

A critical review and evaluation of factual inaccuracies in Ukrainian scholarly publications on Academician Heorhiy Proskura's biography

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Abstract: The training of engineers in the field of hydraulics on the territory of contemporary Ukraine began more than a century ago at the Mechanical Department of the Kharkiv Institute of Technology (KhTI). This article, dedicated to the history and the establishment of the hydraulic laboratory in Kharkiv, provides clarity on the role of its founders. In particular, it outlines the reasons that forced Heorhiy Fyodorovych Proskura to abruptly shift his research focus from hydraulics and hydraulic engineering to aviation and aeronautics. This change of his scientific interests later paved the way for the establishment of Kharkiv Aviation Institute (KhAI).

By employing traditional historical methods and, especially, the prosopographic method, the article reveals not only Heorhiy Proskura's closest social circle, his scientific and familial connections, but also the impact

of the sociopolitical cataclysms of the early twentieth century on both his private life as a scientist and teacher and his subsequent scientific activities.

Inclusion of extensive informational and referential material not only allowed us to identify the motivations behind his professional mobility, outline his distinct character traits and the main trajectory of his professional activity but has also exposed numerous inaccuracies in the works of individual researchers describing Proskura's practical activities. An analysis of some forgotten and less-known facts from the biography of this famous scientist and educator substantially enriches the twentieth-century history of science and technology.

It has been demonstrated that Heorhiy Proskura drew correct conclusions, took into consideration the constructive criticism of his colleagues and subsequently became an outstanding scientist and scientific organiser, who successfully established his own scientific school in the field of aviation and hydraulic machines.

Keywords: *Albitsky, aviation, biography, hydraulics laboratory, hydraulic machines, KhTI, Mukhachov, Proskura, scientific school, Ukrainian Scientific Research Institute of Metals (UkrNDIMet)*

Introduction

Heorhiy Fyodorovych Proskura, an outstanding scientist and specialist in hydraulic engineering and hydro-aerodynamics, and member of the Academy of Sciences of the Ukrainian SSR (1929), ranks among leading figures in science and technology of Ukraine. He is known as the founder of a new direction in science and technology, a laureate, a pioneer and a distinguished scientist. However, the contradictions found in both Soviet-era and contemporary publications force us to reassess the role of Heorhiy Fyodorovych Proskura's personality, especially concerning certain episodes in his biography. In addition, archival data and memoirs of his contemporaries allow us to objectively analyse his work.

While Proskura's biography is notably absent in the works on the history of science and technology, rare publications make indirect references to his work (e.g., Firsov, 2006; Ambrozhevich and Krashanitsa, 2006). In these works, his biography is polished, embellished and, therefore, unreliable because it derives not from archival data but rather from authors' personal opinions, online sources or anecdotal accounts, unsupported by references to scientific sources.

Proskura's official biography, which is not confirmed by archival data (as discussed further in this article), also diverges significantly from his contemporaries' memories. In many commemorative writings, Proskura is credited with increasingly numerous achievements, including authoring the first Ukrainian publications on hydraulics, founding a hydraulics laboratory at KhTI, the discovery of new specialties in aviation, research on hydraulic turbines, etc. Some even believe that Proskura was an aircraft designer (Startavia, 1910).

These misconceptions and disagreements can be partly explained by the fact that for a long time, historical information about Academician Proskura's achievements was not accessible to the general public, which is why certain lacunae in the scientist's biography were filled with mostly unverified information.

A study of the biographies of scientific intellectuals from the nineteenth and early twentieth centuries in the context of new archival sources not only allows drawing highly specialised conclusions about the background of a particular scientist and specific dates or events but also enables us to reconstruct the role of individual figures in the formation of national education and science. Analysing this scientist's social circles reveals the influences on his worldview, behaviour and life path. Reconstructing these connections is of vital importance for an objective depiction of the impact of each specific person and genius on social and political life during specific historical periods.

The revision, supplementation and clarification of Proskura's biography becomes topical due to the consequences of his activities at KhTI. This is not only a question of the history of science and technology or the prestige of the state, but also the accuracy of uncovered historical facts.

A systematic study of Proskura's official biography, one that would be based on archival documents, remains absent. However, almost all researchers who directly or indirectly mention him as a teacher or engineer rely heavily on Dmitry Yakovlevich Aleksapolsky's work *Heorhiy Fyodorovych Proskura* (Aleksapolsky, 1956), which was published to celebrate the 80th anniversary of Proskura's birth. Some information has been published in the monograph by one of the authors of this article (Zhurylo, 2016), but Proskura's contributions were considered there only in the context of the development of KhTI.

Other works replicate previous texts almost word for word (see, e.g., Firson, 2006; Ambrozhevich and Krashanitsa, 2006). Moreover, they contain entire paragraphs copied from Dmitry Aleksapolsky's work, without appropriate

citation (see Firsov, 2006, pp. 5–6; Ambrozhevich and Krashanitsa, 2006, pp. 10–11; cf. Aleksapolsky, 1956, pp. 3–5). This has perpetuated quite a few errors. For instance, a modern (scientific-)popular edition claims: “In the early 1960s, the laboratory headed by Heorhiy Proskura was one of the first in Kharkiv to start using electronic computing equipment” (Karnatsevich, 2005, p. 356). This is inaccurate, as Proskura died in 1958. It is also not true that “he became an assistant at the Department of Theoretical Mechanics, a drawing teacher and a leader of course projects that raised questions about the design of hydraulic machines, lifting cranes, steam engines and water turbines” (Karnatsevich, 2005, p. 353) because the position of “assistant” did not exist in universities before 1917 (Zhurylo, 2016, p. 33). In addition, inaccuracies exist in certain dates: “One of the first works on aero section was the construction of a closed wind tunnel. In Russia, there were only two such tubes at that time, designed to study the interaction of air with a solid body. One was built in Kaluga by Konstantin Tsiolkovsky back in 1887.” It is known that on April 23, 1887, Tsiolkovsky’s house burnt down with all the property destroyed (Kochetkov, 1994, p. 105) and the wind tunnel was built by the “Kaluga genius” (Tsiolkovsky) only as late as in 1897 (Kochetkov, 1994, p. 166).

Evidence about Proskura’s teaching style is also contradictory:

His [Proskura’s] lectures on experimental aerodynamics always gathered a full audience (and not only students); they were distinguished by the clarity and accessibility of the presentation, and it was felt that Proskura himself was passionate about the subject he was teaching. The academician never demanded mechanical memorisation from students but wanted them to learn to think and delve into the essence of the subject. Heorhiy Proskura often visited the student dormitory, was interested in their everyday problems and very fond of attending classes in clubs with young people. (Karnatsevich, 2005, p. 355)

These compliments, unfortunately, are not backed by credible sources. Not only is the perception of lectures by students a very subjective process, but the talents of an outstanding scientist and a brilliant lecturer are not always combined in one person. At the same time, we have a completely different testimony by Aron Naumovych Reznikov (later first rector of the Togliatti Polytechnic Institute), who in his recollections about graduation from KhTI considered Proskura the worst lecturer among those he had to listen to during his student years: “It took me a lot of effort to follow the trail of the lecturer’s thoughts, not to succumb to the soporific effect of his monotonous voice” (Reznikov, 1998, p. 87). Reznikov

testified that students sought to occupy the last four rows in the lecture hall, where they could do anything, even sleep, because the lecturer paid no attention to it. Among other things, Reznikov mentions the following episode:

... once, at the end of a particularly incomprehensible lecture, he [Proskura] made a remark to our class that the course project on hydraulic machines was not being completed by students on time. One of us replied that according to the plan, the mechanical technologists do not have any project on hydraulic machines. "The technologists?" H.F. Proskura became worried. "Are you technologists, not hydromechanics? My God, I gave you a wrong lecture!" But we didn't care—we still didn't understand the lecturers well and only went to his classes because attending lectures in those days was mandatory. (Reznikov, 1998, p. 88)

Considering the possible subjectivity of the perception of lectures by different students, the above evidence is a reason to at least question Karnatsevich's statement, especially since there are other similar examples.

