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State Policy of Russia in the Field of Science and Education (The end of 17th-early 18th Centuries)*

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Abstract

The process of education and science intensive development in Russia at the end of the 17th - the beginning of the 18th centuries is completely related with the personality of Emperor Peter I (Great), who understood the grandiose importance of public education for Russia. The reforms of Peter I in the field of science and education became the most important foundation in the history of pedagogy and military affairs development in Russia, as well as in the history of the Russian state national security strengthening. The result of Peter I reforms in education was the creation of domestic regular Armed Forces of Russia and the provision of the Russian state with the experts of different profiles: military people, engineers, technicians and diplomats. The authors of the article carried out a comprehensive analysis of the materials available in Russia about the Peter schools in order to systematize and preserve these data for pedagogical science and history. The work studied the documents (decrees and letters) of Peter the Great reflecting the reforms in the field of science and education of Russia at the end of the 17th - early 18th centuries. With the support of historical documents, the establishment chronology of the first schools in Russia, the conditions for schoolchildren teaching, the structure and the content of training programs were described, and the teaching aids used in Peter schools were listed.

Keywords: History of Russia, Peter I (Great), Reforms in the field of science and education.

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Introduction

The transformative activity of Peter I had and is still of great significance for Russia. Peter I turned the country that does not have a fleet, an army and the armaments necessary for national security, with the backwardness in literacy as compared to European states into the Russian Empire with one of the strongest armies and the best fleet. Peter I carried out the reforms in the field of education farsightedly: dozens of schools, military, engineering and naval schools were founded, thousands of experts needed by the state were trained. At present, there is no complete, generalizing study of the structure, curricula, and the specifics of school work created by the decrees of Peter the Great. The scientific periodicals presented the information on these schools in a fragmented way. However, the historical experience of pedagogical education organization in the Russian Empire at the end of the 17th - the beginning of the 18th centuries represents the integral knowledge, including both theoretical and practical aspects, which have not lost their relevance at present time.

General characteristics of the Russian Emperor Peter I (the Great) reforms

Peter I Alekseevich, named as the Great (June 9, 1672 - February 8, 1725), the Romanov's dynasty representative, the tsar of All Russia and the first All-Russian emperor. At the age of 10, he was proclaimed the tsar. He began to rule on his own when he was 17 years old. Peter I performed large-scale external and internal reforms that have turned Russia into the path of progress and an intensive state development.

By the beginning of the 18th century, the political, economic and cultural development of Russia experienced significant and progressive changes, but Russia was still behind Western European countries in many respects: economic, military, educational, and state ones. Feudal landowning prevailed in Russia and industrial production was developed very poorly. Economic and cultural backwardness meant the loss of national independence for Russia. The aggravation of the class struggle in Europe (the social and political movement of the 17th and early 18th centuries) demanded from Peter I to take the measures strengthening the state structure, the army and to carry out the reforms in the field of economy and culture. These reforms were prepared by the whole course of the country historical development, their need was realized long before the reign of Peter I.

During the reign of Peter I the process of rapid development of industry, domestic and foreign trade begins, the extraction of Siberia and the Urals minerals started. By 1725, the country had about 240 state-owned and private industrial enterprises. 80 largest industrial enterprises had more than 17,500 workers. Along with the construction of large enterprises, there was a rapid growth of small handicraft production. The construction of canals and ships began for the better use of waterways to develop trade. Economic and political changes in the country caused a great need for specially trained people. State institutions, the army, the fleet, industry and trade needed a large number of experts: officers, sailors, artillerymen, engineers, doctors, civil servants, scientists and teachers. In this regard, a number of important educational reforms was implemented.

