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**Characteristics of unpaved roads in the late 18th century – early 19th century,
and the design of the first wooden trackway as a forerunner to the Bukovyna
railways**

***Abstract.** In the history of Bukovinian social life in the 1840–1850s, an important role is played by the fierce struggle for the introduction of rail transport. This struggle took place in the deepening crisis of the feudal system and the development of capitalism in the Austrian Empire. Primitive medieval methods of transporting goods and passengers by waterways and unpaved roads, which for centuries met the needs of feudal Bukovyna, became a brake on the economic, social and political progress of the Bukovyna region. The beginning of the transport revolution in England had a huge public response in Austria-Hungary. The rapidly developing relationship between scientists and engineers from Austria, Western Europe and America in this period made a large contribution to the process, as the newest means of transportation were spreading in the early 19th century, first of all, in the industrialized regions of Europe. These regions had enough funds for the construction of roads because they could develop different methods of production. Today we are mostly interested in the projects of construction of typical means of transportation on agricultural lands with practically no industry. In the early 19th century, Bukovyna was one of them. The purpose of this article is to thoroughly analyze unpaved roads of the late 18th – early 19th century, as well as the project of the first wooden trackway as the forerunner of the Bukovyna railways. To achieve this purpose, the authors first reviewed how railways were constructed in the Austrian Empire during 1830s – 1850s. Then, in contrast with the first railway networks that emerged and developed in the Austrian Empire, the authors made an analysis of the condition and characteristics of unpaved roads in Bukovyna. The*



government's attention to Bukovyna's roads was explained by their military, economic and political significance for the Austrian Empire by the end of the 18th – early 19th century. There was a number of state trackways built on the territory of Bukovyna which crossed the region and ensured the military interconnection of two Austrian provinces named – Galicia and Transylvania, as well as approached the borders of the Russian Empire and the Danube principalities. At the same time, they helped to restore the suspended trade flow in Bukovyna. In addition, the authors considered the first attempt to create a wooden trackway as a prototype and predecessor of the Bukovyna railway. It is evident that such an idea played a significant role in shaping the development strategy of the region in the minds of Austrian and Bukovinian officials, and became a forerunner for main and regional railways in Bukovyna.

Keywords: *Austrian Empire; transport; construction of railways; periodization; ways of communication of Bukovina*

Introduction.

The development of railway construction in the Austrian Empire in the 19th – early 20th century can be divided into 4 related chronological periods:

- 1) the first period of private railways (from the beginning of construction till 1841);
- 2) the first period of state railways (1841–1854);
- 3) the second period of private railways (from 1854 till the economic crisis in 1873);
- 4) the second period of state railways (from 1873 till the collapse of the Austro-Hungarian Monarchy in 1918).

Of course, each period had its own differences, although they were all characterized by fluctuations between the two systems of railway construction and operation, namely, private and public. In general, the history of railway construction on the territory of modern Austria is quite interesting and educative (Strelko, Berdnychenko, & Pylypchuk, 2021). It is thoroughly described in the publication “The Development of Railways In the Austrian Empire: From the Beginning of Construction to 1854” by I. V. Zhaloba (1995) (Zhaloba, 1995). As it turned out, wooden trackways were first mentioned in the Austrian chronicles in the late 16th century. Such trackways were used to take coal and ore out of the mines. For reference, it took 50 years before this system appeared in England in the early 18th century. However, England was the first to replace wooden tracks with iron in the early 18th century and combine them with steam in the early 19th century. The opening of the Liverpool-Manchester Steam Railway on August 15, 1830, and its positive operating experience had revolutionary consequences for the European communications routes in the 19th century (Georgievskiy, 1893).

