LIFE AND CONTRIBUTION OF ELECTRICAL ENGINEERING SPECIALIST NIKOLAI OZMIDOFF (1850–1938) TO THE FIELD OF ENGINEERING

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Summary. The research covers the multi-faceted activities of Nikolai Ozmidoff (Николай Озмидов; 1850–1938), a specialist in electrical engineering, member of academic staff (1884–1918) of Riga Polytechnicum (RP) / Riga Polytechnic Institute (RPI), professor (1906), in various positions – working on the railway in Switzerland and Germany, in geodesy, surveying, electrical engineering in Riga, as well as his pedagogical and scientific activities at RP / RPI and Ivanovo-Voznesensk Polytechnic Institute in Russia. Developing the article, the author used archival documents, scientific literature, and publications in the press.

Keywords: Riga Polytechnic Institute, Nikolai Ozmidoff, electrical engineering.

The Ozmidoff Family, N. Ozmidoff’s Childhood and Youth

The family of a specialist in electrical engineering Nikolai Ozmidoff was related to the noblemen Ozmidoffs from the governorates of Bessarabia, Mogilev, Yekaterinoslavl, and Kherson in the Russian Empire. A modern Ukrainian historian Viktor Zaruba (Віктор Заруба) has discovered that N. Ozmidoff’s father was a nobleman from Yekaterinoslavl Governorate, who moved to Bessarabia [1]. It may be assumed that Nikolai’s father came from the German-speaking lands, Switzerland or Poland. The influx of German settlers to the Black Sea and Caucasus Region in the early 19th century was caused by the Manifesto of the 20 February 1804 issued by the Russian Tsar Alexander I Romanov (Александр I Павлович Романов; 1777–1825) [2]. A German
colony was soon established in the Bessarabian city Akkerman (now Bilhorod-Dnistrovskyi; Білгород-Дністровський), Ukraine. Relatives of N. Ozmidoff residing in Moscow, Russia, whom the electrical engineer, RPI / RTU Professor Kārlis Tabaks (1920–1997) corresponded with, also had little information about the genealogy of the Ozmidoff family. In order to commemorate the 140th anniversary of Professor N. Ozmidoff, K. Tabaks published an article about him in the journal «Электричество» (Electricity) published in Russia [3]. It is known that Ozmidoff was a relatively widespread surname in the Russian Empire, for example, such persons as Mikhail Ozmidoff (Михаил Озмидов; 1837–1897), a newspaper publisher and editor in Odessa, a Customs Officer in Liepāja and many others can be mentioned [4]. The author has not been able to find out whether they are relatives of N. Ozmidoff or not.

N. Ozmidoff was born on 27 December 1850 in Akkerman. He was baptized in the city church of Saint George. It is known that his father Maxim Ozmidoff (Максим Озмидов; ?–?), a nobleman by origin, had a technical education, which later allowed him to work in the railway department [5]. Unfortunately, there is not much precise information about the Ozmidoff family available in the Latvian State Historical Archive of the National Archives of Latvia, for example, in the personal file of a member of RPI academic staff N. Ozmidoff [6], as well as in the documents that were submitted by N. Ozmidoff when he applied for the Latvian citizenship.

Looking for a job where he could apply his technical knowledge, Maxim Ozmidoff changed his place of residence. In 1862, he and his family moved from Akkerman to Vitebsk, while in 1863, M. Ozmidoff, Nikolai’s father, was transferred to Dünaburg (the name of the city Daugavpils until 1893, Dvinsk from 1893 to 2020). In the late 1850s and early 1860s, the railway network rapidly developed in the Baltic governorates and Vitebsk Governorate: the St. Petersburg–Warsaw Line was built to pass through Rēzekne and Dvinsk, and in 1861, the Riga–Dvinsk Line was opened.

