

Ministry of Healthcare of the Russian Federation
Federal State Budgetary Educational Institution
of Higher Education «Northern State Medical University»
of the Ministry of Healthcare of the Russian Federation

A.G. Kalinin, A.L. Sannikov

History of Russian Medicine

Training manual

Arkhangelsk
2022

UDC 61(061)

Authors: D.Sc. *A.G. Kalinin*; d.m.s., D.Sc., prof. *A.L. Sannikov*

Reviewers: Doctor of philology sciences, professor, Head of the department of foreign languages and Russian as a foreign language *O.I. Vorobyova*; Deputy Director, Chief Researcher of the state budgetary institution of the Arkhangelsk region «Scientific and Educational Center «Lomonosov House», Chairman of the Public Council of the Interregional Public Lomonosov Foundation, Candidate of Historical Sciences, Associate Professor *P.S. Zhuravlev*

Published according to the decision of the editorial
and publishing council of the Northern State Medical University

Kalinin A.G.

History of Russian Medicine: training manual / A.G. Kalinin,
A.L. Sannikov. – Arkhangelsk: NSMU Publishing, 2022. – 98 p.
ISBN 978-5-91702-431-8

Training manual was prepared at the Department of public health, health care and social work of the FGBOU BO Northern State Medical University (Arkhangelsk) of the Ministry of Health of Russia in accordance with the educational programs of higher education and work programs of the discipline «History of Medicine» for students in the field of training 31.05.01 «General Medicine» (International faculty of General practitioner).

The publication is intended for self study of students in practical classes and in extracurricular time.

UDC 61(061)

ISBN 978-5-91702-431-8

© Kalinin A.G., Sannikov A.L., 2022
© Northern State Medical
University, 2022

Министерство здравоохранения Российской Федерации
Федеральное государственное бюджетное
образовательное учреждение высшего образования
«Северный государственный медицинский университет»
Министерства здравоохранения Российской Федерации

А.Г. Калинин, А.Л. Санников

История медицины в России

Учебное пособие

Архангельск
2022

УДК 61(091)
ББК 5г
К 17

Авторы: д.м.н. *А.Г. Калинин*; д.м.н., проф. *А.Л. Санников*

Рецензенты: доктор филологических наук, профессор, заведующая кафедрой иностранных языков и русского языка как иностранного СГМУ *О.И. Воробьёва*; заместитель директора, главный научный сотрудник государственного бюджетного учреждения Архангельской области «Научно-образовательный центр «Ломоносовский дом», председатель общественного совета Межрегионального общественного Ломоносовского фонда, кандидат исторических наук, доцент *П.С. Журавлев*

Печатается по решению редакционно-издательского совета
Северного государственного медицинского университета

Калинин А.Г.

К 17 История медицины в России: учебное пособие / А.Г. Калинин, А.Л. Санников. – Архангельск: Изд-во Северного государственного медицинского университета, 2022. – 98 с.
ISBN 978-5-91702-431-8

Учебное пособие подготовлено на кафедре общественного здоровья, здравоохранения и социальной работы ФГБОУ ВО СГМУ (г. Архангельск) Минздрава России в соответствии с образовательными программами высшего образования и рабочими программами дисциплины «История медицины» для обучающихся по направлению подготовки 31.05.01 «Лечебное дело» (международный факультет врача общей практики).

Издание предназначено для самостоятельной работы обучающихся на практических занятиях и во внеаудиторное время.

УДК 61(091)
ББК 5г

ISBN 978-5-91702-431-8

© Калинин А.Г., Санников А.Л., 2022
© Северный государственный
медицинский университет, 2022

Ancient Russia (or, in another way, medieval Russia), spread over the expanses of eastern Europe, was one of the most significant states during the Middle Ages. Having emerged in the IX century on the site of small principalities, it quickly became a mighty power that possessed, in particular, a fairly high culture, including medicine.

In the history of medicine of ancient Russia (and the study of this history, without any doubt, should be based on the analysis of primary sources, primarily ancient Russian chronicles) it is advisable, from the point of view of a number of authors, to distinguish several stages. These are Proto-Slavic medicine (VI century BC - VIII century AD), medicine of the period of the Old Russian state (IX-XIII centuries), medicine of the period of the revival of Russian statehood and culture (XIV-XVI centuries), medicine of the late Middle Ages of Russia (XVI-XVII centuries) [1].

I. Monastery medicine

The appearance of monastic hospitals can be attributed to the time of the adoption of Christianity in Russia. The monks, who believed that God knows everything on earth, perceived diseases as punishment for human transgressions, and sometimes as the introduction of demons into the human soul and body. Consequently, healing from illness was seen as God's forgiveness and remission of sins.

The most famous of them were the hospital in Pereslavl, founded in 1091 by Metropolitan Ephraim of Kiev, and the Kiev-Pechersk Lavra, founded in 1051 by monks Anthony and Theodosius in the suburbs of Kiev. It got its name from the word "caves", i.e. caves in which monks lived and did their noble work. The Kiev-Pechersk Lavra has left its traces in the development of medicine and culture in Russia. Many chronicles were written there: from Nestor, Nikon, Selvester.

From there, hagiographic literature also went. In the XIII century, the "Kiev-Pechersk Paterik" was created there – a collection of stories and stories about this famous monastery. Many famous architects and painters took part in the creation of the interior of the lavra. About them, the life and activities of the monks, the ways and customs of Kiev were told in the paterika. In 1661, it was first printed and published in the printing house of the same Kiev-Pechersk Lavra. Turn on the sound

Buried in the caves of the monastery are people who have gone down in the history of Russia: the founder of the Lavra, Anthony, the chronicler Nestor, the healers Damian and Agapius, and even the founder of Moscow, Yuri Dolgoruky.

Oddly enough, the lavra found ways to treat a variety of diseases – from infectious to mental. Within the walls of the monastery there was even something like isolation cells, where seriously ill people were placed, they were provided with individual care. People who no longer had any hope of recovery were often healed by monks, after which they believed in God and prayers and took monastic vows.

Among the most famous healers who practiced in the lavra were such people as the Monk Alimpi, famous for treating people with the most severe cases of leprosy. For the treatment of skin diseases, he used iconographic paints, which apparently contained various medicinal substances. Saint and Blessed Agapius was also a monk of the lavra. He is known for



Monasteries as centers of learning and enlightenment.

having cured the grandson of Yaroslav the Wise, who later became the Prince of Russia, and went down in history as Vladimir Monomakh.

The doctors of the monastery treated the patients free of charge, they treated the patients with tolerance, with love, up to self-sacrifice. This attitude is the basics of medical ethics, which nowadays is given great importance when studying at universities.

Monastic hospitals were also centers of learning and enlightenment: monks collected Byzantine and Greek manuscripts, translated from Latin and Greek, combined information into collections, supplemented their knowledge and the knowledge of their ancestors and taught medicine from these sources [2].

Christian culture presupposes a high degree of literacy. The basis of Christianity, as you know, is a Book (the Bible, Holy Scripture), the Orthodox tradition also has as its basis the patristic tradition, which is transmitted in the writings of the fathers of the church. The dogmas of faith and their theological interpretation are also communicated in written texts. So a monk is supposed to be literate, all the more literate should be the clergy who perform divine services based on the most complex texts in their poetics and theology.

In ancient Russia, monasticism was considered the most educated part of Russian society. In the Synodal period (XVII-XIX centuries), the level of education of the clergy and monasticism fell, but the authority of a learned monk, a monk-scribe has always been high. Monasteries became library centers where monks collected, translated and copied manuscripts, decorated them with miniatures. Monastic scriptoria (book-writing chambers) were the only organized way of spreading written culture before the invention of printing. Starting from the XVI–XVII centuries. monasteries become centers of printing.

The monastery has always been a school, primarily for novices preparing to take monastic vows, often seminaries were located in monasteries for the training of clergy, but laypeople had a lot to learn here. All this made monasteries centers of enlightenment.

A combination of spiritual and natural healing was used to treat patients. Herbal remedies, known as Herbariums, along with prayer and other religious rituals were used in the treatment of monks and nuns of monasteries. Herbs were considered by monks and nuns as one of God's creations

for natural help, which contributed to the spiritual healing of the patient. The herbal textual tradition also developed in medieval monasteries. Older herbal Latin texts have been translated and also expanded in monasteries. Monks and nuns have reorganized old texts so that they can be used more efficiently by adding a table of contents, for example, to help find information quickly. They not only reorganized existing texts, but also added or excluded information. New herbs were added that turned out to be useful, or special herbs known in a certain geographical area. Herbs that proved ineffective were eliminated. The drawings have also been added or modified so that the reader can effectively identify the grass. Herbalists, which were translated and modified in monasteries, were among the first medical texts created and used in medical practice in the Middle Ages.

Not only herbal texts were created, but also other medieval texts in which medical issues were discussed. Monasteries in Medieval Europe gained access to Greek medical works by the middle of the century. The monks translated these works into Latin, after which they gradually spread throughout Europe. Monks such as Arnold of Villanova also translated the works of Galen and other classical Greek scholars from Arabic into Latin in the Middle Ages. By creating these texts and translating them into Latin, Christian monks preserved classical Greek medical information and allowed European doctors to use it. By the early 1300s, these translated works became available in medieval universities and formed the basis of university medical curricula.

By exchanging herbal texts between monasteries, the monks learned about herbs that could be very useful, but were not found in the surrounding area. Monastic people traded with each other or used commercial means to obtain foreign herbs. A separate garden was laid out on most of the monastery territory, intended for plants needed for the treatment of patients. The serving plan of St. Gall depicts a separate garden designed for strictly medicinal herbs. Monks and nuns also devoted a lot of time to growing herbs, which, in their opinion, were necessary for the care of the sick. Some plants were not native to these places and needed special care to preserve life. The monks used a form of science that we would call botany today to cultivate these plants. Foreign herbs and plants, recognized as very valuable, were grown in gardens in the immediate vicinity of the monastery, so that the monastic clergy had access to natural medicines.

Medicine in monasteries was focused on helping a person to return to normal health. The ability to identify symptoms and remedies was the main focus. In some cases, the identification of symptoms led to the fact that the monastic clergy took into account the cause of the disease in order to implement a decision. Research and experimental processes were constantly carried out in monasteries in order to be able to successfully fulfill their duties before God, to take care of all of God's people.

One of the most famous and majestic monasteries in the European North of Russia was the Solovetsky Monastery. Solovetsky Monastery is located on the shore of Prosperity Bay (Bay of Prosperity) on Solovetsky Island. The monastery is surrounded by massive walls with a height of 8 to 11 m and a thickness of 4 to 6 m. The wall includes 7 gates and 8 towers (built in 1584-1594 by an architect named Trifon), built mainly of huge stones up to 5 m long. On the territory of the monastery there are also religious buildings, the main of which are interconnected by covered and arched passages. They, in turn, are surrounded by numerous outbuildings and living quarters, including a refectory (a chamber with an area of 500 m²) with the Assumption Cathedral (built in 1552-1557), the Transfiguration Cathedral (1556-1564), the Annunciation Church (1596-1601), stone chambers (1615), a watermill (early 17th century), a bell tower (1777) and St. Nicholas Church (1834).



Solovetsky Monastery (Arkhangelsk region)

The Botanical Garden on Bolshoy Solovetsky Island was founded in 1822 by Archimandrite Makarii and was originally called the Makaryevskaya Desert (in Soviet times, the deserts began to be called the Gorki farm). The Botanical Garden is located in a hilly area, between the lakes of Lower Perth and Desolate. The area occupied by the garden is 5 hectares.

The first plantings on the territory of the Solovetsky Botanical Garden have not been preserved. Now on the territory of the botanical garden grow plants planted by monks in 1870-1920, as well as planting prisoners of the Solovetsky special purpose camp (1927-1936). The Botanical Garden is managed by the museum and is constantly maintained. There are old plantings of the thick-leaved badan along the central road. More than thirty species of woody plants, about 500 species and varieties of ornamental, medicinal, food and fodder plants grow on the territory of the garden.



Botanical Garden on the Solovetsky Islands.

Now the oldest in age are Siberian cedars and Pallas apple trees, which are more than a hundred years old. In addition to them, small-leaved linden, Pennsylvania cherry, Daurian tea, wrinkled rose and many other plants that are climatically not characteristic of northern latitudes grow on the territory of the Solovetsky Botanical Garden. Near the garden there was a

wax plant, through the pipes of which heat was supplied to greenhouses (watermelons, melons, peaches grew in them). A greenhouse with flowers was also heated.

II. Development of medicine and public health in Russia in 18th – 1-st part of 20th century. Outstanding Russian scientists, physicians, health care organizers and their contribution in the different fields of medicine

For the first time the term “medicine” in Russia was used by Peter I. The emperor himself attached great importance to medicine, having opened a hospital school in 1707, and in 1764 - a medical faculty at Moscow University. Medicine in Russia at that time was transformed from a popular one into a scientific one. If before conditional training was limited only to surgery, then under Peter I in the educational institution the following sciences began to teach pharmacology, neurology, dentistry, maxillofacial surgery, physiology and anatomy, forensic medicine. Many specialists traveled abroad and took over the experience of foreign doctors. The emperor himself was quite closely involved in the study of medical matters and successfully performed dental manipulations and operations to ordinary people and to members of the nobility.

In XVIII century the development of medicine in Russia was in full swing. At the end of the 18th century, several hospitals, hospitals and the first psychiatric clinic were opened. It was with the advent of the latter that the beginning of psychiatry as a science began. At the same time, the autopsy of the patient after his death became mandatory.

Despite this activity, the demographic situation was disappointing in connection with the epidemics of smallpox and plague. Medical figures of the time associated the wide spread of diseases, as well as high infant mortality with a lack of proper hygiene among the population.

Mikhail Vasilyevich Lomonosov. Mikhail Vasilyevich Lomonosov was the first Russian scientist-naturalist of universal importance. He laid the foundation of modern Russian literary language, an artist, an historian and an advocate of development of domestic education, medicine, public health, science and economy. In 1748 he founded the first Russian chemi-

cal laboratory at the Academy of Sciences. On his initiative the Moscow University was founded in 1755.

Lomonosov, through his works and service to the Motherland, made not only his name immortal, but also glorified the name of Russia and Russian science. His scientific ideas became a solid foundation for the subsequent development of various academic disciplines [1].

Many of M. V. Lomonosov's views remain relevant to this day, even at the current level of scientific development. He paid great attention to the problem of the growth and savings of the people, rightly believing that the prosperity and power of the state depends on it. He did not separate demography from state policy. According to the scientist, the preservation of Russian the people is the primary task of the government.

In 1761, M. V. Lomonosov wrote to Count Shuvalov a letter ““On the Reproduction and Preservation of the Russian People” “. He believed that” for the most abundant fertility of those who give birth, “that is, to increase childbearing, it is necessary to take several urgent measures. He also analyzed the factors that slowed down the population growth, and at the same time suggested what should be done to eliminate their harmful influence. Lomonosov was worried about the age difference among those entering into marriage. The actual elimination of marital relations between persons of inappropriate years would avoid numerous fictitious marriages. And thus it will be possible to avoid not only numerous facts of fraud, but also to reduce the threat to Russia's national security, since it is through fictitious marriages that many illegal migrants enter the country , who begin life in a new place with a violation of the law.

M. V. Lomonosov considered the issue of reducing the mortality, and mainly child mortality. He proposed to develop medicine to combat diseases and mortality among newborns. To reduce mortality in general , M. V. Lomonosov called for the education of the people in order to reduce the level of domestic heavy drinking and to impose a reasonable and healthy lifestyle. In the mentioned letter to Count Shuvalov, M. V. Lomonosov did not forget to mention migration – a phenomenon that is directly related to demography and accompanies it. He called those Russians who go to live abroad “living dead” and considered it necessary to take measures to the return of people from abroad, so how Russia is “able to accommodate them in its safe bowels”. In the concept Lomonosov's savings of the Russian

people indicated measures in three main areas – demography, the development of medicine, migration. Nowadays, it is the work in these areas that will allow us to suspend the mortality rate among Russians and create conditions for future population growth. The genius of Lomonosov foresaw this two and a half centuries ago [2].

In the scientific work of Lomonosov, an important place is occupied by a variety of issues related to the field of medicine. These are the problems of the etiology of diseases and the preservation of public health, considered from various positions (demographic, labor safety, extreme conditions, etc.), and the provision of medical care to the country, and the development of medical education in Russia. Lomonosov's works dealing with medical problems were full of fresh ideas and original approaches to solving problems.

The scientist understood and noted in his writings that medicine as a science of diseases and their treatment is based on knowledge of the structure and vital activity of the body in its normal state. Without this knowledge, the main goal of medicine – the healing of diseases-cannot be achieved. To cure diseases, it is necessary to understand their immediate cause, and” the causes of disturbed health”, according to Lomonosov, medicine”reaches through the knowledge of the properties of the human body” [2].

In many of his works, the great naturalist dealt with the etiology of diseases and, seeing in them a material cause, in contrast to the views prevailing in the middle of the XVIII century, paid attention to the influence of various climatic factors on the occurrence of disorders in the human body.

Already in 1741 M.V. Lomonosov wrote that “ the first cause of diseases is air. For art shows enough that when the weather is wet and prone to rain and foggy, the body is heavy and decrepit, the nerves are very damaged from immensely cold; and other similar incapacities happen. Then there is eating and drinking, which may not be the cause, if someone takes it in moderation...”. Lomonosov repeatedly touched on the role of air in the origin of diseases, attaching great importance to its temperature. If the cold “harms the nerves”, then the heat is even worse for health, which, according to Lomonosov, relaxes a person, and most importantly, contributes to the rotting of water and food products and the appearance of epidemic diseases. Cold, especially for Russian people who are accustomed to it, is more useful, since it prevents dangers that arise in a hot climate.

Summarizing the experience of his predecessors and his own personal experience, Lomonosov sought to find means to help preserve people's health in extreme conditions. Thus, in the instructions for the members of the expedition sent to search for the Northern Sea Route, Lomonosov speaks about the need to supply the expedition with food supplies to prevent scurvy, recalling such proven anti-scurvy agents as northern berries (cloudberry) and fresh meat.

Lomonosov paid a lot of attention to the prevention of diseases. In particular, in the work "The first foundations of metallurgy or ore affairs" (1741), he proposed specific measures to alleviate the difficult working conditions in the mines. For example, he considered it necessary to create artificial ventilation, developed a natural ventilation system and a number of devices for safe work, came up with special protective clothing, proposed to create recreation areas in mines, introduce a seven-hour working day and prohibit the work of children.



Mikhail Vasilyevich Lomonosov
Portrait by G. Prenner, 1787

Historically, foreign doctors were at the origins of medical education in Russia. Lomonosov understood that providing the country with medical care is the main means in the fight against quackery and quackery, which

should be opposed by treatment according to the rules of medical science. Russia at that time was in dire need of doctors. Lomonosov believed that it was necessary to expand all the methods of training doctors that were practiced: studying at foreign universities, and attaching Russian young men to foreign doctors with the requirement to teach them “with great diligence, without hiding anything.” “The Medical Office,” wrote Lomonosov, “should be firmly confirmed so that both in pharmacies and with doctors there would be a satisfied number of Russian students, whom they would teach their art at a certain time and represent to the Senate.” But that wasn’t enough. It was necessary to teach doctors in Russia in special educational institutions. Therefore, Lomonosov persistently sought the creation of a university with a medical faculty.

It is no coincidence that medical was one of the three faculties (along with philosophy and law), from which, according to Lomonosov’s project, Moscow State University began [3, 4, 5].