It is believed that Austria understood the importance of new types of trackways quite early. The process was initiated by Franz von Gernster, the Principal of the Prague Polytechnic University. On December 31, 1807, he addressed the Bohemian Hydraulic Society with a proposal to build a railway between the rivers Danube and

Moldova (Verhovskiy, 1892, p. 18). However, he was actively defending artificial rail roads after Napoleon's invasion in 1813 (*Promyishlennost i tehnika*, w.y., p. 87). It was his son, Franz Anton von Gernster, Professor at the Vienna Polytechnic, who obtained permission to build a wooden horse-drawn railroad between Mauthausen and Budweiss on September 7, 1824. The road was designed to transport salt from Bohemia. A year later, the First Austrian Railway Company began to build its first railway. The Budweis Railway was launched on September 7, 1827, with only 7 miles of track, and was completed on April 1, 1833. It was the first railway (although horse-drawn) built on the European continent.

It should be noted that the slow construction of the first railways in Austria was grounded by the lack of experience in track construction. Yes, it was believed that the railways should only be built on a flat surface, because train wheels would slide on the slopes. Other engineers believed that one earth mound could not be enough for safe movement. Therefore, they first installed the stone foundation, and then covered it with earth. That is why the construction of railways was expensive and, moreover, very slow.

The purpose of this article is to thoroughly analyze unpaved roads of the late 18th – early 19th century, as well as the project of the first wooden trackway as the forerunner of the Bukovyna railways.

Research methods.

To achieve this purpose, the authors first reviewed how railways were constructed in the Austrian Empire during 1830s – 1850s. Then, in contrast with the first railway networks that emerged and developed in the Austrian Empire, the authors made an analysis of the condition and characteristics of unpaved roads in Bukovyna. The government's attention to Bukovyna's roads was explained by their military, economic and political significance for the Austrian Empire by the end of the 18th – early 19th century. There was a number of state trackways built on the territory of Bukovyna which crossed the region and ensured the military interconnection of two Austrian provinces named Galicia and Transylvania, as well as approached the borders of the Russian Empire and the Danube principalities. At the same time, they helped to restore the suspended trade flow in Bukovyna.

In addition, the authors considered the first attempt to create a wooden trackway as a prototype and predecessor of the Bukovyna railway. It is evident that such an idea played a significant role in shaping the development strategy of the region in the minds of Austrian and Bukovinian officials, and became a forerunner for main and regional railways in Bukovyna.

Results and discussion.

How Railways Were Constructed in the Austrian Empire in the early 1830 s – late 1850 s.

Somewhere in the mid-1830s, right before the construction of railways for steam

locomotives in England, Austria built about 250 km of horse-drawn railways. Noting this fact, I. V. Zhaloba asked: “How did it happen that the Habsburg Monarchy could get proper support from the public, private capitalists and the government, and build the first railway on the European continent?” The answer is: “Let’s consider an aspect emphasized by K. Gudechek. Unlike England, which had sea routes due to its insular position, and Germany, which had an extensive network of river routes, Austria, due to its predominantly mountainous terrain in the pre-railway era, was deprived of these convenient and cheap means of transportation ... According to P. I. Georgievskiy, the export goods from Austria and Hungary was impossible at the end of the 18th century due to the poor condition of the roads: the cost of transporting goods to the border exceeded their value. Modern Austrian historians also believe that it was due to the high level of technical education” (Zhaloba, 1995, p. 48).

Of course, another important factor was the hope of large private capitalists to receive significant revenues from railway transportation. The positive experience of the Liverpool and Manchester Railway had shown the advantage of rail transport and its financial benefits. Austrian engineers went to England to study the experience of using steam locomotives. They did not passively learn from others but made their best contribution to the improvement of railway trains immediately upon return. It was decided to build a steam railway that would connect Vienna with the salt companies in Bochnia (Galicia) (Wandruszka & Urbanitsch, 1973, p. 278).

