzębowski (1799-1882), a graduate of the Faculty of Natural Sciences of Warsaw University in 1825. In 1836-1858, he served as professor of botany, zoology, physics, mineralogy and horticulture. Back in 1828, the scientist invented a device for determining the time anywhere in the world and carrying out various astronomical calculations without the aid of counting the so-called Yastrzębowski's compass or universal compass. Presented at the exhibition of industry, this device was highly appreciated by the competition committee, which, however, noted that "Yastrzhembovsky's invention could claim one of the highest awards if it were useful for the technical industry, not science" [13, p. 428]. Since then, however, Jastrzębowski has gained recognition as a scientist. In 1836, he was appointed professor at the Institute of Agriculture and Forestry in Marymont, whose director since 1835 was Professor Ochapovsky. For 22 years, Wojciech Matveyevich taught natural sciences. Students admired his lectures, which "significantly exceeded the scientific theories that he taught" and quoted the scientist literally [36]. Early in the morning, Professor Jastrzębowski with a shovel or a hoe, together with the students, worked in a field or a botanical garden. Under his leadership, an economic botanical and vegetable garden were created at the institute, where all types of cereals, fodder, medicinal and industrial plants, as well as valuable trees were grown experimentally. On vacation, he went around the country on foot with the students to familiarize them with the agricultural industry in practice. It is known that together with eight students in the summer of 1843 he studied the organization of farms in Western Galicia [37, p. 105]. The moral and scientific authority of the scientist was very high, and, therefore, he was elected a member of many scientific institutions: the Society of Friends of Science in Warsaw (1829), the Krakow Scientific Society (1850), the Imperial Free Economic Society (1852), Lvov (1854), Krakow (1856)) and Warsaw (1858) agricultural societies, etc. Yastshembovsky is the author of many scientific works. In 1847, he published in Polish and French the Climatological Map and a collection of meteorological observations made in Warsaw during 1779-1800 and 1803-1828. He also is the author of following works: Natural Science in Relation to the Needs of Practical Life and Everyday Things (Warsaw, 1848; second edition 1854), Mineralogy, or the Science of Stones (Warsaw, 1851), Rural Meteorology (in Russian, St. Petersburg, 1852), in which the main agricultural work is considered in relation to the time of year and day, etc.

Polish historian Gloger Zygmunt (1845–1910) showed that due to disagreements with the institute director, V. M. Yastrzębowski was relieved of his duties as a professor at Marymont Institute in 1858. Two talented scientists – I.-S. Zdzitovetsky and V. M. Yastrzębowski represented opposite directions of the theory and practice of agricultural science and were extremely definite in their convictions. The natural scientist V.M. Yastshembovsky insisted on studying the physiology of plants and defended the importance of mechanical soil cultivation, while the chemist I.-S. Zdzitovetskiy gave priority to the development of agriculture to agrochemistry and chemical regulation of crops. This scientific discussion ended with the dismissal of V.M. Yastshembovsky in the context of reforming the institute according to the Charter of December 29, 1857. Theoretical and practical contradictions between the supporters of A. Thayer and the followers of J. Liebig were reflected on personnel appointments.

Among other talented teachers of the Marymont Institute, the professor of chemistry and agroforestry technology in 1836-1858 Jozef Belza (1805-1888) stands out. A graduate of Warsaw University in 1827, he is a pioneer of the Polish sugar industry and co-founder of the School of Pharmacy in Warsaw (1840). Professor Belza is the author of the works On the Manufacture of Sugar from Beets (Warsaw, 1837), "Principles of chemical technology of farms: including the sciences of the manufacture of vodka, beer and various alcoholic beverages; obtaining vinegar and beet sugar, flour extraction; knocking out oil, etc." (Warsaw, 1840; 2nd edition in 1851), Police and Forensic Chemistry (Warsaw, 1844, in Polish and Russian; 2nd edition with additions in 1854), "Review of chemistry with the addition of its concise application in agriculture" (Warsaw, 1852), etc. However, among the large range of scientific works of Belza, there are no works on agronomic chemistry at all. In our opinion, this could be one of the reasons for his departure from office in 1858, when, under the leadership of Professor Zdzitovetsky, the reform of the Institute in Marymont began in accordance with the new Statute of 1857. After the dismissal of Professor Belz, agricultural chemistry at the Institute in 1859-1860 was taught by Professor Joseph Bohdan Rogoysky (1818-1896), one of the ideologists and practitioners of the use of mineral compounds in agriculture. In 1872-1873, he founded a mineral fertilizer enterprise near Lodz, which, however, quickly went bankrupt.