Monument M.V. Lomonosov in Arkhangelsk

The first monument to the Russian encyclopaedist scientist Mikhail Vasilyevich Lomonosov. The monument itself consists of two figures - Lomonosov standing in a falling Roman toga and a naked winged genius giving him the lyre, who fell to his left knee. Both figures are located on a convex hemispherical base, which is the northern part of the globe.



III. Development of clinical disciplines in Russia in XVIII-XX centuries

In the first half of the XIX century advanced, surgeons have recognized the need for accurate knowledge of anatomy for surgical interventions. In this respect, significant was the role of local surgeons. The reasons for this were the features of the development of medicine in Russia in the past. In XVI-XVII centuries Russia did not know that the guild division of health care workers, which in the period of feudalism separated them in Western Europe. In Muscovite Russia had no doctors shops, barbers and so on. P. Shops division of health workers exist in the western Russian and Ukrainian regions, in Poland and in the Baltic states in part, included in the structure of Russia in the XVIII century. The author of the first original Russian textbook on surgery JF Bush in the early XIX century, correctly and clearly described the position.

At the end of the XVII and XVIII century, the organization of school medical training future doctors in Russia there was no division in the MD (with school preparation) and surgeons who received knowledge and practical skills in order apprenticeship. Domestic doctors who have received school education in their preparation did not concede to doctors of medicine, and along with it had the advantage, as they are owned and skills of surgeons and not mired in the wilds of scholasticism. In the XVII century the school Apothecary order, especially in hospital schools in the XVIII century Russian doctors were anatomical and surgical practice. Leading Russian doctors-professors (MI Shein, KI Schepin, SG Zybelin) gave his disciples a versatile training. In the XVIII century in Russia has established a firm position that the surgeon must be familiar with the anatomy. On the need for knowledge of anatomy, closely related surgery anatomy did not forget “for all its activities, many prominent figures of Russian medicine of the XVIII century and the first half of the XIX century. B Western Europe during the XVIII century, and in some countries even in the first half of the XIX century Surgery bore traces of the medieval “traditions and handicraft training surgeons. Many surgeons do not know anatomy, we did not appreciate at the time of its importance for the surgery. Anatomy and Surgery in the XVIII century and the first half of the XIX century, developed in close relation to Russia and only the middle of the XIX century was their separation.

P.A. Zagorski. Major role in the development of anatomy in Russia played Peter A. Zagorski (1764-1846). In 1786 he graduated from high school at St. Petersburg general land hospital, and then in the same school worked ‘dissector “and the department of anatomy, physiology and surgery. After then 6 years of practical medical military and civil service, PA Zagorski in 1797 again began to work in St. Petersburg as an adjunct professor, and in 1799 the transformation of hospital schools in the Medical-Surgical Academy and the department at this from the Department of anatomy and physiology of the newly created special department of surgery at the Medical-surgical Academy PA Zagorski headed the department of anatomy and physiology, and directed it until 1833.

Anatomy P.A. Zagorski considered as part of the natural sciences; it he developed and taught in relation to surgery, obstetrics, forensic medicine. He paid much attention to pedagogical work. They were made up of the course anatomy program, developed a method of teaching, student learning was carried out on the body, made a textbook of anatomy for students. P.A. Zagorski in the full sense of the word was the founder of the anatomical school. They assistants and students, then who took the anatomy department were trained in St. Petersburg, Kharkov and Kazan, wires and develops the ideas of the teacher.

The peak of pedagogical activity P.A. Zagorski of anatomy was compiling and publishing them in 1802 textbook “Reduced anatomy or a guide to the knowledge of the human body structure”, are widely used in high schools of Russia stood for years 1802-1830. five editions. Textbook P.A. Zagorski had a great influence “and the formation of views of domestic doctors of the first half of the XIX century.

In addition to educational activities at the St. Petersburg Medical-Surgical Academy P.A. Zagorski has proved a major researcher. In 1805 he was elected a member of the St. Petersburg Academy of Sciences in the Department of Anatomy, Physiology and Zoology. Zagorski studied the development and changes of the arteries and is widely used comparative anatomical method. In his studies, he continued the tradition of natural science Radishshev, factual data confirming the evolutionary position expressed by the philosopher-revolutionary. The Academy of Sciences II. P.A. Zagorski office received superintendence “monsters cabinet”, which contained a large collection of malformations. Start gathering this collec-

tion dates back to the time of Peter I, by order of which in 1714 the Senate issued a decree on sending of freaks people and animals in the museum in St. Petersburg, was incorporated later to the Academy of Sciences. During the XVIII century in the Museum of the Academy of Sciences has accumulated a large number of such drugs. By the time the PA Zagorski they needed to put in order. He scanned the entire collection removed spoiled due to poor storage of drugs replaced preservative fluid.

P.A. Zagorski was not limited to the simple things in order in the museum. He took up Teratology (studying malformations), a fundamentally important issue for the time, as the scientific dispute between the supporters of the preformation and epigenesis scientists continue.

P.A. Zagorski standing on epigenetic positions, recognize and develop the point of view of this concept addresses the problem of Teratology, supporting their views anatomical studies of corpses of people-freaks. He described the numerous anomalies and variations. In his studies, P.A. Zagorski refuted the theory of preformation, he has developed criteria for the understanding of malformations, deformities created classification and denied the mystical knowledge of their origin. He was a stranger to natural-philosophical speculation, common at the time.

P.A. Zagorski applied the methods of chemistry, studied the liquid components of the human body and rejected the idealistic concept of life force. He wrote: "in the moisture of the human body have no vitality." Examining the blood, in particular its coloring agent ("Scarlet" by Zagorski terminology), it is determined that the hemoglobin contained in red blood cells that it contains iron, which plays a role in the exchange of oxygen. This P.A. Zagorski reinforced the position of the Lomonosov and Lavoisier about the role of red blood cells in transferring oxygen.

I. F. Bush (1771 -1843). He was born in Narva, was the son of a soldier Hanoverian army who moved to Russia in 1740. In 1785-1788, the JF Bush was in St. Petersburg Kalinkinsky Medical and Surgical Institute and in 1788 (at age 17) in the war with Sweden was released physician in the navy.

As the only physician at large at the time of military ships, J.F. Bush has provided medical care to the wounded during the naval battles: during one of the battles at the hands of the young doctors were more than 200 wounded. In 1790, J.F. Bush became dissector and professor of hos-

pital schools in the Kronstadt naval hospital. In 1797 J.F. Bush passed a teacher of anatomy and physiology at the Medical-Surgical Kalinkinsky Institute, which in the formation of the St. Petersburg Medical-Surgical Academy was merged with the St. Petersburg Medical-Surgical School. In the Medical-Surgical Academy since 1800 J.F. Bush took a special department dedicated to surgery and in 1833 directed it.

At the Medico-Surgical Academy, reading surgery course, J.F. Bush has made a significant improvement in the teaching and expansion of the surgical clinic. As an example of a deep understanding of J.F. Bush its tasks should be mentioned the fact that he, a German by birth, from 1800 lectured in Russian (much earlier than the others, even the Russian high school teachers at the time, continues to lecture on Latin). J.F. Bush skillfully picked up his assistants and created a school of surgeons. In 1807 he published the first composed it in Russian original textbook "Guide to the teaching of surgery" in 3 volumes. For the 1807-1833 period this textbook had five editions.

I.V. Buyalsky. Scorekeeper, an assistant and successor in the department of P.A. Zagorski in anatomy and pupil J.F. Bush in surgery was Ilya Vasilevich Buyalsky (1789-1866), united in one person anatomist and surgeon. In 1814 I.V. Buyalsky graduated from the St. Petersburg Medical-Surgical Academy. While still a student, he worked at the Department of Anatomy at the P.A. Zagorski. Since 1817, he would have assistant professor position at the Department of Surgery. From 1825 to 1844 I.V. Buyalsky taught anatomy at the St. Petersburg Medical-Surgical Academy, first as an assistant of P.A. Zagorski, and after the departure of P.A. Zagorski resigned (1833) as the head of the department. For a long time (1831-1866) I.V. Buyalsky taught anatomy at the Academy of Arts.

In 1844 I.V. Buyalsky published "A Brief general anatomy of the human body." In this book, he stressed the applied nature of the anatomy.

I.V. Buyalsky shared evolutionary ideas of his teacher, stood on the positions of the gradual development of the organic world, and made a number of progressive ideas of nature as a single whole, conducted comparative anatomical parallels, often turned to the data of embryology, stopping at age differences and recognizing the variability of the human body throughout life. I.V. Buyalsky conducted research on the vascular anatomy of the nervous system and internal organs, he has made numerous museum

preparations. Especially famous for its production of corrosive preparations renal vessels.

In addition to teaching anatomy at the Medical-Surgical Academy I.V. Buyalsky never stopped practicing surgical operations and from 1831 to 1864 was a consultant of a large hospital. He produced more than 2,000 large transactions. Anatomical preparation performed by I.V. Buyalsky helped him to become a brilliant surgeon. He was a master of technique and operated very quickly. I.V. Buyalsky developed the most important issues at the time of surgery: surgery of the blood vessels and the urinary tract, and plastic surgery. He made improvements in operative technique, perfected and offered several tools: turnstile, spatula, spoon obstetric. When ether anesthesia was proposed, I.V. Buyalsky being already an elderly, one of the first Russian surgeons began to apply it in practice.

A brilliant surgeon I.V. Buyalsky high sensitivity and humanity. He wrote: "It is easy to take a hand and foot, to show off the elegance of operations, but has never been able to fasten mistakenly taken away the arm or leg, and injury vain, as if it brilliantly produced may be, is not compensated for any glory surgeon or later his repentance; the duty of an honest man seven times to think before every cut. The operation is done in order to save lives, but we should also think about the fact that this preservation of life as possible was less painful "

For the development and implementation of surgery in the anatomical areas of great importance were composed by I.V. Buyalsky surgical atlases. The first issue of "anatomist-surgical tables" compiled by the I.V. Buyalsky, was dedicated to the operations of large artery ligation. Atlas is a collection of large tables, and parallel to the anatomical and surgical tables have been given. On the anatomical structure of the table a separate area of the body has been shown that usually made a major artery ligation, the relationship of the individual organs, "anatomy of the parts subjected to surgery or lying around." Accordingly, the surgical table were depicted position of the patient during surgery, the incision of the place and the projection on the skin, "the most important, lying deep in parts." All images have been reproduced in full size with products manufactured I.V. Buyalsky. In 1852 it was published the next issue - "anatomist surgical table, explaining the production operations of cutting and breaking of urinary stones." Atlas I.V. Buyalsky found wide acceptance among both domestic and foreign surgeons at the time.

I.V. Buyalsky was the first Russian surgeon who has received great popularity not only in our country but also abroad. V.A. Opiel in his "History of Russian Surgery" wrote: "Buyalsky - is the authority of the European values. "IV Buyalsky was the representative of the anatomical directions in medicine. His work, he showed how much progress has reached Russian Surgery. I.V. Buyalsky struggled for Russian science: all his writings he published only in Russian, which at that time was unusual. I.V. Buyalsky was the best surgeon of his time, especially practitioner, which reflected the latest achievements of science.

E. O. Mukhin (1766-1850). After graduating from the Kharkov Collegium, being in the Potemkin's army, E.O. Mukhin in 1789 graduated from the organized to supplement the medical personnel of military units Elizavetgrad school at the hospital, and then there he taught anatomy and surgery and taught a course "On the bones, sprains, fractures, and medical dressings. "After moving to Moscow in 1795 E.O. Mukhin was assistant professor of pathology and therapy in the Moscow medico-surgical academy. Later in 1800 it was transformed into the Moscow Medical-Surgical Academy, where E.O. Mukhin until 1818 he taught anatomy and physiology. At the same time from 1813 till 1835 E.O. Mukhin read the anatomy, physiology and forensic medicine at the Medical Faculty of Moscow University. In addition to teaching, E.O. Mukhin did practical medical work in hospitals of Moscow, was the first chief doctor Golitsyn Hospital in Moscow (now the City Hospital № 1 named after N.I. Pirogov), he paid much attention to medical administration and participated in the fight against infectious diseases .

Perennial teaching of medical disciplines, a large clinical experience in the military and civilian hospitals in internal medicine and surgery, long-term work E.O. Mukhin in higher medical school on administrative work showed extreme need of textbooks for students. E.O. Mukhin did a lot in order to meet this need of life. He compiled and published in 1806. "The first start kostopravnoy science", dedicated to the treatment of sprains and fractures, written in 1811 and in 1818 published a manual on the anatomy. "As dean of the medical faculty of Moscow University, E.O. Mukhin took best foreign textbooks that were under his direction for the needs of the students have been translated into Russian and Latin languages and printed in Moscow University.

Much attention is paid by E.O. Mukhin to theoretical questions med-
icinsy- physiology and pathology. He attached great importance of the
nervous system. In this regard, of particular interest is the composition
E O. Mukhina “Incentives that affect the human body”, where he tried to
understand the science and study the influence of the external world on
man. With regard to the incentive of the nervous system, the E.O. Mukh-
in distinguished central incentives, which are produced in the brain, and
the off-center, which occur in the nerves or nodes. Sharing incentives to
centrifugal and centripetal, he singled out the incentives that go along the
nerves to the brain from the internal organs. E.O. Mukhin, the main system
of the human body considered the nervous system. “The nervous system is
the link that connects to a common indivisible body and all objects around
him. “Nerves are a reflection of our lives intact.” “The brain is the material
condition of intelligence, ie. Consignments of mind.”

E.O. Mukhin had numerous disciples and followers, who developed its
position. For example, A sun in his thesis (1825) wrote: “Never appears in
the soul of a living person in the absence of the idea of brain process ... a
sense of a necessary change in the brain generated by the sensory organ.”
Another student E.O. Mukhin pointed Gromov S. (1830): “... our soul is
so closely linked with the body that thereof disorder early IPT late, to a
greater or lesser extent, entail a disorder of the body and vice versa.”

In treatment E.O. Mukhin distinguish purely medical measures and
natural measures. According to him, in some diseases (e.g. cholera), we
must always begin with the medical measures, given by gradually increas-
ing the medication until the condition of the organism will not reach a level
where treatment can give the forces of nature. To achieve the first objective
should be to comply with a decent way of life, to use qualitative and quan-
titative decent food, but for the second objective “should use internal and
external anti-seizure of power and influence.” E.O. Mukhin understand
crucial knowledge of traditional medicine, and urged listeners to study it.
He wrote: “... I have often inspired them (students), so that they, chiefly in
the areas of their homeland, have discovered the means between the people
employed against major diseases and to reported where well be, for driving
the popularity for general good. “

F. I. Inozemtsev. Major figures of Russian medicine, an active partici-
pant in the restructuring of medical education in Russia in the middle of the

XIX century was Fyodor Ivanovich Inozemtsev (1802-1869), from 1835 to 1859, he taught surgery at Moscow University. F.I. Inozemtsev was actively involved in the expansion and improvement of the medical education system; in order to improve clinical training of future doctors, he set the task “to form a more scientific and practitioners as possible.” At the same time, N.I. Pirogov and F.I. Inozemtsev promoted allocation of hospital clinics, shared the chair of practical surgery at the Department of Surgical Clinic of Faculty and the department of operative surgery with topographic anatomy, developed detailed program. In addition to clinical lectures with demonstration of preparations and practical training in the clinic, F.I. Inozemtsev demanded mandatory production operations on the corpses of the students, the processing of topographic and anatomical specimens.

Being a highly educated doctor, F.I. Inozemtsev in his writings opposed natural philosophy and humoral doctrines, helped develop the anatomical and physiological direction, clarification of the role of the nervous system in physiological and pathological processes. Being a good teacher, he left many disciples and followers. In the middle of the XIX century by F.I. Inozemtsev has played a major role in the creation of public medicine in Russia: it was founded weekly “Moscow Medical Newspaper”, which discussed the main issues of medical affairs organization in the country, the position of doctors. “Moscow Medical newspaper” developed democratic trend in the activities of physicians, facilitated the rise of national consciousness of Russian doctors and the development of medical science in Russia. F.I. Inozemtsev established in Moscow Society of Russian physicians.

N. I. Pirogov, world-famous doctor and surgeon, was born in Moscow to the family of the treasurer. Nikolay’s father had 14 children, many of which died in infancy. Nikolay had 5 brothers and sisters, being the youngest of them all.

Nikolay Pirogov owed his education of a family friend, a doctor and professor of Moscow State University, who noticed the boy’s talents and started giving him individual lessons. Upon turning 14, Nikolay entered the faculty of medicine in Moscow State University, having lied that he was 16.

N.I. Pirogov liked studying. The boy had to work in order to help his family and finally got a position of prosector in local anatomy theatre. That job gave him a priceless experience in anatomy and promoted his desire

to become a surgeon. Pirogov graduated from the university among best students and headed for Yuriev University in Derpt, which was the best in Russia at that time, for preparing for his professorship.

The young man spent 5 years in local surgery clinic and brilliantly defended his PhD, thus becoming Doctor of Medicine, being only 26 years old. His dissertation was dedicated to abdominal aorta bandaging, which was to date performed only once and ended with patient's death. Nikolay Pirogov was the first to describe abdominal aorta topography or its arrangement in human body, circulatory disturbances while bandaging, and blood circulation pathways during aorta obstruction, as well as explained the reasons of post-surgery complications. N.I. Pirogov suggested two ways of accessing aorta – transperitoneal and extraperitoneal approaches.

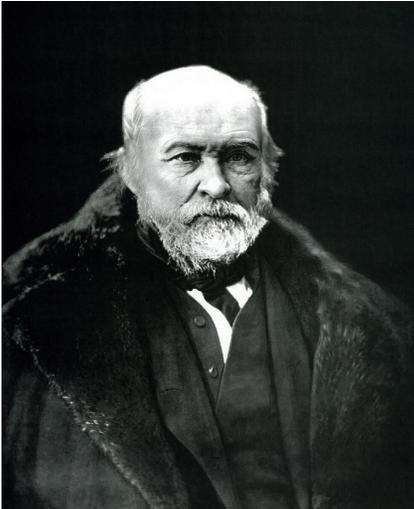
After that, N.I. Pirogov went to Berlin for training, however, his perfect teacher waited for him in Goettingen. Professor Bernhard Langenbeck taught Russian surgeon everything he knew. While travelling home, Pirogov fell ill in Riga and after recovery, starting performing surgery on those who needed it. The word about the genial surgeon started spreading around. When Pirogov returned to Derpt, he learnt that the department in Moscow, which he intended to head, was under another professor. However, the surgeon wasn't unhappy – Professor Moyer left the surgeon his clinic in Derpt. In that clinic Pirogov laid the foundation of a new science – surgical anatomy. The surgeon published his fundamental work “Surgical anatomy of arterial trunks and fascia”. Pirogov taught surgeons to use anatomy for better surgery and for correct bandaging of arteries. The medic made heaps of operation descriptions, which were accompanied with extremely accurate and detailed drawings.

Surgery. Then the surgeon went to France, and later, in 1841 was invited to head surgery department in St. Petersburg Academy of Surgery and Medicine, where he spent over 10 years and opened first Russian surgery clinic. In his clinic the medic founded another branch of medical science – hospital surgery. Pirogov became famous – his lectures were attended not only by medicine students, but also by other people, who have heard about the genius. Newspapers dedicated him articles, comparing the surgeon's lectures with performance of famous Italian singer.