The construction of railways in the Austrian Empire had been delayed for a long period of time. The reason was that the first railways, whether horse-driven or carrying steam locomotives, were mainly built with private initiative and funded from private companies on the basis of concessions issued by the government. I. V. Zhaloba noted: “Such concessions contained great privileges for entrepreneurs, providing an unlimited scope of business activities. In 1838, the government made its first attempt to create a background for the legislative regulation of the railway business. According to the governmental decrees, private companies could decide upon the direction and sequence of railroads, based on their previous profitability calculations. The state could intervene only when the net profit exceeded 15% of deposits. In general, although the decrees contained certain restrictions (for example, the Vienna-Raab Railway was built on the basis of these decrees, and the concession granted to Simon Sini was different from the one granted to Rothschild), they did not have any radical impact neither on railway construction nor on the tariff form” (Zhaloba, 1995, p. 50).

Between 1845 and 1849, Austrian railways made their first attempts to unify with the German railways (Wandruszka & Urbanitsch, 1973, p. 280). The so-called Northern Railway was the most successful example. Unlike other private railways, it has successfully overcome the first difficult period thanks to state loans, private capital and the necessary administrative measures. In the mid-1840s, this railway demonstrated high profits (for example, 6.79% in 1846) (Praschinger, 1989, p. 102,

104). It should be added that the Northern Railway had the highest wages among private railways in Austria. Moreover, this railway had the lowest fare, and the highest accuracy of trains.

In general, railway construction in Austria in the 1840s did not stop. However, despite the fact that the Habsburg Monarchy was not the last European state to build a railway, it definitely could not overcome the necessary pace of large-scale development of the railway network. The main reason for this was the economic crisis caused by the conservative political system. Moreover, it was at that time, namely until 1845, that the share price fell sharply. This led to the collapse of most private railways. The construction of the railway network stopped, as did the empire's credit system, so the state was forced to take decisive measures. On July 10, 1845, a law was issued to ban the issuance of concessions to private enterprises for the construction of railways (except for coal railroads). This ban lasted until 1850. In addition, in November 1846, the state created an Extraordinary Credit Fund at the State Debt Fund, and began to purchase shares of railway companies at prices that corresponded to their true value. This was a successful measure. The state used the previous reduction in the share price, which is why they were quickly bought out. The money received was directed to the construction of railways. As a result of this measure, there was a new artificial increase in the price of railway shares, but the state quickly suspended the purchase for a while to balance the price of shares. At the end of 1847, the state bought more than half of the issued shares. In general, the sum of state expenditures on these measures at the end of 1848 amounted to about 26 million guilders (Tsehanovetskiy, 1869, p. 162).

This measure caused the first actual nationalization of the railway network in Austria. The state became a co-owner of 50–60% of the shares, and consolidated its dominant position, which led to the expansion of a comprehensive state railway system. Thus, in 1850 the state started to create a number of administrative institutions: state railway directorates and administration (powiat) centers. It switched to the state operation of railways, because previously, even state-built railways had been put into operation by private companies. At that time, the state started to actively purchase private railways that were in a difficult financial situation. Also, one of the predominant factors for the purchase of railways was the financial state of some railway companies.

Along with the purchase of existing railways, the state continued to construct new ones in the 1850s. The construction continued even after 1854, when a new course was announced for the privatization of the railways. The outstanding achievements of the Austrian state at that time included the construction of a railway between Vienna and Trieste, the most significant achievement in the history of Austrian railways. Moreover, between 1854 and 1856 the state built a number of railways in Italy, Hungary and part of Galicia (now the territory of Poland). At the same time, the Oderberg, Dżidzice and Auschwitz section completed the construction of private Kaiser Ferdinand's Northern Railway, thus establishing the direct

connection between Vienna and Galicia planned 20 before that (Wandruszka & Urbanitsch, 1973, p. 282).

The intense activity of the state has been paid off: by 1854, when the private companies were allowed to construct railways again, the Habsburg Monarchy built the major part of state railways (1,852 km with a total length of 2,617 km). Compared to other European countries, this was a huge achievement. Thus, of the 371 million guilders spent on railways at the end of 1856, 291 million guilders came from the state (Wandruszka & Urbanitsch, 1973, p. 282).

From the review of railway development in the Austrian Empire from the beginning of construction to the late 1850s, we can conclude the following. During this period, the Austrian Empire managed to form a significant railway network, mostly in the central and western parts of the empire. Only after that, all the thoughts of the state turned to other subordinate territories, including Bukovyna.

