ANTIQUITATES MATHEMATICAE
Vol. 13(1) 2019, p. 67–111
doi: 10.14708/am.v13i1.6460

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Russian Translations and Translators of Western European works (XVIII - early twentieth century) devoted to the history of mathematics[1]

(*If we have a general idea of gradual development of a science,*
it is substantially easier to understand it;
the most complicated components of a science yield easier to substantive
study if we know steps that were taken to arrive at them.
H. Suter)

Abstract. This work is a continuation of the author's presentation of the history of mathematics in Russia as a research area within the history of science (Lokot (2018)). The elements of history of mathematics began to intensively emerge in the epoch of Peter the Great and underwent several stages of development. There are five stages that Russian scientists went through, shaping the elements of research in the history of mathematics into the research area with its own subject, objectives and methods. This article continues the analysis of the first period, i.e. the stage of historical and scientific translations in the field of history of science. Chronologically, the translations of Western European works devoted to history of mathematics have been analyzed, taking into account the profiles of translators, who have relatively little space devoted to them in works on history of mathematics.

2010 Mathematics Subject Classification: 01A60; 01A72.

Key words and phrases: history of mathematics, Russian translations of Euclid and Archimedes, Mathesis, P.I. Bogdanovich, D.I. Planer, N.N. Strakhov, A.M. Manuilov, F.F. Pavlenkov, V.Y. Zinger, S.O. Shatunovsky, G.F. Tsereteli, N.N. Parfentiev, I.Y. Timchenko, A.R. Kulisher, A.V. Vasiliev, S.P. Sluginov, I.V. Sleshinsky, S.N. Bernstein, A.I. Bakov, I.L. Levintov, N.N. Evreinov, D.A. Boehm, I.I. Chistiakov, A.N. Krylov.

[1] 14th of March 2018

Contents

1. Introduction. In Russia, the history of mathematics began to evolve in the 18^{th} century and, developed by numerous Russian scientists in the course of two centuries, moulded in the 20^{th} century into a separate science which had its own subject, goals, and methods. The following stages can be distinguished in the course of its evolution:

- accumulating information on the history of the science by translating works of ancient scientists and western classical authors;
- accumulating biographical and bibliographical materials in works of Russian scientists and teachers;

- forming a tradition in the works of Russian mathematicians to have their mathematical research studies accompanied by detailed journeys into the history of the issue at hand;
- publishing articles and works of Russian authors devoted to the history of various areas of mathematics or its individual issues;
- emerging of national seminal works of general nature in history, philosophy, and methodology of mathematics.

It should be noted that these emergence and development stages in the history of mathematics in Russia were for the most part not separated in time. They went together, mutually affecting one another. The goal of this article is to analyse the **stage of translating works devoted to the history of the science.**

2. The first Russian translations of works on the history of science. Our consideration of the issues associated with the first translations of works of classical authors in the history of mathematics into Russian would be incomplete if we left out the translations of the most remarkable research studies devoted to the general history of science or the history of mathematics and various areas thereof from European languages. We believe that publishing of these articles and books played a significant role in the initial period of the history of mathematics in Russia. It seems that a brief review of some publications – differing in volume and importance, and considered chronologically – describing translators' personalities would be useful.

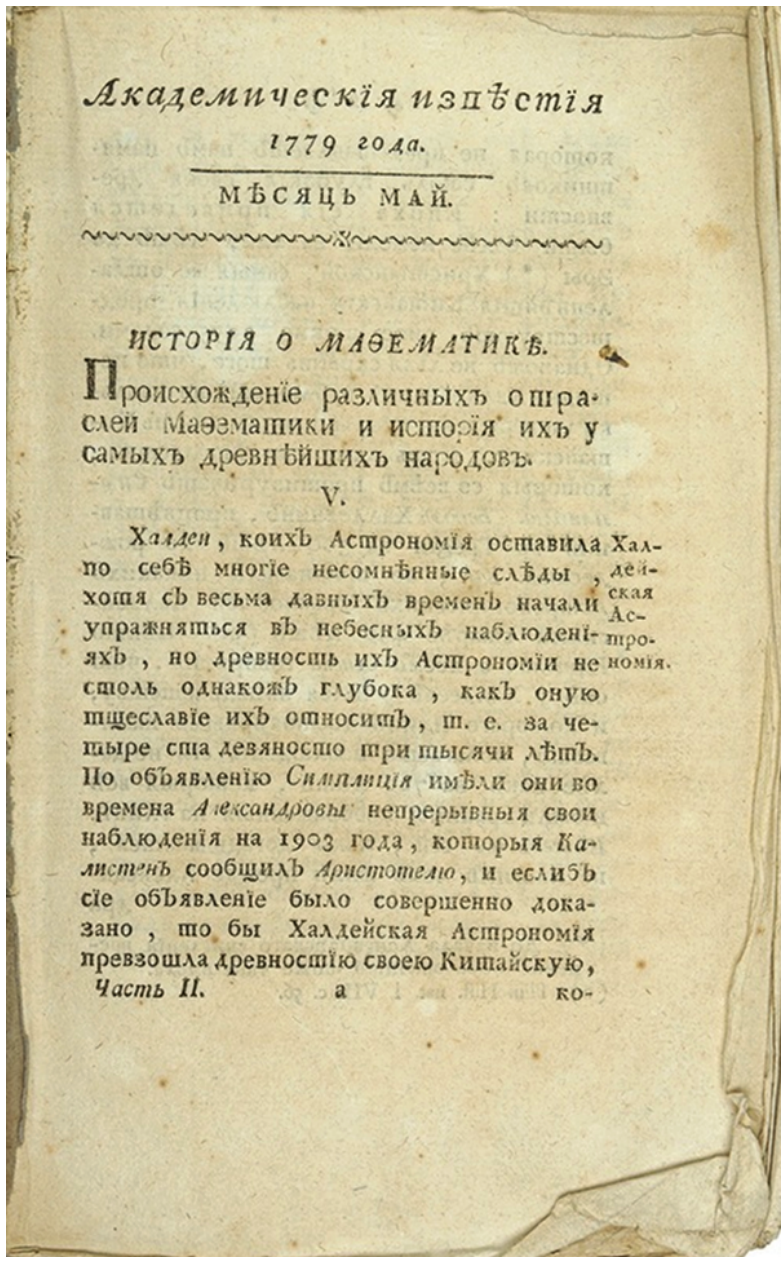
The translation by Bogdanovich of Volume One of Montucla's *History of Mathematics* may be considered as one of the earliest translations of this kind. Research studies of the French scientist, **Jean-Étienne Montucla** (1725–1799), in the sphere of mathematics were mainly devoted to its history. However, the work [11] published in 1758 in Paris in two volumes and significantly improved and expanded in 1799, was rightfully considered as the most significant for the scientific world. Describing merits of Montucla's book, V.V. Bobynin pointed out that, of all books in the history of science of that period, this one was the most complete statement of history of mathematics – both pure mathematics and applied mathematics.

2.1. Peter Ivanovich Bogdanovich (late 1740s/ early 1750s – 1803), who translated Montucla's *History of Mathematics*, studied first, at Leipzig University and then, in Holland and England. Therefore, he was fluent in basic European languages (German, French, and English). After he had returned to Russia, he served in the army for a while and

thereafter, having resigned, was admitted to the Academy of Sciences as a translator and assistant librarian. Responsibilities of Peter Bogdanovich included maintaining the library catalogue, editing *Academic News* (1779–1791), proofreading, and *"improving style"* [56]. The Russian translation of Montucla was published exactly in those years, when Bogdanovich was editing the academic publication entitled *"The History of Mathematics. Background Information on Property, Division, and Usefulness of Mathematics"* without any references to Montucla. In the February issue of the *Academic News* in 1779, this memoir began with the following *"Contents:*

I. *Origin of the word 'mathematics'*
II. *Its property and subject matter*
III. *Division and dissemination thereof of whatsoever nature in the earliest times and contemporary times*
IV. *Metaphysical inception of this science and its various branches*
V. *Useful note about the so-called mental and pure mathematics*
VI. *Opinion on this science of the most celebrated geometers*
VII. *Response to the objections raised by Sceptics and Epicureans against this science*
VIII. *Protection from persecutors of this science*
IX. *Advantages and benefits thereof. Interesting application pertaining to the applications to which any thinkers applied it*
X. *Apology of the pure and solely mental mathematics."* [12, p. 113–114]

The translation was signed at p. 160 in full: *"Peter Bogdanovich"* (this was the only case). In subsequent months, signatures were abbreviated (*"Peter Bogd-ch"*, "P.B."); sometimes, the signature was missing. Prof. N.D. Kochetkova (Pushkin House) believes that Bogdanovich *"ascribed this Montucla's translation to himself, . . . responding to the query of the Academic Senate of 13 May 1782, translator M. Kovalev stated that this translation belonged to him, and "maybe, somebody's name was put there erroneously""* [56]. The authorship of this translation seems to be doubtful, the fact whereof is supported by practice of "collective" translating, which existed at the Academy at that time. Parts of a text were given to different specialists, and each translated his part *"in his own flat"*. Bobynin, for example, wrote that such careless way of doing translations created an opinion among some readers that the memoir entitled *The History of Mathematics* was written by a Russian author, i.e. P.I. Bogdanovich. However, nobody can deny that this work, which



Академическія извѣстія
1779 года.
МѢСЯЦЪ МАЙ.

ИСТОРІЯ О МАѲЕМАТИКѢ.

Происхожденіе различныхъ отраслей Маѳемашики и исторія ихъ у самыхъ древнѣйшихъ народовъ.

V.

Халдеи, коихъ Астрономія оставила по себѣ многіе несомнѣнные слѣды, хотя съ весьма давныхъ временъ начали упражняться въ небесныхъ наблюденіяхъ, но древность ихъ Астрономіи не столь однакожъ глубока, какъ оную тщеславіе ихъ относитъ, т. е. за четыре ста девяносто три тысячи лѣтъ. По объявленію *Симплиція* имѣли они во времена *Александровы* непрерывныя свои наблюденія на 1903 года, которыя *Каллистенъ* сообщилъ *Аристотелю*, и еслибъ сіе объявленіе было совершенно доказано, то бы Халдейская Астрономія превзошла древностію своею Китайскую,

Халдейская Астрономія.