Nikolay Pirogov got a position of director in the Instrument plant, where he invented equipment for performing fast and accurate surgical

operations. The surgeon accepted all appointments in hospitals, consulting local medics. However, the surgeon was surrounded with not only people, who loved him, but those, who envied him. Second year in St. Petersburg brought ill health for the surgeon, who had to spend about 1.5 months in bed. While recovering, Pirogov decided he needed a family and married Ekaterina Berezina, a young woman from a noble but bankrupt family. The wedding wasn't a festive one – the medic didn't have time for that. His wife gave birth to two sons and died during delivery at the fourth year of their marriage.

During those desperate days, Pirogov's project of first Anatomy Institute in the world was approved by the tsar. On October 16, 1846, first test of ether anaesthesia was performed, and first surgery under anaesthesia happened on February 7, 1847 by Pirogov's friend Fedor Inozemtsev. The following week Pirogov performed his own surgical operation with anaesthesia. During 1847 670 operations with anaesthesia were performed in Russia, and 300 of them were made by Nikolay Pirogov.



Nikolay Pirogov in 1870 (25 November 1810 - 5 December 1881)

As soon as Nikolay Pirogov was sent to Caucasus, he started performing surgery on wounded soldiers, using ether anaesthesia, with a total of 10 000 operations. One day, when Pirogov visited local market, he saw how butchers cut frozen cow bodies and noticed how well positions of all

internal organs could be seen. Later he tried the technique in the anatomy theatre, cutting frozen corpses with a special saw. That was how new medical discipline – *topographic anatomy* – was founded. Saw-cuts helped compiling first handbook of anatomical charts, which allowed surgeons to perform operations, doing minimal harm to a patient. That handbook and Pirogov’s technique became the basics for further development of operative surgery.

When Crimean War began in 1853, Pirogov considered going to the war theatre in Sevastopol to be his civil duty. The surgeon was the first to apply plaster bandage while operating, which accelerated fracture recoveries and saved many people from extremity curvatures. Another great achievement of Nikolay Pirogov was introduction of triage, when some wounded people were operated immediately, and some were evacuated after first-aid treatment. Pirogov introduced new type of medical aid – medical nurses started helping injured soldiers. Therefore, Nikolay Pirogov was also the father of military field medicine.

After fall of Sevastopol, Pirogov returned to St. Petersburg and reported to Tsar Alexander II about Prince Menshikov, a mediocre army administrator. However, the tsar didn’t listen to the surgeon, who then fell into disgrace. Pirogov left the Academy of Medicine and Surgery and plunged into problems of education in Odessa and Kiev regions. His activities provoked a conflict with local authorities, and Pirogov was forced to leave his position. Nikolay Pirogov settled down in his estate “Vishnya” (“Cherry”), where opened a free-of-charge hospital. The surgeon left his place only when he went abroad to read lectures.

At that time Nikolay Pirogov was a full member of several foreign academies of sciences. In May 1881, scientists and medics of Moscow and St. Petersburg celebrated 50th anniversary of Pirogov’s research activities. Unfortunately, the surgeon was already terminally ill and died in December of the same year in his estate. Not long before his death, Nikolay Pirogov made one more discovery – he developed a unique technology of embalment – dead body preservation. Embalmed body of the genial surgeon is still in the church of his estate. Pirogov made surgery the science, equipping medics with scientifically based techniques of surgical intervention [6].



Matvey Mudrov. (1776, Vologda — 1831, Saint Peterburg)

His original work consists in collecting the case histories of all the patients he treated for 22 years. This collection consisted of 40 volumes of a small format, where M. Y. Mudrov brought in all the scientific information about the patient, about the medicines prescribed to him, etc., through a special system. M.Y. Mudrov was a practicing doctor who attached great importance to observation and the nature of patients, following the composition of the professor of the University of Vilna I. Frank - *Praxeos medicae universae praecepta*, and only in the 1920s he began to lean towards the system of Dr. F. Brusset.

Matvey Mudrov wrote the following works “*Principes de la pathologie militaire concernant la guerison des plaies d’armes a feu et l’amputation des membres sur le champ de la bataille ou a la suite du traitement developpes aupres des lits der blesses*” (Vilna, 1808); “Reasoning about the means, everywhere are, which ... should help the sick soldier”, read in the medical-physical society in 1812, “A brief instruction about cholera and the way how to protect oneself from this ...”, the first ed. in Vladimir in 1830, the second - in Moscow in 1831, and some others.

Aleksey Osrtoumov (1844 — 1908). A famous physician-therapist, the founder of the Moscow clinical school. An outstanding Russian physician-therapist, a student of G.A. Zakharin, the founder of a large scientific

school. The main works on the physiology and pathology of blood circulation, an ordinary professor at Moscow University.



Aleksey Osrtoumov (1844 — 1908)

Grigory Antonovich Zaharjin . A famous physician-therapist, the founder of the Moscow clinical school, an honorary member of the Imperial St. Petersburg Academy of Sciences (1885).



Grigory Antonovich Zakharin (1829 — 1897/1898).

The most outstanding Moscow therapist of “all time”, Grigory Antonovich Zakharin, was born on February 8, 1829 in the village of Virga of Saratov province, in an old reach family. After graduating from the Saratov Gymnasium in 1847, Grigory entered the Medical Faculty of Moscow University, which he graduated brilliantly in 1852. For the high level of knowledge, he was left at the faculty therapeutic clinic as an intern. Defending in 1854 his doctoral thesis in Latin “Study of about postdelivery diseases,” he was appointed head of the department of faculty therapy; took an active part in the publication of the Moscow Medical Journal.

Grigory Antonovich Zakharin has developed a number of problems that are of great importance for practical medicine. He created a clinical symptoms of syphilis of the heart and lungs. He introduced many new things into the teaching about tuberculosis, identified the main clinical forms of pulmonary tuberculosis. He gave the original theory of a particular form of chronic anemia - chlorosis, which explains this disease by an endocrine disorder associated with changes in the nervous system.

Sergey Petrovich Botkin. He introduced triage, pathological anatomy, and post mortem diagnostics into Russian medical practice.



Sergey Petrovich Botkin (5 September 1832 – 12 December 1889) was a famous Russian clinician, therapist, and activist, one of the founders of modern Russian medical science and education. He introduced *triage*, *pathological anatomy*, and post mortem diagnostics into Russian medical practice.

Botkin was born in the family of famous Russian tea tradesmen. First steps towards education the boy made in the private school of Ennes. In 1850 Botkin was admitted to Moscow State University. In 1855 Sergey

Botkin graduated from the university with honors and received a Doctor of Medicine degree.

Shortly afterwards however he was mobilized as a conscript, designated to serve as military surgeon and sent straight to Sevastopol, where the Crimean War was in full swing. There Botkin worked under the guidance of Nikolay Pirogov, widely recognized as a pioneer of field surgery (i.e. the treatment of wounded combatants on the spot and in spite of ongoing hostilities as the situation may warrant). Pirogov is known for performing the first operation under anesthesia on the battlefield at the time.

Upon the end of his military service, Botkin received a flattering review from his supervisor. He subsequently went abroad, seeking to improve his skills and was able to gain valuable professional experience working at some of the most prestigious institutions on the continent.

Upon his return to Russia, Botkin was invited to work with professor Shipulinsky in the Academy of Medicine and Surgery, and the following year Botkin took Shipulinsky's position at the age of 29.

In 1860–1861, Sergey Botkin opened a clinical and research laboratory and in the course of his research organized systematic studies in clinical pharmacology and experimental therapy, both novelties in Russian research at the time. He was the first to suggest that catarrhal jaundice (hepatitis) was caused by an infection.

In early 1860s, Botkin was assigned as an advising member of the medical board of the Imperial Ministry of Internal Affairs. In 1873 he was also made Head Surgeon to the Emperor, having been among the court physicians for both Tsar Alexander II and Tsar Alexander III. Furthermore, the same year he was elected president of the Medical Association of St. Petersburg. In 1886, Botkin headed the National Public Health Commission, created to investigate the unusually high mortality rates prevalent in Russia, both in times of peace and war. Botkin Hospital is named after him [7].

IV. Development of medico-biological disciplines in Russia in XVIII-XX centuries

Ivan Mikhailovich Sechenov. Ivan Mikhailovich Sechenov, an outstanding Russian physiologist, was born on August 13, 1829 to the family

of a former military man in the Tyoply Stan village near Simbirsk (Ul'ianovsk during the soviet period). Basics of science were taught to the boy at home, since his family's financial situation left much to be desired after his father's death. In 1843 Ivan Sechenov went to St. Petersburg, where he passed entrance examinations to Chief College of Engineers. Several years after Sechenov graduated from the College as a military officer and was assigned to an ordinary engineer combat battalion, where future scientist spent two years and then resigned his commission.

Ivan Sechenov entered medical faculty of Moscow University, however, during last years of his studies Sechenov got disappointed with the state of medical science of that times. Physiology became his dream. After finishing a course of studies, Ivan Sechenov passed doctor examinations and successfully defended his master thesis. In 1856 he went abroad "with a strong intention to do some physiology" and spent several years there, preparing his Doctor dissertation. His work's title was "Materials for physiology of alcohol intoxication", and all experiments were performed there.



Ivan Mikhailovich Sechenov (August 13, 1829 - November 15, 1905)

In 1860 the man of science returned to Russia and became a professor of St. Petersburg Medical Academy. I.M. Sechenov discovered so-called "central inhibition" – special processes in frog's brain, which inhibit or suppress reflexes. This absolutely new phenomenon was called "Seche-

nov's inhibition" and described in the paper, written in 1863 first in French, and then in Russian and German languages.

The same year Russian magazine "Reporter of Medicine" published another Sechenov's paper "Reflexes of Human Brain", where the scientist first showed how external irritants affected human complex mental life and behaviour. Any irritation caused reflex – response of the nervous system. Phenomenon of inhibition, discovered by I.M. Sechenov, helped finding out that every nervous activity consisted of interaction of two processes – excitation and inhibition.

In 1866 Sechenov's classic work "Physiology of nervous system" came off the press, where the genius expresses a very important theory of self-regulation and feedback, which later was developed in cybernetics. This theory led the scientist to the idea of signal and signal as behaviour regulator.

In 1867, after ten years spent in the Academy, I.M. Sechenov left for a sabbatical and then worked with Mendeleev for some time. Later Ivan Mikhailovich worked as a professor in the university of Novorossiysk. The researcher dreamt of revealing secrets of a very important physiological process – consumption and emission of carbon dioxide by blood, and that aim resulted in essential discoveries in the theory of solutions.

In September 1869 I.M. Sechenov became corresponding member of Emperor's St. Petersburg Academy of Sciences. In 1876 the scientist returned to St. Petersburg and took the position of a professor at the physiology department of the faculty of physics and mathematics in St. Petersburg University. In 1889 Ivan Sechenov formulated "Sechenov's equation", an empirical formula, connecting gas solubility in electrolyte solution with its concentration.

In 1891 I.M. Sechenov became professor of the physiology department at Moscow University, where started research on gaseous interchange and continued studies of neuromuscular physiology, resulting in a fundamental book "Physiology of Nervous Centres".

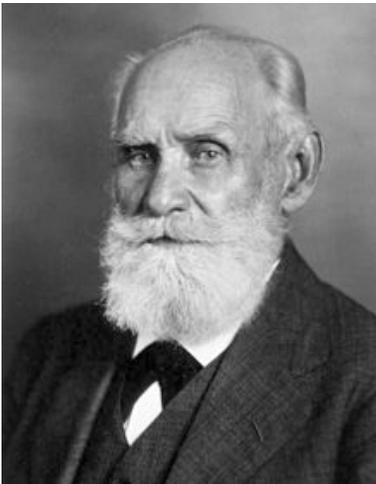
In 1901 Ivan Sechenov retired from his work. In 1905 the great scientist died

Ivan Petrovich Pavlov. Ivan Pavlov, the first son of a priest and the grandson of a sexton, spent his youth in Ryazan in central Russia. There, he attended a church school and theological seminary, where his seminary

teachers impressed him by their devotion to imparting knowledge. In 1870 he abandoned his theological studies to enter the University of St. Petersburg, where he studied chemistry and physiology. After receiving the M.D. at the Imperial Medical Academy in St. Petersburg (graduating in 1879 and completing his dissertation in 1883), he studied during 1884–86 in Germany under the direction of the cardiovascular physiologist Carl Ludwig (in Leipzig) and the gastrointestinal physiologist Rudolf Heidenhain (in Breslau).

Having worked with Ludwig, Pavlov's first independent research was on the physiology of the circulatory system. From 1888 to 1890, in the laboratory of Botkin in St. Petersburg, he investigated cardiac physiology and the regulation of blood pressure.

He became so skillful a surgeon that he was able to introduce a catheter into the femoral artery of a dog almost painlessly without anesthesia and to record the influence on blood pressure of various pharmacological and emotional stimuli. By careful dissection of the fine cardiac nerves he was able to demonstrate the control of the strength of the heartbeat by nerves leaving the cardiac plexus; by stimulating the severed ends of the cervical nerves, he showed the effects of the right and left vagal nerves on the heart.



Ivan Petrovich Pavlov (26 September, 1849 – 27 February 1936)

Pavlov married a pedagogical student in 1881, a friend of the author Fyodor Dostoyevsky, but he was so impoverished that at first they had to

live separately. He attributed much of his eventual success to his wife, a domestic, religious, and literary woman, who devoted her life to his comfort and work. In 1890 he became professor of physiology in the Imperial Medical Academy, where he remained until his resignation in 1924. At the newly founded Institute of Experimental Medicine, he initiated precise surgical procedures for animals, with strict attention to their postoperative care and facilities for the maintenance of their health.

During the years 1890–1900 especially, and to a lesser extent until about 1930, I.P. Pavlov studied the secretory activity of digestion. While working with Heidenhain, he had devised an operation to prepare a miniature stomach, or pouch; he isolated the stomach from ingested foods, while preserving its vagal nerve supply. The surgical procedure enabled him to study the gastrointestinal secretions in a normal animal over its life span. This work culminated in his book “Lectures on the Work of the Digestive Glands” in 1897.

Laws of conditioned reflex. By observing irregularities of secretions in normal unanesthetized animals, Pavlov was led to formulate the laws of the conditioned reflex, a subject that occupied his attention from about 1898 until 1930. He used the salivary secretion as a quantitative measure of the psychical, or subjective, activity of the animal, in order to emphasize the advantage of objective, physiological measures of mental phenomena and higher nervous activity. He sought analogies between the conditional (commonly though incorrectly translated as “conditioned”) reflex and the spinal reflex.

According to the physiologist Sir Charles Sherrington, the spinal reflex is composed of integrated actions of the nervous system involving such complex components as the excitation and inhibition of many nerves, induction (i.e., the increase or decrease of inhibition brought on by previous excitation), and the irradiation of nerve impulses to many nerve centers. To these components, I.P. Pavlov added cortical and sub-cortical influences, the mosaic action of the brain, the effect of sleep on the spread of inhibition, and the origin of neurotic disturbances principally through a collision, or conflict, between cortical excitation and inhibition.

Beginning about 1930, I.P. Pavlov tried to apply his laws to the explanation of human psychoses. He assumed that the excessive inhibition



Sculpture to Pavlov's dog at the Institute of Experimental Medicine, St Petersburg, Russia.

characteristic of a psychotic person was a protective mechanism—shutting out the external world—in that it excluded injurious stimuli that had previously caused extreme excitation. In Russia this idea became the basis for treating psychiatric patients in quiet and nonstimulating external surroundings. During this period I.P. Pavlov announced the important principle of the language function in the human as based on long chains of conditioned reflexes involving words. The function of language involves not only words, he held, but an elaboration of generalizations not possible in animals lower than the human.

Pavlov's typology of higher nervous activity was the first systematic approach to the psychophysiology of individual differences. Ivan Pavlov's ideas of nervous system typology came from work with his dogs and his realization of individual differences. His observations of the dogs led to the idea of excitation and inhibition in the nervous system, and Pavlov theorized that the strength of these processes in the nervous system will determine whether the subject will have a strong or weak nervous system. This theory has influenced research in the field of social psychology and personality.

I.P. Pavlov's relationships with the communists and the Soviet government were unique not only for the Soviet Union but also for the history of science. Although he was never a politician, he spoke fearlessly for what he considered the truth. In 1922, during the distressing conditions of the Revolution, he requested permission from Vladimir Lenin to transfer his laboratory abroad. Lenin denied this request, saying that Russia needed scientists such as Pavlov and that Pavlov should have the same food rations as an honoured communist. Although it was a period of famine, I.P. Pavlov refused: "I will not accept these privileges unless you give them to every one of my collaborators!" In spite of many honours granted him by Soviet officials, he upbraided them openly. After returning from his first visit to the United States in 1923 (the second was in 1929), he publicly denounced communism, stated that the basis for international Marxism was false, and said, "For the kind of social experiment that you are making, I would not sacrifice a frog's hind legs!" In 1924, when the sons of priests were expelled from the Military Medical Academy in Leningrad (the former Imperial Medical Academy), he resigned his chair of physiology, announcing, "I also am the son of a priest, and if you expel the others I will go too!" In 1927, distressed that his was the only negative vote in the Academy of Sciences against the newly recommended "red professors," he wrote to Joseph Stalin, protesting, "On account of what you are doing to the Russian intelligentsia—demoralizing, annihilating, depraving them—I am ashamed to be called a Russian!" In the late 1920s, as an anticommunist gesture, he refused Nikolay Bukharin, the Soviet commissar of education, admission to his laboratory, though the laboratory was supported by government funds administered by Bukharin.

During the last two years of his life, I. P. Pavlov gradually ceased these excoriations and even stated that he hoped to see the success of the government at the helm of his country. This change of heart may have been a result of increased government support of science and of his own feelings of patriotism when war with Japan seemed imminent. He was never a communist, however, nor was he responsible for the technique of brainwashing that has sometimes been ascribed to him.

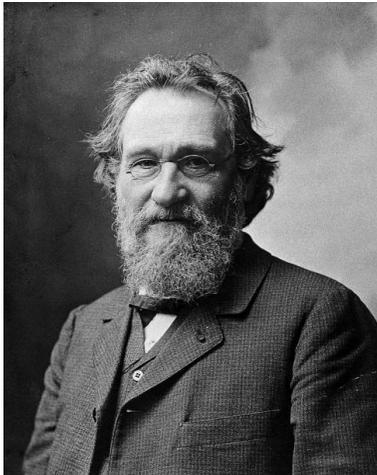
In personal habits I.P. Pavlov was extremely punctual, never missing an appointment, it was claimed, and arriving on time in the laboratory even

when there was revolutionary activity on the streets. To a collaborator, who explained his 10-minute delay as a result of the shooting, I.P. Pavlov exclaimed, "What difference does a revolution make when you have experiments to do in the laboratory!" He was a bold, vehement nonconformist both in science and in his personal life; he fiercely took up the cudgel for what he believed, regardless of the force of his opposition. Although Pavlov held to scientific agnosticism, he considered true religion beneficial; he said that he envied no one anything except his wife her devout religious faith.

I.P. Pavlov's method of studying the normal, healthy animal in natural conditions made possible his contributions to science. He was able to formulate the idea of the conditioned reflex because of his ability to reduce a complex situation to the simple terms of an experiment. Recognizing that in so doing he omitted the subjective component, he insisted that it was not possible to deal with mental phenomena scientifically except by reducing them to measurable physiological quantities.