Unpaved Roads in the Late 18th Century – Early 19th Century as a Forerunner to the Bukovyna Railways.

The social and economic development of Bukovyna can be characterized by the fact that this region was annexed to the Austrian Empire much later than other Ukrainian lands (Transcarpathia and Galicia). That is why the processes of colonization, development of agrarian relations, etc. took place in a very peculiar way. Its colonization was possible only after accumulating enough information not only about natural resources, but also about the means of communication, which were vital primarily due to changes in government.

By the time Bukovyna became part of the Habsburg Monarchy, the state of communication routes in the region had been very poor. Historical sources indicate that important international dirt roads and waterways (along the Dnieper) ran through Bukovyna since Middle Ages. However, at the end of the 18th century, there were only mentions of these routes, since all the trade flows had stopped. I. V. Zhaloba noted: “Politics was the determining factor of this phenomena” (Zhaloba & Yatsentyuk, 1997). The progressive decline of the Ottoman Empire that dominated in Bukovyna and the Moldavian principality since 1538 did not contribute to the revived economic and trade life. On top of that, the political instability of Bukovyna, and the frequent military clashes in Europe which affected Bukovyna one way or another, also complemented the disappointing state of the region's development. Poor economic development led to the fact that at the end of the 18th century, there were only unpaved roads in Bukovyna which became unpassable during the rains, especially in the mountains and swamps. There were few bridges, since the rivers usually turned into fords, and the existing bridges were kept in poor condition. The above factors slowed down the caravans during rains and spring floods, and they had to wait for the water to drop to cross the river (Krushevan, 1903, pp. 12–14). Historical sources also evidence that there was no regular trade and transport traffic on the waterways of Bukovyna. Only after Bukovyna became part of the Habsburg

Empire there was a change in political domination and peace in Bukovyna, and the region was included in the European civilization process. This process gradually contributed to a significant increase in domestic and foreign trade. This is when it became obvious that the road network in Bukovyna did not meet the requirements of the evolving economy. The network was forced to develop rapidly. The Austrian authorities understood that only by improving the means of communication they could create better conditions for the development of trade and economic activity in the Bukovyna region. By creating a network of good unpaved roads, Austria hoped to get the most out of the newly acquired Bukovyna territory. To that end, the authorities sought to include Bukovyna in their imperial economic complex as soon as possible and as strongly as possible (Georgievskiy, 1893, pp. 157–158). In general, at that time the course of the Austrian government towards the construction of roads in Bukovyna was very tangible and important (Kovalchak, 1988).

It is known that, unlike England and Germany, which could use cheap and convenient sea and river routes thanks to their geographical location, Austria did not have such an opportunity due to being a predominantly mountainous country. That is why at the end of the 18th century Austria found itself in a very difficult trade and economic situation: the poor condition of the roads made the export of goods almost impossible, since the cost of transporting goods to the border far exceeded their value. That is why the Habsburg Monarchy started to pay more and more attention to improving the network of unpaved roads (Kovalchak, 1988, p. 2; Hudeczek, 1918, pp. 19–20). Here is what I. V. Zhaloba says about this period: “Initially, the strategic aspect was the most important in relation to Bukovyna. The region provided a direct link between two Austrian provinces: Galicia and Transylvania. This circumstance was pointed out by the monarch Joseph II, who wrote in his letter of June 19, 1773 to Maria Theresa: “This acquisition (of Bukovyna) will not only facilitate trade and communications, but will also create an exit from one province to another for our troops, who are now forced to make a terrible detour.” In addition, the very location of the region in relation to the Russian Empire and the Danube principalities made it strategically important” (Zhaloba, & Yatsentiuk, 1997, p. 728). Thus, the military, political and economic reasons determined the active improvement of communication routes in Bukovyna in the 18th century.