Часть II. а ко-

Figure 1: Montucla in translation of P. Bogdanovich, 1799-1781.

appeared in the last quarter of the 18^{th} century, was a vivid evidence of the interest which arose in the Russia's scientific community with respect to various issues in the history of mathematics.

Another weird publication stands out – translation of an article of **F. Lenormand**, which was published in Paris in 1867. This article was

devoted to the discovered Egyptian papyrus, which comprised a fragment on geometry in the appendix to a text on land surveying. To all appearances, the sensation aroused interest of D. Planer, the author of the translation, so he found it useful to publish the news of this revelation in the *News and Miscellaneous* Section of *Mining Journal* [62]. The inclination to treat this insignificant publication as an article designed as *'light reading'* vanishes once you have checked the profile of its translator. **Dmitry Ivanovich Planer** (1820–1882), a mining engineer and Russia's mining art historian, served in the Urals and in St. Petersburg; as of 1868, was the founding member of the St. Petersburg Society of Natural Philosophers, at the Department of Geology and Mineralogy; reviewed articles published in the *Mining Journal* [25, p. 12]. Having learnt this, one comes to understand that this man was not driven by idle curiosity of a layman. Instead, he was fuelled by the joy of finding: *"This fragment* [papyrus], *which I had the honour to examine and study, states methods of measuring areas of a square, parallelogram, various triangles, and volume of a pyramid. The paleographical type of these writings makes me date this manuscript to the* 12^{th} *dynasty, i.e. as almost contemporary with Solomon. There is all the more reason for this as this papyrus comprises a note which evidences that it is a copy of a still earlier text."* [13, p. 300] This small news story not only illustrates the interest of a wider range of specialists in issues related to the history of physical and mathematical sciences. It also enables us to note the awareness and comprehensive knowledge of the specialists who annotated Russian scientific journals and translated articles for them.

The demand for historical and scientific literature devoted to personalities of scientists was gradually growing in Russia. To satisfy this demand, dictionaries and encyclopaedias were published, including the work of L. Figuier *Vie des savants illustres depuis l'antiquité jusqu'au XIX siècle* translated from French and published in the period from 1869 to 1873. **Louis Figuier** (1819–1894) was a French literary figure and natural philosopher, teacher of natural sciences at schools in Montpellier and Paris. His literary talent enabled him to write not an ordinary biographical directory of men of science. Instead, he created kind of a summary collection which narrated lives and creative work of great scientists in an artistic manner. *"Strangely, he wrote in the Introductory Note, no one in the contemporary literature has thought of combining biographies of various scientists into one book. ... Addressing us to the rather challenging (in its scope and versatility) business of describing lives and assessing works of people renowned in all branches*

of human knowledge, we are sure that our work will fill a substantial gap in the scientific literature." [13, p. I]

The author felt that this work was of use for the readers, noting that *"the lives of great men in science... was interesting for all sorts of public. ... Whether they are physicists, chemists, natural philosophers, or engineers, all of them need to know lives of founding figures in the science they deal with, as well as those of patriarchs of auxiliary sciences.... Society people ... will be delighted to have the opportunity to read about and, if need be, consult on biographies of these honoured men, biographies which we scrupulously elaborated caring about the literary form. ... Young learners ... will learn to perceive virtue, genius, and honour, represented by immortal advocates and creators of science."* [13, p. II]

2.2. Nikolai Nikolaevich Strakhov (1828–1896), famous Russian philosopher, book critic, publicist, librarian, Corresponding Member of St. Petersburg Academy of Sciences (1889), translated this work of Figuier. Strakhov was born in Belgorod. Therefore, the library of Belgorod University was named after him; it was also in Belgorod that a bibliographical guide of his works comprising around 800 sources was also published. According to Professor E.A. Antonov, who prepared this guide, *"... N.N. Strakhov's forty years of literary, scientific, and philosophical activities, were notable for vast knowledge in various spheres of culture and comprehensive understanding."* [57]. The luckily shaped combination of an author and translator ensured the success of this publication. It was widely used not only by scientists. General public used it as well. The Russian publication comprised three volumes:

1. Volume I Great Scientists of Ancient Times (426 p., 1869)
2. Volume II Great Scientists of the Middle Ages and Renaissance (558 p., 1871)
3. Volume III Scientists of the 17^{th} and 18^{th} Centuries (504 p., 1873) [14]

In the early 1870s two parts of *The History of Mathematical Sciences* by **Heinrich Suter** (1848–1922), historian of mathematics and school teacher, and subsequently Doctor Honoris Causa of Zurich University, were published in Zurich: Part I (thesis) in 1871 (in 1873, the second edition, reprinted) and Part II in 1875. Soon these books came to be

[2]See [46].

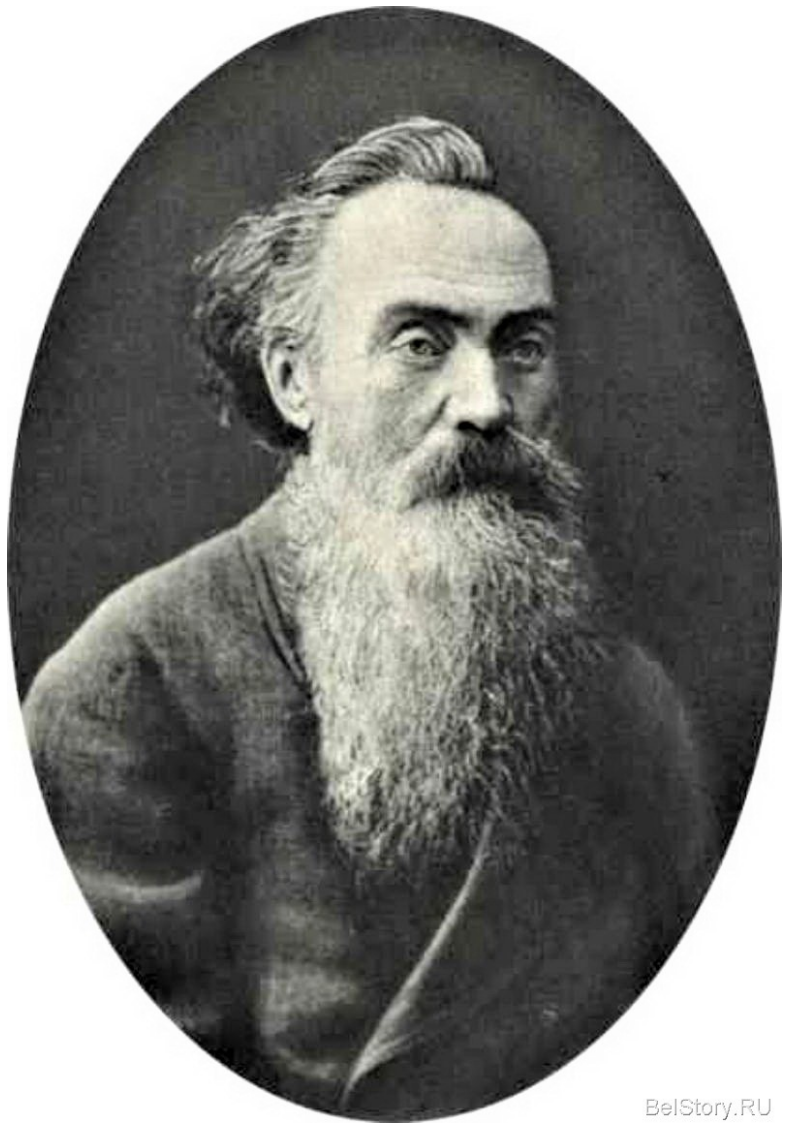


Figure 2: Nikolai Nikolaevich Strakhov (1828-1896).[2]
(Source: Portal *BelStory.RU*. Летопись Белогорья)

known not only in West Europe, but in Russia too, the fact whereof was witnessed by V.V. Bobynin: *"the work of Dr. Suter enjoys well-deserved recognition abroad, especially when it concerns the history of development of higher mathematics."* [16, p. 37] Interestingly, Suter conceived a plan of his work after he had read *The History of Mathematics* by Montucla. He mentioned the fact thereof in the preface. Exactly in three years after the second publication of Suter's Part I had been is-

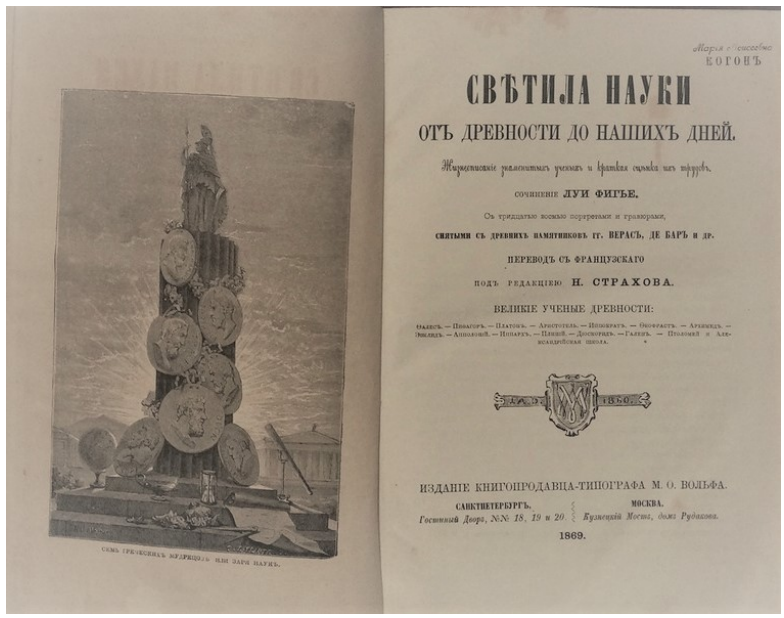


Figure 3: Louis Figuier in translation of N. Strakhov in 3 volumes, 1869-1873.

sued, A. Manuilov translated it into Russian and published in Chisinau (1876). [15] The information available about Manuilov is pretty scarce. However, we managed to find a work of local historians and journalists entitled *Bessarabian Stories* (2011), which contained some details about this man.