The reforms in the field of education, conducted during the first quarter of the 18th century, had a diverse nature. Since the beginning of the 18th century a significant development of Russian science (geography and geology) takes place: a number of large-scale geological expeditions is organized (concerning the study of the Caspian Sea shores, the islands of the Arctic Ocean, Kamchatka, the Kuril Islands), important works are carried out to explore minerals (coal, oil, iron and copper ores) and they begin astronomical observations. At the same time, Russia began to establish the Academy of Sciences, the establishment of the first Public Library in St. Petersburg, to the foundation of archives and museums. In 1719 they opened St. Petersburg Kunstkamera, the first natural history museum in Russia. Since 1703, they started to

publish the first printed newspaper "Vedomosti", the articles for which were written by Peter I. By the order of Peter I, in exchange for the obsolete Church Slavonic script, a more improved and accessible for study Russian language civil script was introduced, which was used to publish the books of secular content since 1710, and also the Arabic numbers are introduced instead of alphabetic ones.

Reasons for the implementation of reforms in the field of education in Russia (late 17th - early 18th centuries)

The failures at the beginning of the Northern War (the war of European states for the Baltic lands, 1700-1721) revealed the main problems of Russia at that time: the shortage of well-trained military and technical personnel, the ignorance of Russian military officers, the absence of a strong navy. Peter I, being a visionary ruler, understood that domestic experts in the field of military art, medicine, engineering, technology, navigation, etc. are needed for the successful conduct of wars, the protection of state borders and for an active development in general. In this regard special schools were opened first of all in Moscow and St. Petersburg (and all over Russia later) and an intensive training of native personnel for state needs began.

As we mentioned above, at the end of the 17th century Russia, first of all, had a strong need of military and technical specialists capable to create military equipment and fight a battle with weapons. Russia needed well-trained artillerymen. By military purpose artillery was divided into regimental, field, siege and fortress one. Each type of artillery had its own organization. In order to prepare literate artillerymen and engineering officers, special military technical schools were needed, which Peter the Great organized.

The reasons for the educational reforms of Peter I can be formulated briefly as follows:

- 1) Russia was a backward country in general at the beginning of Peter I reign. This was a serious threat to its state independence;
- 2) Industrial production was not established, the volume of output was much lower than the corresponding volume of European countries. The amount of extracted minerals (gold, silver) was a small one, metals (iron, copper, tin) were imported from Europe. Only flax, hemp (cannabis fiber), furs were exported;
- 3) The military industry was in its infancy, there was no established production of gunpowder and weapons, there were no competent military experts - engineers, artillerymen, technicians and strategists. The Russian army was poorly trained and poorly armed;
- 4) A complex, non-initiative government apparatus consisted of the boyar aristocracy that did not care about the people's situation;
- 5) Literacy was almost non-existent among people, even in the ruling circles there were uneducated and absolutely illiterate people who received a state post only due to blood-related relations.

First artillery schools in Russia

Already at the end of the 17th century, Peter I made an attempt to prepare domestic artillerymen. Together with Peter and the Great Embassy, the soldiers of the Preobrazhensky and Semenovskiy regiments moved to Europe. Among 13 bombardiers were such well-known bombardiers as Stepan Buzheninov and Vasily Korchmin - the first artillery officers of the Russian regular army. In the letter to Peter I from Berlin, V. Korchmin wrote that "he and Buzheninov learned fireworks and all artillery and almost finished to study trigonometry" (Azanchevsky, 1859, p.32).

The first school for the training of artillerymen was the bombardier company of the Preobrazhensky regiment, founded by Peter the Great in 1698. D.P. Strukov wrote the following: "At the beginning of 1698 there was first experience of secular science school founding by the establishment of a special school of "numbers and agriculture" within the artillery department, as well as the school of verbal sciences: "reading and writing" (Strukov, 1892, p.142). At the beginning of 1698 an artillery school was created (the Moscow school of "numbers and agriculture") under the artillery department (a new cannon court). Here the artillery education in Russia began. Later this school was burned down, and on January 10, 1701, the Moscow Cannon School (artillery and engineering school) was founded on this site. The report of Artillery Order (1701-1705) preserved fully the content of Peter I decree on the foundation of the school and its tasks:

"In the past 1701, on the 10th day of January, according to the great emperor decree, by the note of the Duma deacon Andrei Vinius, they ordered to build wooden schools in a new cannon yard and to teach the children of artillerymen and other extraneous ranks to read, write, engineering sciences, and ... they should study diligently at those schools, and they should not leave Moscow as well after study, and always be busy with artillery, and they should be fed at the same schools; And they are supposed to have 2 coins a day for a person. One coin should be used to buy bread and other food, fish during fast days and meat during meat days and to cook porridge or soup, and other coin should be spent on shoes and caftans, and shirts, And the learners and adoptive ones will receive a special salary and a summer residence according to their results" (Archive of the Artillery Historical Museum (AAHM). F. 2. Unit. V. 4. Ll. 977-980).

When the order was issued, the gates of Moscow houses were lined with sheets, obliging all undergraduates to appear to the Artillery department and to be enlisted for a school study. Since August 1 until September 28, 1701, 180 people of different ages and classes were recruited to the school. On November 19, 1701, the commander of the Artillery department, Andrei Vinius, wrote to Peter I: "250 children are gathered at school, who have a good potential to be good engineers, artillerymen, masters, and the cost of their teaching and upkeep will be at least 1000 rubles per year" (Ustryalov, 1863, p.210). By April of 1704 the number of schoolchildren increased to 300 people. Noble children were trained in artillery and engineering officers, and children of other classes - in artillery and engineering masters. According to the sheet of the Artillery department 129 students were enrolled in the school in 1706: 16 pupils were in the "high" school (at the age from 17 to 22), and 113 pupils were in the "lower" school (at the age from 11 to 23). 35 students fled and enlisted as soldiers (AAHM. F. 2. Un. V. 10. Ll. 162-176). Ya.V. Bruce (the head of this school) demanded to find them, punish them with rods and send them again to study, "as every peasant may be a soldier but not a gunner" (AAHM. F. 2. Un. V. 9. L. 430). In August of 1710, the school had 52 pupils only. An additional recruitment to the school was performed and 24 people were enrolled.

Ya. V. Bruce insisted that the children of the nobles attended the school. In April of 1712, all noble children from the Moscow school were transferred to St. Petersburg. The authority of the Artillery School increased by that time, the representatives of different classes asked to take their children to school. According to the list of the Artillery School (1719), it had 111 people (AAHM. F. 2. Un. V. 230. Ll. 387, 483-492).

In 1722, Peter I determined the number of study places: in the Moscow Artillery School, they ordered to teach 40 pupils to read and write, 30 people were ordered to study arithmetic, 30 people were ordered to study geometry and trigonometry, and the ones who finished to study mathematics "should study artillery drawings and fireworks, laboratory and other sciences. From the Moscow school these students may be sent to St. Petersburg to the Artillery School and support 50 students there in time and if necessary" (AAHM. F. Collected Code. 175. Un. Reader. 306. Ll. 90, 91-93).

June 5, 1724: Peter I issued a new order, according to which the transfer of Moscow students to St. Petersburg was canceled. It was ordered that schoolchildren studied artillery drawings and laboratory work at Moscow (AAHM. F. GP. Un. R. 491. L.35). January 21, 1723 the decree was issued, according to which students were forbidden to marry without the permission before graduation. The penalty for the violation of this order makes three years of hard labor (AAHM. F. Armory. Un. R. 20 (44). L. 42).

Since the foundation of the school 4 teachers worked there. Especially distinguished was the talented Ivan Rybnikov, a sergeant, the teacher of the "Upper" (engineering) school: he taught schoolchildren artillery drawings, laboratory work, shooting from guns, fired from mortars and made an artillery table, in which he put down the results of shooting. Ivan Rybnikov made the drawing of an 8-pounder gun, according to which cannons were casting in Moscow. He designed a full metal pontoon for 40 people (AAHM. Un. R. 164. Ll. 39-40).