Gathering information about Bukovyna communication routes began long before the occupation of the region. Thus, in 1773, Colonel Baron von Enzerberg began gathering information, assisted by one officer and two non-commissioned officers. In general, they collected all sorts of information, but were forced to give comprehensive answers to 5 main questions. One of them was whether it was possible to build a good road from Transylvania to Galicia. This aspect, as it turned out later, was one of the main ones, as it outlined broad plans for road construction (Kaindl, 1894a, p. 10). Subsequently, information about the roads of Bukovyna was confirmed by various Austrian military topographic expeditions.

Bukovyna's occupation was prepared in advance and was complete in 1774. The military administration of the region was headed by General Spleny. During his rule between 1774 and 1778, 70 bridges were built in Bukovyna. This provided the Austrian troops with the possibility for maneuvering. In 1778, General Spleny was replaced by Baron von Enzenberg. Under his leadership, the military administration worked closely on laying the first unpaved roads in Bukovyna. For example, between 1778 and 1779 and in 1783 two roads were built on the territory of Southern Bukovyna, from Dorna to Rodna and from Poiana Stampei to Borgo (Kaindl, 1898, p. 69). At the same time, in Zastavna, Kuchimmar (now the village of Velykyi Kuchuriv, Storozhynets raion), Styrche, Granicesti, Vami and Poiana-Stampej, inns and trade traffic was established across Bukovyna, as well as several shelters for the troops (Polek, 1900).

If we analyze the contribution of the Austrian Empire to the development of the road network in Bukovyna, we can conclude that it has been impressive. During the Austrian reign (1774–1918) a network of state-wide, county-wide and local unpaved roads was created in the region. Among these roads, special attention was paid to state-wide roads, because they were of large trade, political and strategic importance for the state. Actually, these roads were constructed and maintained at the expense of the state treasury (Zhaloba, 1991).

In general, the Austrian government has consistently allocated significant funds for the construction and maintenance of state-wide roads in Bukovyna. Government's attention can be explained by the military, economic and political significance of these roads for the Austrian Empire. In the conflicts that arose in South-Eastern Europe, the Austrian government found a way to quickly deploy large number troops to the borders of the Russian Empire and the Danube principalities, and could put pressure on them if necessary. This was evidenced by the Russo-Turkish Wars (1806–1812, 1828–1829), and the Crimean War (1854–1858).

In 1849, Russian troops moved to Novoselytsia through the so-called Transylvanian and Military routes, as they were sent to help the Habsburgs in suppressing the Hungarian revolution (Kaindl, 1894b, pp. 48–51). That is why, under any circumstances, the state-wide roads ensured the movement of all types of troops and freight convoys. I. V. Zhaloba notes: “At the same time, starting from the late 18th century, the Austrian authorities began to use Bukovinian roads for economic purposes in order to ensure the fastest return from the newly acquired territory. Both the measures of the Austrian court and the peace established on Bukovinian land contributed to this process” (Zhaloba, & Yatsentiuk, 1997, p. 731).

Thus, a number of state-wide tracts were built in the late 18th – early 19th century, crossing the region and ensuring the interconnection between Galicia and Transylvania, approaching the borders of the Russian Empire and the Danube principalities. At the same time, they contributed to the restoration of long suspended trade flow in Bukovyna.

On the other hand, state-wide tracts, which remained major routes until the late 1900s, ensured a political and economic connection between Bukovyna and the center of the empire, serving as means of communication between Austria and Hungary and the East. The construction of non-state roads, which were of mostly regional importance, intensified the above processes. By the beginning of the 19th century, they existed as dirt roads and were mostly in poor condition. The gradual establishment or separation of economic and trade ties led to the emergence of roads and settlements through which both international and domestic traffic took place. In turn, paved roads in these areas, according to the rules of road art, created the conditions for the development of existing trade. Without any doubt, at the end of the 18th century – early 19th century, there was the basis for a permanent network of trackways, the predecessors of railways in Bukovyna. Later this network has improved both quantitatively and qualitatively, especially after the appearance of railways.