2.3. Anton Mikhailovich Manuilov (1844–1936) was born in Ackerman; studied at the First Chisinau Gymnasium; thereafter, entered the Department of Physics and Mathematics of St. Petersburg University; *"having graduated from this University, began teaching mathematics, physics, and cosmography, first, in the gymnasium he had graduated from, then at a theological seminary and high school for girls. He published several popular science works in mathematics and astronomy, and improved the wine measure."* [51, p. 234] He was fluent in foreign languages, at least in German and French, and lived a long life rich in events. He was pretty persistent: in his seventies, he set to study statistics, higher mathematics, chemistry, biology, and philosophical issues. *"As a result of his studies, he wrote a book in French, entitled 'Experience in Commercial Bookkeeping in Units of Energy'."* [51, p. 235]

Manuilov stated in the *Translator's Foreword* that he *"... translated most of this work literally. Departures from the original were made*

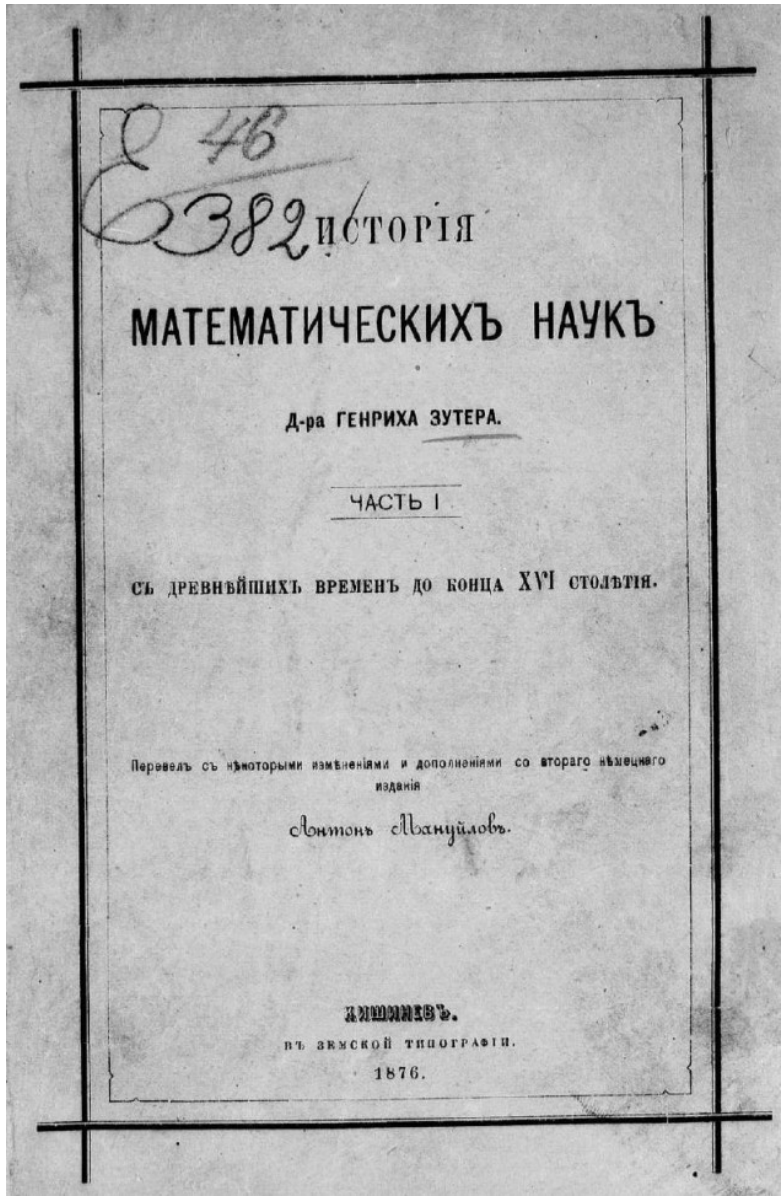


Figure 4: H. Suter in translation of A. Manuilov, 1876.

mostly in those places where we found any inaccuracies or omissions of the author." [15, p. I] He approached the materials he translated from a critical standpoint. He noted those places which he believed to be weak, in particular, the history of mathematical sciences in the Arab world and in the East, which was written without using the most recent research studies. And he was going to *"fill this gap in an appendix to*

Part Two of the work I am publishing." [15, p. I]

A year after the translated book of Suter was published in the Magazine of the Ministry of Public Education (1877), an anonymous review of the above work was issued. V.P. Zubov believed that the author of this review was V.V. Bobynin [39, p. 279], and we accept his opinion, as, having read Bobynin's works, one can easily recognize his style, rhetorical move he used, etc. The reviewer noted that the translation of *"... the first part of this work was made distinctly, in most cases correctly, and almost as a word-based translation. Giving full credit to Mr. Manuilov's work, we believe, however, that some comments, which could be of use for further publications of this book, will not be superfluous."* [16, p. 39] To put it bluntly, the essence of his comments was as follows:

1) Latin and Greek quotations in the original were translated into Russian, making it more complicated to understand them for those who don't speak Latin or Greek;
2) works of Russian scientists devoted to the history of mathematics and translations of works of the ancients (V.Y. Bunyakovsky, F.I. Petrushevsky) were mentioned;
3) and 4) there were translator's misprints and slips of the tongue;
5) Suter did not mention the works of Euclid and Archimedes translated by Peyrard, while these translations were recognized as the best ones for the time being. The translator had to fill this gap.

Generally, this was a positive review: *"Regardless the trivial inaccuracies we mentioned, we recognize that the foregoing translation is a pretty useful book for both the learners and the teachers. If Mr. Manuilov accomplishes this translation, Dr. Suter's History of Mathematical Sciences he publishes will fill the decidedly perceptible gap in our educational and academic literature – there is still no complete publication like this in Russian."* [16, p. 40–41] It should be noted that in 1905, this book by Suter was translated by another translator, **P. Fedorov** and published in St. Petersburg.

Being faithful to the chronology of publications, let us consider F. Pavlenkov's translation (1880) of a popular science work of G. Tissandier, Les Martyrs de la science. [17]. **Gaston Tissandier** (1843–1899), French chemist, meteorologist, aeronaut (wrecked during ballooning), writer, and publisher, professor of Polytechnic Union, and member of French Legion of Honour. The work concerned was, perhaps, the first attempt made in France to speak about tough fate of scientists – those selfless workers of science whose discoveries have enabled the human race

to use material and spiritual wealth. The author was very convincing in writing of the reasons which made him publish his work: *"We are well aware of the fact that Xerxes burned Athens; Pompei and Caesar shed blood like water . . . ; however, we know almost nothing about Euclid's or Archimedes' lives, while their discoveries have still been of use in our everyday life. But we owe the civilisation to these great overachievers from all countries and all times, not to warriors or conquerors."* [17]

2.4. Florentiy Fedorovich Pavlenkov (1839–1900), educator and book publisher, the man who *"had taught Russia to read"*, took on the task of translating.

He studied at Alexandre Cadet Corps, graduated from Mikhailovsky Academy of Artillery, served in the army, and having retired, opened a book store and began publishing. As a publisher, Pavlenkov focused on books designed for general reader: Russian classical literature, books for children, scientific translations and popular-science literature, biographical series like *Life of Outstanding People*. He was imprisoned in Peter and Paul Fortress and was exiled on repeated occasions for some of his inappropriate publications and rebellious speeches. M.E. Selenkina, a woman of letters from Vyatka, recollected that, when in exile in Vyatka, Florentiy Fedorovich *"was always on the go, . . . he was a unique all-rounder: a wonderful translator, feature-writer, editor, publisher, scientist and inventor, and even practiced law."* [2] Of course he could not miss out Tissandier's book because he was well aware of its importance for the promotion of scientific knowledge. And he was quite right: later editions of this book were published in 1891, 1894, 1901, 1904, 1907, and 1913.

2.5. Vasily Yakovlevich Zinger. The translation by V.Y. Zinger of the work of **Michel Chasles** (1793–1880) devoted to the history of geometry was a landmark in the period of infancy of the Russian history of mathematics. At first, the book was published in the *Mathematical Compendium* in parts (Volumes V–X, 1870–1880); subsequently it was published as a separate publication in two volumes [18, 19]. Chasles' work entitled *"Aperçu historique sur l'origine et le développement des méthodes en Géométrie particulièrement de celles qui se rapportent à la Géométrie modern"* appeared in 1837 in Brussels. According to R. Bertrand, this was the *"... most academic, insightful, and innovative work devoted to the history of mathematics of those that had ever been published."* [26, p. 28]

[3] [40]

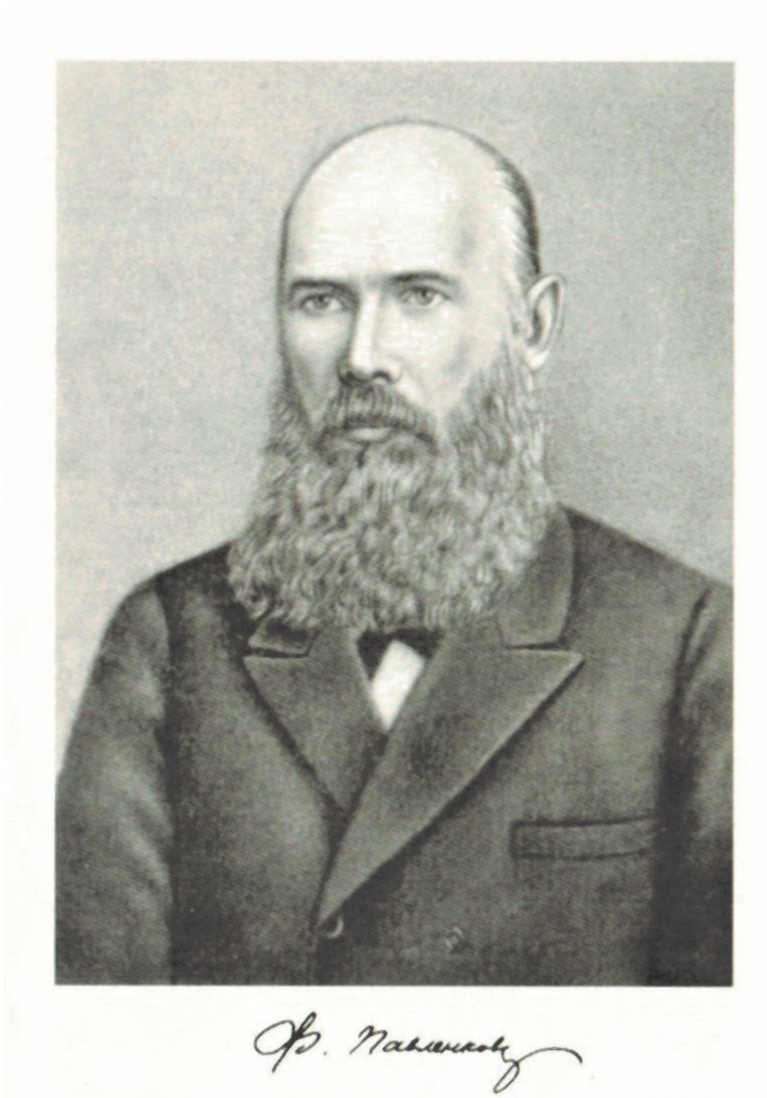


Figure 5: Florentiy Fedorovich Pavlenkov (1839-1900).[3].