The pupils of the school were on full state support: they were supplied with textbooks, necessary supplies, clothes, food, housing and salaries. The pupils of the "Upper" school received large salaries, the pupils of the "Lower" school received lesser salaries. Particularly diligent students received additional cash benefits. At the beginning of the school work, the cash allowance was often delayed, so the students from the lower strata were forced to earn money by the painting of cannon machines.

The information about clothes and textbooks that they bought for schoolchildren preserved: coats, fur coats, pants, hats, shirts, stockings, bast shoes, books, paper, ink, compasses, protractors, etc. Noble children lived in private apartments, and less wealthy ones lived at Pushkarskaya Sloboda.

The books, textbooks and teaching aids that were used at that time in Russian schools were the following ones: Psalter (the book of Psalms), Horologion (a liturgical book with prayers and the foundations of public worship content and order), "Arithmetic" (L.F. Magnitsky), "Sinuses" (with the addition of logarithm tables), "On the use of a compass and a ruler" ("Geometry", translated by J.V. Bruce, 1707), "The description of artillery" (Timofey Brink, 1710), "Artillery teaching and practice" (Johann Buchner, 1711), "The New Fortress" (fortress structure) (Minno van Kugorn, 1709), "The true way to strengthen cities on a wet or a low horizon" (Sebastian Le Prestres de Vauban, 1724). The pupils of the "Upper" school studied German, this is evident from the fact that they were given 22 German ABC books (AAHM. F. 2. Un. R. 1. L. 115).

The school curriculum was not a permanent one. An average period of schooling was 10-15 years. The most complete school curriculum of 1706 preserved:

"At the Lower School:

- 1) Horologion study - 15 people (10-15 years);
- 2) Psalter study - 12 people (11-15 years);
- 3) Writing - 41 people (11-17 years);
- 4) Arithmetic - 45 people (11-23 years).

At the Upper School:

- 1) They studied geometry and trigonometry - 8 people (15-18 years);
- 2) They studied geometry, trigonometry, learn to draw guns and mortars - 7 people (17-22 years);
- 3) Studied geometry, trigonometry, drew guns and mortars - 1 person (17 years);
- 4) Was sent to Berlin for the sciences - 1 person.
- 5) 6 pupils were sent to Captain Spareter's laboratory;

- 6) 2 pupils were sent to the gunner Arpolt;
- 7) 2 pupils were sent to the campaign as the bombardiers;
- 8) 3 pupils were taken as the gunners;
- 9) 4 pupils were trained as oboists (oboes - military wind musical instrument - author's note);
- 10) 50 pupils fled and went missing" (AAHM. F. 2. Un. r. 10. Ll. 162-176).

The training program can be judged by the report of 1710:

"Upper school:

5 were studied on the field to know the length by an instrument without computation, they studied the Swedish and Russian weight of a single pound and the caliber of bombs, to decompose a stone ball, an iron pound and powder will into 1000 pieces, to find a diameter, the lot of verification to every cannonball and find from geometry and an 48 pound cannonball the same pound of iron, to find one pound of iron from 24 pounds of a cannonball according to arithmetic rule and mechanics, a 3-pound iron Swedish gun was drawn and transferred to a small caliber" (AAHM. F. 2. Un. 48. Ll. 964-965).

The drawings of pupils preserved: guns, howitzers, mortars, gun carriages, machines, shells and more. After the end of the course, the students were sent to the active army, where they built batteries, and fired from guns. When they joined the service, each schoolchild was examined by senior officers: they checked the knowledge of mathematics, artillery and engineering, the ability to draw artillery drawings on a scale.

By 1725 Russian artillery and engineering experts replaced foreign officers in the Russian army. The pupils of the school served in the St. Petersburg garrison, Revel, Keksgolm and in many other fortresses and cities, served the Fatherland faithfully. The graduates of this school contributed to the successful outcome of the Northern War, and Russian artillery became one of the best ones in Europe.