Although Pavlov's work laid the basis for the scientific analysis of behavior, and not withstanding his stature as a scientist and physiologist, his work was subject to certain limitations. Philosophically, while recognizing the preeminence of the subjective and its independence of scientific methods, he did not, in his enthusiasm for science, clarify or define this separation. Clinically, he uncritically accepted psychiatric views concerning schizophrenia and paranoia, and he adopted such neural concepts as induction and irradiation as valid for higher mental activity. Many psychiatrists now consider his explanations too limited, and some neurophysiologists have taken greater interest in other developments, such as electrophysiology and biochemistry. In contrast to Sherrington, he has had few prominent students outside Russia. His method of working with the normal, healthy, unanesthetized animal over its entire life has not been generally accepted in physiology.

In 1904 Pavlov was awarded the Nobel prize "*in recognition of his work on the physiology of digestion, through which knowledge of vital aspects of the subject has been transformed and enlarged*".



Ilya Mechnikov (15 May 1845 -15 July 1916)

Ilya Mechnikov is one of the founders of evolutionary embryology, the discoverer of phagocytosis and intracellular digestion, the creator of the comparative pathology of inflammation, the phagocytic theory of immunity, the theory of phagocytella. He put forward and developed one of the first concepts of aging, developed a probiotic diet in order to gain a long and healthy life, introduced the term “gerontology” itself. Ilya Mechnikov is called the “father of the theory of innate immunity” (Eng. father of innate immunity) and the “father of gerontology” (although with the latter, as is often the case in science, the situation is ambiguous, and sometimes the definition of “father of gerontology” is also applied to other scientists who developed the study of aging later).

Mechnikov’s scientific works relate to a number of areas of biology and medicine. In 1879, he discovered the pathogens of insect mycoses. In 1866-1886, Ilya Mechnikov developed the issues of comparative and evolutionary embryology, being (together with Alexander Kovalevsky) one of the founders of this direction. He proposed an original theory of the origin of multicellular animals (see Phagocytella theory). Having discovered the phenomena of phagocytosis in 1882 (which he reported in 1883 at the 7th Congress of Russian naturalists and doctors in Odessa), he developed on the basis of his study a comparative pathology of inflammation (1892), and later — the phagocytic theory of immunity (“Immunity in infectious diseases” — 1901; Nobel Prize — 1908, together with P. Ehrlich). Ilya

Mechnikov's numerous works on bacteriology are devoted to the epidemiology of cholera, typhoid fever, tuberculosis and other infectious diseases. Mechnikov together with E. Roux first experimentally caused syphilis in monkeys (1903).

Summarizing the phenomena of the immune function of phagocytosis, Ilya Mechnikov almost immediately pointed out the role of phagocytes in such processes as atrophy, metamorphosis, repair, regeneration, inflammation and infection. Ilya Mechnikov argued that full-fledged immunity can be guaranteed only if all phagocytosis reactions are complete. If at least one of the phases of phagocytosis falls out, the development of the disease is likely. In fact, this was the first scientific explanation of diseases that arise on the basis of immunodeficiency, that is, on the basis of the "loss" of one of the mechanisms of cellular defense. Modern immunologists came to this conclusion only at the end of the XX century, faced with the phenomenon of immunodeficiency caused by the HIV virus.

The discovery of phagocytosis was put by Ilya Mechnikov as the basis of the biological (phagocytic) theory of immunity, which considers the leading role of the macroorganism in the processes of immunity, as well as the basis of the biological theory of inflammation, the theory of atrophy, and later as the basis of his biological theory of aging.

The issues of aging occupied a significant place in Mechnikov's works. He believed that old age and death in humans occur prematurely, as a result of self-poisoning of the body with microbial and other poisons. In this respect, Ilya Mechnikov attached the greatest importance to the intestinal flora. Based on these ideas, Ilya Mechnikov proposed a number of preventive and hygienic means to combat self-poisoning of the body (sterilization of food, restriction of meat consumption, etc.).

The main tool in the fight against aging and self-poisoning of the human body, Ilya Mechnikov considered the Bulgarian lactic acid bacillus - *Lactobacillus delbrueckii* subsp. *bulgaricus*. He was the first in the world to appreciate the significance of the discovery of the Bulgarian student Stamen Grigorov. Back in 1905, Ilya Mechnikov, as director of the Pasteur Institute, invited a young Bulgarian to Paris to give a lecture about his discovery before the luminaries of microbiology of that time.

In 1907, the results of the world's first medical study of the functional properties of Bulgarian bacillus and Bulgarian sour milk were published.

Ilya Mechnikov personally repeated Grigorov's research to make sure of their consistency. In 1908, on the anniversary of the French Academy of Sciences, his article *A few words about sour milk* was published. Studying the issues of aging and collecting data for 36 countries, Ilya Mechnikov found that the largest number of "centenarians" in Bulgaria is 4 per 1000 people. He associated this with Bulgarian yogurt (in Bulgaria it is called *kiselo mlyako* — "sour milk"). In his writings, Mechnikov began to promote the usefulness of Bulgarian yogurt to the general public. Until the end of his life, he regularly consumed not only fermented milk products, but also the pure culture of the Bulgarian stick.

The ultimate goal of the fight against premature old age, Ilya Mechnikov considered orthobiosis — the achievement of «a full and happy cycle of life ending in a calm natural death»[40][41]. On the basis of Mechnikov's teaching about orthobiosis, an interdisciplinary direction «orthobiotics» has developed in modern science.

Ilya Mechnikov created the first Russian school of microbiologists, immunologists and pathologists; actively participated in the creation of research institutions that develop various forms of combating infectious diseases; a number of bacteriological and immunological institutes in Russia are named after Ilya Mechnikov.

In his early works devoted to Darwinism (*An essay on the Origin of Species*, 1876, etc.), Ilya Mechnikov expressed a number of ideas that anticipated the modern understanding of some issues of evolution].

Philosophical views. Ilya Mechnikov adhered to atheistic views, despite a strict religious upbringing in childhood. Classifying himself as a supporter of rationalism («Forty years of searching for a rational world-view», 1913), Ilya Mechnikov criticized religious, idealistic and mystical views.

In a number of works, Ilya Mechnikov touched upon general theoretical and philosophical problems, including the problem of the meaning of human life. The scientist attributed the main role in the progress of mankind to science. Mechnikov believed that in the future science will save a person from the fear of death if it manages to awaken in him the «instinct of natural death», which, according to the scientist, «nests in the depths of human nature in a hidden state» («Studies on human nature. The Experience of optimistic Philosophy», 1903). First of all, science will change human old

age, significantly improving, thanks to the progress of medicine, the quality of life in this period; the ultimate goal of science will be «prolonging life until the moment of satiation with it and feeling the need for non-existence» («Forty years of searching for a rational worldview»), preface to the second edition, 1914). Supporters of life extension celebrate his birthday on May 15 as «Mechnikov Day» (English: Metchnikoff Day) and use it as a memorable date for organizing various activities [8].

V. History and development of Public Health in Russia

The development of medicine and health care in the first half of the XVIII century is inextricably linked with the complex of state reform of Peter 1. His activities were targeted at overcoming the backwardness of Russia in the economy, military affairs, state structure, public life, and science. The initial stage of the formation of Russian medicine of this period was associated with the Moscow military hospital (1707) – the first full-fledged hospital in Russia. The transformations of Peter 1, taking into account the incessant period of wars, were aimed at the development of the medical business and the organization of the medical service of the army and navy, enshrined in the military charter (1716) and the opening of new military hospitals. The importance of medicine for that time is determined, for example, by the fact that the author of the project of the newly created Academy of Sciences and its first president was the life-physician L. Blumentrost.



Lavrentiy Pavlovich Blumentrost (1692-1755)

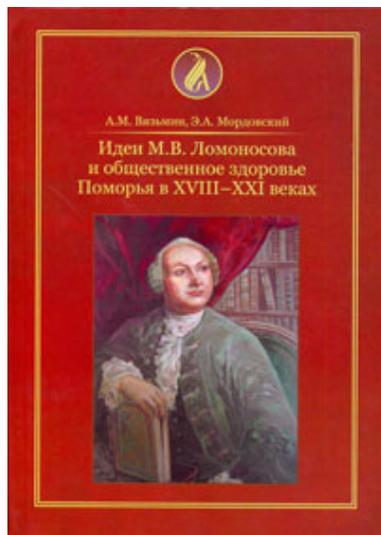
Constant epidemics of infectious diseases, wounds and other surgical pathologies, and catastrophic infant mortality remained the most important social problems of medicine. Improving maternity care has always been one of the main tasks of state medicine. So, according to the project of the Medical Office “on the babichy case” (1754), 15 midwives were assigned to Moscow, and 10 to St. Petersburg, with a preliminary special test of each of them; it was planned to create schools of midwifery in both capitals (they were organized in 1757).); The first maternity shelters were opened in Moscow (1761) and St. Petersburg (1771).

Population health, as extremely important social and economic potential, has always been the subject of attention not only of the scientific community, but also of the state. The problem of population preservation was quite acute in Russia in the XVIII century, where one of the significant obstacles to population growth, along with epidemics and wars, was stillbirth and high infant mortality. A deep socio-hygienic approach to the consideration of issues of public health and population protection was shown by M. V. Lomonosov in the famous letter “On the Reproduction and Preservation of the Russian People” mentioned before.

M. V. Lomonosov proposed a whole system of administrative and public measures to increase the birth rate, reduce morbidity and mortality of the population, which included not only the fight against superstitions, prejudices and harmful customs, but also the improvement of medical care, medical education and health education.

Many social and hygienic ideas of M. V. Lomonosov are developed in a number of his works by A. N. Radishchev.

A remarkable example in this regard is his note «On the law», written during his work in the Commission on the Drafting of Laws in 1801-1802. The great merit of A. N. Radishchev is that he requires a scientific approach to the development of new legislation, and for



this he recommends collecting information (vedomosti) about the state of affairs in all regions of Russia. So, for the sections concerning the welfare of the people, in his opinion, we need data on the number of people in the provinces and districts, on the quantity and quality of land, on the occupations of the population that give them the means to live, on the number of people who go to work, employed in factories and factories, etc. He also emphasizes the importance of trade development. Radishchev recommended that many issues of public health protection be included in the legislation and essentially applied a social and hygienic approach to their justification.

The social and hygienic views of M. V. Lomonosov and A. N. Radishchev were developed in the works of Russian doctors. The most famous in this connection are the speeches of the first Russian professor of the Medicine, S. G. Zybelin (1735-1802). As a Russian physicians S.G.Zybelin was able to focus to an understanding of the social causes of insufficient population growth, to emphasize the negative impact on the birth rate, morbidity and mortality of such social factors as a huge tax burden, sharp social inequality and oppression of the poor. In addition, his great merit is the development of a system of hygienic and social measures to combat morbidity and mortality of the population.



Semyon Gerasimovich Zybelin (1735-1802).

The social and hygienic views of public health were developed in the works of Russian doctors. The most famous in this connection are the speeches of the first Russian professor of the Medicine, S. G. Zybelin (1735-1802). As a Russian physicians S.G.Zybelin was able to focus to an understanding of the social causes of insufficient population growth, to emphasize the negative impact on the birth rate, morbidity and mortality of such social factors as a huge tax burden, sharp social inequality and oppression of the poor. In addition, his great merit is the development of a system of hygienic and social measures to combat morbidity and mortality of the population.

Nestor Maksimovich Ambodik-Maksimovich is one of the founders of scientific obstetrics, pediatrics and pharmacognosy in Russia; a scientist, encyclopedist and educator; one of the creators of Russian medical and botanical terminology.



Ambodik-Maksimovich Nestor Maksimovich (1744-1812)

Graduated from the Kiev Theological Academy (1768). He received his medical education at the University of Strasbourg, where he defended his doctoral dissertation in 1775. After passing the exam at the Medical College for the right to practice in Russia, he began teaching obstetrics at the school of midwives and two St. Petersburg hospital schools. In 1781, he headed an

obstetric school in St. Petersburg. He was the first Russian doctor to receive the title of professor of obstetrics (1782). In this rank, in 1784, he began working at the school for midwives at the St. Petersburg Educational Home.

The scientific and practical activity of N. M. Ambodik-Maksimovich played a huge role in the creation of domestic cadres of doctors and midwives (which at that time practically did not exist). He was the first to teach obstetrics in Russian (before him, the training was conducted in German), believing that this was required by «public and state benefits.» For the first time in Russia, he introduced practical classes both in the maternity ward and on a phantom made according to his own model. He considered theory and practice inseparable: «... speculation and experimentation are connected by an indissoluble union.»

N. M. Ambodik-Maksimovich was a well-known obstetrician-practitioner. He was one of the first in Russia to use complex obstetric interventions, including the operation of applying obstetric forceps. At the same time, he opposed excessive enthusiasm for surgical interventions: «it is necessary to resort to tools in the most extreme necessity, when all measures and methods for the release of the baby have been tested... were.» He introduced a number of surgical instruments into obstetric practice (steel «pliers», i.e. obstetric forceps, a silver female catheter, etc.), proposed his own design of a maternity bed and a gynecological chair. In 1784-1786, he published a major work «The Art of Midwifery, or the Science of Womanhood.» This first original Russian manual on obstetrics and pediatrics in completeness, scientific, modernity was a wonderful manual, which was used by several generations of doctors and midwives (V. S. Gruzdev). «The Art of midwifery» consists of 6 parts and contains extensive information about the anatomy and physiology of the female genital sphere, about obstetric aids and operations, about postpartum diseases; much attention is paid to the physiology of newborns, their feeding, care for them, as well as for young children. N. M. Ambodik-Maksimovich described the diseases characteristic of young children and gave their classification. The manual contains a number of progressive ideas for that time: the need for conservative management of childbirth, the irreplaceability of breast milk, the importance of freedom of movement and fresh air for the proper development of the baby, the importance of a harmonious combination of physical and moral education of children. An atlas of drawings, an index,

and an extensive bibliography are attached to the book. The whole work is well designed (the author partially illustrated it himself) and is an example of the domestic printing art of the 18th century.

N. M. Ambodik-Maksimovich attached great importance to the healing properties of plants. In a number of books devoted to medical botany and drug therapy, he pointed out the importance of studying the domestic flora, as well as the need for comprehensive testing of medicinal plants.

In 1795 N. M. Ambodik-Maksimovich published the first Russian botany in St. Petersburg - «Botany initial foundations». His 3-volume work «Medical theology, or Description of healing plants» (1783-1788) was a kind of encyclopedia of medical knowledge of the 18th century, and also served as a popular treatment center for people who did not have honey. N. M. Ambodik-Maksimovich was a champion of the spread of honey. He fought against ignorance, medicine; translated into Russian several popular medical books.

A great contribution to science was the dictionaries compiled by him, which marked the beginning of the creation of domestic medical terminology. N. M. Ambodik-Maksimovich devoted more than 10 years to compiling dictionaries. He included in the dictionaries not only terms collected «from various printed, ecclesiastical and civil, as well as new, old handwritten books,» but also many terms created by him personally in the process of working on a large number of books and articles. N. M. Ambodik-Maksimovich compiled and published (1780-1804) three dictionaries. In the anatomical and physiological (1783) and medical-pathological-surgical (1785) dictionaries, the terms are given in Russian, Latin and French.

As a scientist, N. M. Ambodik-Maksimovich recognized the primacy of experience in cognition and emphasized the need to link medicine with other branches of natural science. Considering it impossible to study the disease without an accurate knowledge of the structure and function of the organ, he devoted a large place in teaching to the study of anatomy on corpses. The main task of medicine considered the prevention of diseases. The development of the disease was considered from the standpoint of humoral pathology. In the treatment, he proceeded from the individual characteristics of the patient's body, opposing the stencil in the treatment. In matters of protecting the health of the people and combating child mortality, he was a supporter of the ideas of M. V. Lomonosov and believed

that to solve this problem, an increase in the number of doctors and the promotion of medical knowledge among the population.

The first half of the 18th century was characterized in Russia by the struggle for the identity of domestic medicine. Russian Russians had the right to study as a doctor, to teach in Russian, to publish scientific works and textbooks, and to write dissertations. An important role in the development of education and science in the country was played by the Moscow University, which was opened in the middle of the century and had a medical faculty. Until 1786, the training of Russian doctors was conducted in hospital schools, then they were separated from hospitals and became independent medical and surgical schools, since the end of the century (1798), medical and surgical academies were established in St. Petersburg and Moscow.



Imperial Medical and Surgical Academy in St. Petersburg

Professor of the Moscow University E. O. Mukhin (1766-1850) believed that the medical police offered administrative measures to counteract harmful influences on health. To combat child mortality (with quackery and quackery above all), he proposed by creating a cadre of doctors, a network of pharmacies, hospitals, ambulance stations; he stressed that the poor living conditions of the majority of the Russian population contribute to the spread of infectious diseases.



Efrem Osipovich Mukhin (1766-1850)

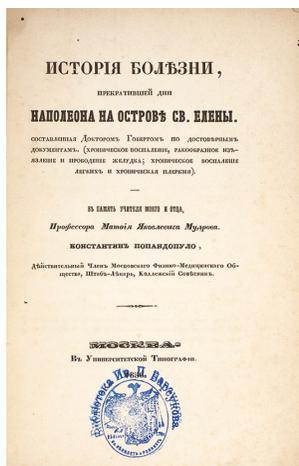
Since the end of the XVIII century, in some countries, the teaching of knowledge that was part of the concept of medical police began. In Russia, the first university professor who initiated the systematic teaching of medical police together with forensic medicine was F. F. Keresturi (1735-1811), the author of the original speech “On medical Police and its use in Russia” (1775). In 1802-1806, Professor N. Y. Dyakov taught such a course at the St. Petersburg Medical and Surgical Academy. In 1843, Prof. N. P. Pelekhin, who held the post from 1837 to 1846. the Department of Forensic Medicine, Hygiene and Medical police in this academy, asked to allocate a special department of general state medicine, in the course of which, in his opinion, should have included the medical police, consisting of two parts — national hygiene and national medicine and medical regulations and forensic medicine.

In Russia, the first clinics were organized with a noticeable delay from Europe – at the beginning of the 19th century at the Moscow University and the St. Petersburg Medical and Surgical Academy. The reforms of Alexander 1 finally buried the idea of centralization of public health that came from Peter 1 – instead of a single Medical board, medical affairs in Russia were led by the Medical Department of the Ministry of Domestic Affairs (medical and sanitary - police control) and the Medical Council (an advisory body on medical science).

The war of 1812 was not only the impetus for the further development of military field surgery, but also the emergence of a new direction in medicine – military field therapy, the founder of which is M. Ya. Mudrov. By the way, Matvey Yakovlevich Mudrov is the author of the creation of the first accounting and statistical medical document in our country – Medical History.



Matvey Yakovlevich Mudrov (1776-1831)



The Decembrist uprising of 1825 was the cause of the reactionary policy of the state - «arakcheevschina». Doctors were banned from traveling to Europe to learn new medical technologies, and pathologo-anatomical autopsies of the dead, teaching anatomy on sectional material, and so on were banned. In relation to the St. Petersburg, Kazan and other universities, the actions of the Ministry of Spiritual Affairs and Public Education (according to N. M. Karamzin's sarcastic definition – «the ministry of eclipse») is characterized as a pogrom of universities. The infamous trustee of the Kazan school district, M. L. Magnitsky, in order to limit «disastrous materialism», ordered the funeral service and burial of the anatomical preparations of the university museum according to the church rite.