The author himself wrote in the Preface to the second publication that this work *"was initiated by a problem offered by Brussels Academy. At first, it comprised but two memoirs, which were presented to the Academy in December 1829... . When the Academy ruled to write this book, I decided to expand the introduction and add results of some research studies pertaining to the same subject to it as notes."* [19, v. I, p. I] In his work, Chasles provided *"a summary of the most important discoveries, owing to which the pure geometry reached its modern development level, and primarily those discoveries which formed base for the*

most recent methods", described these discoveries and methods, and suggested his division of the history of geometry into five historical periods (epochs). To keep focused on the contents, and to avoid encumbering the main text with additional detailed explanations, biographies, and historical digressions, he included them in a separate volume, which turned out to be quite reasonable for the readers. In the Russian publication of 1883, a note to the author's preface stated that the editorial staff of the *Mathematical Compendium* began publishing this work of Chasles' because both the French original (1837) and the German translation made by Dr. Sohncke (1839, Halle) became rare books all at once.

Neither the translator's nor the editor's name was provided on the cover of the Russian publication. However, it is common knowledge that **Vasily Yakovlevich Zinger** (1836–1907) was the translator and the editor of this publication. He was a graduate of Moscow University, Doctor of Pure Mathematics, Professor Emeritus, subsequently Dean and Provost of the Imperial Moscow University, founder of Moscow school of geometry, and President of Moscow Mathematical Society. His student, Prof. Andreev, stated that "as a young man," Vasily Yakovlevich *"was very passionate about Chasles' works and closely scrutinized them... He translated one of Chasles' fundamental works ... into Russian in full, however, he did not do it diligently, he did not pursue editing details; instead, he did it as quickly as he was reading and speaking, because he always had a ready-to-use clear and precise phrase for each established or accepted idea."* [26, p. 13] Thus, owing to the efforts of Moscow Society of Mathematics and V.Y. Zinger, Russian historians of science were able to read the work of M. Chasles, the acknowledged leader of French school of geometry of that time, in their native language. No doubt, the thorough understanding and analysis of this work was conducive to identifying historical links of fundamental scientific ideas in geometry.

2.6. Samuil Osipovich Shatunovsky. Analysing translations made in the late 19^{th} century, a small but "legislative" work of Dedekind, *Stetigkeit und Irrationalzahlen (Continuity and irrational numbers)* published in Braunschweig in 1872 should not be overlooked. **Richard Dedekind** (1831–1916), German mathematician who was awarded doctoral degrees at the Universities of Oslo, Zurich, and Braunschweig, member of Berlin (1880), Roman, and French (1900) Academies of Sciences, author of classic works devoted to the substantiation of the theory of real numbers. The above book sets forward (as the author himself stated in the preface to his other book *"My attention was first directed towards the considerations which form the subject of this pamphlet in*

the autumn of 1858. As professor in the Polytechnic School in Zurich I found myself for the first time obliged to lecture upon the elements of the differential calculus and felt more keenly than ever before the lack of a really scientific foundation for arithmetic. The theory of irrational numbers... is based on the phenomenon occurring in the domain of rational numbers which I designate by term cut and which I was the first to investigate carefully; it culminates in the proof of the continuity of the new domain of real numbers. It appears to me to be somewhat simpler, I might say easier, then the two theories different from it and from each other, which have been proposed by Weierstrass and G. Cantor, and which likewise are perfectly rigorous." [7, p. 36]

This work was translated by S.O. Shatunovsky and published in Odessa in 1894 in a journal *Vestnik opytnoj fiziki i ehlementarnoj matematiki (Bulletin of Experimental Physics and Elementary Mathematics)* (Nos. 191–192) (reprinted in 1923) [48]. The importance of the above translation was clearly explained in the review of a famous Russian methodologist teacher S.I. Shohor-Trotsky, which was published in a pedagogical magazine *Russian School. "One can hardly get into the current idea of irrational numbers without reading authentic sources such as Dedekind's work published as translated by Mr. Shatunovsky,* wrote Shohor-Trotsky, *... In the Russian translation concerned, which was perfectly made by Mr. Shatunovsky who demonstrated great love to his job, the translator's preface he prepared with respect to George Cantor, the appendix which comprises the theorem on the existence of transcendental numbers, and even the translator's notes, which, although brief, are extremely useful for the reader who reads Dedekind for the first time, all these deserve attention."* [21, 48]

The translator, **Samuil Osipovich Shatunovsky** (1859–1929), was a mathematician, then a privat-dozent, subsequently a professor at Novorossiysk University, one of the founders of Odessa mathematical school. Born to a family of a craftsman, Samuil Shatunovsky graduated from a non-classical secondary school in Herson and had no right to enter a university without a gymnasium certificate. Having studied for some time at the Technological Institute and thereafter, at the Institute of Railway Engineers in St. Petersburg, he was admitted to St. Petersburg University as an auditor to study mathematics, as he was seriously absorbed in this science by that time. He had a chance to attend lectures of such coryphaei as P.L. Chebyshev, E.I. Zolotarev, A.N. Korkin, Y.V. Sokhotsky. Thereafter, he lived in Switzerland for two years,

[4] [38]

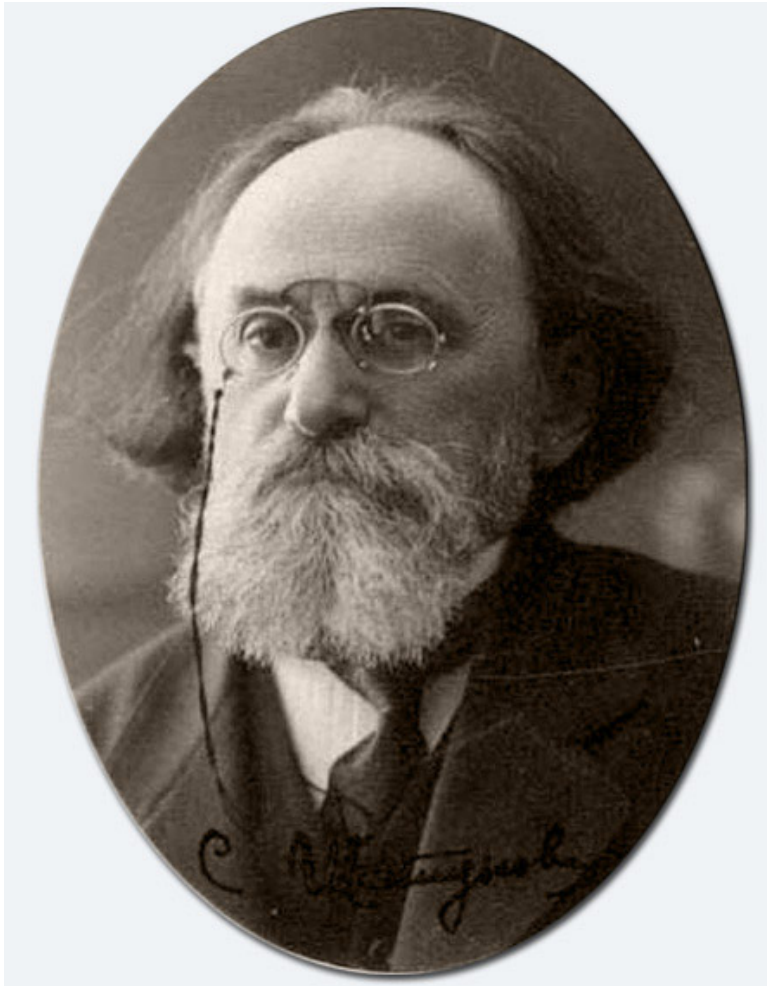


Figure 6: Samuil Osipovich Shatunovsky (1859-1929).[4].

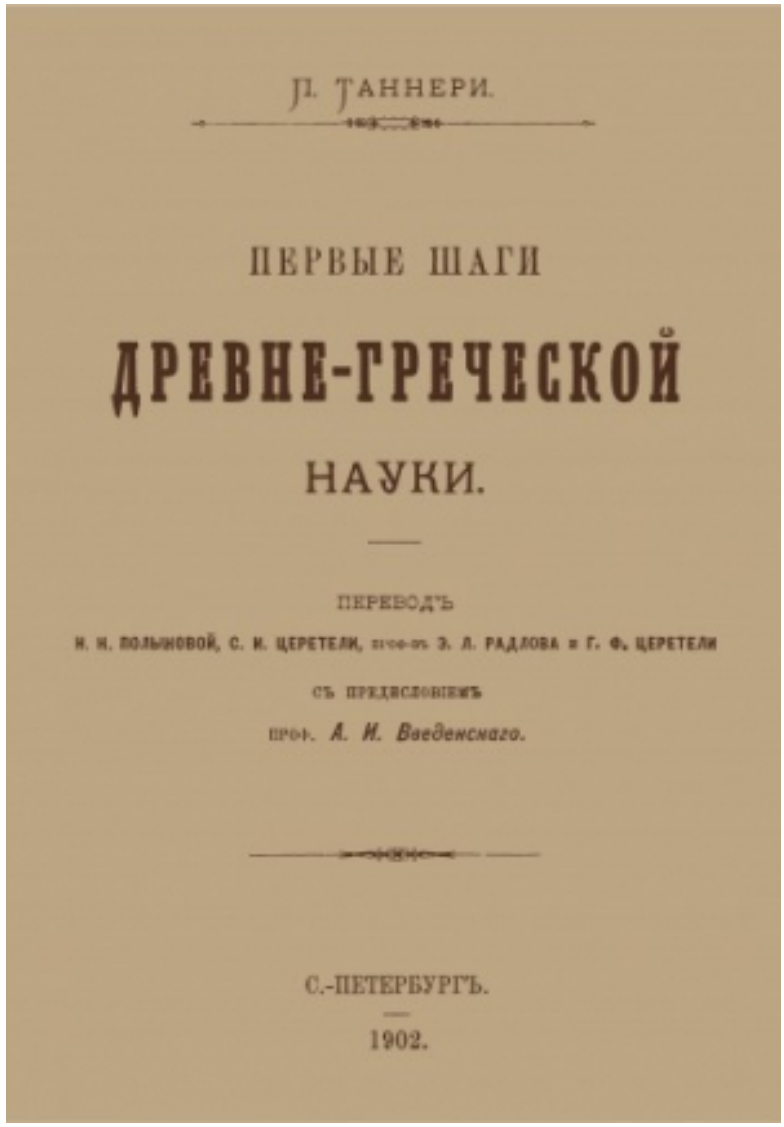
where he attended lectures of H. Weber, famous algebraist of that time. When he returned to Russia, he travelled in the south of Russia, making ends meet by giving private lessons. As of 1893, he settled in Odessa, where he first *actively contributed to a journal Bulletin of Experimental Physics and Elementary Mathematics*, and subsequently became a secretary of the Department of Mathematics of Novorossiysk Society of Natural Philosophers (1898–1914). In 1905, Shatunovsky was elected privat-dozent at Novorossiysk University *"after R.P. Yaroshenko, I.V. Sleshinsky, I.Y. Timchenko, and V.F. Kagan had procured a permission of the Ministry of Public Education for him to pass Master's examinations and Shatunovsky successfully passed these examinations in 1904."* [58] His main works pertain to algebra. However, we would es-