As part of the research of historical information about the professional activity and personal data of Heorhiy Proskura during his work at KhTI, we apply a critical analysis of the causes of the indicated errors to minimise them in his biography. The authors hope that this helps restore historical justice, correct errors in the biography and present the personal characteristics of Heorhiy Fyodorovych Proskura and his contribution to the development of hydraulics and aviation in Ukraine in the early twentieth century. The basis of this research are the materials of the State Archive of Kharkiv Region, Funds 770 and R-1682 of Kharkiv Polytechnic Institute, Fund R-4589 of Kharkiv Aviation Institute and Fund 331 of the Central State Archive of the Supreme Authorities of Ukraine (CSASA), Kyiv.

Accordingly, the main part of the article consists of three sections devoted not only to biographical inconsistencies or demythologisation of the history of the founding of the KhTI hydraulic laboratory but also covers Proskura's activities before 1917.

1. Proskura's formation as a teacher and scientist: inconsistencies in the presentation of his biography

It is important to start with the fact that Dmitry Yakovlevich Aleksapolsky's (1956) often cited biography of Proskura contains several errors. Although Aleksapolsky wrote his brochure based on the data from Proskura's personal file, these records themselves contain contradictory evidence. Moreover, the source of inconsistencies was often Proskura, who provided either incomplete or contradictory information about himself. For example, in the questionnaires after the 1917 coup, he indicates that from 1902 to 1905 he worked as a teacher at KhTI (SAKhR, 1930, p. 40) or that in 1902–1904 he was a postgraduate student at KhTI (SAKhR, 1930, p. 36) or that he held a scholarship and was on a business trip in Zurich during the same years (SAKhR, 1930, p. 24). It can be assumed that these self-contradictions were deliberate and motivated.

In addition, Proskura provided conflicting statements about his background: he was either from a family of employees (SAKhR, 1930, p. 19) or described his mother as the daughter of a merchant (SAKhR, 1930, p. 14). Probably, here too one can assume not only psychological (such as inattentiveness) or sociological motivations (for example, changing perceptions of self-identity) but also ideological ones (for instance, the political situation at the time).

The years he worked as a shipyard designer are also indicated variously: either 1905–1907 (SAKhR, 1930, p. 40) or 1906–1908 (SAKhR, 1930, p. 10). He also provides inconsistent information about his wife—she was a doctor who graduated from the University of Zurich in 1908 or the daughter of a nobleman whom he had married on February 3, 1906 and lived with (SAKhR, 1901, p. 225). Given that his personal file does not contain an application for a foreign passport for his wife to complete her studies, the testimony about Zurich seems dubious, because according to the regulations at the time, a married woman could not obtain a passport without her husband's statement. Moreover, it is not clear with what funds could a daughter of a station chief “who was dismissed in 1905 for participating in the railway workers' strike” (SAKhR, 1930, p. 24) afford to get an education in Switzerland. How plausible is it that a nobleman and stationmaster in 1905 would participate in a strike with the railway workers? Perhaps he was instead fired for failing to keep the station running? Here we have more questions than answers.

Thus, Proskura was most likely on a business trip to Zurich from 1902. According to the peculiarities of foreign travel in the Russian Empire at that time, he was

listed at the place of previous work, which according to the department was the Ministry of National Education. Before Zurich, he visited Riga, where hydraulic turbines were manufactured by the Mantel's and Perlitz's factories. However, Proskura showed little interest in their low-power turbines.

Switzerland has long been known for its advanced metalworking industry. In Zurich, Proskura attended Professor F. Pragil's lectures on hydrodynamics at the Zurich Polytechnic Institute and observed the internal structure and manufacture of steam turbines, steam engines, various hydraulic systems, cooling systems and other equipment at the Escher Wyss enterprise. Later, Proskura applied Pragil's theory of water turbines in his own calculations and projects on several occasions. The essence of the theory was the use of Euler's hydrodynamic equations to describe the flow of liquid in the channel of the turbine wheel. The efficiency of turbines turned out to be significantly higher than that of a cylindrical steam engine. It is not surprising that turbines quickly found wide application in the global energy sector (CSASA, 1034, p. 3).

As for the sources of Heorhiy Fyodorovych's livelihood during his years of study, interesting information can be obtained from the records of his family members. In his autobiographical questionnaires, Proskura reported that his father worked at a leather factory (SAKhR, 1930, p. 24). In addition, as it turned out, Proskura's maternal grandfather—Vasily Museevych Belitsai—had worked in the production of hides in the town of Smela, Cherkasy District, since 1839. Employing 12 workers, he produced about 6,700 units of leather for 76,000 roubles a year (Orlov, 1887, p. 217). Belitsai's enterprise ranked 3rd in the then Kyiv Province in terms of production volume. Based on the autobiographical data of Proskura's questionnaires, where he writes that his father worked as an employee in a leather factory of up to 100 employees, we can assume that this was the enterprise of his father's, Fyodor Andreevych Proskura's, father-in-law. In addition, among the graduates of the Imperial Moscow Technical School (IMTU) in 1900, there was a Evgeniy Vasilievych Belitsai (BMSTU, 1865), who very likely was Heorhiy Proskura's uncle, the brother of his mother Maria Vasilievna, whose name before marriage was also Belitsai. This could explain why Heorhiy Proskura did not study close to home but at a proper school in Elysavethrad, and why he did not enter KhTI or KPI but IMTU. Let us assume that the uncle was a year above Heorhiy and took care of his nephew; perhaps the relatives lived together, and both were studying with the financial support of the merchant Vasily Museevych Belitsai. Such details in questionnaires would have been politically sensitive to disclose in Soviet times. Later, human carelessness or

forgetfulness may have caused the confusion in the data. Despite many of such errors, for some reason they did not attract Aleksapolsky's attention and did not compel him to check data from other sources.

As a result, a legend was born about the "outstanding abilities of a young engineer" (Aleksapolsky, 1956, p. 3), later replicated by other researchers. What special talents could he have in mind for this student, when at that time there was a lack of both printed works of his authorship (no works are mentioned either in his personal file or elsewhere) or any record of his experience in both practical and pedagogical work? It seems that the main reason for Proskura's being at KhTI was his personal acquaintance with the then director of KhTI, Professor Dmitry Zernov, who for some time taught at the Imperial Moscow Technical School, from which Proskura graduated (SAKhR, 1898, p. 6). The first sheet of Proskura's personal file shows that it was not the director of KhTI, but Proskura himself who had asked to send a diploma of his graduation from IMTU (SAKhR, 1901, p. 1). Proskura started working as a laboratory assistant at KhTI not on September 1, but on October 1. The position of a laboratory assistant became vacant when, according to the letter of the Director of the Institute of Technology Dmitry Zernov to the head of the educational district, adjunct professor Ivan Ivanovych Bobarykov moved from Kharkiv to Tomsk, where he received the title of professor. Therefore, Proskura was hired to resume Bobarykov's work in the mechanics laboratory (SAKhR, 1901, p. 6). Indeed, Bobarykov started working in Tomsk precisely on September 1, because he knew about his move to another city and about his transfer to a different position in a different educational institution in advance, considering that at that time letters took more than a week to arrive in Tomsk. If Proskura was indeed invited to work at KhTI, it would also have happened early, and, therefore, he too would have started work in September, not a month later.