Moscow School of Mathematical and Navigational Sciences

January 14, 1701 another artillery school was founded in Moscow at the Sukharev Tower by decree of Peter the Great: the Moscow School of Mathematical and Navigational Sciences (known as the Navigational School).

Peter I believed that "the school is needed not only for maritime affairs, but also for artillery and engineering" (Benda, 2004, p.5). The first observatory in Russia was also founded there. This school taught fortification, architecture, arithmetic, geometry, drawing and trigonometry. There was a special requirement: after graduation, the students did not have to go to another service, except for artillery. The school had three stages of study (three schools or grades): "verbal" (here they studied reading and writing), "lower one" ("numbers", where students studied arithmetic), "upper" (here the students studied the basics of trigonometry, geometry, artillery and fortification). In two primary classes, children were taught reading and writing, since many pupils who entered the school were completely illiterate. Each school occupied a separate wooden building, a certain teaching staff worked there. A great difficulty for teachers was represented by the fact that the enrollment in school and training went on all the year round, in this regard the schoolchildren learned the material in different ways. After the passing of a corresponding program, the students were transferred to another school (class), so there was no an organized graduation. As V.N. Benda noted "in artillery school graduates were graduated as they were ready for practical activities" (Benda, 2004, p.24).

The Moscow artillery school was a well-equipped educational institution. As V.N. Benda wrote "the school was located in new, adapted premises, had the necessary teaching aids and textbooks" (Benda, 2004, p.18). The bombardiers led by Peter I studied artillery and engineering. The tsar appointed G.G. Skorniyakov-Pisarev as the head of the bombardier department, who "was entrusted with the theoretical training in a bombardier company for more than 20 years" (Ratch, 1857, p.128).

Peter I selected the candidates for the bombarding company by himself, gave the priority to the best educated soldiers. The enrollment in the school was performed from all classes. The doors to the school were open to the children from the lowest strata. The lists of schoolchildren had the names of noble and soldier children, the children of boyars and monastery servants, clerks and scribes, trade and craft people, horsekeepers and foreigners. By 1719, there were about 50% of artillery school pupils from noble families. The age of the students was different: from 7-8 years to 20-25. Students were united in groups not by age, but by the degree of subject mastering, the transfer of the student to the next class occurred individually, as he mastered sciences. Noble children were forcibly brought to a school sometimes, and the children from the lower classes expressed the desire to learn by themselves, because the state provided pupils with everything they needed.

The idea of school creation was accepted by Peter I from the West. As it was said above, the first teachers were represented by foreigners there, therefore the education system completely repeated the western one at first. The Sagan system was practiced in schools: as S.V. Pogodayev wrote "the learning was reduced to the memorizing of various scientific truths ... the system of corporal punishment was used widely. A student was whipped by a whip, a lash, sticks and grapples for the slightest fault or a poor performance" (Pogodyaev, 2015, pp. 29-30). Many students could not stand the hard school life and ran away from school. Peter the Great took extremely harsh measures to prevent the flight of schoolchildren until they were sent to hard labor or sentenced to death.

The school taught mathematics and verbal sciences. A special attention was paid to mathematics during the training of artillerymen: mathematical knowledge was necessary, first of all, to calculate the aiming of guns, the angles of aiming, the determination of a target range using geometric calculations, etc. At the end of the theoretical course, the students were sent to the artillery laboratory for practical training.

Domestic and foreign military experts were among the school teachers, initially the number of the latter prevailed at schools. The upkeep of foreign teachers required large expenditures and was often inefficient one due to their lack of knowledge of Russian language, and there were schoolchildren of low origin who did not know any foreign language. Until 1706 this school was under the jurisdiction of the Armory Chamber, and later it was transferred to the Navy Department and Admiralty Chancellery.