In 1868, N. Ozmidoff graduated from the gymnasium in Dünaburg and successfully entered the Faculty of Physics and Mathematics of St. Petersburg University. In 1869, he changed his plans and went to Switzerland to continue his studies at Zurich Polytechnic School (Eidgenössische Polytechnische Schule Zuerich), also called the Polytechnicum. The university founded in 1855 is now known as the Swiss Federal Institute of Technology in Zürich (Eidgenössische Technische Hochschule Zuerich). N. Ozmidoff attended the lectures of prominent scientists: the founder of graphic statics, engineer and mathematician, bridge design and structural engineer Carl Culmann (1821–1881), a mechanical engineering engineer, «father» of kinetics
Franz Reuleaux (1829–1906), an architect, art critic Gottfried Semper (1803–1879) and others. N. Ozmidoff received his university diploma in 1874.[7]

**In Railway Service in Switzerland and Germany**

Having received an engineering diploma, N. Ozmidoff started working as an Engineer's Assistant in the Swiss North-East Railway Company in 1874. The young engineer found a job in the railway service in order to gain experience and later be able to work independently. At that time, in the early 1870s, a railway construction project was started in Switzerland, which was important for the country's economy. The grandiose technical project became a symbol of the unity and cohesion of the Swiss nation. The railway connected the neighbouring countries, and its construction was quite complicated, as a tunnel under the mountains was also built. The construction of the Swiss railway became a pan-European project with the general aim to connect Germany with Italy. In 1875, N. Ozmidoff became the Construction Manager in the construction of the Baden–Niederglatt Railway Line in Switzerland. In 1878, he started working as a bridge designer on the railway line Magdeburg–Halberstadt in Germany [6; p. 12, 13].

**Work in Geodesy, Surveying, and Electrical Engineering in Riga**

After gaining his first practical experience, the young engineer returned to Russia, taking his wife and son with him. He chose to live in Riga, probably because the German culture and language widespread in Riga were close to his wife and it was easier for her to settle in her new life.

On 4 March 1879, the Riga City Board made a decision on the establishment of the City Construction Board, which would also include the Surveying Office. According to the documents, engineer N. Ozmidoff started working in the office on 17 March, occupying the position of the City Surveyor. His task was to collect the existing surveying materials, control surveying works and drawing plans. The creation of the first triangulation network (1880–1882) and the surveying of the territory were led by the RP professors, Switzers Alexander Beck (1847–1926) and Heinrich Malcher (1848–1927), who also worked in this committee [8]. N. Ozmidoff’s practical work in surveying the city was highly
appreciated – in 1882, he was awarded a First-Class Diploma at the All-Russian Industrial and Art Exhibition in Moscow.

Soon, he was fascinated by the new area of scientific and practical work and began installing electrical equipment in Riga’s public buildings and major industrial enterprises. The young engineer proved to be talented in the new field of work. The knowledge and experience gained in Switzerland, Germany, and Riga were important factors in his career – in May 1896, the Riga Stock Exchange Committee appointed him as an Electrical Engineering Expert at the All-Russian Industrial and Art Exhibition in Nizhniy Novgorod.

N. Ozmidoff became one of the first electrical engineering specialists who was given the opportunity to use his knowledge for the benefit of the people of Riga, restoring the 1st Riga City (German) Theatre (currently the building of the Latvian National Opera and Ballet) after the fire from 1882 to 1887. The first power station in Riga was opened at the theatre building in 1885 [9], according to other sources – in 1887 [10; p. 5], and its installation was led by engineer N. Ozmidoff. Another project was related to the mentioned theatre building, and Eduard Lindwart (1856–1920), a graduate (1879) of RP, took part in its realization. He worked as a mechanical engineer of the City of Riga, got acquainted with the work of power plants abroad. On his recommendation, a battery was installed in the power plant near the theatre building in 1891, so that the spare electricity could also be purchased by the residents of the immediate vicinity [10; p. 5]. In addition, N. Ozmidoff participated in the creation of electrical equipment in the largest industrial enterprises in Riga: A. Wolfschmidt Distillery (Brennerei A. Wolfschmidt), C. von Stritzky Beer and Porter Brewery (Bier-und Porterbrauerei, Malzfabrik C. Stritzky), Malt Factory, Russian-French Rubber Production Factory «Prowodnik», Strasdumuiža Cotton Factory (Strasdenhofer Baumwollen-Manufactur) and others. As the demand for electricity grew, in 1900 the Riga City Council started considering an opportunity to build a power plant and in October 1901 made a decision that the issues of construction and operation would be under its control. In November, the first funds were allocated to the new project. On 14 May 1905, the Riga City Electricity Supply Company opened the first large power station in Andrejosta [11]. The commissioning of the power plant equipment from the companies was completed only in November 1905. The city appointed experts – RPI professors N. Ozmidoff and Paul Denffer (1871–1959) [10, 11]. Engineer N. Ozmidoff also made sure that at Christmas 1888, the pupils of St. Peter’s Church School would have their Christmas tree decorated with electric bulbs [12], which was a big event back then and brought joy to children and adults alike.
Figure 1. The chimney of the first power plant in the Baltic governorates near the building of the Latvian National Opera and Ballet Theatre in Riga (2022).