We do not know what sources the authors of the work rely on (Oleinik and Gres, 2016, p. 13), when they indicate that "[t]hanks to his outstanding abilities, H. F. Proskura was invited to Kharkiv by the Director of the Kharkiv Emperor Alexander III Institute of Technology (KhTI) Professor Dmitry Stepanovych Zernov, who was present at the final exams." In fact, there are no documents about his business trip to Moscow in the spring of 1901 in Zernov's personal file. Instead, it is known that in 1900–1901, he went on a business trip to St. Petersburg, to attend a meeting at the Ministry of National Education (SAKhR, 1898, p. 17), took some time off in the Caucasus (SAKhR, 1901, p. 23) and spent a week of vacation in St Petersburg (SAKhR, 1898, p. 17). That

year, Zernov indeed left for Moscow for 6 days, although “on family matters”, and only in January 1901 (SAKhR, 1898, p. 22). In addition, in December 1902, he was summoned as a witness to the Moscow court (SAKhR, 1898, p. 17). Proskura defended his diploma on May 31, 1901. Importantly, there is also no information on Dmitry Zernov's business trip to Moscow in May 1901 in the personal files of Professors Ivan Ponomarev and Aleksey Predtechensky, who performed the director's duties in his absence (Ponomarev until September 30, 1900, and Predtechensky from September 30, 1900, see SAKhR, 1903, p. 109). It could hardly have been a personal trip. To imagine that a director of the institute could leave the city for a few days on private circumstances without a written permission from the guardian of the educational district and did not appoint anyone to perform his duties during his absence, was practically impossible under the bureaucratic conditions of tsarist Russia.

Furthermore, relying on Proskura's questionnaire data, Dmitry Aleksapolsky indicates in his brochure that since 1904, Proskura “worked as an assistant at the Department of Theoretical Mechanics and as a teacher of drawing” (Aleksapolsky, 1956, p. 5) and already “in 1911, H. Proskura was elected a professor of KhTI at the Department of Applied Mechanics” (Aleksapolsky, 1956, p. 6). However, Proskura's personal file indicates a different position and a different department: on January 1, 1904, Heorhiy Fyodorovych [Proskura] assumed the position of a full-time teacher of drawing and mechanics (SAKhR, 1901, p. 218). Since September 12, 1911, Proskura was an adjunct professor (SAKhR, 1901, p. 222), and before the 1917 October coup, he never became a full professor, although most of the adjunct professors of KhTI usually received the title of full professor in 2–5 years. Before the October coup, the position of a professor differed from the position of an adjunct professor in approximately the same way that the position of a teacher with a professor's certificate today differs from the position of a professor without a professor's certificate. In addition, until 1917, professors and adjunct professors were not elected but appointed (Zhurylo, 2016, p. 32).

In the list of employees of the Ministry of National Education of the Russian Empire, not even for 1911, but for 1917, we find the following piece of information:

Adjunct professor at the Department of Applied Mechanics and Theory of Machine Construction, State Councillor Heorhiy Fyodorovych Proskura was on duty from 01.01.1904 to 09.01.1904 and from 09.12.1906; from September 12, 1911, he was in the position of adjunct professor. He received as wages a salary of 1,600 roubles, dining and room allowances of 200

roubles each, lessons of 2,200 roubles. He has the orders of St Anna and Stanislaus, 3rd degree. He graduated from the Imperial Moscow Technical School, is married, from the middle class, born in 1876, Orthodox, and has no children. (*Spisok...*, 1917, p. 515)

It is known that on September 1, 1904, Proskura resigned from the service “due to domestic circumstances” (SAKhR, 1901, p. 68). He moved to St Petersburg, where he lived at Vasilievsky island, Line 10, Building No. 49, Quarter 95 (SAKhR, 1901, p. 74). Proskura returned to KhTI only in December 1906. Proskura’s “domestic circumstances” related to the so-called “Schiller incident” at KhTI, which is described in further detail in the work of one of the authors of this article (Zhurylo, 2016).

An eyewitness of the events, Petr Matveevych Mukhachov, published an article about the “Schiller incident” and its consequences:

... in April 1904, under former director M.M. Schiller, two professors (Mrs. Krasusky and Latyshev), two teachers (Mrs. Komarov and Roginsky) and two laboratory assistants (Mrs. Pashkov and Sitnikov) were fired shortly after major student unrest.

The reasons for such a sudden administrative dismissal remain unknown and are likely to remain so in the future. Be that as it may, after the dismissal of six teaching staff, some other teachers (Mrs. Steklov, Ziegler, Yanovsky, Gemilian, Herburt, Gavrilov, Kopnyaev, Solomko, Tir, Proskura, Vasiliev) also left the institute at their own request during the period from April 10 to September 1, 1906. Some teachers (Mrs. Shchygolev, Voskresensky) were forced to leave in the period from September 1 to October 1 of the same year as a result of M.M. Schiller providing them with too meagre remuneration or classes that did not correspond to their specialty. Other teachers (Mrs. Chernobaev, Peskov), upon returning from a business trip abroad on May 1 and August 31, 1905, did not want to accept the classes offered to them, despite the fact that these classes concerned precisely those branches of technology that they specialised in; finally, one (Mr. Lepeshov) M.M. Schiller did not give any classes (January 1, 1905) due to his painful health condition. Thus, the gradual departure of teachers extended over a long period of time (from April 7, 1904, to September 1, 1905). (SAKhR, 1887)

Mukhachov continues to inform that new teachers were hired to replace the dismissed 22 teachers. The work of the Institute was expected to stabilise. However, in September 1905, the students demanded from the Education Committee to have their former teachers returned and give them chairs out of turn. At the time of these protests, KhTI was headed by Mukhachov instead of Schiller. Expressing the difficulty of fulfilling this requirement, Mukhachov reminded them that the Education Committee of KhTI is not responsible for the former director M.M. Schiller's actions and that the teachers were dismissed by the Ministry of National Education. Therefore, the Ministry should reinstate the teachers. Regardless of that, Mukhachov managed to reemploy most of the teachers who had resigned because of the "Schiller incident", and thereby significantly increase the level of student training. However, the liquidation of the consequences of M.M. Schiller's arbitrary decisions lasted until 1907. In 1905, for the first time in its history (and, fortunately, for the last time), there was no graduation of students at KhTI. Only the correspondence regarding the resuming of teaching activities at the Institute lasted for 10 months (Zhurylo, 2016).