On the basis of indirect facts, it is possible to draw some conclusions regarding the development of sectoral (industry) research at the institute. For example, the so-called teaching aids of the institute according to the Charter of 1857 included the following: an exemplary institute farm with cowsheds and sheepfolds, a veterinary clinic with stables, cattle and sheep, experimental plots and an experimental field, an arboretum, a library, a chemical and technological laboratory, a pond for fishing experiments etc. (§51) [34]. It is obvious that all these structural divisions of the institute were not only centers of educational, but also experimental work as a necessary condition for organizing an exemplary economy. After the resignation of the Institute director Ochapovsky in 1853, personnel reshuffles under the conditions of reforming the institution under the Charter of 1857 continued. A detailed comparison of the staff of the Institute after the adoption of the Statutes of 1840 and 1857 is contained in a monographic study, little known in Russian historiography, "The First Polish Polytechnic. 1825-1831. The information presented allows summarizing that new teachers were invited by the director of the institute Zdzitovetsky to read the "extended course of sciences" [36, p. 104-105].

Comparison of the content of training courses on the Charters for 1820, 1835, 1840, and 1857 and the Curriculum for the two periods of activity of the Marymont Institute, respectively, for

1820-1831 [42] and 1836-1840 [43], as well as for 1842 [20, p. 1-18] allows seeing the transformation of the content of the course "chemistry" under the influence of the theory of mineral nutrition of plants. From an auxiliary educational discipline, which was chemistry according to the Charter of 1835 and 1840 and which was studied in a summary to establish "methods of chemical analysis of soils, water quality, air purity, etc." [20, l. 10], this subject, according to the Charter of 1857 (§33), turned into an integral part of agricultural science called agricultural, or agronomic, chemistry, which was studied in exactly the same way by agronomists and foresters [15, 19, 41]. The article on experimental research (§48) in the Charter of 1857 remained in the same edition as it was stated in the Charter of 1840.

The significant science-intensive content of the curriculum demanded a higher level of initial training from the applicants. If, according to the Charter 1840 (Art. 37), a person entering the institute was allowed having home education, and during the interview he should show "sufficient ideas about the subjects that are in the closest relation to agriculture and forestry", then according to the Charter 1857, the right to study at the institute was received only by persons who have completed the full course of a gymnasium or a real school (§22), and the period of study was extended from two to three years [41, p. 3]. This led to a significant reduction in students in the educational institution. If in 1857 139 people received diplomas, then in 1859 only 10, and in 1861 40 people [39, p. 67].

5 Conclusion

A comprehensive study of the available documents and published facts allows us to conclude that the reasons for the adoption of the new Charter of 1857 were not only student riots and, as a consequence, the intention of the Russian authorities to strengthen administrative control over students, which was traditionally said in all scientific studies on the history of KNAU [39, p.67, 44, p.16]. The educational institution needed extensive modernization to improve the professional knowledge of graduates, taking into account the breakthrough in the development of scientific natural science. This was also understood by the Trustee of the Warsaw School District in 1851-1861, Privy Councilor Mukhanov, who, in a private letter dated January 12, 1855 to the Minister of Public Education, raised, firstly, the question of amending the terms and curriculum, and, secondly, of strengthening supervision of students [45].

The charter of December 29, 1857 was developed on the basis of the following: 1) the Charter of the Marymont Institute of August 31, 1840; 2) Regulations on the Gora-Goretsky Agricultural Institute of June 30, 1848; 3) Charter of the Noble Institute in Warsaw of May 2, 1854, the regulations of the Charter of the Marymont Institute of 1857 on training courses and teaching aids were borrowed from the "Regulations on the Gora-Goretsk Agricultural Institute", and the paragraphs on control over students from the "Charter of the Noble Institute in Warsaw". Despite the fact that the Marymont Institute was subordinate to the Ministry of Public Education, the Charter of 1857 was coordinated with the Scientific Committee of the Ministry of State Property, to which the Gory-Goretsky Agricultural Institute was subordinate. The scientific committee concluded that "the institute wins a lot in comparison with its current position" [6, p. 35]. However, neither the renewal of the curriculum and the teaching staff, nor the introduction of the post of inspector to monitor students, nor the prohibition for students to travel home on vacation, nor other changes implemented in accordance with the new Charter of 1857, contributed to the implementation of the intentions of its drafters. Students were increasingly drawn into revolutionary confrontation with the Russian authorities.