N. Ozmidoff was invited to participate in a grandiose project of modernization of the port of Riga and expansion of the railway network [13]. Historian L. Malahovska has stated that «significant expansion of the Russian railway network in the 19th century in the conditions of the rapid industrial boom of the 1890s was one of the causes that promoted the development of the shipping conditions in the port of Riga meeting the requirements of the world's largest ports. Riga Port ranked among the most modern ports in Europe» [14]. All transformation, expansion, and deepening measures carried out in the port of Riga in the 1890s were ambitious tasks undertaken to achieve this goal. N. Ozmidoff participated in the projects related to the construction works of the Riga–Oryol railway line in Andrejosta direction.

Faculty Career at Riga Polytechnicum / Riga Polytechnic Institute (1884–1918)

Pedagogical career of Nikolay Ozmidoff at RP began in the fall of 1884. On the recommendation of the Polytechnicum Council, he was appointed an Assistant Professor of the engineering encyclopaedia course. In academic year 1886/1887, RP Assistant Professor Engelbert Arnold (1856–1911) started teaching a course on electrical engineering for the first time in Latvia. In 1891, E. Arnold left Riga, and the course he delivered was taken over by N. Ozmidoff. From 1892, the course on electrical engineering was divided into two parts, one of them was
taught by Assistant Professor Richard Hennig (1861–1922) and the second – by a practicing electrical engineering N. Ozmidoff [15].

In the second half of the 1880s, the language policy began to change in the Russian Empire. The new Russification policy affected the Baltic governorates and their educational institutions. By the order of 29 September 1892, the government demanded to start teaching in the Russian language. Negotiations began between the representatives of the Russian Ministry of Public Enlightenment and RP. The lectures were partially switched to the Russian language; however, the academic staff could still continue teaching in the German language. RP experienced significant changes in 1896 when its status changed – from a private university, RP became the state highest educational institution with rights and obligations similar to technical education institutions in Russia.

From 1 September 1898, N. Ozmidoff was already an Associate Professor of electrical engineering, from 1 July 1906 – a Professor of the Department of Electrical Engineering, and from 1 September 1909 – a Professor Emeritus [6]. He headed the Electrotechnical Laboratory established by E. Arnold in 1887, which was located in the RP building at 19 Troņmantniekas (currently – Raiņa) Boulevard, and at the beginning occupied an area of 78 m². In 1911, on the initiative of N. Ozmidoff, the laboratory was expanded, and its area was expanded to reach 365 m² [16]. Alexander Didebulidze (1882–1951), a graduate (1911) of the Department of Mechanics of RPI [17], later an Academician of the Georgian Academy of Sciences, was assistant to N. Ozmidoff (from 1911 to 1915). Assistant (1905–1908) Ludwig Hunchen (1880–1950), a graduate (1908) of the Department of Mechanics of RPI, also worked together with Professor N. Ozmidoff. After obtaining the diploma of the engineering technologist, he worked as an Assistant (1909–1913) and Assistant Professor (1913–1918) at RPI and Electrotechnical Laboratory of RPI [18].

Figure 2. A fragment of the assignment completed by RPI student Konstantins Mellups (1891–1980) in the RPI Electrotechnical Laboratory (16 October 1914).
He retired as a Full Professor in 1914, but was rehired by RPI for five more years in August of the same year. Exactly one year later, when the front of World War I was approaching, Professor N. Ozmidoff with his family and colleagues from RPI evacuated to Russia, Moscow. Studies continued – RPI had 2559 students on 1 January 1916, but only 1538 on 1 January 1917 due to the conscription of students to military service [19; p. 39]. N. Ozmidoff was a Meritorious Professor since 1 September 1909, and the Russian Ministry of People’s Enlightenment allowed him to work for another five years as he reached retirement age [6; p. 18], in 1914 such permission was given for the second time. He continued working as a Visiting Professor [19; p. 5] and in addition to his salary received a pension of 3000 gold rubbles per year from the Russian government from 1 September 1914 to 1 October 1918 [20; p. 2].