Petr Mukhachov, then director of the KhTI, actively supported young teachers, among whom at that time were Proskura, Kopnyaev, Tir and others. In particular, Proskura's candidacy was supported due to the retirement of Honoured Professor Vasily Ivanovich Albitsky, as someone was needed to fill this upcoming vacancy. In addition to age, there were also political reasons, because as an ardent monarchist, Albitsky had both misunderstandings with his colleagues and conflicts with his students, who repeatedly announced a boycott on the old professor (Gutnik, 2018, p. 8; Panasiuk, 2022, p. 227).

2. Establishment of the hydraulics laboratory at KhTI: myths and reality

Later in his work, Dmitry Yakovlevich Aleksapolsky (1956, p. 5) correctly points out that "in 1913–1915, H. Proskura carried out extensive work on the equipment of the hydraulic laboratory at the KhTI". However, the fact that "[s]ince then, he has been constantly managing the Department of Hydraulic Machines" (Aleksapolsky, 1956, p. 5) rather contradicts reality. This is because before the 1917 October coup, the department was not a structural unit, but, in fact, only a position of a professorship or an adjunct professorship; thus it could

be held but not managed (Zhurylo, 2016, p. 32). Apparently, Aleksapolsky, who had received higher education in 1925, described the regulations of the department and its management which were valid during his studies and later, but did not take into account the differences of the regulations of the department before the October coup.

In his own autobiography, Proskura states: “in 1905, he became a teacher at KhTI”, “in 1911, he was approved as professor at the same institute” and “in 1936, he was approved as dean of the Faculty of Mechanical Engineering at the Kharkiv Mechanical and Mechanical Engineering Institute” (SAKhR, 1930, p. 18). Aleksapolsky mistakenly refers to him as “dean of the mechanics faculty” (Aleksapolsky, 1956, p. 6). Later, Proskura himself writes: “I created a hydraulics and aerodynamics laboratory at KhTI and published works indicated in the list attached” (SAKhR, 1930, p. 24).

Apparently, based on these statements, various authors claim that “[i]n 1913–15, H. Proskura created a hydraulics laboratory with unique installations at KhTI” (Firsov, 2006, p. 6). Or less eloquently, “[i]n 1913–15, H. Proskura created a hydraulics laboratory at KhTI” (Ambrozhevich and Krashanitsa, 2006, p. 11). But what actually happened: did Proskura “conduct a lot of work” to equip the hydraulics laboratory of KhTI or indeed to establish it?

The myth has been further perpetuated by a memorial plaque with the inscription:

Academician Heorhiy Fyodorovych Proskura (1876–1958), an outstanding scientist, founder of the scientific school of hydraulic engineering and aviation in Ukraine, founder of the Department of Hydraulic Machinery (1914), member of the Presidium and head of the Department of Technical Sciences of the Academy of Sciences of Ukraine, an honoured worker of science and technology, laureate of the State Prize, worked here from 1901 to 1958.

This inscription raises several questions. Is it correct to assume that Proskura worked at KhTI since 1901 if he was initially a freelance employee of KhTI and only later returned to KhTI, after a long break in 1901–1902 and from December 1906 to 1958? After all, in 1902–1904, he was constantly on an assignment abroad and was not affiliated with his previous institution but the department—the Ministry of National Education—and had resigned from KhTI between September 1904 and December 1906. Thus, he worked at KhTI not since 1901, but under exceptional circumstances (hired as external staff) in



Figure 1. The memorial plaque to Heorhiy Proskura at the Engineering Building of the National Technical University “Kharkiv Polytechnic Institute”. (Photo by Oleh Zhurylo.)

1901–1902 and from December 1906 to 1958. Interestingly, Proskura's personal file includes his congratulatory telegram as a former graduate of KhTI to Havrila Sendetsky on the 25th anniversary of the scientific activity of his “favourite teacher” (SAKhR, 1901, p. 216). This greeting is dated September 22, 1934.

Moreover, is it correct to consider Proskura the founder of the Department of Hydromachines, which did not yet exist at KhTI in 1914? Even in 1917, Proskura only held the position of an adjunct professor at the Department of Applied Mechanics and the Theory of Machine Construction (*Spisok...*, 1917, p. 515). The institute's departments were not established by adjunct professors before the October coup and not even on the level of the director of KhTI, but by the Ministry of National Education, whose decision was approved by the emperor. According to Proskura's personal file, he was assigned to be “in charge of the hydraulics laboratory from January 16, 1914” (SAKhR, 1901, p. 223), which, thus, already existed. Moreover, leading an already existing laboratory is not the same as managing the Department of Hydraulic Machines.

According to the archival documents, Heorhiy Fyodorovych Proskura did not establish any hydraulics laboratory at KhTI. Until 1910, students were taught in various laboratories at KhTI. That same year, the Educational Committee developed projects for the creation of several laboratories, such as qualitative analysis, agronomic and zootechnical and hydraulics laboratories. These projects were handed over to the Ministry of National Education. The Ministry allowed

the establishment of only one laboratory—namely, the hydraulics laboratory, which was set up by the luminary of hydraulics at that time, Professor Vasily Ivanovych Albitsky. In his personal file, there is a request to the Trustee of the Educational District dated June 12, 1912, in which Albitsky specifically writes: “On September 1 of the current year, the five-year term for which I was left at the Institute by the Minister of National Education for the construction and equipment of the hydraulics laboratory” (SAKhR, 1886, p. 191). Albitsky asked to extend the term of his work for the following five years. Under the pressure of the Director of the Institute of Technology Professor Mukhachov, who promoted Proskura, the Study Committee of the KhTI did not support this proposal by a majority of votes. Mukhachov referred to his protege Proskura in a report note to the Educational Committee of KhTI as someone who “declared himself a highly knowledgeable theorist” (SAKhR, 1886, p. 198). However, the Minister of National Education extended Albitsky’s term of public service, but only for a year (SAKhR, 1886, p. 195).

At the meeting of the Educational Committee on October 12, 1912, Albitsky said:

While I had given lectures on hydraulics for more than twenty-five years, Mr. Proskura had given lectures for only one year. While I, in addition to courses in hydraulics, have carried out original research in its field, which has been translated into German and French, Mr. Proskura presented only one compilation, which is hardly known outside the walls of the Institute and probably not read by any professor of the Institute and, even more so, by Mukhachov himself. At the time when I produced hydraulic and hydrotechnical works worth about a million roubles, Mr. Proskura, as far as I know, did not produce a single one. I cannot understand on what basis does Mr. Mukhachov claim that Mr. Proskura managed to declare himself a very knowledgeable theoretician and a skilled project manager. In higher mathematics, Mr. Mukhachov is completely inadequate and has very indirect contact with hydraulics, so he cannot be a competent judge of Mr. Proskura’s qualifications. The same can be said about other members of the Academic Committee, except for Professor Belyankin, who, as far as I know, is not delighted with Proskura. (SAKhR, 1886, p. 213)

It is clear from this testimony that Professor Albitsky did not hold a high opinion of the competence of most of his colleagues, which, in turn, explains their unfavourable attitudes towards him.