Agricultural experimental activity originated at the Marymont Institute from the very beginning of its activity in 1820 on the basis of the European practice of agricultural education, inseparable from research work. The beginning of the scientific and organizational design of research activities at the institute was laid by the Charter of 1835, the development of which was most likely carried out by the director of the institute, Professor Ochapovsky. For a long period, the activities of the experimental field in Marymont were strongly influenced by Thayer, the "father of the fruit-changing economy", whose student and follower was Professor Ochapovsky. The experimental field at the Marymont Institute was created earlier than the experimental field at the Gory-Goretsk Agricultural Institute, which scientists call the first experimental field in the Russian Empire. However, the loss of archival documents in Warsaw and Kharkov led to some oblivion of the significance of the Marymont Institute in the history of agricultural science and industry experimentation. Unfortunately, the specific content of scientific research and the methodology for conducting it cannot be studied in detail due to the narrowness of the source base. In the context of bringing the Polish education system to Russian educational practices, the provision on compulsory scientific research was removed from the new Charter of 1840. Nevertheless, under the guidance of professors Ochapovsky and Yastshembovsky, an experimental field, economic botanical and vegetable gardens, a nursery, a chemical laboratory, etc. were set up. The pan-European agrarian discussion between the supporters of Thayer's humus theory and the founder of agricultural chemistry, Liebig, had a significant impact on the development of research at the institute. The dissemination of Liebig's ideas served as a prerequisite for reforming the Marimons Institute in accordance with the Charter of 1857.

Located near Warsaw, the Marymont Institute has become a center for the spread of revolutionary sentiment among Polish youth. Increased supervision of students could not eradicate their free thinking. This led to the suspension of the admission of first-year students in 1861 and the transfer of the institute by special government order to Novo-Alexandria (Pulawy), a small county town near Lublin.

Literature:

1. Achapovsky, M.N. (2006*). Enlighteners of the Belarusian land, 10 early 20th century: encyclopedic reference book (2nd edition*). Minsk, 31-32.
2. Achapovsky, M.N. (2003). *Encyclopedia of the History of Belarus: in 6 volumes.* Minsk: BelEn, 1993–2003, 1, 236–237.
3. Berg, N.V. (1873). *Notes on Polish conspiracies and uprisings: 1831-1862. Russian Archive*. Moscow, Publishing house of Gracheva and Co. At Prechistenskiye gates, Shilova village. Available at: http://elib.shpl.ru/ru/nodes/10396-berg-nv-zapiski-nv-berga-o-polskih-zagovorah-i-vosstaniyah-1831-1862-m-1873#mode/flipbook/page/5/zoom 4.
4. Charter. (1835). *Regulations of the Institute, approved on October 13, 1835*. SAKR, F.669, Op. 3, Ed. 16, L. 1–13.
5. Charter. (1820). *Regulations of the institute and the agricultural school at the institute, approved on September 12, 1820 by the State Agricultural Academy*. F.669, Op. 3, Unit 7, L. 1–27.
6. Charter. (1857). *Regulations of the Institute of Agriculture and Forestry in Marymont and the rural school attached to it, approved on December 29, 1857, and the materials for its provision (letters, conclusions)*. F. 669, Op. 3, Ed. 28, L. 1–43.
7. Decision of the Government Commission. (1924). *On the Establishment of a Rural School for Poor Children at the Marymont Institute of Agriculture*. Dated on August 27, 1924. SAKR, F. 669, Op. 3, Ed. 13, L. 1–13.
8. Extract from a letter from the trustee of the Warsaw Educational District to the Minister of Public Education. (1856). *On improving the internal organization of the institute and supervising the pupils*. Dated on January 12, 1856. SAKR, Op. 3, Ed. 27, L. 1.
9. Falkovich, S.M. (2010). *Poland and Russia in the first third of the 19th century. From the history of the autonomous Kingdom of Poland. 1815–1830*. Moscow, Indrik.
10. Feduta, A.I. (2019). Filomat in the Empire: A Documentary Story about FrantishkaMalevsky. Minsk, Limarius.
11. Fursenko, I. D. (1968). Kharkov Agricultural Institute named after V.V. Dokuchaeva: essays on history. Kiev, Harvest.
12. Gerasimchyk, V.V. (2018). *Konstantin Kalinouski: Personality and legend*. Grodno, YurSaPrint LLC.