During the first quarter of the 18th century by the order of Peter I the number of students at the Moscow School for Mathematical and Navigational Sciences increased at the expense of soldiers, sergeants and corporals of Preobrazhensky, Semenovskiy and other regiments. They were sent to the Sukharevskaya tower to study mathematical sciences, after the training the military had to return to their regiments. The Moscow School of Naval and Navigational Sciences is the prototype of a higher military educational institution.

Creation of the Russian Academy of Sciences

The Academy of Sciences was founded on February 8, 1724 by the order of Peter I in St. Petersburg. It should be noted that the idea of the Academy of Sciences creation in Russia was discussed by Peter I repeatedly with G.V. Leibniz, the founder of the Berlin Academy of Sciences, the Saxon philosopher, a logician, a mathematician and a diplomat. The Russian emperor took useful advice from G.V. Leibniz on

the organization of an educational and a scientific institution of this type. The Academy included three classes: mathematical (the department of higher mathematics, astronomy, mechanics, physiology); Physical department of experimental and theoretical physics, chemistry and practical medicine, botany, anatomy and zoology); Humanitarian department (the department of eloquence and church history, Greek and Roman antiquities, jurisprudence, logic and metaphysics).

The research activities of the Academy professors were published in the "Comments" (the periodical in Latin). The Academy was quickly recognized in European academic circles, and the articles from the journal "Comments" were reviewed in German, French, and Dutch scientific publications. St. Petersburg Academy of Sciences set strong ties with European academies and scientific societies. The anatomical theater, a geographical department, a library, a physical and mineralogical room, the *Kunstkammer* (the museum of rarities), a botanical garden, and instrumental workshops were founded. The employees of the Academy organized scientific expeditions to various regions of Russia (Kamchatka, Siberia, Alaska, Aleutian Islands, etc.), studied the natural resources of the Russian Empire, collected valuable material on the history, ethnography, economic activities, the languages of different peoples of Russia. Professors wrote detailed works on the geography, the animal and the plant life of our country.

The foundation of engineering and other military educational institutions

The foundation of schools by Peter I was dictated by the desire and the need to provide Russia with domestic experts, where there was a severe shortage of well-trained military and technical personnel. Peter I pointed out the problem of professional and pedagogical training of an officer in military education:

"They (the officers) are the assistants of a company and a squadron commander in all the details of the service, and they must know firmly all people in the units entrusted to them, and everything that is prescribed in the drill statute in order to be able to explain well and show a soldier all the prescribed rules of the front service on local and march service from a counter, marching, rifle skills and so on. Each of the officers is responsible for his part; They not only have to comply with platoon and private superior ranks in appearance, but also justify it in the most accurate way, occupying the units entrusted to them, as much as the military order and the rules of service require" (Military Charter on the post of Field Marshal General and all the generals and other officials. Electronic resource).

Since 1712 an engineering school began to work in Moscow, where 23 pupils were trained, but in 1713 the number of pupils increased to 100 people.

In 1712, an artillery school was established with the artillery regiment, where the pupils studied arithmetic, artillery, geometry, fortification and drawing. In 1719 another engineering school was founded in St. Petersburg; both educational institutions were united in 1723.

In 1715, the Maritime Academy was opened in St. Petersburg, which was the only closed military educational institution in Russia of that period. The Academy had a military staff and a strict schedule of a day. The graduates of the Naval Academy were the famous Admiral F.F. Ushakov, the scientist and the navigator A.I. Chirikov et al.

In 1717 the St. Petersburg Artillery School was founded. This was due to the fact that artillery and gunpowder manufacture was developed in St. Petersburg at that time. Many local and foreign artillery experts lived in the northern capital.