Albitsky openly points out the insufficiency of allocated funds for the establishment and equipment of the laboratory. For example, during the planning of annual allocations of 11,000 roubles in 1907, nothing was allocated to the laboratory; in 1908, only 1,000 roubles were allocated, in 1909—2,250 roubles, in 1910—5,500 roubles, in 1911—5,250 roubles, and in 1912—5,250 roubles (SAKhR, 1886, p. 211). Moreover, Albitsky quite harshly criticised Professor Mukhachov's work methods, defining them as "political debauchery, mastery of the captured law and favouritism at the Institute" (SAKhR, 1886, p. 214). Already on November 15, 1912, the director of KhTI officially wrote to Albitsky: "I have the honour to ask you to notify me whether practical classes with students in the hydraulics laboratory located in your department can begin now, and if not, when will it be possible to begin?" (SAKhR, 1886, p. 317). Therefore, reasonable questions arise. What kind of a hydraulics laboratory did Proskura establish at KhTI? Were there two hydraulic laboratories at KhTI?

Adjunct professor Proskura had to find his own way in academia in order to remain a teacher at the Institute and obtain the title of professor. He managed to shift his focus to aviation precisely at the time of its rapid development. Even during his studies at the IMTU, one of his teachers was the "father of Russian aviation" Nikolai Egorovich Zhukovsky, who was also an honorary member of Kharkiv Institute of Technology of Emperor Alexander III.

In 1909, Proskura was the first to head the Aeronautical Department of the Kharkiv Branch of the Imperial Russian Technical Society, the aero section of the Technical Society of Students of KhTI (SAKhR, 1901, p. 85). Apparently, he understood that he could not face competition with Albitsky. Relying on the support of Mukhachov, the director of the Institute of Technology, Proskura turned to the Educational Committee of the Institute with a proposal to start giving lectures on the optional course on the theoretical foundations of aeronautics. However, it was not so easy to legalise the reading of lectures. On May 8, 1912, already the general meeting of the members of the aero section of KhTI petitioned the Institute's Educational Committee to open optional courses on aeronautics and to equip an aerodynamics laboratory. The request was signed by the head of the aero section, adjunct professor Heorhiy Proskura and the secretary, student Havrila Sendetsky (SAKhR, 1914, p. 1).

Since then, Proskura mostly worked in the field of aeronautics. And although he did not succeed in becoming either an aviation engineer or an aircraft designer, except for publishing a couple of works on aviation ('Theoretical foundations of aviation and aeronautics' and 'Air propellers: theory and calculation of

propellers', both works published in Russian) (Aleksapolsky, 1956, pp. 17–18), his efforts contributed to the opening of, first, aviation specialisation, then of a specialty and later to the founding of the aircraft engine institute, now known as the famous Kharkiv Aviation Institute (KhAI). Although the literature also cites some popular scientific works by Proskura, for example 'Gliders of the Feodosia competitions (in November 1923)', 'Gliders and light airplanes: (with 50 drawings)' and 'Gliders with motors and their practical significance' (Oleinik and Gres, 2016, p. 98), the absolute majority of his 103 cited works (Aleksapolsky, 1956, p. 20 listed only 67) is devoted to hydraulics, hydraulic engineering, pumps, cavitation of ship propellers, etc.

The opinion regarding the general passion for aviation at that time is further attested by the fact that in 1911, a 1908 KhTI graduate, Heorhiy Botezat, defended the world's first thesis in the field of aviation at the Sorbonne (Zhurilo, Gutnyk and Zhurilo, 2022, p. 74).

Researchers of Proskura's scholarly activities (Firsov, 2006; Ambrozhevich and Krashanitsa, 2006) do not mention in their works the interesting fact about his attempt to become a teacher at the Imperial Moscow Technical School in 1910 (SAKhR, 1901, p. 138). Obviously, they are not familiar with Proskura's archival file, which sheds light on this episode of his life: after the request for the transfer of Proskura was rejected, and after an 8-day trip to Moscow in September 1910 (SAKhR, 1901, p. 142), he cancelled his request to move to Moscow "due to changed circumstances" (SAKhR, 1901, p. 144).

Proskura refused to move because of his living conditions in Moscow. In Kharkiv, he was the director's favourite, had various privileges in many matters: from receiving an Institute's apartment (not even all ordinary professors were provided with free housing at KhTI) to going on various business trips and publishing works at the expense of the Institute. Proskura and his wife lived together with his two unmarried sisters, Lidia and Maria. Even after World War II, when serving as the department head at the Kharkiv Aviation Institute, Proskura lived for a long time with three women on the premises of the Kharkiv Polytechnic Institute, although he could have found his own apartment. Neither Proskura nor his sisters had children. So, the sisters took care of their brother and ran the household to allow Proskura to fully focus on his scientific work.



Figure 2. Professor Vasily Ivanovich Albitsky (1850 – post-1926).
(Source: KhPI, 1886.)

It cannot be claimed that Heorhiy Proskura was an outstanding researcher or scientist at that time. In *Reports on the state of Kharkov Technological Institute for 1900–1917*, his name is not mentioned once before 1906. In the 1906 Report, it is indicated that full-time teacher Heorhiy Proskura was in service from January 1 to September 1, 1904, and from December 9, 1906 (Report 1906, p. 7). There is no information on the scientific works of Heorhiy Proskura in the 1906 Report.

The Report for 1907 reveals that full-time teacher Heorhiy Proskura was in service from January 1 to September 1, 1904, and from December 9, 1906, and prepared for publication a monograph *On the regulation of the movement of machines*, part of which was to be published in February 1908 (Report 1907, p. 21).

In the Report for 1908, it is indicated that teacher Heorhiy Proskura prepared for publication the works *On the regulation of the movement of machines* and *Lecture notes of water turbines*, as well as two articles: 'Movement of a machine controlled by a regulator' and 'Hydrodynamics of water turbines related to the method of their calculation' (Report 1908, pp. 22–23).

The 1909 Report informs that teacher Heorhiy Proskura has published *Lecture notes on water turbines* and *Hydrodynamics of water turbines*, and the article titled 'Theory and calculation of airplanes' in the journal of the South-Russian Society of Technologists (Report 1909, p. 23).

Only the 1911 Report mentions that Heorhiy Proskura is an adjunct professor, that he published a curriculum of lectures on the theory of steam engines and hydraulics and visited with students an airship park in Sevastopol (Report 1911, p. 24).

In the Report for 1916, adjunct professor Heorhiy Proskura is mentioned in connection with publishing the *Regulation of the movement of the machine-engine* and the article 'Characteristics of water turbines' (Report 1916, p. 53).



Figure 3. Academician Heorhiy
Fyodorovych Proskura (1876–1958).
(Source: KhPI, 1901.)

In addition, it is revealed that Heorhiy Proskura acted on behalf of Director Mukhachov as an expert on oil engines in court cases on several occasions (Report 1908, p. 23; Report 1911, p. 24; Report 1916, p. 53).

An indirect confirmation of Proskura's insufficient qualification in hydraulics at that time (conflicting with the assessment of him as "a very knowledgeable theoretician and masterful design manager"!) is a letter from the Association of Southern Steel and Coal Producers dated January 18, 1918, in which they ask the director of KhTI to recommend "an experienced specialist-practitioner in hydrotechnical structures" for consultations "regarding the strengthening of the banks and the arrangement of the dam" (SAKhR, 1920,

p. 1). The letter contains the following resolution: "Ad-Prof. H.F. Proskura cannot point to such a specialist". That is, neither Proskura himself, nor any of his colleagues, graduates or students were able to competently solve the task. Unfortunately, Professor Albitsky's warning about Proskura became true, because he really could not teach students what he himself did not know.