13. Gloger, Z. (1901). Wojciech Bogumił Jastrzębowski.1799–1882.Album biograficzne zasłużonych Polaków I Polekwieku XIX / Wydane Staraniem I Nakładem Mary i Chełmońskiej, T.I, Warszawa 1901. Available at: https://pl.wikisource.org/wiki/Album_biograficzne_zasłużonych_Polaków_i_Polek_wieku_XIX/Wojciech_Bogumił_Jastrzębowski.
14. Golikova, O.M., Kravtsov, A.I., & Kirichok, R.I. (Eds.) (2011). *History of Kharkiv National Agrarian University named after V.V. Dokuchaev*. Kharkiv National Agrarian University named after V.V. Dokuchaev, 35–36.
15. Golikova, O.M. (2015). Activities of Professor Jerzy Benjamin Flat as the founder and first director of the Institute of Agriculture in Marymont (to the 200th anniversary of Kharkiv National Agrarian University named after VV Dokuchaev). *Ukrainian Studies Almanac, Center for Ukrainian Studies of Philosophy Department in Kyiv National Taras Shevchenko University*. Kyiv, KNU, 18, 143–147.
16. Golikova, O.M. (2020). *Educational-scientific and organizational principles of Kharkiv NAU named after V.V. Dokuchaev during the location of the Free Economic Zone in the Kingdom of Poland (1816–1914).* Kharkiv: FOP Brovin, 62–113.
17. Historical information. (1830). *About the Agronomic Institute in Marymont*. Warsaw, SAKR, F. 669, Op. 3, Ed. 14, L. 1–7.
18. Instruction. (1819). *For Economic Meetings of the Board at the Institute, approved by the Director of the Institute on March 18, 1819.* SAKR. F. 669. Op. 3. Ed. hr. 5. L. 1–2.
19. Instruction of the Government Commission for the Corps of Foresters, December 23, 1823. SAKR. F. 669. Op. 3. Ed. hr. 12. L. 1–16.
20. Institute. (1842). *Curricula for 1842*. SAKR. F. 669. Op. 3. Unit xp., 24. L. 1–24.
21. Koter, M. (1971). Michał Oczapowski Jako Twórca Chemii Rolniczej w Polsce. *Roczniki Gleboznawcze – Soil Science Annual*, XXII, No. 2, Warszawa.
22. Łepkowski, T. (1987). *Rozważania o losachpolskich*. London: Wyd. Puls.
23. Materials on joining the Institute of the Warsaw Forestry School. (1840). *Decree, letters, reports,* (October 9, 1838 March 14, 1840 SARR. F. 669.
24. Manteufflowa, M. (1981). Plater (Broel-Plater) Ludwik August. *Polski Słownik Biograficzny*. Polska Akademia Nauk, Instytut Historii, XXVI. Wrocław–Warszawa–Krakow–Gdansk–Łodź: Zakład narodowy imienia Ossolińskich. Available at: https://www.ipsb.nina.gov.pl/a/biografia/ludwik-august-plater.
25. Musambekov, Yu.S. (1962). *Justus Liebig. 1803–1873*. Academy of Sciences of the USSR. Moscow, Publishing House of Academy of Sciences of the USSR.
26. Note of the director of the Institute of Flatt with a proposal for a plan for the establishment of an agricultural school in Marymont. (1818). *State Archives of the Kharkiv region*. Dated on August 3, F. 669, Op. 3, Unit 4, L. 1–7.
27. Note. (1820). *The character of the institute and the agricultural school at the institute, approved on September 12, 1820 by the State Agricultural Academy*. F. 669, Op. 3, Unit 7, L. 1–27.
28. Note. (1818). *From the director of the Flat Institute with a proposal for a plan to establish an agricultural school in Marymont.* Dated on August 3, 1818. SAKR, F. 669, Op. 3, Ed. 4, L. 1–7.
29. Oczapowski, M. (1978). Polski Słownik Biograficzny/ Polska Akademia Nauk. T. XXIII: Niemirycz Wladyslaw – Olszak Vaclav. Wrocław–Warszawa–Krakow–Gdansk, Zakład narodowy imienia Ossolińskich.