pecially note Shatunovsky's achievements as a teacher, populariser of science, and one of the founders of *Mathesis*, Odessa publishing house [49]. The republishing dates of the above Dedekind's work (1906, 1909, 1914, 1923) are the vivid evidence of the expedience of this publication and demand for it.

Gradually, the choice of works in the history of mathematics to be translated became more goal-oriented and conscious. Thus, in the early 20^{th} century (1902) a translation of a work of **Paul Tannery** (1843-1901), of some reputation in Western Europe, was published. Paul Tannery was a French mathematician and historian of mathematics, professor of Greek and Latin Philosophy at Collège de France. His works in the history of ancient science became classical, and his translations of the ancient Greeks have been used by scientists to this day. *Pour l'histoire de la science hellène* (Paris, Félix Alcan, 1887) was the first of the three of his works translated into Russian. This was a collaborative translation made by four translators: **M.I Volynova**, **R.I. Tsereteli**, Prof. **E.L. Radlov**, and **G.F. Tsereteli** [20]. The author divided his book into two parts. The first one set forth Tannery's view of the history of ancient systems of philosophy (before Socrates), and the second one comprised his translations of fragments from works of ancient philosophers. It is evident that the contents of the treatise was very specific. Therefore, an interdisciplinary team was engaged to translate it. However, there were no mathematicians among the translators. Thus, G.F. Tsereteli translated doxography and fragments (other than the fragments from Empedocles) from Ancient Greek, and E.L. Radlov translated fragments from Empedocles. Prof. A.I. Vvedensky wrote a preface to the Russian publication. There is another preface in the Appendix to Chapter XIV, which was written by Prof. G.F. Tsereteli.

Grigory Filimonovich Tsereteli (1870-1938) was an Orientalist, specialist in papyruses, and professor at St. Petersburg University. His tragic fate was briefly described as follows: *"As of 1930, incorporated in the Academic Case* ["Academic Affairs" (or "The Case of Academician S.F. Platonov") - a criminal case fabricated by the Joint State Political Directorate against a group of scientists of the Academy of Sciences and a group of local historians in 1929–1931 in Leningrad. 115 people had gone through the case, including 4 academicians, who were accused of plotting to overthrow the Soviet power]; *in February 1931, arrested. He was put in prison and set free in six months, probably, thanks to his*

[6] [38]
[7] [42]


П. ТАННЕРИ.

ПЕРВЫЕ ШАГИ

ДРЕВНЕ-ГРЕЧЕСКОЙ

НАУКИ.

ПЕРЕВОДЪ

Н. Н. ПОЛЬНОВОЙ, С. И. ЦЕРЕТЕЛИ, изъ-съ Э. Л. РАДЛОВА и Г. Ф. ЦЕРЕТЕЛИ

СЪ ПРЕДИСЛОВІЕМЪ

проф. *А. И. Введенскаго.*

С.-ПЕТЕРБУРГЪ.

1902.

Figure 7: P.Tannery in translation of M. Volynova, S. Tsereteli, L. Radlov, G. Tsereteli, 1902.[6].

wife's letter to I.V. Stalin. In spring 1938, he was arrested again and in a year, sentenced to 10 years of confinement in prison. He died allegedly while he was transferred to another prison in an echelon. According to other sources, he was shot dead in prison. His place of death is unknown. He was rehabilitated posthumously." [3] His wife, **R.I. Tsereteli**, was probably a historian or philologist. **Ernest Leopoldovich Radlov** was a historian, philologist, philosopher, professor, worked in St. Petersburg.

Figure 8: Grigory Filimonovich Tsereteli (1870-1938) .[7].

We found no information on **M.I. Volynova**. **Alexandre Ivanovich Vvedensky** (1856–1925) was a Russian philosopher and idealist, psychologist, founder of the St. Petersburg first Philosophical Society, professor of St. Petersburg University. It should be noted that the work discussed herein above was not intended for amateurs, it was designed for single-discipline experts specialising in the history of science.

Provincial scientific centres affiliated with Russian local universities, which consolidated naturalists and historians of science, eventually be-

gan increasingly frequently addressing various issues in the history of basic mathematical ideas. Thus in Kazan, under the direction of Prof. **A.V. Vasiliev** (1853–1929), one of the founders of physical and mathematical section of the Society of Natural Philosophers at Imperial Kazan University, they translated and published numerous works of foreign mathematicians. Another work of R. Dedekind, which appeared in 1888 and was entitled *What are numbers and what they should be?*, was devoted to statement of the theory of real numbers using the *'method of Dedekind cut'*. This work was bound to catch the interest of Russian scientists and teachers. In 1905, N.N. Parfentiev, one of Prof. Vasiliev's students and privat-dozent of Kazan University, translated it into Russian. This work, which became a rare book, had never been republished until 2015. However, nowadays, this work was given a new lease of life owing to the new publication of its translation under the general editorship of G.I. Sinkevich. The latter added a detailed editor's preface to this book describing Dedekind's scientific path and investigations, analysing various ways of introducing the notion of a number and continuity, and providing the biography of translator N. Parfentiev [54, p. 8–24].

2.7. Nikolai Nikolaevich Parfentiev (1877–1943) graduated from Kazan University, Mathematical Section of the School of Physics and Mathematics, and was retained at the University to get prepared for professorship (1900–1902). In 1904, he was assigned to the Department of Pure Mathematics as privat-dozent. According to K.Z. Galimov, who was one of his students, having fallen under the influence of revolutionary-minded people, Parfentiev engaged in illegal activities among teachers in Kazan, participated in unrest among students in 1905, which was why he *"was expelled from the University and gymnasium and was deprived of the right to live in collegiate towns. The University's forward-looking professors came to the rescue of their alumnus and helped him go abroad instead of Petropavlovsk, Kazakstan, he had been assigned to."* [41, p. 627] He lived in Berlin, earning his living giving lessons and doing translations. At the same time, he studied at Berlin University and University of Goettingen, attended lectures and seminars delivered by Klein, Hilbert, and Schwartz. After a year, having returned to Russia, Nikolai Nikolaevich was reinstated in his office, and in two years, the University sent him on an internship trip to finally prepare his Master's thesis. We worked in libraries in Munich, Gottingen, Berlin, Paris, and Bordeaux, studying special issues in the theory of functions (1908-1910). Having returned back to Kazan, he presented a thesis entitled *"Research in the theory of growth*

of function" (1911) seeking for the Master's degree and was granted professorship the same year. Back in 1900, Prof. Vasiliev, his teacher, formed a physico-mathematical student group at the Department. In 1913, this group was already headed by N.N. Parfentiev. His fluency in foreign languages (German, French, Latin, and Greek) enabled Nikolai Parfentiev to translate fragments from F. Klein's *Elementary Geometry* when he was still a student; then to successfully translate early in his teaching career, and subsequently, to extensively involve students, who were members of the above-mentioned group and translated works by Poincare, Helmholtz, Kronecker, and Hankel [54, p. 21] under his direction. Many professors of Kazan mathematical school and representatives of other scientific schools of the USSR (P.A. Shirokov, B.M. Gagaev, V.A. Yablokov, B.A. Fuchs, K.P. Persidsky, and others) were N.N. Parfentiev's students.

Another spectacular example of successful undertaking in the area of translations in Russia's provinces was in Odessa academic community. A group of enthusiasts of science formed a Mathematical Department at Novorossiysk Society of Natural History [Natural Philosophers] in Odessa. **Ivan Yurievich Timchenko** (1863–1939) played a special role in arranging its work. a mathematician, historian of mathematics and mechanics, privat-dozent, he thereafter became a professor of Novorossiysk University (Odessa). As of 1888, Timchenko was an active member of the Mathematical Department and as of 1914, he headed the Department, often made reports and wrote for the *Journal of Empiric Physics and Elementary Mathematics*, which was at that time published in Kiev and Odessa. It was owing to this Journal that one of his rigorous historical research studies came out. The editorial board of this Journal decided to have I. Heiberg's book translated. It was a letter of Archimedes to Eratosthenes: *"Method for Mechanical Theorems"* (1909) (cf. [65], [47], [45]).

In 1906, **Johan Ludvig Heiberg** (1854–1928), a Danish philologist and historian, found one of the Archimedes' treatises, which was considered lost (*"Archimedes' palimpsest"*), in the library of the Church of the Holy Apostles in Istanbul, took photos of around two thirds of pages in the manuscript, and tried to reconstruct the treatise. The outcome of his research was translated into Russian, and privat-dozent Timchenko wrote a preface and detailed comments to the translation, having placed these in front of the main text and entitled *Archimedes and His Newly Found Work* [22, p. I–XV]. It should be noted that this book was published by Mathesis publishing house in Odessa (1910–1925), which was

considered by the academic community to be the best one, as Mathesis engaged leading scientists of that time (Orest Khvolson, Ivan Sleshinsky, Sergey Bernstein, Ivan Timchenko, Igor Arnold) to translate the works they were going to publish. Let us also mention that the magazine *Teachers' Collection* published a review of this work by S. Bernstein in its December issue of 1910.

