Description of Ural and Siberian Factories by G.V. de Gennin like a source on the history of science and technology of the 1st third of the XVIII century

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Abstract. The paper is devoted to the history of the archaeographic project for the publication of the manuscript of G.V. de Gennin (1735) titled Description of the Ural and Siberian Plants. On the basis of archival documents it is shown in what conditions this project was carried out in the 1920-1930s, when there was an active development of the scientific discipline “history of science and technology” (and there were repressions that affected both scientific and publishing figures). In 1937, the manuscript of G.V. de Gennin was published, but only now it is possible to identify the names of scientists involved in this project, but not specified in the output of the book. In addition, archival materials allowed the author covering in detail the plans of the publication, as well as the process of preparing the manuscript for printing.

1. Introduction
Georg Wilhelm de Gennin (Vilim Ivanovich, 1665-1750) was born in Germany. In 1697, he was invited by F.J. Lefort, the closest associate of Peter the Great, to the Russian service, where he quickly and successfully made a career and rose to the rank of lieutenant general. In Moscow, he initially became a master of the foundry at the Armory, and in the next 1698 he was entrusted to train young nobles in artillery. G.V. de Gennin was engaged in the Great Northern War as an gunner and a fortifier engineer. The work of G.V. de Gennin on the modernization of the Russian metallurgical industry began in 1713 when Peter the Great appointed him as the Ononets commandant and head of the Petrovsky, Povenetsky and Konchezersky plants. Due to his efforts it was possible at these enterprises to quickly establish production, rebuild and improve equipment, replace old blast furnaces for greater productivity ones. In 1722, by the decree of Peter the Great, G.V. de Gennin was sent to the Urals. The purpose of this secondment was, firstly, to raise the treasury and look after the private mining and metallurgical industry, and secondly, to sort out the conflict between the head of the state-owned plants of the Urals V.N. Tatishchev and the plant owners the Demidovs. In total, G.V. de Gennin spent twelve years in the Urals. By the end of his stay, only in the Middle Urals there were 13 large state-owned and 19 private metallurgical plants that found more than 3 million pounds of cast iron and 40 thousand pounds of copper.

In 1735, G.V. de Gennin presented the manuscript of his work Description of the Ural and Siberian Plants to Empress Anna Ioannovna. This work was, on the one hand, a kind of report on his activities containing a detailed description of plant structures, equipment and production technology, and on the other hand, a guide to the construction and organization of production and labor at
metallurgical enterprises. The book was not published during the author’s lifetime, but the manuscript attracted the attention of both contemporaries and descendants. Mining specialists rewrote entire chapters from it for their scientific research and training of young personnel of the Mining Cadet Corps (Mining Institute). Thus, for example, back in the XVIII century, the famous specialist in the field of noble metal metallurgy I.A. Schlatter actively used this manuscript in his multi-volume work *Detailed Description of the Ore Smelting Business.*

The director of the Department of Mining and Salt Industry A.F. Deryabin also used it when writing his *Historical Description of Mining Industry in Russia from the oldest times to the present* (St. Petersburg, 1807). De Gennin’s manuscript was copied by students of the Mining Cadet Corps and private plant owners. The active use of the manuscript led to the fact that by the beginning of the XX century there were at least five copies in Russia. One of them belonged to the Leningrad Public Library named after M.E. Saltykov-Shchedrin (now the Russian National Library). The second made in press gilding, once copied for Grigory Demidov (“Demidovsky”), was later kept at the Institute of Books, Documents and Letters, and after the liquidation of this institution it was transferred to the archive of the Leningrad branch of the Institute of History of the USSR Academy of Sciences. Besides, this archive has another copy – “Academic”, transferred here from the Library of the USSR Academy of Sciences. Another copy of G.V. de Gennin – “Abrisov” copied for students of the Mining Cadet Corps is available in the library of the Mining Institute (today the University). The fifth known copy of the manuscript belongs to the State Historical Museum in Moscow [1]. This paper considers the history of publication of this manuscript in detail.