History of the First Wooden Trackway of Bukovyna.

In the history of Bukovinian social life in the 1840–1850s, an important role is played by the fierce struggle for the introduction of rail transport. This struggle took place in the deepening crisis of the feudal system and the development of capitalism in the Austrian Empire. Primitive medieval methods of transporting goods and passengers by waterways and unpaved roads, which for centuries met the needs of feudal Bukovyna, became a brake on the economic, social and political progress of the Bukovyna region. The beginning of the transport revolution in England had a huge public response in Austria-Hungary. The rapidly developing relationship between scientists and engineers from Austria, Russia, Western Europe and America in this period made a large contribution to the process (Voronin, 1974), as the newest means of transportation were spreading in the early 19th century, first of all, in the industrialized regions of Europe. These regions had enough funds for the construction of roads because they could develop different methods of production. Today we are mostly interested in the projects of construction of typical means of transportation on agricultural lands with practically no industry. In the early 19th century, Bukovyna was one of them.

One of the first questions about the need to build a wooden horse-driven trackway in Bukovyna was raised by Karl Wittek, the Secretary of the Court Chamber in 1841. He pointed that the construction of a trackway was of paramount importance for the economic development of Bukovyna, especially for large-scale forest exports (especially due to lack of human resources in mountainous areas). K. Wittek criticized the process of rafting the forest by the Bukovinian rivers and proved the dependence of river transport from nature. He stressed that Bukovinian forests could provide enormous volumes of wood and fantastic profits. K. Wittek hoped to sell the forest to Egypt and other parts of the Ottoman Empire without much difficulty. The brave entrepreneur proposed to solve this problem only by building a wooden horse-driven trackway. The trackways were not supposed to be made of iron,

but of wood. The thing is that at that time, the so-called American type trackways (wooden laths, lined with tin, longitudinal beams) were rather popular. Therefore, it was not a surprise that K. Wittek proposed this for Bukovyna. After all, iron trackways for this region were still very expensive. K. Wittek convinced everyone that wooden trackways could be built cheaper and faster than unpaved roads even 10 years later, in the early 1850s. The prospect of building wooden horse-drawn trackways was seriously considered to improve the routes in the eastern provinces of the Austrian Empire (Galicia and Bukovyna). The cost of a conventional railway was 3 times bigger than the cost of a wooden trackway. In addition, the transportation of goods via trackways was 3–4 times faster than via unpaved roads (Zhaloba, 1999). Appealing to the best international practices in the construction of the first wooden horse-driven trackways, K. Wittek made concrete proposals for the construction of two important branches – from Chernivtsi to Suceava as the main transshipment point on the Moldovan border, and from Poiana Stampei to Suceava through Transylvanian region near Solka to connect the forests of Bukovyna and Chernivtsi. These roads were to cross the forests and connect them with Transylvania and Moldavia. The second trackway was to become a hub for Bukovyna, since it connected Chernivtsi, the capital of Bukovyna, with forest reservations. K. Wittek proposed to start the construction from the second trackway, since in that case, all the wood required for the first trackway could be delivered from the state forests. This was extremely important, because the first trackway was to be laid in private areas with the withdrawal of land. It was believed that this withdrawal was not expensive, as the price of land in Bukovyna at that time was low (Botushanskyi, 2000). The second trackway was to be established mainly on state lands, so it could be finished at a lower cost.

K. Wittek believed that the construction of wooden horse-drawn trackways could be funded both from private and public sources. Still, he preferred state construction because the state had everything at its disposal to build a wooden trackway, and that made things much easier. Nevertheless, the project proposed by K. Wittek was not destined to come true. As we know, at that time Bukovyna was part of the Galician governorate. Therefore, the petition initiated by K. Wittek was sent to the Governor-General of Galicia, who had to present the conclusions of local institutions in this regard. On September 16, 1845, that is, two years after K. Wittek's petition, the President of the Court Chamber of Kübeck received a negative response from Archduke Ferdinand, the Galician military and civilian Governor-General. The answer stated that the project of K. Wittek “lacked the necessary knowledge of local conditions” and that his good intentions were not suitable for practical implementation. The relevant institutions that prepared this verdict pointed out two main statements: 1) there was no surplus wood in Bukovyna, since the area between Chernivtsi and Suceava was mostly forestless; 2) to deliver wood from remote places, they had to construct an additional 60-mile wooden trackway. Therefore, the trackway proposed by K. Wittek was unprofitable. In addition, the sale of wood in the Galati market, even under favorable conditions, could not give much benefit (Galati