In 1896, **Florian Cajori** (1859–1930), an American mathematician and historian of mathematics, Ph.D., professor of physics in Colorado College, published his research entitled *A History of Elementary Mathematics with hints on methods of teaching*. Ivan Timchenko prepared this book as well as the previous one for publishing in Russia (1910) as the editor and translator. This book also comprised 69 detailed notes and 37 additions of this translator, some of them in the form of analytical reviews [23]. In the preface, Ivan Yurievich gave reasons for choosing this Cajori's work to translate it into Russian, having noted that this work *"... leads ... in the intelligibility and clarity of presentation, in the abundance of information and neat layout of the book, ... and the author's ability to reconcile facts in the history of science with general cultural history in a concise and eloquent manner makes this book interesting for those who are not just looking for information on the origin and first meaning of formulas and theorems from different sections of mathematics in works like this, but who mainly seek to understand the growth pattern of mathematical knowledge and development of key mathematical ideas."* [23, p. III] Interestingly, Timchenko recommended that, in addition to this translated publication, Russian readers should read *Sketches on the history of development of physical and mathematical sciences in Russia* by V.V. Bobynin, as there was no information like that in Cajori's book.

In his report on this publication to the Academic Committee of the Ministry of Public Education (MPE), Prof. B.M. Koyalovich noted: *"Apart from the work of Prof. Cajori, the book under consideration comprises 17 appendices prepared by the editor of I.Y. Timchenko's translation, and we believe that these appendices are of great importance for science, which are more valuable than Prof. Cajori's book itself. I.Y. Timchenko regards individual points in the history of mathematics, however, his entire work ... is based on authentic sources and evidences of its author's outstanding conversance with the literature in the history of mathematics. The author provided quite a number of interesting quotations from vintage books and time after time corrected not only Cajori's but Cantor's errors as well."* [37, p. 3] [(we are talking about Moritz

Benedict Cantor).]

A landmark in the development of Russian history of geometry was the publication of R. Bonola's *Non-Euclidean geometry* in St. Petersburg. **Roberto Bonola** (1874–1911) was an Italian mathematician, philosopher, and historian of mathematics, graduate of the University of Bologna, teacher of mathematics at higher learning institutions in Pavia and Rome. He died a premature death because of illness. His scientific interests resided in the sphere of geometry, i.e. non-Euclidean and projective geometry. However, non-Euclidean geometry was uppermost. R. Bonola's doctoral dissertation was devoted to non-Euclidean geometry, and he prepared the most complete list of references for it (1902) and an extensive bibliography for foundations of geometry in relation to the non-Euclidean geometry [30]. Having further developed the part of his dissertation devoted to critical statement of history, Bonola set forth the history of non-Euclidean geometry in a separate publication (1907) beginning with attempts of **ancient Greeks, Arabs, and scientists of the Renaissance** to prove the Fifth Postulate and distinguished its development milestones. The book was a success and was translated into German, English, and Russian [24] substantially immediately. A. Kulisher translated the book into Russian, and A.V. Vasiliev wrote a supplement entitled *Regarding the attitude of N.I. Lobachevsky toward the theory of parallel lines until 1826*, which was incorporated in the Russian publication.

2.8. Alexandre Ruvimovich Kulisher (1875 – not until 1915) was a Russian mathematician, teacher, author of manuals and articles in mathematics; translated works of European mathematicians from English, German, and Italian, and fiction. Alexandre Kulisher was born to a family of a Doctor of Medicine in Kiev; studied in St. Petersburg University. To learn methods of teaching at school, he did several internships (in Germany, Switzerland, Sweden, Norway, and Denmark). He taught mathematics and physics. After 1917, Kulisher was a professor at higher learning institutions in Petrograd; as of 1923, a teacher at Leningrad State University (LSU); as of 1929, professor at LSU. In 1937, he was expelled from the All-Union Communist Party *'for loss of class vigilance'* and exiled to Vyatka (now known as Kirov), where he worked as a professor of the Department of Algebra and Geometry [9].

2.9. Alexandre Vasilievich Vasiliev (1853–1929) was a Russian mathematician, professor of Kazan University, one of the founders of Kazan Society of Physics and Mathematics, promoter of Lobachevsky's

ideas, author of numerous works in the pure mathematics and history of pure mathematics, and a wonderful teacher. *"The vivid characteristic feature of academic thinking ...* [of A.V. Vasiliev] *was consistency which joined together the profound historicism, philosophical thoroughness, rigorous mathematical analysis, and educational focus. . . . Looking into any mathematical problem, he was always curious about its history in the first place, because what was of real interest for him was the evolution of the idea."* [59] Small but highly significant, his work about Lobachevsky's views of the theory of parallels supplemented Bonola's research in the most fortunate way and enabled him to provide a holistic view of the history of non-Euclidean geometry.

As we can see, the turn of the 20^{th} century, both in the centre and on the fringes, was marked by rather heavy translating activities. Translators translated works of western historians of mathematics, although numerous works of Russian scientists devoted to these issues had already been published in Russia. The interest in these translations did not fade away until the end of the period under consideration. In 1911, three publications appeared, which deserve particular attention. The first one was G. Darboux' article, *A study of development of geometrical methods*, translated by privat-dozent S. Sluginov and published in Kazan (1911) [27]. As a geometer, **Jean Gaston Darboux** (1842–1917) had hardly had peers while alive. His contemporaries compared his talent to that of Euclid. According to D. Hilbert, *"What Euclid had done in the third century B.C. by his work and by systematising works of Greek geometers, Darboux did in the late nineteenth century for modern geometry."* [43, p. 9–10] Translations of any of Darboux' works would of course be strongly sought-for by Russian mathematicians. However, this article was particularly awaited, as it introduced *"the most important things in the history of development of geometry to the reader in a very concise and elegant manner."* [27, p. 5] According to the translator, it was of interest not only for specialists but also for the public at large.

Very little is known about Sluginov, as he had to live in the horrible *"times of change"*. **Serapion Petrovich Sluginov** (1879–??) graduated from Kazan University (School of Physics and Mathematics, Department of Mathematics) in 1906. As of 1910, he was a privat-dozent at this University and other higher learning institutions in Kazan. In this period, he published a book entitled *Analytical Functions Theory* (Kazan, 1914). He also published his reviews in a Kazan journal *Bulletin of Education and Upbringing* (e.g. 1914, Issue 3). After the coup of 1917–1919, he worked as a teacher at Samara University (1921), and

subsequently moved to Perm, where he became a professor and headed the Department of Mathematics from 1921 to 1936. Due to the lack of skilled staff in Siberia, in 1930–1934, he concurrently worked (on a part-time basis) as professor and head of the department of mathematics at Perm Teachers' Institute and Ural Industrial Teachers' Institute in Sverdlovsk. Thereafter, he was roaming around the country: in 1938, Far East State University in Vladivostok; subsequently, Teachers' Institutes in Tula and Sergiev Posad (1950–1955) [50, p. 11].

It is remarkable that the issues related to foundations of mathematical sciences, which were only beginning to draw attention of Russian scientists, became the subject matter of special interest for a group of mathematicians from Odessa headed by Prof. I.V. Sleshinsky. It was he who translated into Russian the famous work of Bolzano, *Paradoxes of the Infinite*, which was published by F. Prihonski in 1851 based on the author's posthumous manuscript [28]. **Bernard Bolzano** (1781–1848) was an outstanding Czech mathematician, theologian, philosopher, and dean of the Department of Philosophy at Charles University in Prague. He was dismissed from the University for his political opinions and deprived from the opportunity of publishing his works. Many of them had never been published while he was alive. In his *Paradoxes of the Infinite*, he anticipated G. Cantor's set-theoretic ideas; introduced the notion of a set and one-to-one correspondence; proved the theorem on the existence of an accumulation point in any infinite bounded set (Bolzano-Weierstrass Theorem) [44].

2.10. Ivan Vladislavovich Sleshinsky, Jan Śleszyński (1854–1931) was a Polish-Russian mathematician, Doctor of Mathematics, professor, a student of prof. E.F. Sabinin, a specialist in variational calculus. Having graduated from Novorossiysk University (1875) and passed master's examinations (1880), Jan (Ivan) Sleshinsky had a two-year internship at Berlin University, attended lectures of K. Weierstrass, L. Kronecker, E.E. Kummer, E.G. Bruns. In 1883, after he returned to Odessa, he defended his master's thesis entitled *Study of the second variation of a simple integral*, and thereafter, doctoral thesis entitled *On the theory of the least-squares method* (about 1897). Sleshinsky lectured at Novorossiysk University from 1883 to 1909 and was awarded the title of professor emeritus (1908). His main works were devoted to the theory of continued fractions, justification of the least-squares method, theory of probabilities, mathematical logic, and foundations of mathematics [4]. Ukrainian historians of mathematics noted the great influence of I.V. Sleshinsky on the development of mathematical re-

search in Novorossiysk University. There is little information available about the period from 1909 to 1917 in Sleshinsky's life. All we know is that in these years he continued extensive collaboration with Mathesis publishing house, translating and editing for them. It is unclear when Sleshinsky emigrated. However, we know that in 1911–1924 he was a professor of mathematics and logic at Jagiellonian University in Krakow. The most significant of his works were *Proof Theory* in two volumes (1925; 1929) and *Theory of Determinants* (1926), both published already in Poland.

Bolzano's book translated by I.V. Sleshinsky in Odessa was published in 1911. The editor's preface to the translation preceded the work. In his preface, Sleshinsky drew the readers' attention to Bolzano's scientific archives which was stored in Vienna Court Library: *"ten piles lettered A,B,C,D,E,F,G,H,H [sic],J. Only part of one pile contains lectures in ethics, all the rest being mathematics."* [28, p. V] It is evident that he was familiar firsthand with these materials, as well as with other works of this author, as subsequently, he listed the main discoveries in various spheres of mathematics, which had been made earlier than the authors after which these discoveries were named. First, he introduced certain notions, such as 'upper; second, he established and developed properties of the infinite, *"which formed the basis for Cantor's theory"*; third, he considered the definition of the sum *"on which H. Grassmann built its arithmetic."* [28, p. V] Furthermore, Sleshinsky noted *"wonderful ideas ... related to analysis vindication"* and some other outstanding ideas. However, in spite of his highest appreciation of Bolzano's work, Sleshinsky took a critical look at the work he translated. He could not agree with certain views of Bolzano (in particular, in the area of metaphysics), although he justified them because *"the most renowned mathematicians of this epoch shared his opinion"* [28, p. VI].