In part, this lack of qualified specialists was due to Proskura's somewhat unethical behaviour towards colleagues whom he would consider competitors. As soon as the honoured Professor Vasily Ivanovych Albitsky retired, Proskura made considerable efforts to force the resignation of the old professor's son, Vladimir Vasilievych Albitsky, who had worked as a laboratory assistant at the hydraulics laboratory. Proskura justified his attitude towards the professor's son with the latter's allegedly "wrong attitude to the assigned duties" so much so that it seems to point to laboratory assistant Albitsky's "unsuitability for the laboratory". On March 18, 1914, V.V. Albitsky received a note from the director of KhTI, advising him to submit a request for dismissal from his position (SAKhR, 1911, p. 106). This whole story was described in more detail in the work of one of the authors of this article (Zhurylo, 2016, pp. 152–164).

Later, Proskura succeeded in becoming a rather notable scientist in the development of Professor Albitsky's research direction. He presented his achievements in hydraulics in his works in Russian: *Turbines, their theory and calculation* and *Hydraulics* (both published in Kharkiv, 1901), *New general formulas for calculating water turbines, their derivation, analysis and application*, *Centrifugal and propeller pumps* (Kharkiv, 1931), *Laws of dynamic similarity of hydraulic machines* (Kyiv, 1940) and others. In addition, he was involved in the formulation and development of the aero section, and under his lead, an aerodynamics laboratory with a wind tunnel was established.

3. Proskura's activities after 1917

The events following the October coup dramatically changed Proskura's relationship with Mukhachov, then director of the KhTI. As already mentioned, Proskura had greatly benefitted from being Mukhachov's favourite, as the latter had promoted him, quite often sent him on business travels, often to foreign countries, facilitated compensation of his travel expenses by KhTI, and published abstracts of lectures and other Proskura's works. However, when it was time to express gratitude, Proskura's response was unexpected.

Due to the sudden death of his wife, Petr Mukhachov was forced to leave his post as the director of KhTI, to care for his four daughters, the youngest of whom was 4 years old, and handed his position over to Ivan Pavlovych Osipov. In April 1917, at a meeting of the Institute's Academic Council, Mukhachov was accused of undemocratic practices and violation of the Institute's autonomy. Ironically, several teachers whom Mukhachov had reinstated at KhTI after the "Schiller incident" took part in these accusations and his harassment (Zhurylo, Kabachek and Kirichenko, 2022, p. 180) and demanded Mukhachov's resignation from the Kharkiv Institute of Technology. Among the teachers were Vadim Erastovich Tir, Heorhiy Fyodorovych Proskura and Pavel Petrovich Kopnyaev (SAKhR, 1887, p. 490).

It is worth reflecting on what the Institute's autonomy could have been at the height of the First World War and what kind of democracy was possible in the conditions of the generally undemocratic imperial regime? These rhetorical questions deepen our understanding of the context of the events described. The real motives are not known for certain, especially since the participants themselves

remained silent. Perhaps this publicly articulated disdain for the “old” leadership appointed “during the tsarist times” was dictated by the revolutionary changes in the politics of the time. A subsequent change in the political situation, the kaleidoscope of regimes and the circumstances of personal lives did not leave them the opportunity to take advantage of this *démarche* for their own career growth. Except for Proskura, who briefly performed the duties of rector of KhPI in 1924 (SAKhR, 1924, p. 85). So, in April 1917, Mukhachov was forced to leave KhTI. Since the rector at the time could afford a governess and a nanny to take care of his children, it can be assumed that family circumstances could have simply been a convenient excuse to leave the high position. After his release, Mukachov retired and returned to KhPI as a teacher only in 1920 (Zhurylo, Kabachek and Kirichenko, 2022, p. 180).

Throughout the Soviet period, certain ideological stereotypes were developed regarding the activities of outstanding scientists during the October coup and in the first years of the Soviet regime. Sometimes these stereotypes can be found in modern literature. For example, a publication of the National Aerospace University dedicated to the upcoming anniversary of Heorhiy Proskura mentions the following:

H. Proskura faced the October coup by actively participating in the reorganisation of the higher school. During these days, his capabilities as a scientist and organiser of scientific work became fully evident. His scientific activity could be characterised by his constant attention to practical issues, understanding of the ways of development of technology, appropriate selection of scientific topics, verification of theory in practice. (Oleinik and Gres, 2016, p. 63)

Let us leave that without further comment.

It seems that during these turbulent years, Proskura adopted a cautious wait-and-see approach, refraining from any political activity. Unlike many of his colleagues, he was not elected to the City Duma during Denikin's short-term rule. Also, he did not sign the appeal of Kharkiv professors to Western scientists to condemn the Bolshevik practices. Therefore, he also did not appear at the well-known trial of the Kharkiv professors in April 1921. It is notable that his wait-and-see strategy later resulted in his administrative advancement: in 1923, Proskura became the first vice-rector, and later temporarily performed the duties of the rector of KhPI (SAKhR, 1924, p. 16).

The events of the October coup had a serious impact on the fates of scientists and teachers of higher education. For example, at first, the Provisional Government, by its Decree No. 1322 of September 1, 1917, changed the names of positions in universities: professors now became 'ordinary professors', adjunct professors—'extraordinary professors', director was renamed 'rector', and assistant director—'prorector' (*Sobranie...*, 1917, p. 2303). The same document abolished the teaching of the Law of God and increased the salaries of ordinary professors to 4,500 roubles per year and for extraordinary professors to 3,000 roubles per year (*Sobranie...*, 1917, p. 2305). However, this was only the beginning of the changes. In September 1918, by a Decree of the Council of People's Commissars, most of the established rules of higher education were cancelled. To obtain higher education, no documents on previous education were required. If a person had a desire to study at a university, they were accepted. A diploma was not issued upon graduation. All academic degrees and titles were also abolished. Of course, this decree was initially in effect on the territory of Soviet Russia, but later, with the arrival of the Bolsheviks, it was extended to the territory of the Ukrainian SSR. Incidentally, quite soon everyone who gave lectures was called a professor. It was at this time that Heorhiy Proskura, like many other young teachers, became professors. Academic degrees and titles were reinstated in higher education only in 1934 (Reznikov, 1998, p. 63).

For some time in 1928, the former rector before the October coup, Petr Mukhachov, served as head of the Institute of Metals established in Kharkiv (later known as the Ukrainian Research Institute of Metals, UkrNDIMet), in which many of his former students and colleagues continued to work, both part-time and full-time. It was under Mukhachov's lead that UkrNDIMet went through the formation and administrative process which is the most difficult stage for any newly founded institution (for details, see Zhurylo, Kabachek and Kirichenko, 2022, p. 183). Of course, the personal relationship between Mukhachov and Proskura had suffered because the former rector of KhTI could not forget the 1917 incident, nor the role of his former protégé in it.

As a result, even after Mukhachov's dismissal from the position of director of UkrNDIMet, Proskura remained a persona non grata at the Institute of Metals. None of the heads of UkrNDIMet at any level wanted to cooperate with a person of such dubious reputation.

A long-term consequence of this falling out was that there are no works on the study of not only aviation, but also hydroturbines and pumps among the research works of UkrNDIMet. The scientists of UkrNDIMet categorically refused to

even discuss any business relations, either with Proskura himself or his circle. Thus, personal grudges and ambitions not only harmed scientific cooperation, but also caused significant damage to the state. These losses could have been prevented by upholding scientific cooperation among the above institutes, which would have made it possible to obtain greater performance and durability of hydraulic machines in special alloys with special properties at a much earlier time.

