Professor A.A. Kuzin, a historian of mining geology

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Abstract. A biography of an outstanding historian of technology and educator, Professor A.A. Kuzin (1911–1993) is reconstructed. The paper describes his making as a scientist, the steps and specifics of his education, and his gradual arrival into a new profession of historian of science and technology that emerged in the 20th century. Kuzin belonged to a rare type of versatile scientist who was equally good at in-depth theoretical works and purely empirical studies. He left a deep mark both in the historiography of the history of technology and in the development of studies on science and technology archives. Kuzin created his own scientific and educational school of the studies on science and technology archives. He is an author of more than two hundred scientific works. His works on the history of mining geology and the history of prospecting technology in Russia became classical and exemplary, and, after the lapse of many decades, comprise a whole special epoch.

1. Introduction
Alexander Avramievich Kuzin (1911, Moscow – 1993, Moscow), Candidate of Historical Sciences and Doctor of Technical Sciences, professor, was a prominent historian of technology and an educator, an author of more than two hundred scientific works, including dozens of books, monographs, articles, and documentary publications. After the lapse of many decades his works have not lost their scientific value. Professor Kuzin’s name is associated with the formation of the state science and technology archives and a new tertiary school subject in the USSR – science and technology archive studies – institutionalised in a series of textbooks and instructional materials that still remain in use.

2. Methods, materials and historiography
This study uses the methods of historical-scientific reconstruction, historical source studies, and historiography. The paper is based on the studies of all available historical sources. We have identified and analysed the documentary materials from the Archive of the Russian Academy of Sciences (ARAN), Scientific Archive of S.I. Vavilov Institute for the History of Science and Technology of the Russian Academy of Sciences, and the Archive of the Russian State University for the Humanities (RSUH) that hosts A.A. Kuzin’s personal fonds (unprocessed). The photographs that are published for the first time were kindly provided by A.A. Kuzin’s relatives. Professor Kuzin’s biography and scientific legacy have never been studied before, neither in its entirety nor in regard to his works on the history of geology. Rare mentions of Kuzin are full of errors (see, e.g., the latest one [1, p. 792]) and have no scientific value. This reflects a broader situation in the studies of the life and legacy of the historians of science and technology. With rare exceptions, until recently, the mentions of historians of science, even the most prominent of them, could only be found in brief anniversary articles or
obituaries. Presently, the articles and memoirs devoted to the historians of science are being published increasingly more often (see, e.g., [2-7]). With Kuzin being an outstanding historiographical figure, his scientific career will also undoubtedly become a focus of close attention.

3. Results and discussion
A.A. Kuzin, the only child in the family, was born in Moscow on 19(6) July 1911. It is known that his father received a university education, and in 1914-1918 served first in the Imperial Army and then in the Red Army. After 1922, he worked in a number of Moscow’s organisations as a statistician and planner. The mother of the future historian of technology had an artistic education, taught sketching, and worked as a stage designer and book illustrator.

A.A. Kuzin was an extremely private person, which distinguished him even in the “silent” Soviet era. This trait of his character could have resulted from the unknown circumstances of his origin and fates of his family and friends. Many pages from his life, especially the first decades, remain unknown. Of the few known facts, it is important to mention his serious fascination with chess at the age of 15-19. He played chess as a professional. One can see from his notebooks containing the records of his numerous chess games, his partners were prominent Soviet masters. In 1928, after graduation from the secondary school, Kuzin enrolled in the drivers’ courses; at the same time, from 1928 to 1930, he was a student at the Physico-Mathematical School under the auspices of the Ya.-F. Kagan-Shabshay State Institute of Electromechanical Engineering. From June 1930 to November 1931, he worked as a driver for a number of Moscow enterprises, harnessing his professional skills, probably because, to enroll in a higher education institution, he needed to have had a required working tenure (required number of work years before enrolling). From December 1932, he began to work as a technician and later, as a manager of physical laboratory at the worker’s school “rabfak” (an educational institution in the USSR that prepared young workers for entering higher education) of the Central Directorate of Motorways and Dirt Roads and Motor Transport (“Tsudortrans”) of the USSR People's Commissariat for Internal Affairs (“NKVD”). In parallel with his job, Kuzin studied at the Moscow Institute of Steel and, in 1933, he transferred to the Moscow Evening Institute of Agricultural Engineering of the USSR People's Commissariat for Agriculture (“Narkomzem”). He did well academically and, in 1938, having successfully defended his diploma project, was qualified as a mechanical engineer with the first-degree diploma.