The revolutionary, populist moods of Russia in the 2-nd half of the XIX century led to atheistic, materialistic views, which in particular served to dominate a special direction of domestic medicine that was relevant for al-

most a century and a half – «nervism» (the doctrine that seeks to extend the influence of the nervous system on as many functions of a healthy and pathological organism as possible). The abolition of serfdom (1861), the zemstvo, judicial, censorship, university, military and other reforms carried out by Alexander II affected all aspects of the country's life and prepared its rapid movement along the European capitalist path in the late 19th and early 20th centuries. Zemstvo medicine played a progressive role in the development of medical support for rural residents, was a major step forward, a new original phenomenon of the organization of health care not only in Russia, but worldwide. In addition to providing medical and sanitary care, progressive, advanced doctors of zemstvo medicine conducted a number of social and hygienic studies, sanitary descriptions of localities. Numerous works of the zemstvo sanitary statisticians concerned demography, morbidity and physical development of the population, issues of the sanitary condition of individual localities, working conditions of factory and agricultural workers, artisans, etc. Public health research was very important, it was the zemstvo sanitary statistics that first began to study the incidence. Zemstvo medicine was characterized by all the main features of domestic medicine-preventive, sanitary and hygienic orientation, professional humanism and dedication. The activities of prominent zemstvo doctors characterized public health activities. In the works of many representatives of zemstvo medicine, advanced ideas of prevention were widely spread [9].



I. Tvorozhnikov. «Off-road in the Tver province. Zemsky doctor». Zemskaya district hospital in Nizhny Novgorod province

It this period Russia was under the influence of the social movement, the zemstvo and factory reforms, that the foundations of public hygiene as

a science and educational discipline about public health and its management were first formed, which at the beginning of the XX century was stated as social hygiene. In the Russian literature, the term “social hygiene” was first used by the doctor V. O. Portugalov in the his book “Questions of public hygiene”. Both the term itself and the so – called “social-hygienic” approach were revolutionary for that time and had a great resonance in society.



Samara Zemsky doctor V. O. Portugalov (1835-1896)

In 1871. The Society of Doctors of Kazan approved the program of activity of doctors-hygienists, compiled by V. O. Portugalov. The hygienic doctor was charged with the duty of a detailed study of the area in which the population served by him lives, climatic and living conditions in order to determine the causes of the disease and develop proposals for their elimination. More successful in this direction was the activity of students of Kazan University I. I. Molleson, E. L. Osipov, P. F. Kudryavtsev, N. I. Tezyakov and others outside the Kazan province. In particular, the outstanding zemstvo doctor I. I. Molleson (1842-1920) in his pamphlet “Zemskaya meditsina” outlined a similar program [10].

A consistent study of socio-demographic problems was carried out by S. A. Novoselsky. In his book Mortality and Life Expectancy in Russia

(1916), he demonstrated the experience of constructing the first complete Russian table of mortality. In his opinion, “mortality can fairly be recognized as the best measure of the vitality and living conditions of the population, reflecting the impact on health and longevity of a combination of various sanitary, economic, social and other factors.” [11].

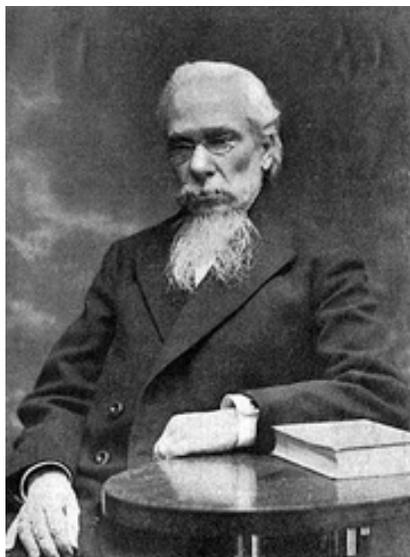
During the period when in Russia in the last decade of the XIX century and the first decade of the XX century, the so – called “public medicine” developed on the basis of the public organization of medical care (first of all, independent of the imperial power in St. Petersburg-city and zemstvo medicine), separating from general hygiene.

During this period, a significant role in the dissemination of social and hygienic knowledge was played by the progressive organs of the Russian medical periodical press. On the pages of these magazines, articles were published that contained descriptions of unsanitary working and living conditions, demands were made for improving the social, economic and sanitary conditions of the people, for organizing medical services, for the need for sanitary education of the population, etc. This was primarily the “Archive of Forensic Medicine and Public Hygiene” in 1865-1870, when its editor was S. P. Lovtsov (1823-1876).

For the advanced Russian doctors who absorbed the views of the ideologists of revolutionary democracy A. I. Herzen, N. G. Chernyshevsky, N. A. Dobrolyubov and their followers, the idea of serving the people was the main incentive for all their activities. The desire to facilitate the living conditions of the population, to awaken its self-consciousness, to create human conditions of existence, to give their knowledge to prevent its moral and physical degeneration characterize not only the Russian medical periodical press of that time, but also the activities of most medical societies that emerged in the early 60s in all major cities of Russia [12].

A great impact to the study of the sociological aspects of the of public health was made by progressive doctors, statisticians and demographers. E. M. Dementiev (1850-1918) in the monography “Medical assistance to factory workers” (1899) carefully considered the legal framework for providing medical care and identified its three main forms: 1) hospitals established and maintained at the expense of factory owners. In these cases, the workers receive outpatient treatment and full care and maintenance in hospital beds; 2) emergency rooms, arranged and maintained at the expense of the owners of factories - in them, mainly, outpatient treatment is carried

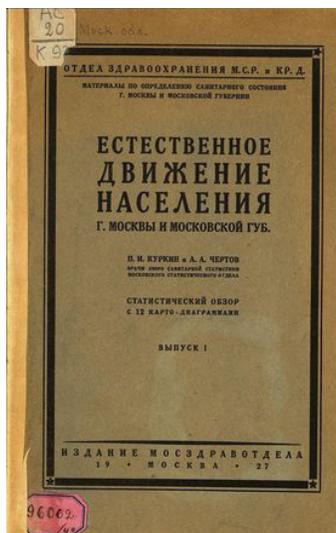
out and rarely-short-term maintenance of bed patients; 3) outpatient clinics and emergency rooms, where doctors and paramedics on salary are “on demand” - “in fact, there is no medical care”.



Evstafy Mikhailovich Dementyev (1850-1918)



A notable figure among the specialists who changed the statistical and sociological study of public health problems was P. I. Kurkin (1858-1934), who proposed the» scheme « and delivered by him at the All-Russian Meeting of 1912 (at the Pirogov Society), hygiene statistics were he divided into branches: 1) Statistics of medical care; 2) Statistics of the sanitary condition; 3) The population, the physical and social conditions of its life style (including item 3 «The economic situation of the population, attitude to the land, crafts and occupations, peasant financing»); 4) The morbidity of the population; 5) Natural movement (death rate and birth rate of the population (including item 3 «Statistics of causes of death of the rural and factory population»); 6) Physical development of the population. The real contribution of P. I. Kurkin is that at the beginning of the XX century he insisted on the transition from a continuous» one-dimensional « mass observation to a selective, in-depth, differentiated study of general morbidity [13].



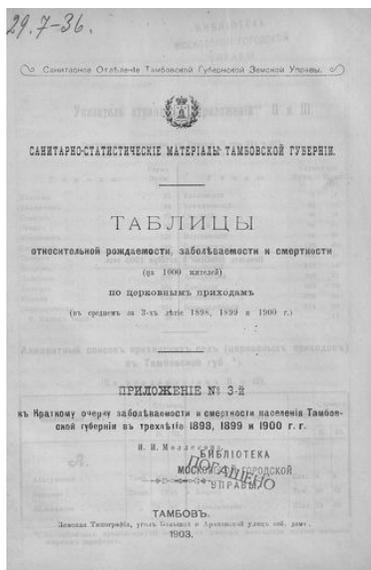
Pyotr Ivanovich Kurkin (1858-1934))

Studies conducted under his leadership have established a different ratio of disease forms in different socio-economic and professional groups to the overall average incidence rates for the entire population of a given district, province or country. In 1908-1910, P. I. Kurkin justified the method of selective research of individual localities and selected population groups. In 1912, he published a remarkable “Scheme for the construction of zemstvo sanitary statistics”. The true merit of P. I. Kurkin is served by the fact that at the beginning of the XX century he insisted on the transition from a continuous” one-dimensional “ mass observation to a selective, in-depth, differentiated study of general morbidity.

Realizing that the study of the morbidity of the population and its causes is of great importance for the development of public medicine, A.V. Petrov included in the program of the permanent sanitary commission of the Society for the Study of the Region in sanitary terms (1870) the collection of information about morbidity and the study of the influence of environmental conditions on the health of the population. At this time, the issue of the need to train special sanitary personnel and create a sanitary organization was particularly acute.

In 1872, the Perm Provincial Zemstvo Board organized a permanent

sanitary commission and invited I. I. Molleson, who became the first sanitary doctor in Russia. I. I. Molleson immediately launched sanitary and statistical studies of Perm and the entire province according to the program adopted by the Society of Doctors of Kazan. In addition, he developed a new program for medical and statistical descriptions, highlighting the statistics of child mortality, which by this time was recognized as the main cause of high mortality in Russia, and the statistics of morbidity, indicating the social causes that give rise to it. His most important work is “Tables of the relative birth rate, morbidity and mortality (per 100 inhabitants) by church parishes (in the average for the 3rd anniversary of 1898, 1899 and 1900)”. -1903.



Ivan Ivanovich Molleson (1842-1920)

An important milestone in the history of social hygiene was the well-known classical study by F. F. Erisman, E. M. Dementiev and A.V. Pozoghev of factory enterprises in the Moscow Province in 1879-1885 (I. D. Strashun, 1955; M. E. Stankova, 1974). This research was carried out due to the historical situation of that time, characterized by the rapid growth of capitalist production, the industrial proletariat and the development of

the labor movement in Russia. The research program developed by the Sanitary Commission of the Moscow Provincial Zemstvo under the leadership of E. A. Osipova, was adopted by the Third Congress of doctors of the Moscow province (1878). The results of the study were summarized in 17 volumes and 2 additional issues — “Collection of statistical data on sanitary research of factories and plants of the Moscow province for 1879-1885” (1881 -1893).

The social and hygienic orientation of views in the activities of F. F. Erisman was also expressed in his ideas about the scope of duties of a sanitary doctor. F. F. Erisman emphasizes that his activities should not be limited only to the police side of the sanitary case, that the actions of the doctor should be aimed at eliminating “unfavorable living conditions”. Erisman argued for the need to create industrial and sanitary legislation in Russia in the interests of protecting the health of workers, the proper maintenance of factories and residential premises, and the organization of medical care for the factory population. At the VII Congress of doctors of the Moscow province (1884), F. F. Erisman expressed the idea that monitoring the health of workers should be carried out not by district doctors, but by zemstvo doctors.

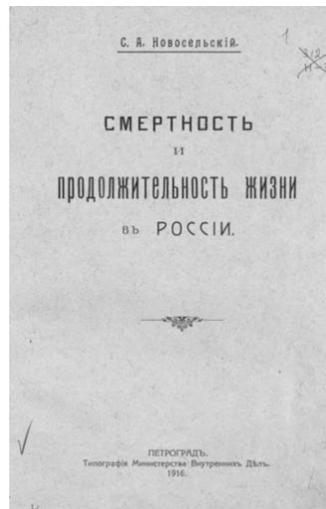


Fyodor Fyodorovich Erisman (1842-1915)

The research of F. F. Erisman and his colleagues had a great influence on the formulation of the work of the factory inspection, which was es-

established in Russia in 1882, headed by the famous economist prof. I. I. Yanzhul (1846-1914).

Prominent public doctors S. M. Bogoslovsky (E. I. Notkii, 1972), who laid the foundations of occupational morbidity statistics, and S. A. Novoselsky, the author of a number of major works on demography and methods of sanitary statistics, made a great contribution to the study of the influence of working conditions and the life of workers. The research on the health of the industrial workers of Russia, which showed the social causes of the difficult situation of the Russian proletariat, its high morbidity and mortality, on the basis of a huge sanitary and statistical material, was of great importance for the development of social hygiene in our country. In the process of their implementation, methods of work were developed, conclusions and generalizations were made, which were used in the subsequent time, including by the Soviet social-hygienists.

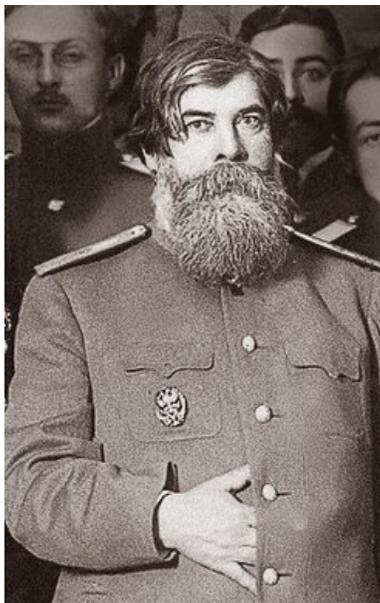


Sergey Aleksandrovich Novoselsky (1872-1953)

Research on the health of agricultural workers and the rural population has also played an equally important role in the development of social hygiene in Russia.

The issues of child mortality were repeatedly discussed at provincial congresses of zemstvo doctors. The most active was the activity of the

Voronezh County Sanitary Council, which conducted a detailed study of several parishes with particularly high infant mortality. According to the report of the sanitary doctor of the provincial zemstvo V. P. Uspensky, the district sanitary Council (1900) adopted a resolution and developed a program of research by district doctors of the causes of sanitary problems of parishes, published in the “Medical Chronicle of the Voronezh Province” (1901, No. 2).



Vladimir Mikhailovich Bekhterev (1857 - 1927)

V.M. Bekhterev is an outstanding Russian and world-famous encyclopedic scientist: neurologist, psychiatrist, morphologist, physiologist, psychologist, founder of the national school of psychoneurologists. In 1881, Bekhterev defended his dissertation for the degree of doctor of Medicine on the topic: “The experience of clinical research of body temperature in some forms of mental illness,” and on November 20 of the same year he received the academic title of privatdozent. As a candidate for an internship, V.M. Bekhterev submitted 58 papers to the competition commission on various issues of experimental research and the clinic of nervous and mental diseases, and on 01. 06. 1984, by the decision of the Academy Con-

ference, he was sent on his first scientific trip abroad to Germany. V.M. Bekhterev attended lectures by Westphal, Mendel, Dubois-Raymond, etc. famous German scientists who studied the nervous system. Then, in Leipzig, he worked with the largest neurologist and morphologist of that time, P. Flexig, to whom he soon dedicated his first fundamental monograph “Conducting pathways of the spinal cord and brain”. Here he began to study psychology in the laboratory of the famous V. Wundt. In December 1884, V.M. Bekhterev received an official invitation to occupy the Department of Psychiatry at Kazan University. He accepted this invitation with some conditions, one of which provided for the completion of a full program of scientific business trip. After Leipzig, Bekhterev visited Paris, where he will get acquainted with the work of the great J. Charcot, and then Munich (clinic of Prof. Gudden), and completed a business trip in the summer of 1885 in Vienna at the clinic of Prof. Meinert.

In the autumn of 1885, V.M. Bekhterev started working at Kazan University. He reorganized the Department of Psychiatry, at which he soon organized the first psychophysiological laboratory in Russia, where V.M. Bekhterev began to study the morphology of the nervous system. During the Kazan period of his life, V.M. Bekhterev enriched science with discoveries in the field of anatomy and physiology of various structures of the brain and spinal cord. These studies were summarized in the monograph “Conducting pathways of the spinal cord and brain” (1893). German Professor F. Kopsch (1868-1955) claimed that “only two people know the anatomy of the brain perfectly – this is God and Bekhterev.” In 1892, V.M. Bekhterev initiated the creation of the Kazan Neurological Society, and in 1893 he created the journal Neurological Bulletin, of which he was the editor for many subsequent years.

On September 26, 1893, V.M. Bekhterev, instead of his teacher I.P. Merzheevsky (1838-1908), who retired due to seniority, headed the Department of Mental and Nervous Diseases of the Military Medical Academy. The research started in Kazan continued here, and ended with the publication in 7 parts in 1903-1905 of the monograph “Fundamentals of the doctrine of brain functions”.

In St. Petersburg in 1896 V.M. Bekhterev created the journal “Review of Psychiatry, Neurology and Experimental Psychology”, and in 1897 the newly built clinic of nervous diseases of the Military Medical Academy

(Lesnoy Ave., 2) was opened, in which a special operating room was organized for the surgical treatment of some nervous and mental diseases.

In 1899, V.M. Bekhterev was elected an academician of the Military Medical Academy and awarded the gold medal of the Russian Academy of Sciences. A year later (in 1900) V.M. Bekhterev was awarded the Baer Prize of the Russian Academy of Sciences for the monograph “Conducting pathways of the spinal cord and brain”. In the same year, he was elected chairman of the Russian Society of Normal and Pathological Psychology and professor of the Women’s Medical Institute in the Department of Nervous and Mental Diseases.

During the winter of 1905-1906, V.M. Bekhterev served as the head of the Military Medical Academy. During these years, his scientific interests were already directed to the study of psychology – in 1903, he first proposed the creation of a Neuropsychiatric Institute. These plans were successfully realized in 1907. In the same year, V.M. Bekhterev received the title of Honored ordinary professor.

Creation of a Psychoneurological Institute. Over the next four years, full of troubles on the creation of the institute, V.M. Bekhterev completed a three-volume monograph “Objective Psychology”. In 1911, the Institute’s first own buildings appeared in the so-called Tsarskoye Gorodok behind the Nevsky Outpost, built by the famous specialist in the construction of medical institutions, the court architect R. F. Meltzer (1860-1943). In the same year, 1911, V.M. Bekhterev published a monograph “Hypnosis, suggestion and hypnotherapy and their therapeutic value.” In 1912 An Experimental Clinical Institute for the Study of Alcoholism was opened in the structure of the Psychoneurological Institute,

After V.M. Bekhterev’s speech on the “Beilis Case” in 1912, on October 5, an order came from the Minister of Public Education L.A. Kasso (1865-1914), in which L.A. Kasso did not find it “possible to approve Academician Privy Councilor Bekhterev for the new fifth anniversary, with the title of president of the Institute.” At the same time, V.M. Bekhterev was dismissed from the Military Medical Academy and from the Women’s Medical Institute.

During the First World War, V.M. Bekhterev contributed to the conversion of the Neuropsychiatric Institute into a Military hospital, which operated a first-class neurosurgical department, later transformed into Rus-

sia's first Neurosurgical Institute. In 1916, the educational units at the Psychoneurological Institute were transformed into a Private Petrograd University.

The Soviet period of life. V.M. Bekhterev accepted the Revolution of 1917, and from December 1917 began working in the scientific and medical department of the People's Commissariat of Education. Since 1918, he has already been a member of the Scientific Council at the People's Commissariat of Education, and in the same year he managed to organize an Institute for the Study of the Brain and Mental Activity (the Brain Institute), for which the government allocated the building of the Palace of Grand Duke Nikolai Nikolaevich Jr. (Petrovskaya nab., 2). Research within the framework of a new scientific direction, called reflexology by V.M. Bekhterev, began in full swing at the Institute. In the same year, his monograph "General Principles of Reflexology" was published.