The third publication of those mentioned above, which was published in Odessa (Mathesis publishing house) also in 1911, is a translation of the work of F. Rudio, *Archimedes, Huygens, Lambert, Legendre. Vier Abhandlungen über die Kreismessung. Deutsch herausgegeben und mit einer Übersicht über die Geschichte des Problemes von der Quadratur des Zirkels, von den ältesten Zeiten bis auf unsere Tage* (Teubner, Leipzig, 1892) [29]. The author of this translation was a famous author in the West. **Ferdinand Rudio** (1856–1929) was a German and Swiss mathematician, historian of mathematics, one of the organisers of the International Congress of Mathematicians (1897). The bibliography of his works in the history of mathematics can be found in

[8, p. 389–390]. It is notable that F. Rudio's work was translated and edited by R. Bernstein. It was perhaps for the first time that Bernstein translated a work in the history of mathematics. Subsequently, the book saw countless reprints with additions.

2.11. Sergei Natanovich Bernstein (1880–1962) was a mathematician, professor (1907), Doctor of Pure Mathematics (Kharkov, 1914), Member of the Academy of Sciences of Ukrainian Soviet Socialist Republic (USSR) (1925) and Member of the Academy of Sciences of the USSR (1929). Sergei Natanovich was born in Odessa to a family of a docent (associate professor) of Novorossiysk University. He obtained higher education in Paris (in 1901–1902, completed a full course of Higher School of Electrical Engineering in Paris and was awarded a Diploma of Electrical Engineer; in 1902–1904, studied at the Department of Physical and Mathematical Sciences at Sorbonne to be awarded the degree of a Doctor of Mathematics). At first, he lived and worked in St. Petersburg (1905–1908) and thereafter, at higher learning institutions in Kharkov (1908–1933), Leningrad, and Moscow [5]. S.N. Bernstein's main research studies were basically devoted to the theory of differential equations, theory of approximation of functions by polynomials, and theory of probability. However, he found time for history of mathematics too, especially at the start of his teaching career. When he was still a privat-dozent in Odessa, Sergei Natanovich actively collaborated with *Teachers' Collection* magazine, editing articles and books. The monthly publication entitled *Teachers' Collection* was published in St. Petersburg at the Main Department of military education establishments in the period from 1864 to 1918 to *"further the appropriate development of teaching and educational activities at Military Schools, Gymnasiums and Progymnasiums, and at Junker Schools."* As publications in this magazine cut across a range of key teaching issues, this magazine came into notice of teachers from civil institutions as well. The magazine had two sections: the official and unofficial one. The unofficial one comprised Appendices which gave pride of place to criticism and bibliography [52]. Let us compromise the chronological sequence of our story and note that it was in the latter section where Bernstein published his reviews as of 1909. Among these reviews, we would single out those which were devoted to the history of mathematics:

- Elements of Mathematics by Lazan. Translated from French // Teachers' Collection, 1909, October, p. 323–325. (reviewed)
- I. Heiberg. The New Work by Archimedes. The Letter of Archimedes to Eratosthenes regarding some mechanical theorems. Trans-

lated by Mathesis // Teachers' Collection, December, p. 619–620. (reviewed)

- F. Cajori. The History of Elementary Mathematics. Translated under the editorship of I. Timchenko: Teachers' Collection, March, p. 393–394. (reviewed)
- Russian Mathematical Bibliography. Edited by Prof. D.M. Sintsov. Issue 1–2 for 1908–1909. Odessa, Mathesis, 1910–1912: Teachers' Collection, May, p. 623–624. (reviewed)
- Jules Tannery. Basic Notions in Mathematics. St. Petersburg, 1914. Teachers' Collection, 1916, January, p. 110–112. (reviewed)

We would also note that another remarkable translation, which significantly expanded the information available to Russian readers on works of Western mathematicians devoted to the theory of trigonometric series, was made by S.N. Bernstein. It was an annotated edition of *Trigonometric Series expansions* by Lejeune Dirichlet, B. Riemann, R. Lipschitz, annotated by P. Montel and published by Kharkov Mathematical Society as translated by G.A. Gruzintsev and S.N. Bernstein (1914, Kharkov). Furthermore, S.N. Bernstein had some works in the history of mathematics of his own. He wrote them before 1917, however, the discussion thereof was included in subsequent materials devoted to the creation and development of the history of mathematics in Russia. Here is another interesting fact, which directly concerns the author of these reviews. The publishing house Mathesis, which introduced itself as a *"nonfiction publishing house which publishes works relating to physical and mathematical sciences"*, placed information on the products it published on the last pages (p. 1–13) of appendices to the translation of *Historical Overview of Elementary Geometry* (Odessa, 1912) done by E. Fourrey. The list of books which were in preparation included *EUCLID. THE FIRST SIX BOOKS OF THE ELEMENTS. Translated by Prof. D.M. Sintsov and privat-dozent S.N. Bernstein* [31, p. 12]. Unfortunately, the plans for the publication failed and this translation was never published.

We owe to *Mathesis* publishing house issuing several small popular science publications in 1912 in Odessa. They were published in the *Elementary Mathematics Library* series and were intended for general public. The series was devoted to the *"development of the most important and interesting issues in elementary mathematics, which were covered from the historical and probably philosophical point of view, focusing on absolute comprehensibility of the content"*. All the reader had to know was elementary mathematics [4]. Those were translations of W. Lietz-

mann's *Pythagorean Theorem. With some information on Fermat Theorem* [32] and E. Fourrey's *Historical Overview of Elementary Geometry* [31]. **Walter Lietzmann** (1880–1959), a student of Hilbert, was a German mathematician, teacher, populariser of mathematics, Gymnasium teacher, editor of a German instructional magazine, professor of teaching at Gottingen University [6]. Later editions of his book were subsequently published several times (1934, 1960). Unfortunately, the translator was not mentioned. However, the entire series mentioned above was published under the direct editorship of S.O. Shatunovsky [64]. The work of Emil Fourrey was translated by A.I. Bakov. **Afanasiy Ivanovich Bakov** taught physics at Odessa gymnasiums; worked at Mathesis publishing house part-time; and translated a lot of popular-science literature [1].

Another interesting translation from the same *Elementary Mathematics Library* series was a work of a German teacher, professor Eugen Löffler (1883–1979), entitled *Numbers and Number Systems...* translated by I.L. Levintov. This book was published under the general editorship of privat-dozent S.O. Shatunovsky. The author states in the preface to the book that the goal of this book is to *"present numbers for a wide array of educated public against the background of cultural history ... The author set himself the task of showing that numbers and number systems are closely associated with the cultural status of people and that they often form one of the diverse links between various nations and epochs."* [33, p. 3–4] The narration was concluded by classifying the number systems summarized in a separate table and by considering the methods *"used to combine individual numbers into a composite number in systems of various nations."* [33, p. 94]. The book was written in a simple, clear, and intelligible manner, and was, in fact, suitable for any reader regardless of his level of competence. We intended to demonstrate the way historical and mathematical knowledge was popularised in Russia's provinces using the example of this translation, which was otherwise probably not very important for the development of Russian history of mathematics.

There was no translator's preface in this book. However, we managed to find some information about I.L. Levintov himself. **Iosif L. Levintov** (18??–19??), PhD (Natural Sciences) [the degree awarded upon graduation from the university] who worked at Mathesis publishing house in Odessa, often translated articles and books from German and English, sometimes mentioning the editor's name, other times under the editorship of *Bulletin of Elementary Mathematics and Empiric Physics.*

He died prematurely, and his wife, Maria Solomonovna Levintova, got married to a famous mathematician from Odessa, V.F. Kagan, who mentioned in his *Biography* that I.L. Levintov was a follower of Ernst Mach's philosophy and named his daughter after Mach with the consent of Mach himself. His daughter, Ernestina Iosifovna Levintov, became a Hispanist, PhD (Philology), and his son, Iosif Iosifovich Levintov became a physicist, Dr. Sci. (Physics and Mathematics) [53].

When several research studies appeared to address stepping up the logical rigor requirements for mathematical theories, basic mathematical notions began to be discussed and polished more often. One of the remarkable foreign works devoted to this issue was the book written by brothers **Jules and Paul Tannery** (J. Tannery. *Basic Notions in Mathematics including an essay by P. Tannery: Basic information from the history of mathematics*). This book was republished thrice until 1914. It was this third publication which was in 1914 translated by N. Evreinov into Russian [34]. The work of Jules Tannery (on pages 1–359) was devoted to pure mathematics. The author explained in the preface: *"The proposed book is essentially a detailed presentation of mathematics under the programme of a philosophy class..."* [34, p. XIII]. The essay of Paul Tannery (p. 360–406) is of special interest for us, because it discusses the most significant (in his opinion) moments in the history of development of mathematical theories:

I. The origin of algebra.
II. How the Greeks understood the words 'analysis' and 'synthesis" and their geometrical algebra.
III. Positive and negative.
IV. Curves studied by the ancients.
V. The beginning of using coordinates for graphic presentation of changing phenomena.
VI. The origin of infinitesimal calculus.

In the end of the essay, the author provided historical information in astronomy.

So far, the identity of translator N. Evreinov has been established but presumably. Probably it was **Nikolai Nikolaevich Evreinov** (1879–1953), who was a playwright, historian, and theatre theorist, representative of bohemian St. Petersburg of 1910, who ended his days amongst Paris emigrants. In 1901, he graduated from St. Petersburg School of Law being awarded a silver medal and the rank of a titular counsellor.

Thereafter, he served for the Ministry of Justice and Ministry of Railways for thirteen years [60]. As it appears from his letters, somewhere in 1910–1914, he was in great need of cash and could make a little extra money at publishing houses, the more so since he spoke foreign languages fluently and had some experience in literary work too (e.g. his *History of Corporal Punishment in Russia*, 1913).