30. Oczapowski, M. (1854). Obituary. *Zemledelcheskaya Gazeta* [published by the Ministry of State Property], 34, 274–275.
31. Oppenheimer, C. (2003). Climatic, environmental and human consequences of the largest known historic eruption: Tambora volcano (Indonesia) 1815. *Progress in Physical Geography: Earth and Environment*, 27(2), 230-259. Available at: https://journals.sagepub.com/doi/abs/10.1191/0309133303pp379.
32. Petrov, A. (1905). *Ochapovsky Mikhail Nikolaevich. Russian Biographical Dictionary*. Imperial Russian Historical Society; under the supervision of A. A. Polovtsov. V.12: Obezjaninov-Ochkin. St. Petersburg, Publishing House of Main Directorate of Appanages.
33. Podlaski, S. (2015). *Studenci Absolwenci Wydziału Rolniczego SGGW, dla Uczelni, Narodui Kraju*. Katedra Fizjologii Roślin, Wydział Rolnictwai Biologii SGGW. Warszawa, Aula Kryształowa.
34. Regulations. (1818). *On the internal organization of the Council of the Warsaw Forest School, approved on March 20, 1818.* SAKR, F. 669, Op. 3, Ed. 3, L. 1–6.
35. Regulations. (1840). *On the institute, approved on August 31, 1840 with an appendix (staff, estimate, training schedule)*. SAKR. F. 669. Op. 3. Ed. hr. 21. L. 1–13.
36. Review. (1855). *Review of the actions of the Department of Agriculture and an outline of the state of the main branches of rural industry in Russia for 10 years from 1844 to 1854*. St. Petersburg, Publishing House Imperial Academy of Sciences.
37. Rodkiewicz, A.J. (1904). *Monografie w zakresie dziejów nowożytnych, Wydawca Szymon Askenazy. T. VI: Pierwsza Politechnikapolska 1825–1831*. Warszawa, Druk W. L. Anczycai Spółki.
38. Science course. (1831). *Programs at the Marymont Agricultural Institute in the first period (1820–1831).* SAKR. F. 669, Op. 3, Ed. 3, L. 1, 1.
39. Science course. (1840). *Programs at the Marymont Agricultural Institute in the second period (1836-1840).* SAKR. F. 669, Op. 3, Ed.17, L. 1–2.
40. Swiętochowski, B. (1971). Michał Oczapowski I jego zasługi dla rozwoju nauk rolniczych. *Roczniki Gleboznawcze – Soil Science Annual*, XXII, 2. Warszawa, 17–24.
41. Verekha, P.M. (1905). *Plater de Broel, Count Louis Konstantinovich. Russian Biographical Dictionary*. Edited under the supervision of A. A. Polovtsov. XIV: Smelters-Primo. St. Petersburg, Type. General Directorate of Districts.
42. Vergunov, V.A. & Ochapovsky, M.M. (1854). *A scientist and one of the organizers of the domestic branch of the scientific and educational process (1788-1854).* Available at: http://www.rusnauka.com/29_SSN_2013/Istoria/3_145795.doc.htm.
43. Viner, V.V. (1922). *Agricultural Experimental Activity: (A Brief Historical Outline of the Programs of Russian Agricultural Experimental Institutions in 1840–1910): Lectures given in the courses on agricultural research experience, case under Petrov.* Agricultural academy in Moscow: Publishing House of the People's Commissariat for Land “New Village”.
44. Vergunov, V.A. (2019). *Scientific and organizational principles of functioning of agricultural research in Ukraine (the second half of the 19th century - the beginning of the 21st century)*. Doctoral Thesis, History Science: 07.00.07. Pereyaslav-Khmelnytsky.

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