In 1918, the Private Petrograd University at the Psychoneurological Institute received the official status of the Second Petrograd University. But in 1919, the higher school was reorganized in Petrograd, as a result of which the law and pedagogical faculties were transferred to the First Petrograd University, the medical faculty was transformed into the State Institute of Medical Knowledge (GIMZ), the chemical and pharmaceutical department into the Chemical and Pharmaceutical Institute, the veterinary faculty into the Veterinary and Zootechnical Institute. Thus, the created system of training at the University at the Neuropsychiatric Institute was so perfect that, if necessary, individual faculties and even departments were turned into independent higher educational institutions without much difficulty.

From 1920 to the end of his life, V.M. Bekhterev was a deputy of the Petrograd Soviet, taking an active part in the work of the permanent commission on public education.

In 1921, V.M. Bekhterev achieved the reorganization of the system of research institutions of the Psychoneurological Institute into the Psychoneurological Academy and was elected its President. In the same year, V.M. Bekhterev published a monograph "Collective reflexology". During this period, the scientist paid much attention to the study of the physiology of labor processes of various professions and issues of scientific organization of labor.

In 1927, V.M. Bekhterev received the title of Honored Scientist. On December 24, 1927, during the work of the First All-Union Congress of Neuropathologists and Psychiatrists in Moscow, at which V.M. Bekhterev made a report, he died suddenly. The circumstances of the illness during the day, the lack of professionalism of the treatment, the peculiarities of the pathoanatomical autopsy (only the brain was extracted and examined), the hasty cremation of the body in Moscow and the subsequent oblivion of the scientist for 30 years suggest the violent nature of death. The urn with the ashes of V.M. Bekhtereva, kept for many years in the memorial museum of V.M. Bekhtereva, was buried on the Literary Bridges only in 1970. The author of the tombstone monument is M.K. Anikushin (1917-1997).

Resume. "Systematic index of V.M. Bekhterev's works and speeches printed in Russian", compiled by O.B. Kazanskaya and T.Ya. Khvilivitsky in 1954, contains about a thousand titles. These works reflect: V.M. Bekhterev's discoveries in the morphology and physiology of the nervous system, the description of 19 new forms of diseases in neuropsychiatry, the invention of many new methods of diagnosis and treatment, etc. It is known that V.M. Bekhterev conducted about a thousand forensic psychiatric examinations. The journal "Bulletin of Knowledge" in 1926 published a list of institutions and journals that arose on the initiative and with the direct participation of Vladimir Mikhailovich: institutions - 33, journals - 10. To these data, subsequent studies of the scientist's creativity allowed us to add 17 more institutions and 2 journals. The work on the bibliography of V.M. Bekhterev's works continues and currently 1,350 works published in various journals and individual publications in Russian and about 500 in other languages, mainly in German, have been established. However, the complete works have not yet been published.

In 1957, for the 100th anniversary of the scientist, the street on which the Psychoneurological Institute is located was named Bekhterev Street, in 1960 a monument was erected to him in front of the main building of the institute (sculptor - M.K. Anikushin), a memorial plaque was placed on the building "The founder of the Psychoneurological Institute academician V. M. Bekhterev worked here from 1908 to 1927", Since 1925. The Psychoneurological Institute bears his name.

V.M. Bekhterev's brilliant abilities, inquisitive mind, unyielding perseverance in achieving the set goal and incomparable ability to work were aimed at

consistently solving the most difficult problems of medical theory and practice in the study, treatment and prevention of neuropsychiatric diseases [14].



Georgy Fedorovich Lang (1875-1948)

The years of Dr. George Fedorovich Lang's life fell on the second half of the XIX and the first half of the XX century. He was an outstanding general practitioner, thanks to whom modern medicine has a clear and consistent classification of diseases of the heart, blood vessels and other organs, human systems.

A brilliant clinician, scientist, gifted with versatile talents, he made a huge contribution both to the field of healthcare in general and to the field of medical education. Lang spent his whole life scrupulously studying internal diseases. A special place among them was occupied, of course, by cardiovascular pathologies, but he paid no less attention to other medical sections.

Medical workers in our country rightly give Dr. Lang the primacy in the creation of the Soviet cardiology school. For more than thirty years, Georgy Fedorovich devoted himself to the in-depth study of blood pressure, hypertension, heart and vascular diseases. It was he who published several of the first serious works in which he described hypertension from all possible angles - such as doctors know it now. Lang has a monograph dedicated to GB, for which he was posthumously awarded the State Prize.

During his lifetime, G.F. Lang managed to found one of the largest therapeutic schools in our country. He was engaged in various sections devoted to internal diseases: cardiology; liver diseases; lung diseases, etc.

The most famous classification and names of heart and vascular diseases were developed by Lang. He also introduced the concept of reversible disorders of biochemical processes in the myocardium (we are talking about myocardiodystrophy as one of the severe consequences of cardiac disorders). He investigated and described several intermediate types of pathological conditions that could be conditionally placed between a heart attack and angina pectoris.

According to Georgy Fedorovich, hypertension can act as a manifestation of neurosis of the nerve centers responsible for regulating the tone of the vascular bed. He has developed an effective set of preventive measures to prevent the occurrence of such a condition.

Diagnosis of myocardial infarction using electrocardiography was developed in the USSR by specialists of the clinic, which was headed by G.F. Lang. Here, doctors have studied in detail all aspects of this dangerous disease. He also approached the study of problems related to rheumatism responsibly, studying in detail the clinic of cardiac pathologies of rheumatic origin.

The scientist was no less interested in hematology than in other disciplines. He helped organize the hematology department at the clinic. In the future, on its basis, specialists studied the relationship between hematopoietic processes and mechanisms associated with the destruction of blood [15].



V.P. Obratsov (1849 - 1920)

Vasily Parmenovich Obratzov is a Russian clinician, one of the founders of the Kiev school of Soviet therapists.

After graduating from the Medical and Surgical Academy in 1875, he worked as a zemstvo doctor in the Vologda province, then (1877-1878) as a military doctor during the Russian-Turkish war. In 1880 he defended his doctoral dissertation on the topic “On the morphology of blood formation in the bone marrow in mammals”, worked in a military hospital in Kiev. Since 1888, the head. therapeutic department of the Kiev City Hospital; since 1891, private associate professor, since 1893, professor of the Department of Private Pathology and Therapy, and in 1904-1918, head of the department of the Faculty therapeutic clinic of the Kiev University.

V. P. Obratzov has published over 50 scientific papers, mainly devoted to improving the methods of clinical research, the study of diseases of the cardiovascular system and organs of the gastrointestinal tract. He developed a method of palpation of the stomach and intestines (1887), and then other abdominal organs; proved that not only with pathological changes, but also in a healthy person, it is possible to probe the stomach, the final segment of the small intestine, most of the large intestine, liver. Methodical deep sliding palpation of abdominal organs, Obratzov received general recognition; this technique was supplemented and improved by his students. V. P. Obratzov proposed a special method of direct listening to the heart (1900), which allows recognizing the heart gallop and the third tone of the heart, developed an original method of direct percussion with one finger of the thoracic and abdominal organs (1910), widely used in the clinic. He singled out enterites as an independent wedge. form (1895), described the clinic of various forms of appendicitis, improved the diagnosis of a number of other gastrointestinal diseases (enteroptosis, gastric dilatation, tuberculosis of the cecum, Treitz hernia, etc.). Paid special attention to determining the functional ability of the heart directly at the patient’s bedside; developed the doctrine of the mechanism of bifurcation of heart tones and gallop rhythm, described the clinic of heart neuroses. The classical description of V. P. Obratzov (together with N. D. Obratzov) has received international recognition. Strazhesco of the clinical picture of coronary artery thrombosis (1909), which justified the possibility of lifetime recognition of myocardial infarction; with the introduction of electro- and phonocardiography into the clinic, V. P. Obratzov’s views were fully confirmed.

Being an outstanding clinician, V.P. Obratsov created a therapeutic school widely known in Russia and abroad; many of his students, including N. D. Strazhesco, M. M. Gubergritz, G. R. Rubinstein, B. I. Trusevich and others, became heads of departments [16].



N. D. Strazhesco (1876 - 1952)

Nikolai Dmitrievich STRAZHESKO (1876-1952) was a Soviet therapist, academician of the USSR Academy of Sciences (1943), the Academy of Sciences of the USSR (1934) and the USSR Academy of Medical Sciences (1944), Hero of Socialist Labor (1947), Honored Scientist (1934).

He graduated from the Medical Faculty of Kiev University in 1899 and worked under the guidance of B. P. Obratsov at the Clinic of Internal Diseases of Kiev University. In 1904 he defended his doctoral dissertation “On the physiology of the intestines”, performed in the laboratory of I. P. Pavlov. From 1907 to 1919 he was a professor at the Kiev Women’s Medical Institute, since 1919 head of the Department of Therapy at the Novorossiysk University, since 1922 director of the propaedeutics clinic, and then the hospital clinic of the Kiev Medical Institute. From 1929 to 1952, Director of the faculty clinic of the same Institute. During the Great Patriotic War, he worked as a consultant at the M3 hospitals of the USSR, was a professor at the departments of therapy of the Bashkir Med. institute and 1st MMI. Since 1943, Director of the Ukrainian Institute of Clinical Medicine organized by him (now named after N. D. Strazhesko).

N. D. Strazhesko is the author of more than 100 scientific papers devoted to various issues of the clinic and treatment of internal diseases.

Published jointly with V. P. Obratsov, the work “On the symptomology and diagnosis of coronary artery thrombosis of the heart” (1910), in which for the first time in the world a detailed description of various wedges, forms of myocardial infarction was given and its main pathogenetic link was revealed, brought him worldwide fame. He also studied the problems of physiology and pathology of the organs of the gastrointestinal tract (stomach, intestines and liver), the use of strophanthin as a drug for heart diseases. His monograph “Fundamentals of physical diagnosis of abdominal diseases” (1924) became a classic work. N. D. Strazhesko paid special attention to the clinical and experimental study of the pathology of the circulatory organs. He described a number of syndromes and symptoms in cardiovascular diseases, developed the doctrine of functional circulatory insufficiency, together with V. X. Vasilenko created a classification of circulatory insufficiency, scientifically substantiated the theory of rheumatism as an infectious and allergic disease of streptococcal etiology, revealed the relationship between sepsis, endocarditis and rheumatism, described the regularities of the ratio of cardiac asthma and angina pectoris (chest toad). He has conducted research on so-called chronic infections, as well as wound sepsis, allergies, geriatrics, hematology, shock, tuberculosis, etc. Name of N. D. Strazhesko has a number of symptoms described by him: a symptom of a tumor of the head of the pancreas, a sign of complete atrioventricular heart block — Strazhesko cannon tone, a symptom of perigastritis - Strazhesko phenomenon [17].

VI. Development of medicine and public health in Russia from Soviet period till nowadays. Outstanding Russian scientists, physicians, health care organizers and their contribution in the different fields of medicine

The establishment of health care system during the Soviet period is associated with the names of prominent names of the Soviet health care system Nikolai A. Semashko and Zinovy P. Solovyov.

Semashko, Nikolai Aleksandrovich. Born Sept. 8 (20), 1874, in the village of Livenskoe, Elets District, Orel Province; died May 18, 1949, in Moscow. Soviet party and state figure; a founder of the Soviet public health

system. Academician of the Academy of Medical Sciences of the USSR (1944) and of the Academy of Pedagogical Sciences of the RSFSR (1945). Member of the Communist Party from 1938.



Nikolai Alexandrovich Semashko (1874-1949)

The son of a teacher, N.A. Semashko enrolled in the faculty of medicine at Moscow University in 1891. He joined a Marxist circle in 1893. In 1895 he was arrested for participating in the revolutionary movement and exiled to his native village under open police surveillance. He graduated from the faculty of medicine at the University of Kazan in 1901 and practiced medicine in Orel and Samara provinces. Semashko became a member of the Nizhny Novgorod Committee of the RSDLP in 1904; he helped organize the strike at the Sormovo Plant during the events of 1905 and in consequence was again arrested.

In 1906, N.A. Semashko emigrated to Geneva, where he first met V. I. Lenin. In August 1907 he represented the Geneva Bolshevik organization at the Stuttgart Congress of the Second International. In 1908 he moved to Paris with the Bolshevik center abroad and served as secretary of the Central Committee Bureau Abroad until 1910. He participated in the work of the Party School at Longjumeau in 1911.

At the Sixth (Prague) All-Russian Conference of the RSDLP (1912), N.A. Semashko delivered a report on workers' insurance; his draft resolu-

tion was edited by Lenin and adopted at the conference. N.A. Semashko took part in the social democratic movement in Serbia and Bulgaria in 1913. He was interned early in World War I (1914–18). Upon returning to Moscow in September 1917, he was elected chairman of the Piatnitskaia District Administration from the Bolshevik faction; he also served as a delegate to the Sixth Congress of the RSDLP(B). N.A. Semashko helped prepare for the October armed uprising in Moscow and set up medical aid for its participants.

After the October Socialist Revolution of 1917, N.A. Semashko headed the medical and sanitation section of the Moscow soviet. He was the first people's commissar of public health of the RSFSR, holding this post from July 1918 to 1930. Under his supervision, the work of controlling epidemics was successfully carried out and the Soviet public health system was established; the systems of health care for mothers and children and for children and adolescents were founded, and a network of medical scientific research institutes was established.

From 1921 to 1949, N.A. Semashko was a professor in the sub-department of social medicine of the faculty of medicine at Moscow University (the faculty was called the First Moscow Medical Institute beginning in 1930), also serving as the sub-department's chairman. From 1930 to 1936 he worked on the All-Russian Central Executive Committee as a member of the presidium and chairman of the Children's Commission, which was charged with the rehabilitation of homeless children and the supervision of preventive medicine at children's health institutions.

From 1945 to 1949, N.A. Semashko was director of the Institute of School Hygiene of the Academy of Pedagogical Sciences of the RSFSR. From 1947 to 1949 he also served as director of the Institute for the Organization of Public Health and the History of Medicine of the Academy of Medical Sciences of the USSR (beginning in 1965, the institute was called the N.A. Semashko All-Union Scientific Research Institute of Social Medicine and the Organization of Public Health). N.A. Semashko was instrumental in the founding of the Central Medical Library (1918) and the House of Scholars (1922), both in Moscow. He was editor in chief of the Great Medical Encyclopedia from 1927 to 1936. In 1923 he became the first chairman of the Supreme Council on Physical Culture and Sports, and from 1940 to 1949 he served as chairman of the All-Union Hygiene So-

ciety. N.A.Semashko was awarded the Order of the Red Banner of Labor, and several medals.



Zinovy Petrovich Solovyov (1876-1928).

In January 1920 Z. P. Solovyov headed the Main military sanitary Department of the “Workers and peasants” Red army. On the initiative of Z. P. Solovyov in 1925 in the Crimea on the black sea coast the all-Union pioneer camp «Artek“ was created.

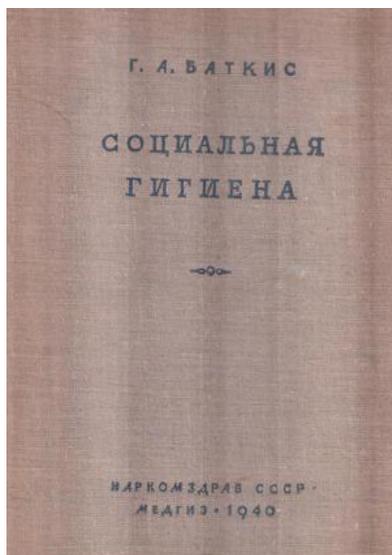
In his works «Ways and crossroads of modern medicine», «Preventive tasks of medical care», “What doctors should be prepared by the higher medical school», «Scientific bases of military-sanitary service» the questions of organization of medical business and medical education in the country .

It was not so many textbooks on social hygiene on that time. One of the first which appeared were books, written by T. Ya. Tkachev (1924) and Z. G. Frenkel (1923, 1926). A new journal “Social Hygiene” was published since 1922, in which main topics were devoted health care issues, scientific research and teaching of social hygiene.

The first clinic of social and occupational diseases was the opening in 1924 in Moscow, where clinicians together with specialists in the field of social hygiene studied the most actual issues etiology of the diseases, the role of professional and industrial risk factors in the occurrence of diseases, developed methods for the diagnosis, treatment and prevention of a number of social and professional diseases.

Famous scientist professor P. A. Kuvshinnikov established an independent department of medical statistics was in 1935.

In 1936 new textbook “Social Hygiene” (G. A. Batkis) was published, which was reprinted many times and played a great positive role in the training of doctors in the field of social hygiene and health care organization. It was in this textbook that the classical scheme of studying the health of the population (demographic indicators, morbidity and disability, indicators of physical development) was proposed, which is taught in medical universities in our time.



Grigory Abramovich Batkis (1895-1960)

I. D. Strashun (1892-1967), who from 1921 to 1930 headed the Department of Sanitary Education of the People’s Commissariat of Health of the RSFSR and was the organizer and government commissar of the Soviet pavilion at the International Hygiene Exhibition in Dresden in 1930, played a significant role in promoting the social and hygienic direction. He is credited with organizing the successful work of the Museum of Social Hygiene, creating the first Soviet sanitary and educational films, and educating the first Soviet personnel of sanitary and educational workers.

One of the first textbooks is “Social hygiene. Manual for Medical students and doctors” was published in 1927 under the editorship of A.V. Molkov with an introductory article by N. A. Semashko. It includes two parts. The first part was called “Basic methods for studying the sanitary state of the population” and was devoted to sanitary statistics (P. I. Kurkin), the question of average values (P. A. Kuvshinnikov) and anthropometry (V. V. Bunak). The second part, entitled “Problems of collective life from the point of view of social hygiene”, covered the issues of the sanitary state of Russia and the USSR, housing (A. N. Smeni), labor (S. I. Smeni). Kaplun), nutrition (A.V. Molkov), education of the younger generation (A.V. Molkov, V. P. Lebedeva and A. S. Shapiro), the sexual question as a problem of collective life (G. A. Batkis).

Different factors that contributed to the development of Soviet medicine and health care found vivid expression during the 2-nd World War. The system of organizing medical care in the country, its material base, the closest connection with front and the unity of actions of the military and civilian health services, the accounting and creative development of the legacy of the military medical organization, the heroic work of medical staff was the base of unprecedented victory in the fight against the wounds, traumas and injuries epidemic: 72% of the wounded and 90% of the sick came back to military service.

During the 2-nd World War, the health authorities provided comprehensive assistance to the front and ensured the sanitary well-being of the front and rear. Great attention was paid to the issues of health protection of industrial workers, women, children and adolescents. On June 8, 1944, the Presidium of the Supreme Soviet of the USSR adopted a Decree “On increasing state assistance to pregnant women, large and single mothers, strengthening the protection of motherhood and childhood, establishing the honorary title “Mother-Heroine” and establishing the Order of “ Maternal Glory “and the medal “Medal of Motherhood”.

The war caused huge damage to the national economy and health care of our country. 1710 cities and urban-type settlements, about 40 thousand hospitals, polyclinics, dispensaries, sanitary and epidemiological stations and other medical institutions were destroyed. 20 million Soviet citizens were killed, and millions were maimed. It took enormous efforts to eliminate the humanitarian consequences of the war, to restore the network of

medical institutions and their activities, to organize and provide services to war invalids, and to significantly raise the level of health care. Measures aimed at ensuring a high level of health care for the population, reducing morbidity and mortality, building a network of health facilities, creating healthy working and living conditions, etc., have become of paramount importance.