2. Materials and methods

The paper is based on the analysis of documents of scientific organizations: the Commission for the History of Knowledge and the Institute of the History of Science and Technology. These documents are stored in the Archive of the Russian Academy of Sciences (Fund 485, finding aid 1; Fund 277, finding aid 4). The basic principles of modern historical science, primarily the principles of objectivity and historicism serve the methodological basis of the study. This study utilized general scientific methods: analysis, synthesis, comparison and generalization. We used the biographical method to reconstruct the biographies of certain historians that prepared the manuscript for printing.

3. History of the archaeographic project for the publication of the manuscript of G.V. de Gennin

The manuscript of de Gennin’s was first published at the beginning of the XIX century. In 1825, the first issue of the Mining Journal was published by the newly established Scientific Mining Committee, in which the publication of the *Description of the Ural and Siberian Plants* by G.V. de Gennin began with a biography of the author. It was written by the marine engineer and historian V.N. Berch from 1826 to 1827, but his publication was not complete. The absence of illustrations that accompanied the original manuscript text reduced its value. Therefore, the researchers preferred to use the manuscript itself [2].

A new stage in the study of de Gennin’s manuscript began in the Soviet period due to the general development of the history of science and technology as a sphere of professional activity. In the 1920s at the initiative and under the leadership of academician V.I. Vernadsky, the first research center for the history of science and technology was created – the Commission on the History of Knowledge of the USSR Academy of Sciences (CHK; since 1932 – the Institute of the History of Science and Technology of the USSR Academy of Sciences – IHST).

G.V. de Gennin’s manuscript attracted attention already in the early years of CHK. At a meeting of the CHK bureau on November 14, 1928 Yu.I. Gessen proposed to publish the chapters from the manuscript of G.V. de Gennin for the 200th anniversary of this work. The idea was well received. It was decided that Yu.I. Gessen, together with an employee of the Institute for the Study of Platinum and Other Noble Metals O.E. Zvyagintsev, would first get acquainted with this manuscript and make a scientific report at the CHK meeting. In December of the same year, Yu.I. Gessen made the report titled *Manuscript of de Gennin on the Ural Plants of 1735* and raised the question of its printing.
Following the discussion, the publication of the manuscript by G.V. de Gennin was recognized as advisable.

In January 1929, at the meeting of the CHK, the issue of publishing de Gennin’s work was again raised. After the speech of the historian and employee of the Historical and Archaeographic Commission at the USSR Academy of Sciences A.I. Andreev (1887-1959), it was decided to transfer the preparation of the manuscript for publication to the Historical and Archaeographic Commission at the USSR Academy of Sciences with the involvement of Yu.I. Gessen and O.E. Zvyagintsev. However, soon A.I. Andreev was repressed according to the Academic Case.

In February 1931, V.A. Kamensky compiled a note titled On the issue of creating a museum of the history of science and technology at the CHK and proposed to study the manuscript of G.V. de Gennin, especially its illustrative material, for its use in the museum exposition about Russian metallurgical plants of the XVIII century.

The research plans of the CHK for 1931-1932 included the preparation of de Gennin’s manuscript for publication, the responsibility for which was entrusted to Yu.I. Gessen and V.A. Kamensky.

Within the framework of scientific research of the Institute of the History of Science and Technology of the USSR Academy of Sciences V.A. Kamensky prepared the first biographical essay about G.V. de Gennin after a century-old publication of V.N. Berch [3]. Later, in the Archive of the History of Science and Technology – the print media of the IHST – V.A. Kamensky published a number of articles on the history of domestic and Western European metallurgy of the XVIII-first half of the XIX centuries [4].

In parallel with V.A. Kamensky, the artist, architect, corresponding member of the State Academy of the History of Material Culture, as well as the scientific secretary of its Moscow branch N.B. Baklanov studied the manuscript of G.V. de Gennin. In 1933, his article titled Naturalia by De Gennin as a source on the history of technology in Russia was published in the Proceedings of the USSR Academy of Sciences [5]. As a result of a comparative analysis of the known copies of the manuscript, N.B. Baklanov came to the conclusion that all of them were the copies of the original, the fate of which is unknown. The number of drawings in each copy varied, but on average ranged between 170-180 units.