Figure 1. A.A. Kuzin (first left in the first row) among the group of graduates from the Moscow Evening Institute of Agricultural Engineering. 1938.

From 1938 to 1941, Alexander Kuzin worked as an engineer at the plants of the USSR People's Commissariat for Aviation Industry. In the spring of 1941, he became seriously ill with nervous breakdown and was forced to quit his job due to his condition. Only a year later, in April 1942, he recovered to the extent of becoming able to resume working, teaching a course of technical drawing at a vocational technical school and a school for working youth.

Since young age, Kuzin was a perfectly organised person. It was no longer impossible for him to work as an engineering practitioner. This left him with a lot of free time, and with the beginning of the
In academic year 1942 he enrolled as an extramural student with the Moscow State Institute for History and Archives (“MGIAI”). In September 1946, not long before his graduation, he began to teach at MGIAI and, after completing his postgraduate studies there, defended his dissertation “An outline on the history of technical documentary materials (Russian technical drawings) in pre-revolutionary Russia” for the Candidate of Historical Sciences degree in 1949.

As may be seen from this short biography A.A. Kuzin, by the time he began to engage in research and teaching, had two higher educations, in engineering and technology with a physico-mathematical “lining”, and in the humanities (history and archives). This combination, multiplied by his inborn talent for research, was perfectly suited for a comparatively new profession of historian of science and technology. The development of history of science and technology as a discipline and profession in the USSR has not been easy. It was practically demolished in the late 1930s for purely political reasons and its slow restoration began in the mid-1940s. In the late Stalinist period, the history of technology as a means of ideological indoctrination, received a huge impetus and the respective works began to be honoured with the highest state awards [8].

Kuzin could not have missed these developments and on 20 December 1952 he became a research fellow with the Commission for the History of Technology of the USSR Academy of Sciences’ Division of Technical Sciences (“OTN AN SSSR”). At the same time, Kuzin continued to teach at MGIAI, where he managed to establish a Department of Science and Technology Archives and Sound and Audiovisual Archives in 1969, which he chaired till 1987 and where he created an original school of historians/archivists who specialised in science and technology documents as well as in sound and audiovisual documents. It was through Kuzin’s personal efforts that the history of science and technology continued to be taught at MGIAI even in the years when it ceased to be taught anywhere else in the USSR. More than 20 Candidate dissertations and numerous diploma projects have been defended at the Department with Kuzin as academic supervisor. It must be emphasised that the role of Professor Kuzin in the development of the history, theory, and practices of archive studies, in the making and development of a network of archives of science and technology in the country is grossly underestimated while his brainchild, the specialised Department at MGIAI, was recently dissolved.

In 1953, the Commission for the History of Technology was merged into the Institute for the History of Science and Technology (“IIET”) of the USSR Academy of Sciences. At IIET, Kuzin initially continued with his studies on the history of technical drawing in Russia but, being a universal researcher, he did not find it too hard to switch from the history of technical drawing to the history of discoveries of ore deposits, particularly as he knew the respective collections in the archives of Moscow and Leningrad better than anyone else. Kuzin’s decision to change the scope of his research was influenced by the fact that, before the 1960s, he worked at the Sector for the History of Geological and Geographical Sciences, Mining and Metallurgical Science and Technology, headed by S.V. Shukhardin who was an expert on the history of mining. Shukhardin became the executive editor of Kuzin’s fundamental monograph “The history of discoveries of ore deposits in Russia (until the mid-19th century),” published in 1961. In this book the scientist described the history of searching for and
discovering ore deposits in the territory of Russia from the late 15th to mid-20th century. He has traced the evolution of tools and devices used in mineral prospecting, described the old iron, copper, silver-lead, tin, and gold ore deposits, and rescued from oblivion the names of many prospectors and specialists. This book remains one of the most popular works on the history of science and technology. An impressive geographical and temporal scope of the study, maximally dense and practically exhaustive source base, and in-depth treatment of the theme that enjoys a very wide audience – all of this makes this book still highly relevant and practically applicable. Although this study met and even exceeded the parameters of a dissertation for the Doctor of Historical Sciences Degree, Kuzin, however, did not defend it for a number of reasons, mostly for the reasons that had nothing to do with science.