The scientific research of the Academician of the Russian Academy of Sciences, prof. Yu. P. Lisitsyn, was devoted to the problems of: “Theoretical issues of social hygiene and health care organization” and “Social conditions and public health”. On these issues, he defended his doctoral dissertations “Modern theories and directions of medicine in capitalist countries” by Yu. P. Lisitsyn (1966) and “Complex socio-hygienic studies of the main social groups of the USSR population (development, methods, experience)” by O. V. Grinina (1969). Proposed by O. V. Grinina’s method of medical and social research of the family is widely used in scientific research in the USSR and abroad (England, Bulgaria, Eastern Germany).



Professor Yuri P. Lisitsyn (1928-2013)

At the corresponding department of the Central Institute of Advanced Medical Training (head of the department — corresponding member of the

USSR Academy of Medical Sciences, prof. N. A. Vinogradov), research was conducted on the following problems: features of health and health care organization in cities of various types, methodology and methods of health planning, forecast of providing polyclinic care to the population for 1975-1980, taking into account socio-demographic shifts, fundamentals of health economics. The results of these studies are partially summarized in the published lectures «Organization of emergency medical care» and «Organization of specialized emergency medical care» and are reflected in the order of the Ministry of Health of the USSR «On further improvement of the work of emergency medical care hospitals» (1972).

The WHO International Conference in Alma-Ata in 1978 gave a high assessment of the construction of the Soviet health care system, to the creation of which the representatives of social hygiene made an indisputable contribution and declared that primary health system in Soviet Union is one of best model of socialized medicine [18].

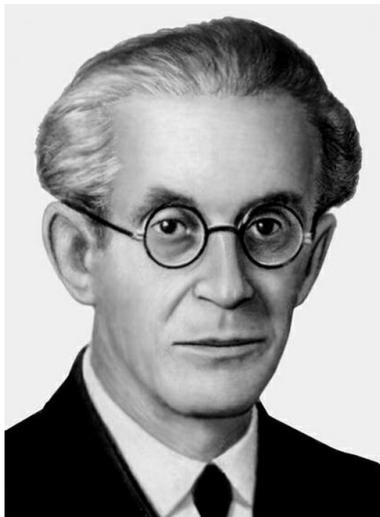
A special feature of the current stage of development of social medicine in the Russian Federation is the study, along with the generally accepted directions, of new problems – the problems of the establishing of medical and social work as a part of applied social medicine, the development of modern technologies of social work in various aspects of public health prevention, the joint activity of social workers together with specialists of other related professions in order to the provide medical and social assistance to the population health.

The impact of the macroeconomic situation on the development of healthcare is undeniable. At the beginning of the twentieth century, Russia, thanks to high world prices for hydrocarbon raw materials, found itself in a favorable «budget surplus» situation. Since 2006, thanks to additional funding for healthcare, a large-scale modernization of the industry has begun, which continues to this day. The National Health Project (2006-2008) was replaced by the Health Care Modernization Program (2011-2012), followed by the May Presidential Decrees (2012-2018) and the National Health Care Project (2019-2024). These programs are characterized by evidence-based public health targets and a comprehensive interagency approach to achieving them.

During this period a number of outstanding achievements in different medical fields were established.

The enormous successes achieved by surgery in the XIX century became the prologue of its unprecedented progress in the next, XX century. Diagnostic and therapeutic capabilities of clinical medicine and surgery have steadily grown, and as a result of natural differentiation from surgery, gynecology, urology, ophthalmology, traumatology, anesthesiology and resuscitation have emerged as independent disciplines. Oncology, proctology, thoracic, cardiovascular and pediatric surgery have become highly specialized disciplines, transplantology, microsurgery and X-ray endovascular surgery were born and began their active development.

In many cases, new achievements and victories were associated with the formation of vascular surgery. The vascular suture developed at the beginning of the XX century by Alexis Carrel opened the way to surgical treatment of coronary heart disease and myocardial infarction, disorders of cerebral circulation, obliterating atherosclerosis, portal hypertension and many others. In 1905, Carrel was the first to perform a heart transplant in an experiment.



S. S. Bryukhonenko (1890 — 1960). A Russian Soviet physiologist, Doctor of medical Sciences, created the world's first artificial blood circulation device.

Created in 1920 by Sergey Sergeevich Bryukhonenko, the artificial blood circulation apparatus, which he called an autojector, allowed another outstanding founder of world transplantology, Vladimir Petrovich Demikhov, to

transplant an additional heart to a dog in 1946. In the same year, he replaced the entire cardiopulmonary complex — the dog lived for six days. It was a real victory. Demikhov began experiments on liver transplantation, performed coronary bypass surgery for the first time in an experiment on dogs. In 1954 he transplanted the dog's head, while blood circulation was restored in the transplanted head, it retained its functions and all the inherent reflexes.



Nikolai Nilovich Burdenko (1876 - 1946)

Russian Russian and Soviet surgeon, healthcare organizer, founder of Soviet neurosurgery, chief surgeon of the Red Army in 1937-1946, academician of the USSR Academy of Sciences, academician and first president of the USSR Academy of Medical Sciences, Hero of Socialist Labor, Colonel-General of the Medical Service, participant of the Russo-Japanese, World War I, Soviet-Finnish and Great Patriotic Wars, winner of the Stalin Prize. Member of the Central Executive Committee of the 16th convocation. Member of the CPSU since 1939. Deputy of the Supreme Soviet of the USSR of the 1st and 2nd convocations. Honorary Member of the Royal Society of Surgeons of London and the Paris Academy of Surgery. Chairman of the Soviet Commission investigating the Katyn shooting of Polish citizens.

Returning home in 1905, Nikolai immediately went to finish his studies, for this he chose the Yuriev University. A year later, he successfully passed the exams, defended his diploma with honors and received the title of doctor. He stayed at the same university to work, and began to prepare

for the defense of his dissertation. On the advice of teachers, I chose the study of liver functions as a topic.

At the same time, the first serious operations began to appear in Burdenko's biography. The doctor also studied the consequences of portal vein ligation and defended his thesis on this topic in 1909. At this point, he did not stop improving his knowledge, reinforcing them with research and experiments, until he reached a virtuoso technique when performing operations. A year later, at the Yuriev University, he became a privat-docent of the Department of Surgery, and in 1917 - an ordinary professor of the faculty surgical clinic. An interesting fact: ignoring the traditions of the Russian school of surgery, he went abroad to gain knowledge on the anatomical features of the brain, and later his research on this topic was published in various journals.

When the First World War began, many people already knew Burdenko's name as a surgeon. Having assembled his own squad, he went to the front. Becoming a consultant surgeon to the army and organizing a hospital in Gerardovo for the treatment of neurosurgical wounded, he made a huge contribution to medicine, saving soldiers who were wounded in the head. The survival rate after his operations greatly increased, this achievement of the surgeon was later highlighted at many meetings in regional, army and front-line missions.

For the first time, he had a chance to prove himself as a doctor Burdenko only with the beginning of the Russian-Japanese War in 1904. He went to the front, where he spent a lot of time in the trenches with the soldiers, and when it was necessary, he carried out the wounded on himself, provided first aid, made bandages and simple operations. The time spent there made a strong impression on him, which made the young man follow his destiny even more.

In 1918, Burdenko became a professor at the Voronezh Institute, concurrently headed a surgical clinic, and 5 years later moved to Moscow and "took the helm" of the Department of Topographic anatomy at the metropolitan university. In the Soviet Army, he was also not forgotten and in 1937 he was appointed chief consultant surgeon. And with the beginning of the Second World War, he became the chief operating surgeon at all.

Over the years, Nikolai Nilovich has written more than 300 scientific papers, the topics of which concerned various problems. He regularly con-

ducted research in histological, physiological, anatomical and biochemical fields. He studied the work of the stomach and pancreas, duodenum, and liver. For his brilliant work and new discoveries, the man has more than once become the owner of prizes, titles and awards. For many years he was engaged in editorial work in medical publications “Surgery”, “Questions of neurosurgery”, “Military Medical Journal” and others [19].



Alexander Vasilyevich Vishnevsky (1874 - 1948)

A.V. Vishnevsky was born on August 23 (September 4), 1874 in the Dagestan village of Novoaleksandrovka (now the village of Nizhny Chiryurt, Kizilyurt district of Dagestan) in the family of the staff captain of the 82nd Infantry Dagestan regiment Vasily Vasilyevich Vishnevsky.

In 1899 he graduated with honors from the Medical Faculty of the Imperial Kazan University. During the year he worked as a supernumerary resident of the surgical department of the Alexander Hospital of Kazan. In 1900-1901 he was a supernumerary prosector of the Department of Operative Surgery with Topographic Anatomy, in 1901-1904 - a prosector of the Department of Normal Anatomy, in 1904-1911 he worked as a privatdozent of the Department of Topographic Anatomy. In November 1903 he defended his doctoral dissertation.

In 1905, A.V. Vishnevsky was sent abroad to master the methods of urological research. From April 1, 1908 to January 15, 1909, his second business trip abroad took place, during which he studied the treatment of the genitourinary system and brain surgery. In Germany, he worked in the

clinics of famous German surgeons Beer, Kerte, Hildebrand, as well as in Paris, where he studied neurosurgery at the clinics of Doyen and Gosse. At the same time, he completed two scientific papers in the Mechnikov laboratory at the Pasteur Institute.

In 1910, A.V. Vishnevsky, together with V. L. Bogolyubov, was assigned to conduct a course of general surgical pathology and therapy at the Medical Faculty of Kazan University, since 1911 he has been teaching this course alone. In April 1912, he was elected an extraordinary professor of the Department of Surgical Pathology. Since 1916 he has been the head of the Department of Hospital Surgery.

During the First World War, A.V. Vishnevsky conducted two surgical courses practically without assistants — surgical pathology and a hospital clinic, at the same time he was a senior doctor at the hospital of the Kazan department of the All-Russian Zemstvo Union, a consultant doctor at the hospitals of the Kazan Stock Exchange and Merchant Society, the infirmary of the Kazan Military District.

Since 1918 he worked as a senior doctor at the first Soviet hospital in Kazan, in 1918-1926 he headed the regional hospital of the Tatar ASSR. From 1926 to 1934 he was in charge of the faculty surgical clinic of Kazan University.

In a completely new field of activity - administrative - he proved to be a brilliant organizer. His activity reached its peak in 1923-1934. At this time Vishnevsky published about 40 scientific papers. He owns experimental physical studies and numerous original works on surgery of the biliary tract, urinary system, thoracic cavity, neurosurgery, surgery of military injuries and purulent processes. Vishnevsky is a recognized classic of Soviet surgery, the author of more than 100 scientific papers. One of them became widely known.

Observing the effects of novocaine on the course of pathological processes, Vishnevsky came to the conclusion that novocaine not only acts as an analgesic, but also has a positive effect on the course of the inflammatory process and on wound healing. He developed a scientific concept about the effect of the nervous system on the inflammatory process. Based on this, he created new methods of treating inflammatory processes, purulent wounds, traumatic shock (novocaine blockade, vagosympathetic block, etc.). The combination of novocaine and oil-balsamic dressing gave a new

method of treating inflammatory processes in spontaneous gangrene of the legs, trophic ulcers, thrombophlebitis, abscesses, carbuncles and other diseases. In 1932 he published a monograph «Local anesthesia by the method of creeping infiltration».

New methods of anesthesia and wound treatment proposed by Vishnevsky played a huge role during the Great Patriotic War, saved thousands of Soviet soldiers. The method of anesthesia according to Vishnevsky became one of the leading Soviet surgeons in the operational activity and brought the author wide fame. Accessible to ordinary surgeons, the method facilitated the penetration of surgery into ordinary medical institutions up to and including the rural district hospital. The oil-balsamic dressing (Vishnevsky's ointment), proposed by Vishnevsky in 1927, was used successfully for the treatment of wounds during the war period. Currently, the method is considered obsolete due to low efficiency, may lead to an increased risk of skin cancer, hematological and other diseases.

In 1929, at the invitation of the Dean of the Medical Faculty of the University of Iowa, A.V. Vishnevsky made a report in the USA on his method, called «Russian».

At the end of 1934, Vishnevsky moved to Moscow, where he headed the surgical clinic of the Central Institute for Advanced Medical Training. Leaving Kazan, he left numerous students here. 18 professors graduated from the A.V. Vishnevsky school. Of the four surgical departments of the Kazan State Medical Institute, three were occupied by his students - Professors N. V. Sokolov, I. V. Domrachev, S. M. Alekseev. Five more Kazan students - V. I. Pshenichnikov, A. N. Ryzhikh, G. M. Novikov, A. G. Gelman, S. A. Fleerov - headed surgical departments in other cities.

One of the best students of Alexander Vasilyevich was his son - Alexander Alexandrovich, a military surgeon.

After graduating in 1929, med. Faculty of Kazan University, worked there (until 1931), and then at the VMA as a teacher of the Department of Normal Anatomy. Since 1933 - researcher and at the same time (since 1937) head. Surgical Department of the VIEM, since 1940 — Professor of the Department of Military Field Surgery of the CIU. During the Great Patriotic War, he was an army surgeon, chief surgeon of a number of fronts. After the war, he was the chief surgeon of a number of military districts. Since 1948 - Director of the A.V. Vishnevsky Institute of Surgery of the

USSR Academy of Medical Sciences and simultaneously in 1956 - Chief Surgeon of the USSR Ministry of Defense.



A. A. Vishnevsky (1906-1975). Soviet surgeon, scientist, Doctor of Medical Sciences, Professor, Chief surgeon of the Ministry of Defense of the USSR, Colonel-General of the medical service. Academician of the USSR Academy of Medical Sciences.

As a student and closest employee of his father, A.V. Vishnevsky participated in the creation of one of the Russian surgical schools, and after his father's death was its head.

A. A. Vishnevsky is the author of more than 380 scientific papers, including a number of monographs. His early works are devoted to the anatomical justification of local anesthesia by the method of "creeping infiltration". In subsequent publications, an analysis of the mechanisms of pain and the effect of novocaine blockade is given.

The monograph "Novocaine blockade and oil-balsamic antiseptics as a special type of pathogenetic therapy" (1952), written jointly with A.V. Vishnevsky, is the result of many years of research on the role of nervous trophic in the pathogenesis of a number of surgical diseases and substantiation of the proposed methods of nonspecific therapy of these diseases.

A. A. Vishnevsky made a great contribution to the development of Soviet military field surgery. Being a participant in the battles near the Khalkhin-Gol River (1939), he first applied and showed the effectiveness

of novocaine blockades in the fight against traumatic shock in the wounded, as well as the healing effect of bandages with oil-balsamic emulsion in the treatment of suppurated gunshot wounds, that at the advanced stages of medical evacuation surgical interventions in the wounded can be performed under local anesthesia by the method of “creeping infiltration”. The use of these methods for the provision of surgical care and treatment of the wounded in field medical institutions was important during the Great Patriotic War.

In peacetime, A. A. Vishnevsky, continuing research on issues of anesthesia and nervous trophy, developed together with his staff a number of other problems: heart and vascular surgery, mechanisms for compensating for impaired functions of organs and systems, the use of cybernetics and electronics in surgery, burn injury, the use of polymers in surgery.

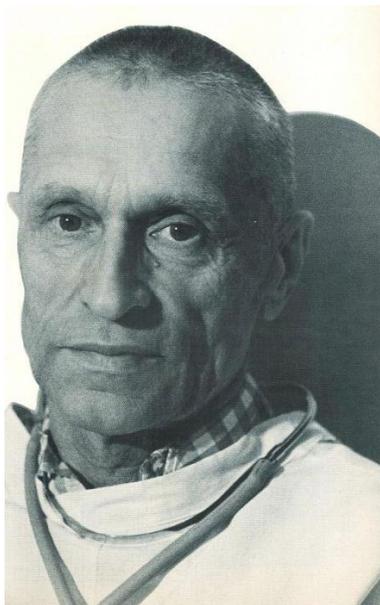
In 1961, on the initiative of A. A. Vishnevsky, a laboratory of medical cybernetics was established in the institute he led and the development of problems of diagnosis and prediction of diseases using computers, and later remote diagnostics using teletype communication, was started. He developed and for the first time in our country successfully performed the operation of implantation of a radiofrequency stimulator in violation of the function of the pelvic organs due to traumatic spinal cord injury (1966). Under the leadership of A. A. Vishnevsky, 22 doctorates and 31 cand. dissertation.

A. A. Vishnevsky conducted great public work: he was a deputy of the Supreme Soviet of the RSFSR of three convocations (since 1963), delegate of the XXI, XXIII and XXIV Congress of the CPSU, Deputy Chairman of the Soviet Committee of Solidarity with Chilean Patriots, Chairman of the Board of the All-Russian Society of Surgeons, member of the Presidium of the Board of the All-Union Society of Surgeons, member of the International Association of Surgeons, honorary academician of the Surgical Academy of Peru, honorary member of the Society of Swedish Doctors, Society of Physicians of Piedmont, Czechoslovak Med. societies named after Purkinje et al . He was one of the founders of the journal «Experimental Surgery and Anesthesiology», and since 1956 its editor-in-chief. In the 2nd ed. BME and in MME was the editor of the editorial department «Military Medicine», and in the 3rd ed. BME - Deputy editor of the department «Military medicine and medical service of civil Defense».

He was awarded 3 Orders of Lenin, 4 Orders of the Red Banner, 2 Orders of the Patriotic War I degree, 2 Orders of the Red Star, the Order «For Service to the Motherland in the Armed Forces» III degree, many medals, as well as orders and medals of a number of foreign countries. For his work on local anesthesia during heart surgery, A. A. Vishnevsky was awarded the R. Lerish International Prize (1955).

In 1957, Alexander Alexandrovich Vishnevsky performed the first heart operations in the USSR with the help of an improved artificial blood circulation device, and South African surgeon Christian Barnard performed a human heart transplant for the first time in 1967 [20].

In the galaxy of Russian outstanding cardiac surgeons, it is impossible not to name a graduate of the Arkhangelsk State Medical Institute (now the Northern State Medical University) Nikolai Mikhailovich Amosov.



Nikolai Amosov (6 December 1913 - 12 December 2002)

He is the author of innovative techniques in cardiology and thoracic surgery in USSR, the author of the systematic approach to health (the “method of limitations and loads”), discussion works on gerontology, artificial intelligence and rational planning of social life (“social engineer-

ing”). January 17, 1963, N. Amosov held the first in the USSR prosthetics of the mitral valve of the heart. N. Amosov was able to build an apparatus for artificial blood circulation. At first the scientist tried to turn off the heart on the dog. When his experience was crowned with success, operations on the human body were carried out by him.



Valery Shumakov (9 November 1931
—27 January 2008)

For the first time in the USSR, Valery Shumakov successfully performed a kidney transplant (1965), a heart transplant (1988), simultaneous heart, liver and pancreas transplantation. He was the founder of the scientific school, he trained more than 50 doctors and 120 candidates of medical and biological sciences. Author of 3 scientific discoveries, more than 20 monographs, 450 scientific papers, 200 inventions.

Since 1994 he was the editor-in-chief of the journal «Bulletin of Transplantology and Artificial Organs». In 1995, under the editorship of V.I. Shumakov, the first in Russia «Guide to Transplantology».

Nowadays, Leo Antonovich Bokeria, a well-known cardiac surgeon in Russia and the world, is engaged in active surgical practice.

Leo Bokeria obtained in the course of several thousand open heart surgery. Academic Bokeria refers to a small number of eminent surgeons of the world that carry out the entire arsenal of known heart operations using cardiopulmonary bypass with a wide range of pathology. Leo Bokeria

initiated the development of another new section of cardiac surgery in our country - a minimally invasive cardiac surgery.