In 1935, N.B. Baklanov published his monograph titled Technique of Metallurgical Production of the XVIII Century in the Ural [6]. The main source when writing this monograph was the work of V. de Gennin and especially drawings.

At the same time, the IHST, which was transferred to Moscow in 1936, intensified work on preparing the manuscript for publication. Then, the leadership of the IHST appointed V.A. Kamensky and N.B. Baklanov as the responsibles for the publication of the manuscript of G.V. de Gennin. D.A. Kashintsev and A.I. Gambarov were also involved in the work. Both specialists had a certain scientific background in this field of knowledge. According to the plan for the publication, the essay by G.V. de Gennin should include four lead-in articles. As for the publication of de Gennin’s text itself, 55 chapters of the essay were proportionally distributed among these authors, for each of which they had to prepare a scientific commentary. In addition to comments, V.A. Kamensky, N.B. Baklanov and A.I. Gambarov were supposed to compile an subject-topical vocabulary, and D.A. Kashintsev – the index of names and geographical references.

The drawings and diagrams were to be selected by the same authors on the basis of a detailed analysis of the graphic material of all five copies of de Gennin’s manuscript. But fate prevented the implementation of this plan. On October 9, 1936 D.A. Kashintsev was repressed, and on November 4, 1937 he was shot, then for unknown reasons N.B. Balkanov left the project. Yu.I. Gessen was again invited to the project, and the publication of the manuscript by G.V. de Gennin began to be implemented according to the new plan together with the Historical and Archaeographic Institute. This institute was responsible for the textual work, and, in particular, it was tasked to accurately reproduce the text of the manuscript according to the authorized list of the Leningrad Public Library named after M.E. Saltykov-Shchedrin, which was obviously a presentational copy for Empress Anna Ioannovna. In turn, IHST employees had to identify discrepancies in four other copies. A.I. Gambarov, Yu.I. Gessen
and V.A. Kamensky prepared a subject-topical vocabulary. Besides, they split the work on the compilation of technical and historical comments. The geographical index was prepared by Yu.I. Gessen, the index of names – by V.A. Kamensky. The publication was to be opened by three lead-in articles by V.A. Kamensky, Yu.I. Gessen and A.I. Gambarov devoted to both the biography of G.V. de Gennin and the history of domestic metallurgy of the manufacturing period.

As for the illustrative material, it was planned to publish more than 200 drawings in color. Since the watercolor drawings and diagrams contained in the original copies of the essay were not of the same artistic and historical value, they were selected from all the copies of the manuscript. This work was carried out by A.I. Gambarov. The entire edition was planned in two volumes. The editor-in-chief of the publication was the famous metallurgist, academician M.A. Pavlov; editor-distributor – A.I. Gambarov.

However, the events at the end of 1936 influenced the fate of the academic publication of the essay by G.V. de Gennin. The Historical and Archaeographic Institute was then liquidated. On February 27, 1937, the director of the IHST N.I. Bukharin was arrested, and, as subsequent events showed, the fate of the institute was predetermined.

But, nevertheless, in 1937 de Gennin’s essay was published, but only in one volume, in an archaeographically light version, i.e. without textual notes and commentary on the content [7].

Of the previously planned two hundred and more drawings, only the fourth part was included in this publication, and the images themselves were reproduced in black and white with a reduction in format by four times compared to the original.

In a brief preface by M.A. Pavlov, which broke off the publication, a general description of the value of the book by G.V. de Gennin was given connecting his work with modernity. The publication was accompanied by a lengthy lead-in article by M.F. Zlotnikov titled First Description of the Ural and Siberian Plants, which not only analyzed the manuscript as a valuable historical source, but also gave a biography of its author. M.F. Zlotnikov is a historian of industry and the working class of Russia of the XVII-XIX centuries. From 1932 to 1938 he worked in the Chief Editorial Board of the History of Factories and Plants Publishing House, where the work of G.V. de Gennin was published. The names of V.A. Kamensky, A.I. Gambarov and Yu.I. Gessen do not appear in the publication. Thus, all the long-term work of the Institute of the History of Science and Technology of the USSR Academy of Sciences and its employees was forgotten.