Figure 3. Nikolai Ozmidoff in Moscow (1915).

N. Ozmidoff’s textbook for the course on electrical engineering was published at the beginning of the 20th century in Riga [21]. In 1890, he published an article on the distribution of current in the electrical network in one of the first special journals dedicated to the issues of electrical energy «Электричество» (Electricity), published in Russia since 1880 [22]. N. Ozmidoff presented a report on some facts from his practice in working with transformers at the meeting of the Russian Technical Society on 3 March 1889. The report was published in a separate brochure in St. Petersburg [23]. The professor’s work was appreciated with high awards in the Tsarist Russia: the 2nd and 3rd Class Orders of St. Anna, the 2nd Class Order of St. Stanislaus, the 4th Class Order of Saint Prince Vladimir.
Responsibilities of a Members of Academic Staff at Ivanovo-Voznesensk Polytechnic Institute, Russia

The activity of RPI in Moscow continued until April 1918, then part of the academic staff and students returned to Riga, which at that time was occupied by the Germans. At the same time, the idea to establish the Polytechnic Institute (IVPI) in Ivanovo-Voznesensk (at present – Ivanovo) on the basis of RPI emerged. On 6 August 1918, a decree on the establishment of the IVPI was issued [24]. Among the professors of the newly established higher education institution there were also former members of academic staff of RPI: N. Ozmidoff (Department of Electrical Engineering), Vsevolod Keldych (Всеволод Келдыш; 1878–1965) (Department of Construction Mechanics) and others. RPI Professor Mikhail Berlov (Михаил Берлов; 1867–1935) was elected the first Rector of IVPI (1918–1921). N. Ozmidoff was also a member of the IVPI Council Presidium and Deputy Dean of the Faculty of Mechanical Engineering.

Figure 4. Academic staff of Ivanovo-Voznesensk Polytechnic Institute. From left: in the second row, Stepan Shimansky (Степан Шиманский; 1868–1931); third N. Ozmidoff; fourth M. Berlov; ninth in the third row – Vsevolod Ozmidoff (Всеволод Озмидов; 1881–1938?) (1921/1922).

However, living and working conditions in the Soviet Russia were not easy, so in 1921 N. Ozmidoff’s colleague Professor M. Berlov returned to Riga. Professors N. Ozmidoff [25] and S. Shimansky followed him in 1922.
Nikolai Ozmidoff’s Family

N. Ozmidoff married a Swiss citizen, Catholic Armida Paulina Ozmidoff, b. Dorer (1855–1923). While living in Riga, both N. Ozmidoff’s wife and he himself had made friends with the Switzer Alexander Beck, who was a lecturer (1873–1899) at RP / RPI, as well as other Switzers who lived in Riga [26]. The Ozmidoffs also had no language barrier in their conversations with the Swiss.

A. P. Ozmidoff passed away at the age of 68 and was buried in the Orthodox cemetery – Pokrov Cemetery in Riga [27].

The Ozmidoff family had two sons and two daughters. The eldest son Maxim Ozmidoff (Максим Озмидов; 1879–1952) was a graduate (1908) of RPI, an architect [28]. After graduating he worked for a year in a private architectural bureau in Stuttgart, Germany. After that, he returned to Riga and in 1909 founded his architectural bureau. In 1910, he got married in Riga, evacuated during World War I and lived in Voronezh, Russia. In the 1920s and 1930s, he lived in Riga and designed various buildings, including residential houses [29]. In 1941, M. Ozmidoff moved to Germany, where he died in 1952.

Figure 5. RPI graduate, architect Maksim Ozmidoff (c. 1919).

The second son, Vsevolod Ozmidoff, also studied at the Department of Engineering of RPI [30] from 1902 to 1914, but did not finish his studies [31] due to the start of World War I. He was captured by the German troops at the very beginning of the war and was released only in November 1918. V. Ozmidoff decided to stay in Russia. In 1922, he completed his studies at IVPI and worked there as an Assistant in fine geometry, later – as an engineer in the textile industry. In the late 1930s, he was repressed by the Soviet authorities and is believed to have died in 1938. V. Ozmidoff’s son Rostislav Ozmidoff (Ростислав Озмидов; 1928–1998) was a famous oceanologist, a corresponding member of the Russian Academy of Sciences (1991) [32].