In afteryears, Kuzin’s repertoire as a historian of technology was constantly expanding. He was working equally professionally both in the studies of concrete archive materials and in the theoretical and methodological research areas – naturally, in strict compliance with the Soviet Marxist paradigm. A propos, he was an outstanding expert in Karl Marx’s historical-technical legacy and had successfully completed a very difficult project of studying, deciphering, and publishing Marx’s manuscripts.

On 20 April 1972, A.A. Kuzin belatedly defended his dissertation “The causes, results, and regularities in the development of prospecting tools and devices in Russia until the mid-19th century” for the Doctor of Technical Sciences Degree. Kuzin’s dissertation was a monumental study in 3 volumes with a total volume of 919 pages. In addition, a separate 224-page volume contained a review of sources and the list of references (more than a 1000 titles!). The dissertation was largely based on the documents, for the first time discovered in the Central State Archive of Ancient Acts (TsGADA), Central State Historical Archive in Leningrad (TsGIAL), Central State Archive of Military History (TsGVIA), Archive of the USSR Academy of Sciences, State Historical Museum, and other repositories. This dissertation much exceeded the 1961 monograph in its size and content and covered the history of exploration of mineral resources in Russia and the evolution of tools and devices, used during mineral exploration and prospecting, over a longer period of time. Kuzin’s dissertation addressed the issues of creating a crude ore resource base, analysed the reasons and results of searching and prospecting for ore deposits, as well as their importance for production. He had identified and described the regularities in the development of the methods, forms, and tools and devices, used in searching and prospecting for ore deposits in Russia until the mid-19th century. Thus, his study covered the period of feudalism with its typical production processes and the emergence of conditions for transition to machine-based manufacturing in the first half of the 19th century.

Figure 3. Institute for the History of Science and Technology of the USSR Academy of Sciences. Moscow. 1968
Judging from the remaining minutes and reviews, Kuzin’s defence of his dissertation was, indeed, very special. The opponents were the foremost authorities: Doctors of Geological and Mineralogical Sciences G.P. Sinyagin and F.I. Volfson, and Professor A.A. Zvokykin, Doctor of Economic Sciences, one of the pioneers in the history of science and technology in our country and an expert on the history of mining. Both the official opponents and all those who participated in the discussion during the defence agreed that Kuzin had presented the results of an unprecedented study, absolutely unrivalled among the works not only on the history of exploration and prospecting but also on the history of science and technology per se. Thus, Sinyagin noted that the material contained in Kuzin’s dissertation was sufficient for two or three dissertations: it was both the social history of the relevant period, the history of exploration and prospecting, and the history of tools and devices used in exploration and prospecting.

4. Conclusion
A.A. Kuzin belongs to the second generation of Russian historians of science and technology, who, unlike their predecessors, worked in relatively safe conditions where their lives and physical existence were not threatened, at least, after 1956. Kuzin presents a rare example when, in the 1940s - 1950s, the individuals who came into history of science and technology were perfectly prepared for this strange profession. Everything was perfectly balanced: a versatile education and vast erudition, language skills, considerable and diverse engineering and teaching experience, and of course, the experience of living and surviving – and finally, his age perfect for a researcher into history. A.A. Kuzin was an extremely prolific and versatile scientist, even in comparison with his most prominent contemporaries.

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