Orders of the Emperor of Russia Peter I on the training of Russian pupils abroad

Peter I understood the importance of foreign education, and on November 22, 1699, he issued the decree, according to which about 50 disciples were sent to Europe to study various sciences. In the list of students the tsar included the children of famous Russian aristocratic families: Golitsyns, Kurakins, Dolgorukys, Volkonskys, Trubetskies, etc. Many pupils already had a family, children, but did not dare to go against the sovereign's will, since Peter I threatened them to lose land and property. The Tsar forbade the students to return to Russia without diplomas. After the study in Europe, many of the students took important posts in public administration and in diplomatic service.

In 1718, according to the order of Peter I, 22 pupils were sent to Spain, England, France and Venice to study sea military affairs. The students were also forbidden to return to Russia without diplomas. In Europe, they had to keep records of their overseas life, to collect information about the construction of ships and galleys.

Peter I sent students abroad not only to study engineering and shipbuilding, but also for the purpose of fine arts mastering. Let's give the text of the Tsar Peter I Charter to the Grand Duke of Tuscany Cosimo III the Medici with the request to take Russian students at the Florence Academy of Arts.

18th of January, 1716. The diploma of Tsar Peter I to the Grand Duke of Tuscany Cosimo III the Medici with the request to enroll Russian students to the Florentine Academy of Arts sent for the study of civil architecture and painting.

By God's mercy I, Peter the Great, the Tsar and the Autocrat of All Russia, and so on and so forth.

Your highness.

We sent a few Russian men in the area of Your Highness and the Most Serene Venice Polish Commonwealth by the agent Peter Beklemishev to the Russian people for the training in the art of civil architecture and painting. And the Academy, established by your Highness in Florence, is famous in all sciences and arts, for that we ask your highness to take the friendly sent ones to this very academy, and to study there and to provide your high princely patronage to allow everything. We hope for this from your Highness, and we will not leave in all cases to show how highly we honor your friendship, and that through the provision of all mutual pleasures we will keep it and seek it.

For this, we wish Your Highness good health and the best in everything.

Your highness comrade,

Peter" (Documents from the archives of Florence. Electronic resource).

During the reign of Peter the Great, about 1,000 people went abroad to study different sciences - engineering, shipbuilding and navigation, chemistry, fortification, mechanics, etc.

Companions of Peter I spreading the science and education in Russia

A major role in the development of Russian science belongs to Vasily Nikitich Tatishchev (1686-1706). In 1720, by the order of Peter I, he was sent to Siberia and the Urals in order to find silver and copper ores. It was V.N. Tatishchev who founded the cities of Yekaterinburg and Perm. At the Ural plants, he opened schools to train mining, facilitated the opening of libraries, compiled the instructions for the preservation of forests, as well as the instructions for surveyors, which was the first geographic and economic questionnaire. He collected a rich descriptive material about the soils and the relief of Russia.

Leonty Filippovich Magnitsky (1669-1739) is considered to be rightly as another associate of Peter I in his educational reforms. L.F. Magnitsky was the teacher of mathematics at the School of Mathematical and Navigational Sciences in Moscow, wrote the first textbook on mathematics in Russia. This textbook was used in Russian schools for over 50 years after its issue.

Fyodor Polikarpovich Polikarpov-Orlov (late 1660s - the beginning of 1670s - 1731) published a three language dictionary of Slavic, Greek and Latin languages (1701). This dictionary was used in Russian schools until 1770s.

Yakov Vilimovich Bruce (1670-1735) was the author of the Russian-Dutch and Dutch-Russian dictionary, made a map of lands from Moscow to Asia Minor, opened the first observatory in Russia. Y.V. Bruce studied in England for one year. His papers-notes, which he brought to Russia, include the following ones:

1. "The compilation manuscript on mathematics and fortification" in Swedish. The manuscript includes the following sections: "Arithmetic", "Geometry", "Practical Geodesy and Geometry", "Siege of Fortress", "Instructions for Fortification", etc. The abstract consists of 286 pages and contains a detailed theoretical and practical material with exercises and diagrams on the use of mathematical knowledge for various purposes;