In the early 20^{th} century, a fundamental work of **I. Tropfke** *The History of Elementary Mathematics* in seven volumes (1902–1924), began to be published in Germany. This book saw countless reprints, and has been probably one of the most complete sources in the history of this branch of mathematics to the present time. In 1914, only the first part of the first volume was translated into Russian. This part was devoted to the history of arithmetic. To give you an idea of its contents, here is the description of contents of the translation: *"Numbers at large. Measures. Whole Numbers. Fractions. Applied Computations. Rule of Three. Percentage Rule. Time Estimation. Calculation of Profits and Losses. Accounting Calculations. Tare Estimation. Mixing Rule. Partnership Rule. History of Promissory Notes."* [35]

Chistiakov edited the Russian-language publication, while D.A. Boehm and R.E. Struve translated from German. By all appearances, the publishers had plans to have this major work further translated. However, further developments in the country made it impossible. **Dmitry Alexandrovich Boehm** (1880–1938), gentleman by birth, teacher, assistant professor in theory of mechanics at Moscow Higher Construction Institute, anarchist and visionist, embraced the revolution with enthusiasm. Subsequently, he worked as a teacher at Higher Military Communications School (1819); thereafter, at Military Teachers' Institute and Frunze Military Academy (1926). In 1931, he came under the weight of repression, was accused *"of participating in a counterrevolutionary organisation, creating and heading prohibited circles, and spreading anti-Soviet propaganda. Speaking about "prohibited circles" they meant D.A. Boehm's participation in the work of a bibliographic circle run at the public library and reading room of Kropotkin Museum."* [61] In the case of the *Order of Light*, Boehm was first convicted and sentenced to five years of imprisonment; was kept in Yaroslavl detention facility for political prisoners; however, he was exiled to Tomsk before long; in 1934, transferred to Narym Kray, where the circuit session of the Military Division of the Supreme Court of the USSR sentenced him to the extreme penalty – to be shot – and the sentence was executed the same day (he was rehabilitated in 1975).

All we managed to learn about the second translator, **R.E. Struve**, was that he worked as a teacher of mathematics at learning institutions in Moscow.

2.12. Ioasaf Ivanovich Chistiakov (1870–1942) was a mathematician, teacher, educator, founder of the magazine entitled *Mathematical Education* (1902), member of organizing committees in charge of arranging All-Russian Congresses of Teachers of Mathematics. He studied at the Department of Physics and Mathematics of Moscow University. Having graduated from the University in 1893, he presented his work entitled *Bernoulli Numbers*, which was awarded a Gold Award and published in *Transactions of Moscow University*. For his whole life he worked as a teacher at various secondary and higher learning institutions, was in charge of mathematical training of teachers at continuing education courses in Moscow and neighbouring towns. In the Soviet period, I.I. Chistiakov was one of the first *"red"* professors of Moscow State University. He was fully engaged in preparing new curricula for schools and tertiary institutions, held a Chair at the Departments of Mathematics at various Schools of Moscow State University. However, in 1935, he was arrested and exiled to Tomsk, where he worked as a professor at Tomsk State University and Tomsk Politechnic Institute. His writings include around 70 works in mathematics, methodology, and history of mathematics [63].

Publication of I. Newton's work entitled *Mathematical Elements of Early Natural Philosophy* in Russian in 1915–16 marked the end of the period under consideration in translations of literature devoted to the history of mathematics in Russia. A.N. Krylov used London edition Newton's *"Philosophiae Naturalis Principia Mathematica", Londini, 1687"* [36]. **Alexey Nikolaevich Krylov** (1863–1945) was a mechanic, shipbuilder, mathematician, member of St. Petersburg Academy of Sciences (1916) and the Academy of Sciences of the USSR, professor of Nikolaevsky Naval Academy and Institute of Railway Engineers, advisor at major shipyards in St. Petersburg.

Speaking of academician Krylov as a translator, let's refer to the article of E.N. Poliakhova and others, in which the authors noted that Krylov worked really hard on the history of science, he presented works of classical authors to researchers, however, he often indulged to process these works, *"as he did not consider these authors immune, he further developed their ideas, and made amendments to their works in need of new requirements."* [55] The work on the translation of the famous work by Newton began in 1914. The first and the second volumes (Book 1,

Book II) were published in issues IV–V of *News of Nikolaevsky Naval Academy*. The authors of the article noted that *"his translation including brilliant comments made this most important work, which Newton had written in Latin in a manner that was hard to understand, comprehensible for general reader."* [55] It should be noted that certain departures by A.N. Krylov from the extant translating rules, which implied careful treatment of the primary source, can be easily understood. He sought to make the translated materials readily understandable and useful not only for historians of science but for experts as well.

We have not yet considered another type of translations. Those are translations of research studies of the most famous Western scientists regarding the most important issues in pure and applied mathematics, which won wide recognition in global science. These works were vital not only for those Russian scientists who studied mathematics and history of mathematics. They were also vital for those representatives of younger generation who decided to commit themselves to science. A great number of these works began appearing in Russia beginning from the late 19^{th} century and especially in the early 20^{th} century at publishing houses in St. Petersburg, Moscow, Kazan, Odessa, Kiev, Kharkov. Those were works of R. Bolzano, Dirichlet, Riemann, Lipschitz, Dedekind, F. Klein, E. Borel, Poincare, and others. The remaining translations, which make a fairly large number, are classified among later translations and are beyond the scope of our research. Furthermore, we left out translations of educational mathematical literature, as this topic is worth being reviewed separately.

Finally, let us note another valuable source of information on the most important issues in mathematics of the 19^{th} – early 20^{th} century mentioned by G.I. Sinkevich. In modern research studies in the history of mathematics, this source often lacks attention. It relates to translating, although indirectly. Those are reports of graduates of Russian universities who were retained at Western European tertiary institutions to get ready for professorship and to do two-year and longer internship working with the best representatives of the contemporaneous science: *"Many of them, attending lectures of European mathematicians and studying literature in libraries, included detailed review in the history and current status of the respective issue in their research papers, brought the most significant scientific books and articles with them, translated, and published them. We would mention works of S.O. Shatunovsky (first publications of translated Cantor's and Dedekind's works of 1894–1896), I.Y. Timchenko (review of the theory of functions, 1892), V.L. Nekrasov (a*

most detailed review of the status of the set theory, 1908), A.V. Vasiliev (New Ideas in Mathematics series, 1913–1915).” [54, p. 22]

3. Conclusion.

1. The stage of accumulation of knowledge in the history of mathematics by translating world scientists has no timeframes and runs in parallel with the development of the history of mathematics in Russia.
2. The approach to translating of creator-owned works in the course of the historical process substantially changed: from word-for-word non-specialist translations to texts processed by translators in order to adapt the contents to the goals dictated by actual practice to “careful” translating of historians of science aimed at preserving the author’s structure of the work and introducing the original to the reader. These changes were not linear, they were affected by socio-economic and political conditions prevailing in the period the translation was made.
3. At first, the source to be translated was chosen *“on the convenience-based principle”* (depending on the language the translator knew better). For example, works of the ancients were often translated from a double or even triple translation of the original. In the 19^{th} century, translators began choosing sources more thoroughly, always making sure which one was closer to the original.
4. Translators’ profiles were also changing. In the first half of the 18^{th} century, translations were made by professional translators who spoke foreign languages but did not have deep expertise in mathematics. At the end of that century, natural scientists and teachers of physical and mathematical sciences, who had experience in translating foreign manuals and writing manuals of their own, came to replace them. The diversity of translators’ community in the late 19^{th} century stemmed from the comprehensive knowledge and great amount of education of the Russia’s Big League of scientists of the time.
5. The appearance of translations of works of contemporary Western authors devoted to the history of mathematics bespoke the emergence of enduring interest of Russian scientists and natural scientists in the history of the science and their willingness to study these problems. Furthermore, translators chose works to be translated not only with regard to the interest of researchers of the history of the science. They took into account the interests of

the broad audience of readers.

6. The special series of translated Western scientific physical and mathematical literature, which appeared in progressive Russian publications, as well as the publishing houses themselves, which dealt with these translations and engaged high-class experts to work on these translations, such as, for example, Mathesis, enables us to assert that, by the end of the 19^{th} – beginning of the 20^{th} century, owing to this purposeful publishers' activities, Russian readership had had access to research findings comparable to the access the Western readers had.
7. Russian history of mathematics owes the numerous works in the history of physical and mathematical sciences, which appeared in the end of the 19^{th} – beginning of the 20^{th} century, to the above translations as well.

As a matter of fact, we have not considered all translations of classical ancient authors and Western European historians of mathematics in this work. However, we do hope that the works we selected have enabled us to create an accurate picture of this stage of inception and evolution of the Russian history of mathematics.

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Rosyjscy tłumaczenia i tłumacze dzieł zachodnioeuropejskich (XVIII–początku XX wieku) poświęconych historii matematyki.

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Streszczenie. Niniejsza praca jest kontynuacją prezentacji badań Autorki nad powstaniem historii matematyki w Rosji jako obszaru badawczego w ramach historii nauki (v. Lokot(2019)). Elementy historii matematki zaczęły intensywnie wyłaniać się w epoce Piotra Wielkiego i przeszły kilka etapów rozwoju. Wyróżnić można pięć etapów, które przeszli rosyjscy naukowcy, kształtując elementy badań z historii matematyki w obszar badawczy z własnym przedmiotem, celami i metodami. W tym artykule kotynuowana jest analiza pierwszego okresu, tj. etapu przekładów historycznych i naukowych z dziedziny histoii nauki. Chronologicznie przeanalizowalizowano tłumaczenia dzieł zachodnioeuropejskich poświęconych historii matematyki z uwzględnieniem osobowości tłumaczy, którym stosunkowo mało miejsca poświęcono w pracach poświęconych historii matematyki.

2010 Klasyfikacja tematyczna AMS (2010): 01A60; 01A72.

Słowa kluczowe: history of mathematics, Russian translations of Euclid and Archimedes, Mathesis, P.I. Bogdanovich, D.I. Planer, N.N. Strakhov, A.M. Manuilov, F.F. Pavlenkov, V.Y. Zinger, S.O. Shatunovsky, G.F. Tsereteli, N.N. Parfentiev, I.Y. Timchenko, A.R. Kulisher, A.V. Vasiliev, S.P. Sluginov, I.V. Sleshinsky, S.N. Bernstein, A.I. Bakov, I.L. Levintov, N.N. Evreinov, D.A. Boehm, I.I. Chistiakov, A.N. Krylov.

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(Zgłoszona: 14th of March 2018; Wersja końcowa: 31st of December 2018)

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