At the same time, Heorhiy Proskura did not let it get to him and managed to turn the situation in his favour. At KhTI, he gave various lectures on machine speed controllers, design, steam engines, hydraulics and hydraulic engines. It is not surprising that most of his works were devoted to power machines of that time: 'The theory of steam engines' (1911), 'Regulation of the movement of engine machines' (1908), 'The theory and calculation of water turbines' (1908), 'Hydrodynamics of water turbines related to their calculation and study' (1909), 'Water turbines' (1910), 'Lectures on hydraulics' (1911), 'The theory of steam engines' (1913–1914), 'Hydraulics combined with hydrostatics and hydrodynamics' (1914) and 'The theory of a propeller-type water turbine' (1922) (see Zhurylo, 2016, p. 202).

Since 1909, Heorhiy Proskura taught an optional series of lectures on the theoretical principles of aeronautics. Later, after 1920, he also lectured on water turbines, blowers and compressors, and the theory and history of aviation and propellers. This was essentially a lecture series based on the most recent developments of that time, as there was no time to reflect on the rapid changes in science and technology. However, with his knowledge of foreign languages, persistence and hard work, Proskura gradually but confidently turned from one of the worst lecturers at KhTI into a leading scientific figure. Also, his ability to see scientific prospects and report on possible results led to the fact that he became an effective organiser of science. At the time, he published the following books: *The theory of aviation* (1924), *Air propellers: the theory of propellers* (1926), *A graphic method of designing water turbine spirals* (1926), *Experimental hydro-aerodynamics* (1933), *Hydrodynamics of turbomachines* (1934) and others (Oleinik and Gres, 2016, p. 200).

Although Heorhiy Proskura never became a leading researcher of aviation, he was first and foremost an organiser who was able to engage not only students but also the leadership of the Ministry of Education with his ideas on aviation. The bright representatives of his scientific school—the most famous among whom were Professor Dmitry Nikolaevich Ksandrov, an outstanding aircraft designer,

and Doctor of Sciences Mikhail Iosifovich Gurevich and in the field of hydraulics and hydraulic machines Professors Dmitry Yakovlevich Aleksapolsky and Lazar Samoylovich Shmuglyakov—actively developed Proskura's ideas (SAKhR, 1924, p. 55).

Heorhiy Proskura always considered himself more of a theoretician than a practitioner. This is not surprising: he was a member of many scientific and public organisations: a member of the board of the All-Ukrainian Association of Engineers, a member of the Society of Aviation and Aeronautics of Ukraine and Crimea, the head of the Hydraulics and Aerodynamics Laboratory, and since 1923—the Department of Hydraulics and Aviation, the chairman of the faculty commission of the Faculty of Mechanics at KhTI, the dean of the same Faculty, the head of the Department of Hydraulics and the Department of Aviation Engineering Department at the Ukrainian Research Institute of Industrial Energy, a member of the Presidium of the Energy Council of the Supreme Council of the National Economy of the Ukrainian SSR, and the scientific editor of the journals *Air Fleet*, *Bulletin of the Kharkov Technological Institute* and *Proceedings of the Kharkov Technological Institute* (KhPI, no date). Objectively, with such a workload, it is difficult to engage in practical activities. But even under such circumstances, Proskura found time to participate in designing gliders with the teachers and students of the departments (SAKhR, 1924, p. 53).

The year 1930 marked a new period in Heorhiy Proskura's life: the founding of the Kharkiv Aviation Institute with his active participation, where he served as head of the Department of Aerohydrodynamics and, simultaneously, the Department of Hydropower Plants of the Kharkiv Mechanical Engineering Institute. His position, according to the records of the new university was: "Proskura H. F., Academician. Scientific head of all scientific research works of the aerodynamics laboratory" (CSASA, 1934, p. 25).

Since the mid-1930s, Heorhiy Proskura was the head of the Kharkiv Branch of the All-Union Aviation Scientific-Engineering-Technical Society, the design section of the All-Ukrainian Aeroclub (1933) and director of the Laboratory of Issues of High-Velocity Machines and Mechanisms of the Academy of Sciences of the Ukrainian SSR (1944–1955). His conscientious work was recognised in 1943 with the Stalin's (State) Prize and orders and medals of the USSR. He was awarded the honorary title of an Honoured Worker of Science and Technology of the Ukrainian SSR (1944). In addition, he was awarded the Certificate of the All-Ukrainian Central Executive Committee with the Hero of Labour title (on August 17, 1933) for his work in the field of aviation and a gift of a car by the People's Commissar of Heavy Industry in 1934 (CSASA, 1934, p. 9).

Unfortunately, Heorhiy Proskura's international connections after 1917 were very limited: the government of the former USSR did not welcome contacts with foreigners, which became especially noticeable after the Second World War. Heorhiy Fyodorovych's students were already engaged in international cooperation. Graduates of the hydraulics department (which was his main place of work) developed scientific directions in the field of hydraulic engineering in different cities of the former USSR, Bulgaria, Romania, Hungary, countries of Africa and Asia and South America. This cooperation involved building turbines for foreign hydroelectric power plants in Salto Grande and Piedra del Águila (Argentina-Uruguay), Aguamilpa (Mexico), Purnari (Greece) (by Professor Igor Veremeenko), and representation of the former USSR in international organisations: as a UNESCO expert and consultant on consultation issues (Professor Vyacheslav Barlit) and creation of standards of the former Council of Economic Cooperation (by Professor Dmitry Aleksapolsky). This is proudly announced on the website of the department, which today is known by the name of Heorhiy Proskura (KhPI, no date).

Thus, Heorhiy Fyodorovych Proskura, thanks to his persistent character, self-improvement and natural organisational skills, managed to create a scientific school in the field of hydraulics and aviation, whose representatives made a great contribution to the development of science and technology. In Ukraine, a prestigious prize of the National Academy of Sciences of Ukraine in the field of energy is named after him, and in Kharkiv, a street in the area of the Aerospace University (former Kharkiv Aviation Institute) now bears his name.

Conclusion

The existing information on Proskura's biography contains many errors and inaccuracies, stemming from both Heorhiy Proskura's own accounts and perpetuated by various researchers.

Contrary to previously held information, Proskura was not an ordinary professor before the 1917 October coup but held the position of adjunct professor. He received the title of professor only after the October coup, during the period when the title of professor of the first and second group was awarded to all those who gave lectures.

As indicated in his service record, he worked at KhTI from January 1 to September 1, 1904, and since December 9, 1906, and not since 1901, as indicated on the memorial plaque.

The hydraulics laboratory at KhTI was not established by adjunct professor Proskura, but by ordinary professor Albitsky, who was a luminary of hydraulics at that time. Starting with Dmitry Aleksapolsky's work, published in 1956, the majority of printed works on Proskura's activities contain false data about his work experience, positions and scientific achievements before 1917. Also, the information about Proskura's work at KhTI on the memorial plaque of the Engineering Corps of NTU "KhPI" is not correct.

The Department of Hydromachines, allegedly founded by Proskura at KhTI did not exist in 1914. In 1914, however, Proskura became the head of the hydraulics laboratory of KhTI after the retirement of Honoured Professor Vasily Albitsky. The conflict between Albitsky and Proskura also negatively affected the further career of Albitsky's son at KhTI.