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Life and Contribution of Electrical Engineering Specialist Nikolai Ozmidoff (1850–1938) to the Field of Engineering
Figure 6. Nikolai Ozmidoff’s family (early 20th century).

Figure 7. Student of Riga City Gymnasium Vsevolod Ozmidoff (1902).
Professor's daughter Olga Ozmidoff (Ольга Озмидова; ?–? ), married name Pikardt, lived with her family in Vienna, Austria. Professor N. Ozmidoff visited her several times (in 1928, 1929, 1930) [33] with his daughter Yevgenia Ozmidoff (Евгения Озмидова; 1880–after 1939), who did not start her own family and lived with her father. In 1929, Nikolai and Yevgenia spent several months in Bessarabia and Austria [34]. The Professor lived in Riga, at 15 Raiņa Boulevard. In November 1936, he moved to 38 Brīvības Street, where his son Maxim lived [35].

N. Ozmidoff also wanted to meet his youngest son Vsevolod, who lived in Russia. In 1926, documents were completed so that the son could visit his father with his family – his wife and a four-year-old daughter [36]. There is no news about Vsevolod’s meeting with his father in later years. His daughter Yevgenija left for Germany in 1939 [37].

Figure 8. Nikolai Ozmidoff’s request to the Department of Foreigners of the Ministry of Internal Affairs to allow his son Vsevolod Ozmidoff and his family to enter Latvia (1926).
The Ozmidoff family was involved in charity, for example, at the end of 1926, they donated money to the Literary-Practical Society of Citizens. In the list of donors of the mentioned German organization, we find both Professor Emeritus N. Ozmidoff and his son, an architect M. Ozmidoff, as well as an engineer V. Ozmidoff from Ivanovo-Voznesensk [38].

**End of Life in Latvia (1922–1938)**

In 1922, N. Ozmidoff and his family returned to Riga from Ivanovo-Voznesensk. On 12 June 1922, he submitted a request to the Administrative Department of the Ministry of the Interior to admit him and his family to the Latvian citizenship [38]. The Professor did not speak the Latvian language, but, taking into account the fact that he had lived in Riga for a long time and had real estate in Latvia, he was accepted into the Latvian state by the decision of the Cabinet of Ministers on 5 October 1922. N. Ozmidoff knew four languages – French, Russian, Polish, and German.

Figure 9. News of the Ministry of the Interior of the Republic of Latvia about N. Ozmidoff and his family (1922).
Figure 10. N. Ozmidoff’s oath to be loyal to the Latvian state after obtaining the Latvian citizenship (26 October 1922).

On 29 May 1920, the Faculty of Mechanics of the Latvian Higher School (LHS; from 1923 – University of Latvia (LU)) decided that it would ask the Organizational Council of LHS to invite IVPI Professor N. Ozmidoff as a specialist in the electrotechnical industry, as the one who had developed the plan for the relevant industry at RPI. After a long debate, on 9 June 1920, the Organizational Council of LHS decided to approach the Ministry of Foreign Affairs of the Republic of Latvia with a request to invite N. Ozmidoff to work at the newly established university in Riga [39]. On 29 November 1922, the newspaper «Students» (Student) reported that the Faculty of Mechanics had elected N. Ozmidoff as a Private Docent in the non-compulsory course «Teorētiskie elektrotehnikas pamati» (Theoretical Foundations of Electrical Engineering) [40], but apparently such a course was not taught. This is evidenced in a book published to commemorate the 10th anniversary of the University of Latvia, in which N. Ozmidoff was not mentioned as an academic staff [41]. In the Latvian State Historical Archive of the National Archives of Latvia, his personal file could not be found in the University of Latvia fund no. 7427 either. Also, when arranging for his pension in Latvia, it
was indicated that he was unemployed [20; p. 3]. Perhaps he was taking care of his sick wife and did not have time to prepare for lectures at the university. N. Ozmidoff had no official income in Latvia.

Figure 11. Registration sheet for disabled scientific workers to receive benefits (1923).