The publication of the book was marked by a positive review by the famous economist and historian, academician S.G. Strumilin. The review was published in 1938 in the Historian Marxist journal. Among other things, he expressed a number of claims against the publishing house: “Unlike many other publications of the History of Factories, the Gennin’s monumental work is undoubtedly a serious contribution to historical science. There is nothing to do but regret that the publishing house, which extracted this most valuable work from the archives, skimmed to publish it completely having made a number of disappointing cuts in the book by excluding many specific data on the auxiliary workshops of the then metallurgy”.

However, the story of the publication of the “Abrisov” by G.V. de Gennin does not end there. The fact is that the personal plans of A.I. Gambarov, which he expressed in a letter to the President of the USSR Academy of Sciences, Academician V.L. Komarov, included the publication of the second volume containing comments on de Gennin’s text. Despite the publication that has already appeared IHST considered it necessary to complete the preparatory work of the academic, i.e. scientific archaeographic publication. A corresponding agreement was concluded with the publishing house of the USSR Academy of Sciences, according to which the publication of the fundamental publication was planned for 1938. But, on January 11, 1938, the Pravda newspaper unexpectedly published a “small” feuilleton titled Parasites from Science signed by some D. Zaslavsky. The employees of the institute were accused of wrecking and conducting rummagy research, which consisted in unnecessary and unrelated studies. The main object of feuilleton was A.I. Gambarov, whose surname, like other original participants in the project of the G.V. de Gennin’s publication, did not appear in the book published in 1937.
Two days after the publication of the feuilleton, A.I. Gambarov and the acting director of the mitigatory Institute of the History of Science and Technology of the USSR Academy of Sciences Ya. M. Svikke were reprimanded “for victimization in preparing the Gennin’s work for publication, which led to unproductive spending of state funds” with subsequent dismissal. A.I. Gambarov addressed V.L. Komarov for help. By his personal order, he canceled the order to dismiss A.I. Gambarov. However, for the first time the IHST leadership did not obey the instructions of the President of the USSR Academy of Sciences V.L. Komarov. The conflict was considered at the meeting of the Presidium of the regional committee of the Union of Higher School Workers and Scientific Institutions. A.I. Gambarov managed to prove the illegality of his dismissal and restore to his post. However, his first working day was scheduled for February 16, 1938, and on February 15 of the same year a decree was issued on the liquidation of the IHST, finally approved by the Presidium of the USSR Academy of Sciences on February 25, 1938.

4. Conclusion
Thus, the academic manuscript of G.V. de Gennin was not published. The fate of the scientists involved in the discussion and implementation of this archaeographic project is tragic. As for the Description of the Ural Plants by G.V. de Gennin, it was the 1937 edition that was widely known and firmly entered the source base on the history of domestic industry of the XVIII century. However, until now, researchers still have to address the copies of the manuscript. First, according to the published version, it is impossible to work with image sources. Second, there is still no detailed list of discrepancies in all copies, especially since in 1936 the head of the Slavic-Baltic Department of the New York Public Library A. Yarmolinsky reported another manuscript copy of this book stored in the library [8]. Third, there are still no scientific comments on de Gennin’s essay, a text almost 300 years old and difficult enough to perceive. Thus, it is possible to conclude that the publication of de Gennin’s work confined to the 200th anniversary of writing did not take place in the form conceived by Soviet historians of science and technology of the older generation. The main reason was the political situation in the country, which destroyed the community of historians of science and technology. It is to be hoped that by the 300th anniversary of the “Abriso” by George Wilhelm de Gennin, modern researchers will prepare a scientific edition of this work, which, in terms of its scale, may be put on a par with other monuments of world scientific and technical thought, even with such as the work of Georgius Agricola titled On Mining and Metallurgy.

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