2. The abstract "Notes on Mathematics" in German, compiled by Ya.V. Bruce. The work includes all main sections of mathematics, including "The rules of a triangle", "The rules of double angles", "Arithmetic progressions", "Geometric progressions", "The extraction of the square root", "Definitions", "Theorems", "Geometry problems" and "Trigonometry";

3. The manuscript by Y.V. Bruce "The articles on mathematics and astronomy". The book includes the following sections: "Corner sector", "The creation of sinuses, tangents and secants", "the basis of a circle diameter proportion of the diameter to its length", "Logarithm technique, or the actions with logarithms", "Basic logarithms of given numbers", "The problems of astronomy" "The theory of planet motion", "Moon Orbit," "Sun Orbit", "Projection of the Sun orbit", "Three known longitudes of the Sun, located in its apogee and perigee".

Let us note that, unfortunately, the scientific works by Y.V. Bruce were not subjected to research by astronomers and mathematicians.

Ya.V. Bruce collected a rich library, which included rare books in various foreign languages on alchemy, architecture, astronomy, geometry, geomancy (Arabian divination by noises produced by land, later geomancy served as the basis for the science of seismology), hieroglyphics, history, literature, medicine, mathematics, pharmaceuticals, physics, physiognomy (now some of this science data are used in psychology), philosophy, chemistry, the basics of ciphering, etc. After the death of the scientist, according to his will, the library fund was transferred to the Academy of Sciences.

Summary

The era of Peter I (Great) is one of the brightest periods for scientific, military and political development of Russia. Peter I governmental reforms in Russia allowed to create a modern army and navy, the government economic policy ensured an intensive growth of industry and trade. Striving to end the backwardness of the country, Peter I acted resolutely, applying severe administrative measures, which was reflected in the texts of state laws and in their practical implementation.

The reforms in the field of education, like all other transformations of that period, had a pronounced class character and were carried out primarily in the interests of nobility power strengthening. Peter I strove to raise the level of landowner education, to create a qualified administrative apparatus, to train experts for

the army and navy. However, it should be noted that in the era of Peter I people "from crowd" (from the lowest strata of society) also had the opportunity of professional growth.

The educational reforms favorably influenced the development of industry and trade, contributed to the development of science and culture in Russia. Reforms were supported actively by prominent progressive scientists and public figures of that period. Among these figures, F.S. Saltykov (naval engineer), L.F. Magnitsky (mathematician and teacher), F.P. Polikarpov (writer, translator, lexicographer), Y.V. Bruce (military man, diplomat, scientist), G.G. Skornyakov-Pisarev (military man, mechanic), A.A. Kurbatov (adviser to Peter I on issues of state administration and management), Feofan Prokopovich (priest, writer, philosopher, associate of Peter I), I.T. Pososhkov (economist-theoretician, inventor), V.N. Tatishchev (historian, geographer, economist), A.D. Kantemir (diplomat, writer).

State secular schools established in the first quarter of the 18th century were a new type of educational institutions. Religion gave way to general educational and special subjects there. Although during the acquisition of public schools, the government paid a special attention to the involvement of nobility children there, these schools also accepted the children of other classes. This made it possible to get education for the broader strata of population and favorably influenced the development of democratic intellectual ranks, of which many eminent figures of Russian enlightenment came out.

The schools opened under Peter I laid a solid foundation for the further development of Russian education. They initiated the development of special education: naval, artillery, engineering, medical and mining one. Capital cities, Moscow and St. Petersburg, became the major centers for school education and scientific thought. Many foreign experts were invited to Petrovskaya Russia, while foreign youth was trained at secular state schools besides the Russian one and at spiritual schools created later. Foreign students included, in particular, Western Slavs (Bulgarians, Serbs, etc.). This contributed to the interpenetration of new pedagogical ideas in the environment of the Slavic peoples and the establishment of fruitful relations between the Slavic states.

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