Figure 12. Fragment of N. Ozmidoff’s Latvian passport with his photograph and signature (beginning of the 1920s).
He was granted a pension in Latvia only in 1925, and in the first couple of years after his arrival in Latvia, his financial situation was difficult. In January 1923, the Faculty of Mechanics of the UL asked the Pensions Department of the Ministry of Labour to grant a former RPI professor N. Ozmidoff an allowance for meritorious services for the university and the City of Riga [20; p. 25].

The professor read a lot and tried to attend the events of the Russian Student Corporation «Fraternitas Arctica». In this corporation, which was founded at RP in 1880, several persons worked along with N. Ozmidoff: RPI graduate (1914), engineer Mikhail Krivoshapkin (Михаил Кривошапкин; 1888–1943); graduate (1894), engineer, and pedagogue Alexander Momma (Александр Момма; 1869–1941), graduate (1895) S. Shimansky, former RPI students – architect Vladimir Shervinsky (Владимир Шервинский; 1894–1975), writer Mikhail Prishvin (Михаил Пришвин; 1873–1954) and others [42].
In 1930, Professor N. Ozmidoff’s 85th birthday was celebrated in Riga. He was still cheerful, with a good memory. Anatoly Perov (Анатолий Перов; 1907–1977), a journalist of the newspaper «Сегодня» (Today), wrote in connection with the anniversary that the respected professor was still cheerful and looked younger than a man in his ninth decade, he also participated in the life of the Russian student corporation «Fraternitas Arctica» and was still informed about the latest findings in science [43].

N. Ozmidoff was fascinated by the world ice doctrine of the Austrian engineer Hans Hoerbiger (1860–1931) – a pseudoscientific cosmological doctrine of the eternal ice [44].

Nikolai Ozmidoff passed away on 30 July 1938 in Bulduri, Jūrmala [20; p. 70]. The Latvian press also reported about it – the Latvian, Russian [5] and German newspapers. Professor N. Ozmidoff was buried next to his wife at the Pokrov Cemetery in Riga.

Conclusions

Nikolai Ozmidoff belonged to the older generation of specialists in electrical engineering who started working in this field in Riga in the 1880s. Thanks to a good education and contacts with famous and well-known Western European scientists, he became a good specialist and promoted the development of electrical engineering in Latvia. He was one of the most prominent Latvian electricians, whose activity at RPI «is connected with the training of highly qualified electrical technicians and extensive scientific and technical activities» [45]. Until now, the facts about Professor N. Ozmidoff’s activities in the Riga Swiss Society and the professor’s friendship with other Swiss families in Riga was less known. The author has reflected upon N. Ozmidoff’s professional activities, emphasizing also his extracurricular activities in this society and the student corporation, as well as the life and fate of Ozmidoff’s family.

Students of Professor N. Ozmidoff contributed to the development of electrical engineering in Latvia and beyond. His student and colleague A. Didebulidze became a prominent scientist and pedagogue – he was one of the founders of the Odessa Polytechnic Institute in Ukraine (1918), then worked in Georgia, and was an Academician of the Georgian Academy of Sciences (1944). L. Hunchen, an educator of electrical engineers at the UL / State University of Latvia (SUL), Dean (1944–1946) of the Faculty of Mechanics of SUL, Director of the Institute of Energy and Mechanical Engineering of the Academy of Sciences of the Soviet Socialist Republic of Latvia (1946–1947) should also be mentioned.
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SOURCES OF ILLUSTRATIONS

Figure 1. S. Kovaļčukas personīgais arhīvs.
Figure 2. RTU IVPC.
Figure 3. S. Kovaļčukas personīgais arhīvs.
Figure 4. RTU IVPC.
Figure 5. LNA LVVA 2996. f., 14. apr., 5045. l., 1. lp.
Figure 6. RTU IVPC.
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Figure 11. LNA LVVA 5213. f., 3. apr., 1012. l., 3. lp.
Figure 12. LNA LVVA 2996. f., 14. apr., 5046. l., 5. lp.
Figure 13. LNA LVVA 5213. f., 3. apr., 1012. l., 25. lp.

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Elektrotehnikas speciālista Nikolaja Ozmidova (1850–1938) dzīvesdarbība un devums inženierzinātnē


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