Of the 107 scientific works by Heorhiy Proskura only 2 are devoted to aviation issues. Other 4 of his works related to aviation are popular-scientific.

The disloyal behaviour of Proskura, Tir and Kopnyaev towards the former Director of KhTI Mukhachov led to further ignoring of Proskura and his circle by the employees of UkrNDIMet, and limited research not only on aviation, but also on hydroturbines and pumps at UkrNDIMet. This, in turn, led to serious scientific-theoretical and material losses.

An internship abroad in Zurich allowed Proskura to learn the theory of water turbines developed by Professor Prafil and the new mathematical apparatus for Euler's hydrodynamic equations for the flow of liquid in the channel of the turbine working wheel. Proskura successfully applied this knowledge in his further work.

Despite the unsuccessful start of his career, his own complex character and the political upheavals in Ukraine in 1917–1921, Heorhiy Proskura made the right decisions, took into consideration the criticism of his older colleagues and managed to find his scientific niche. He successfully established a scientific school, whose representatives implemented his scientific ideas in the field of aviation and hydraulic machines not only in Ukraine but also in other countries. Heorhiy Fyodorovych Proskura became one of the organisers of the Aviation Institute in Kharkiv, served as a member of many scientific and public organisations and was an Academician of the National Academy of Sciences of Ukraine.

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References

- Aleksapolsky, D.Ya. (1956) ‘Heorhiy Fyodorovych Proskura. Akad. nauk USSR’. Kyiv: Publishing House of the Academy of Sciences of the Ukrainian SSR.
- Ambrozhevich, A.V. and Krashanitsa, Yu.A. (2006) ‘Heorhiy Fyodorovych Proskura’, *Aviation and Space Engineering and Technology*, 2(28), pp. 10–16.
- BMSTU (1865) *Digital collections*. Bauman Moscow State Technical University Library. List of graduates and teachers of IMTU, MMMI, MVTU, MSTU since 1865. Available at: <http://people.bmstu.ru/abcdef/be.htm> (Accessed: 4 July 2024).
- Firsov, A.I. (2006) ‘Proskura—uchenyj, inzhener, pedagog’, *Aviation and Space Engineering and Technology*, 2(28), pp. 5–9.
- Gutnik, M.V. (2018) ‘Profesor Albitskyi Vasily Ivanovich—profesor Kharkivskoho tekhnolohichnoho instytutu v haluzi hidravliki (19.03.1850 – pislia 1916)’, *History of Science and Biography*, 2, pp. 126–138.
- Karnatsevich, V.L. (2005) *100 znamenityh har'kovchan*. Kharkiv: Folio.
- Kochetkov, V.N. (1994) *Zolotaya podkova (biografiya Tsiolkovskogo)*. Moscow: Megapolis.
- KhPI (no date) *Digital collections*. National Technical University “Kharkiv Polytechnic Institute” Library. Available at: <http://library.kpi.kharkov.ua/vustavki/PREPODAVATELY.html> (Accessed: 4 July 2024).
- KhPI (1886) *NTU “KhPI” Library*. Available at: http://library.kpi.kharkov.ua/vustavki/PREPODAVATELY/PR_%D0%90.html (Accessed: 4 July 2024).
- KhPI (1901) *NTU “KhPI” Library*. Available at: http://library.kpi.kharkov.ua/vustavki/PREPODAVATELY/PR_%D0%9F.html (Accessed: 4 July 2024).
- Oleinik, I.V. and Gres, V.S. (2016) *Akademik Heorhiy Fyodorovych Proskura: biobibliograficheskij sbornik*. Kharkiv: NTU “KhAI”.
- Orlov, P.A. (1887) *Ukazatel' fabrik i zavodov Evropeyskoy Rossii i Tsarstva Pol'skogo: materialy dlja fabrichno-zavodskoy statistiki*. St Petersburg: R. Golike Printing House.
- Panasiuk, A. (2022) ‘Naukovo-pedahohichna spadshchyna V.I. Albitskoho v istoriohrafii’, *History of science and biography*, 1, pp. 219–235. Available at: <https://doi.org/10.31073/istnauka202201-12>

- Reznikov, A.N. (1998) *Eskizy proshlogo v proektsii na nastoyashchee*. Samara: Fedorov.
- SAKhr (1886) Osobovaya sprava Albitskoho V.I., F. R-1682, desc. 2, c. 5, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1887) Osobovaya sprava Mukhachova P.M., F. R-1682, desc. 2, c. 210, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1898) Osobovaya sprava Zernova D.S., F. R-1682, desc. 2, c. 123, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1901) Osobovaya sprava Proskury H.F., F. R-1682, desc. 2, c. 262a, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1903) Osobovaya sprava Predtechensky O.I., F. R-1682, desc. 2, c. 261, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1911) Osobovaya sprava Albitskoho V.V., F. R-1682, desc. 2, c. 7, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1912–1922) *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1914) Klopotannia pro asyhnuvannia kredytu na chytannia pry Instytuti kursu z povitroplavannia ta obladnannia aerodynamichnoi laboratorii, F. 770, desc. 1, c. 728, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1920) Ob ekspertizah i otzyvah nauchnogo haraktera, F. R-1682, desc. 1, c. 43, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1924) Zvit Kharkivskogo tekhnologichnogo instytutu z uchbovoi chastyny za 1923/24 navchalny rik, F. R-1682, desc. 1, c. 133A, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- SAKhr (1930) Osobovaya sprava Proskury H.F., F. R-4589, desc. 4, c. 411a, *Derzhavnyi arkhiv Kharkivskoi oblasti*, State Archives of Kharkiv Region, Kharkiv.
- Sobranie uzakonenii i rasporyazhenii pravitel'stva, izdavaemykh pri pravitel'stvuyushchem senate № 209. 1 sentiabrya 1917 g.* (1917). St Petersburg: Senate Printing House.
- Spisok lits, sluzhashchikh po vedomstvu ministerstva Narodnogo prosveshcheniya na 1917 g.* (1917). St Petersburg: Senate Printing House.
- Startavia (1910) *Digital collections*. Gliding club of the airfield 'Buzovaya' named after O.K. Antonov. Available at: <http://startavia.info/> (Accessed: 4 July 2024).
- TsDAVO (1934) Osobovaya sprava Proskury H.F., F. 331, desc. 2, c. 279, *Tsentral'nyy derzhavnyy arkhiv vyshchikh orhaniv vladny ta upravlinnya Ukrayiny*, Central State Archive of Supreme Authorities and Administration of Ukraine.
- Zhurilo, D., Kabachek, V. and Kirichenko, O. (2022) 'Naukovo-pedahohichna diialnist Petra Mukhachova v 1887–1935 rr.', *History of Science and Biographies*, 1, pp. 170–191. Available at: <https://doi.org/10.31073/istnauka202201-09>
- Zhurilo, D.Yu., Gutnyk, M.V. and Zhurilo, A.G. (2022) 'George Bothezat and his contribution into the world aviation and astronautics', *Space Science and Technology*, 28(1(134)), pp. 70–80. Available at: <https://doi.org/10.15407/knit2022.01.070>

Zhurylo, D.Yu. (2016) *Stanovlenie i razvitie Har'kovskogo tekhnologicheskogo instituta v kontse XIX—nachale XX vekov*. Kharkiv: NTU “KhPI”.

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