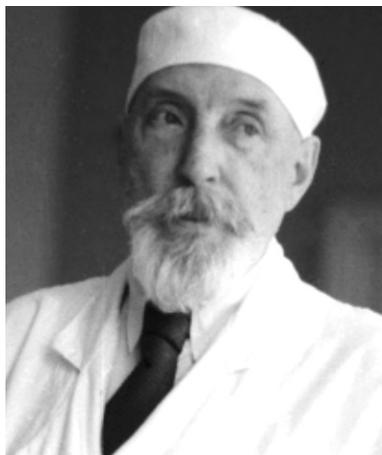


Leo Bokeria (born December 22, 1939)

The world and domestic surgery of the XX century has given many glorious names of remarkable scientists and clinicians, the achievements of each of whom are worthy of the highest praise. Alexander Vasilyevich Vishnevsky was an outstanding Russian surgeon. He developed an original principle of local anesthesia, which has not lost its significance even now, proposed various types of novocaine blockade and methods of their application, an oil-balsamic emulsion for the treatment of wounds and burns (Vishnevsky ointment). Another remarkable surgeon, Sergei Ivanovich Spasokukotsky, has made a great contribution to the development of modern medicine. Perhaps there is not a single section of surgery of the abdominal cavity, lungs, general specialty issues in which his innovative talent would not manifest itself. He created one of the most fruitful surgical schools in our country. Academician Alexander Nikolaevich Bakulev, a student of Spasokukotsky, became not only the successor of his teacher's work, but also multiplied his fame. He developed methods of esophageal plastic surgery, neurosurgical interventions for brain abscesses and craniocerebral wounds. Academician Bakulev's contribution to pulmonary and cardiac surgery is enormous. He performed the first successful operations in the country to remove a tumor of the mediastinum, lung with chronic purulent process, with adhesive pericarditis, mitral stenosis, and the first Botall duct ligation in the country. Under his leadership, methods for the

diagnosis of heart diseases, electrical stimulation during its transverse blockages, and methods for the treatment of coronary insufficiency were developed. He first proposed to operate on patients with acute myocardial infarction. In 1955, on his initiative, the Institute of Thoracic Surgery was established, now the A.N. Bakulev Center for Cardiovascular Surgery. The achievements of our scientists in the development of abdominal surgery are great. Sergey Sergeyeovich Yudin was a bright and talented surgeon. He described his profession as follows: “Some are able to observe subtly, others are able to reason soberly, others are able to act hastily. Only very rarely do all three qualities occur in a harmonious combination in one person. With acute observation and correct judgment, one can be an excellent theorist and an excellent clinician. But being deprived of the ability to act boldly and accurately at once, one cannot become a good surgeon...”. His merits are especially great in surgery of the esophagus, stomach, duodenum.

In the Soviet period of the formation of ophthalmology, a special place belongs to outstanding scientists and health care organizers V.P. Filatov and S.N. Fedorov.



V.P. Filatov (1875-1956) was a world-renowned Soviet scientist, founder of a major scientific school of ophthalmologists, academician of the Academy of Medical Sciences of the USSR.

For many years, V. P. Filatov developed new methods of complete (1924) and partial through (1927-1938) corneal transplantation, designed special tools (trepan) designed to form a cylindrical hole in the cornea of

the eye (diameter 4-5 mm). He used a cadaveric cornea for transplantation, carried out layer-by-layer corneal transplantation, developed a method for preserving the cadaveric cornea, widely introduced cadaveric corneal transplantation, etc. Filatov developed a fundamentally new method of treatment - tissue therapy, on the basis of which he created the doctrine of biogenic stimulants. The Filatov round stem method is currently used by surgeons all over the world to restore damaged tissues and eliminate disfiguring defects.

At the initiative of V. P. Filatov, taking into account the scope, effectiveness and importance of his scientific work for the country, it was decided to create a large clinical and experimental base for scientific research in Odessa. In 1936, Vladimir Petrovich Filatov was organized, the first and permanent director of which remained until the last day of his life. Thanks to the energy of its head, the institute quickly turned into one of the best ophthalmological institutions in the country.



S.N. Fedorov (1927-2000) Soviet and Russian ophthalmologist, eye microsurgeon, one of the participants in the introduction of radial keratotomy, professor. Academician of the Russian Academy of Sciences, Corresponding Member of the Russian Academy of Sciences, Hero of Socialist Labor of the USSR. Candidate for President of Russia.

S. N. Fedorov was born in Proskurov in Ukraine in 1927, graduated from the medical faculty of the Medical Institute in Rostov-on-Don and began working as an ophthalmologist in the village of Vyoshenskaya, Rostov region, then in Lysva, Perm region. In 1957 he completed his clinical residency at the Medical Institute of Rostov-on-Don and defended his PhD thesis there. In 1958, he began working as the head of the clinical depart-

ment of the branch of the Research Institute of Eye Diseases named after Helmholtz in Cheboksary.

In 1958, while working in Cheboksary, he began to solve the most difficult problem in medical and social aspects — the replacement of a clouded lens with an artificial one. After many-sided experimental studies, Svyatoslav Nikolaevich carried out the first successful implantation of an intraocular lens in the USSR, thereby opening a new direction in science. The following decades proved the prospects of his chosen scientific direction. In Russia alone, S. N. Fedorov and his students carried out about 1.5 million such operations.

In 1961, S. N. Fedorov headed the Department of Eye Diseases of the Moscow Medical Dental Institute and the problem laboratory for implantation of an artificial lens.

Now it is difficult to imagine the situation in ophthalmology at that time. Ophthalmologists from different countries, after unsuccessful attempts to use an artificial lens, began to abandon this practice. Congresses of eye surgeons, printed publications were full of speeches with harsh criticism of the very idea of the possible use of an artificial lens in surgical practice.

Nevertheless, S. N. Fedorov went against the flow and developed such an operation technique, such models of artificial lenses that did not leave a stone unturned from the criticism of opponents. At that time, Fedorov was the only surgeon in the world who made a presentation at a small conference in Europe about his experience in using 200 artificial lenses. Immediately after that, he became the leading surgeon of the International Club of Implantologists and was one until the end of his days.

Then the message revolutionized cataract surgery. Currently, 2 million people are implanted in the world. artificial lenses per year. If it were not for the persistence of Svyatoslav Nikolaevich, today's science would be at the level of the 75th year.

Fedorov managed not only to come up with a method of operation and models of artificial lenses, but also to organize the production of the latter in Moscow. It is known that in stagnant years it cost a lot of effort. Only thanks to this titanic work, thousands of Soviet citizens were able to be treated in accordance with the most modern technologies that the Western world has not yet had time to adopt. Svyatoslav Fedorov spends his whole life solving problems related to the treatment of cataracts. His ingenious

inventions in the field of surgery, new materials, new artificial lenses still excite the whole world.

Since the mid-70s, a group of like-minded people has been gathering around Fedorov. Work begins in all areas of surgery: myopia, hyperopia, astigmatism, glaucoma, cataract, retinal detachment and much more. In a short period of time, this team has developed and implemented a huge number of treatment methods and operations that have not been used anywhere else in the world. During this period, the team introduced into wide clinical practice operations for myopia, hyperopia, astigmatism and their various combinations. The artificial lens implantation laboratory was transformed into an independent laboratory of experimental and clinical eye surgery, and then into the Research Institute of Eye Microsurgery.

At the same time, S. N. Fedorov was one of the first to introduce operations using lasers, in which no one believed at that time. The first laser surgery department in the country appeared in his clinic, the arsenal of which was replenished and replenished every year with new laser installations and state-of-the-art operations.

In 1980, on the basis of the Research Institute of Eye Microsurgery, the MNTC “Eye Microsurgery” was established with branches in 11 major industrial cities of Russia, and S. N. Fedorov was appointed General Director.

In 1984, an excimer laser was created, which was successfully used in 25,000 operations. The technology of refractive operations, developed by S. N. Fedorov and widely used in many countries of the world, allowed more than 12 million people to get rid of glasses, find the joy of work, the happiness of communicating with nature and playing sports.

Svyatoslav Nikolaevich Fedorov gave an impulse to several fundamental directions at once, without which modern ophthalmology is unthinkable. His fundamental works in the field of implantology, keratoprosthesis, glaucoma, optic nerve atrophy, vitreoretinal and laser surgery have become classics of world ophthalmology. S. N. Fedorov has made a genuine revolution in ophthalmology. From a modest measured science, he turned it into a bright, rapidly progressing, prestigious branch of medicine. Thanks to his achievements, Russia remains one of the leaders of world ophthalmology even now, in not the best times for it. By implementing the principle formulated by him, “Beautiful eyes for everyone!”, Svyatoslav Fedorov and his school, associates in different countries have made millions of blind people happy.

In 1994, at the International Congress of Ophthalmologists in Canada, S. N. Fedorov was rightfully awarded the highest professional honor: recognized as an “outstanding ophthalmic surgeon of the XX century.”

He pushed the boundaries of medicine, did not pay attention to someone’s “impossible”, took risks — and the risk was justified. Having set himself the task of freeing people from glasses, Svyatoslav Nikolaevich created a fundamentally new highly effective direction in the world of ophthalmic surgery - refractive and energy surgery for the correction of myopia, hypermetropia and astigmatism.

MNTC “Eye Microsurgery” under the permanent leadership of Svyatoslav Nikolaevich has become not only one of the best medical centers in the world, but also a world-famous scientific school, from which hundreds of highly qualified specialists have graduated, who have headed ophthalmological institutions in Russia and many countries.



Monument to Academician S.N. Fedorov at the building of the Volgograd branch of the MNTC «Eye Microsurgery», opened on December 26, 2003, on the day of the 15th anniversary of the Volgograd branch

The scientific activity of S. N. Fedorov has never been an end in itself, did not contain abstract research. Each step was caused by an organic need to provide the most effective assistance to the patient, to restore his quality

vision as soon as possible. Therefore, it is not surprising that the result of a huge number of scientific studies was the development of an invention. Svyatoslav Nikolaevich is the author of 523 scientific papers, 7 monographs, 234 inventions, 108 patents. Under his leadership, 86 candidate's and 25 doctoral dissertations were completed and successfully defended.

S. N. Fedorov was Chairman of the Board of the All-Russian Scientific Society of Ophthalmologists, editor-in-chief of the journal "Ophthalmosurgery", member of the editorial boards of the journals "Bulletin of Ophthalmology" (USA), "American Society of Implantologists", "Refractive Surgery" (USA), "News of Eye Surgery" (USA), "European Journal of Implantation and Refractive Surgery", president of the International Society of Keratorefractologists, honorary member of the International Society of Artificial Lens Implantation, member of the International Society for Phacoemulsification and Surgery cataracts, Honorary member of the International Society for Corneoplastic Microsurgery, member of the European Society for Cataract Surgery and Refractive Surgery. For his great achievements in the field of public health, S. N. Fedorov was awarded the Orders of the October Revolution, the Red Banner of Labor, the Badge of Honor, the Order of Lenin and the title Hero of Socialist Labor.

For scientific research in the field of ophthalmic surgery, S. N. Fedorov was awarded the highest award of the Academy of Sciences - the Lomonosov Gold Medal - and the M.I. Averbakh Prize of the Academy of Medical Sciences. He was also a laureate of the State Prize of the Russian Federation in the field of science and technology, as well as a laureate of the Paleologus Prize (USA), Pericles (Italy).

But he was not just a scientist, a brilliant surgeon, a talented organizer, creator, ascetic. He was a bright personality whose fame crossed national borders. Svyatoslav Fedorov introduced advanced methods of labor organization into medical practice and built an ophthalmological service in the country on principles that proved their viability and prospects in the most difficult times of crisis: He is the founder of the only and unique Eye Microsurgery Complex in the world, proposed and implemented original and unique organizational innovations: brigade method of work, rental contract, mobile operating rooms with diagnostic equipment based on buses, motor ship, railway car; diagnostic and surgical conveyors with extensive use of modern computer technology.

On June 2, 2000, Svyatoslav Nikolaevich Fedorov tragically died [21].

Bibliography

1. Medicine of Ancient Russia / Mark Mirsky, Nikolai Bogoyavlensky. - Moscow: Rodina, 2018.— 416 p.
2. История медицины: методические рекомендации / Е.В. Бачило// История медицины. Конспект лекций, 2007.
3. Merkulov V. Lomonosov on saving Russian people. Lomonosovsky vestnik. № 23, November 2015.
4. <http://lomonosov.niv.ru/lomonosov/nauchnaya-kritika/lomonosov-inauki/lomonosov-i-medicina.htm>
5. Merkulov V. Lomonosov on saving Russian people. Lomonosovsky vestnik. № 23, November 2015.
6. Voloshin I., Bernini P.M. (1998). «Nickolay Ivanovich Pirogoff. Innovative scientist and clinician». Spine. 23 (19):2143–6.
7. Beliaeva V.S. (2007). “Sergeĭ Petrovich Botkin—founder of physiological school in Russian medicine (to 175th anniversary of birthday)”. Экспериментальная и клиническая гастроэнтерология, Experimental & Clinical Gastroenterology (5): 152–154. PMID 18389612
8. Mackowiak Philip A. (2013). «Recycling metchnikoff: probiotics, the intestinal microbiome and the quest for long life». Frontiers in Public Health. 1:52doi:10.3389/fpubh.2013.00052. PMC 3859987. PMID 24350221.
9. Kirik Y.V., Alderman P.E. transfer the idea of “social hygiene” from Germany to Soviet Russia in the formation of training programs for social hygiene, 1922 // Bulletin of public health and healthcare of the Russian Far East. 2020. № 1. URL: <http://www.fesmu.ru/voz/20201/2020103.pdf>
10. Vengrova I.V., Shilinis Yu.A. Social hygiene in the USSR. M.: Medicine, 1976. 215 p.
11. Portugalov V.O. Questions of public hygiene. St. Petersburg: A. Morigerovsky Type, 1873. 624 p.
12. Shchepin V.O., Zatravsky S.N. Social hygiene as a phenomenon of the scientific revolution in medicine of the late XIX-first half of the XX century // Problems of social hygiene, healthcare and the history of medicine. 2015. No. 6. pp. 14-18.
13. Borodulin V.I. Clinical medicine from the origins to the 20th century. Moscow: ROMM, 2015. 504 p.

14. <https://bekhterev.ru/glavnaja/vladimir-mihajlovich-behterev/>

15. <https://medobr.com/news/georgiy-fyedorovich-lang-mdash-vyday-ushchiysya-terapevt-proshlogo-veka/>

Appendix 1.

Examples of test for assessing theoretical knowledge in the discipline “History of Medicine”.

Instructions: Choose one correct answer from the suggested options.

1. The founder of topographic anatomy in Russia was:

- (a) Buyalsky IV
- (b) NI Pirogov
- (c) PA Zagorski
- (d) EO Mukhin

2. The founder of modern physiology of digestion, received the Nobel Prize for research on the physiology of digestion:

- (a) Vorobyov VP
- (b) S.P. Botkin
- (c) IP Pavlov
- (d) AI Abrikosov

3. Hepatitis A also known in Russia as:

- (a) Mudrov’s disease
- (b) Botkin’s disease
- (c) Zakharin’ disease
- (d) Pirogov’s disease.

4. Medical triage on the battlefield at the period of Crimea War (1853-1856) was introduced by:

- (a) NI Pirogov
- (b) Buyalsky IV
- (c) FI Inozemtsev
- (d) Zagorski PA

5. It is known that received the Nobel Prize for his investigations on phagocytosis.

- (a) Robert Koch

- (b) Louis Pasteur
- (c) I.I. Mechnikov
- (d) Edward Jenner

6. What was research institution for I.P. Pavlov's investigations?

- (a) Institute of Experimental Medicine in St. Petersburg
- (b) Moscow State University
- (c) Pasteur Institute (Paris, France)
- (d) Harvard University (Boston, USA).

7. This scientist laid the foundation for the study of reflexes and neuroscience.

- (a) Claude Bernard
- (b) I.M. Sechenov
- (c) I.I. Mechnikov
- (d) I.P. Pavlov

8. The first time in Russia anesthesia was applied by:

- (a) NI Pirogov
- (b) Buyalsky IV
- (c) FI Inozemtsev
- (d) Zagorski PA

9. The first dental school in the II half of XIX century was opened in:

- (a) Moscow
- (b) St. Petersburg
- (c) Kiev
- (d) Odessa

10. The initiative of translation the best foreign medical textbooks into Russian and Latin languages was introduced by:

- (a) NI Pirogov
- (b) Buyalsky IV
- (c) FI Inozemtsev
- (d) EO Mukhin

11. The first minister of Health of the Russian Federation, the founder of socialized medicine in Russia was:

- a) N. A Semashko
- b) NN Burdenko
- c) SP Fedorov
- d) Z.P. Solovyev

12. In 1807 the first original textbook in Russia “Guide to the teaching of surgery” in 3 volumes was published by:

- (a) NI Pirogov
- (b) Sobolev AM
- (c) IF Bush
- (d) Zagorski PA

13. The founder of the “emergency health care” in Russia was:

- a) NV Sklifosovsky
- b) F. Erismann
- c) N. Semashko
- d) SI Puchkov

14. Socialized medicine is:

- (a) Health care at people’s expense
- (b) Charitable care at government expense
- (c) Free medical care at government expense, regulated by professional groups
- (d) Integration of social medicine with health care

15. First country to socialize medicine completely:

- (a) Russia
- (b) Germany
- (c) UK
- (d) Canada

16. One of the most outstanding graduators of NSMU (former Arkhangelsk State Medical Institute) was:

- (a) Sergei Botkin
- (b) Leo Bokeria

- (c) Svaytoslav Fedorov
- (d) Nikolai Amosov.

17. The founder of eye microsurgery in Russia was former head of the Department of eye diseases Arkhangelsk State Medical Institute:

- (a) Svaytoslav Fedorov
- (b) Ivan Kasyan
- (c) Nikolai Amosov.
- (d) Nikolai Bychikhin.

18. One of the first in Russia to use complex obstetric interventions, including the operation of applying obstetric forceps was:

- (a) Nikolai Pirogov
- (b) A.A. Vishnevsky
- (c) N. M. Ambodik-Maksimovich
- (d) I.V. Buyalsky

19. A famous physician-therapist, the founder of the Moscow clinical school was:

- (a) Aleksei Ostroumov
- (b) Matvey Mudrov
- (c) Sergei Botkin
- (d) Grigory Zaharjin

20. The most outstanding Russian and world-famous encyclopedic scientist and psychiatrist was:

- (a) G.F. Lang
- (b) N. D. Strazhesco
- (c) V.M. Bekhterev
- (d) M.V. Lomonosov

Answers:

1	2	3	4	5	6	7	8	9	10
b	c	b	a	c	a	b	c	b	d
11	12	13	14	15	16	17	18	19	20
a	c	a	c	a	d	a	c	d	c

Учебное издание

Kalinin Aleksei Genrikhovich
Sannikov Anatoly Leonidovich

History of Russian Medicine

Training manual

Издано в авторской редакции

Компьютерная верстка *Г.Е. Волковой*

Подписано в печать 10.01.2022.
Формат 60×84^{1/16}. Бумага офсетная.
Гарнитура Times New Roman. Печать цифровая.
Усл. печ. л. 5,8. Уч.-изд. л. 4,4.
Тираж 100 экз. Заказ № 2410

ФГБОУ ВО «Северный государственный медицинский университет»
163000, г. Архангельск, пр. Троицкий, 51
Телефон (8182) 20-61-90. E-mail: izdatelnsmu@yandex.ru