is a port town in eastern Romania), because mast timber was much more valuable. For this reason, there was no sense in building a separate road. The Galician construction director stressed that there was not enough timber for shipbuilding in Bukovyna, and little firewood and building wood could be sold abroad.

Eisenbeck, an Austrian agent in Iasi, also made a conclusion about K. Wittek's project. On March 10, 1844, he announced that the Moldavian government did not expect the wooden trackway or railway to be extended through Moldova. Therefore, K. Wittek's project was also rejected. In addition, all the officials of the Austrian Empire agreed that Bukovyna had mountain rivers and streams that flew into the Siret and Prut, and that they would transport wood to both Moldova and Galati. Because of this, Dubeck wrote an official letter dated October 17, 1845, informing Archduke Ferdinand that he was terminating the case.

I. V. Zhaloba drew the following conclusion about the first wooden horse-drawn trackway in Bukovyna: “What’s interesting, a year later, on January 17, 1845, Eisenbeck wrote about the lively interest aroused by the decision of the Austrian government dated December 18, 1844 to rebuild the Galician railway from Bochnia through Lviv to Chernivtsi at the expense of the state. Moreover, the position of the Moldavian noblemen was very active. They immediately started to form consortia that would be able to build a counter line from Galati through Iasi to the Austro-Moldavian border. Influential representatives of Moldovan landowners addressed both questions and suggestions to Eisenbeck about the state of the Galician railway, about the possible participation of Austria in the construction of the Moldovan railway, and so on. The above-mentioned agent stated this in his report to Kübeck on January 17, 1845. Kübeck's response was swift and categorical: Eisenbeck was strictly ordered to refrain from any statements or explanations that could give rise to any hopes or conjectures on the part of Moldova. To one degree or another, all this was done with the construction of the railway from Lviv through Chernivtsi to Iasi in 1860s, and with the construction of Bukovinian local and timber railways in the late 1980s – early 20th century. However, K. Wittek’s project is of exceptional interest as a model of state thinking of that time, a way of bringing something fresh to the old soil. On the one hand, there is colonization and homesteads as a tribute to the old regulations of the obsolete era. On the other hand, there is a belief in the need to spread a new means of transport, thereby raising the price of land and livelihoods, and the desire to take advantage of the current favorable situation for a painless land expropriation to avoid unnecessary costs in the future. The fact that the local authorities did not even want to design this trackway is also a good example of the inertial Austrian bureaucracy at that time” (Zhaloba, 1999).

This was the first attempt to build a wooden trackway in Bukovyna. This very idea, of course, played a role in shaping the development strategy of the region in the minds of Austrian and Bukovinian officials, and became a forerunner for main and regional railways in Bukovyna.

Conclusions.

In the late 18th century – early 19th century, a developed network of unpaved roads was laid in Bukovyna as the basis of a permanent road network, the predecessors of railways. Later this network has improved both quantitatively and qualitatively, especially after the appearance of railways.

The construction of the first horse-drawn trackway in Bukovyna would not be of great importance for the region, but the experience of its construction and operation would not only prove the possibility of uninterrupted operation in all seasons, but also the relevance of railway construction. The commercial operation of this road could also show the feasibility and profitability of new means of transport. At the same time, this trackway would become the first step in the organization of the railway business in Bukovyna, and could serve as an impulse for the development of the railway industry in the Bukovyna region.

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Referenses

- Botushanskyi, V. M. (2000). *Silske gospodarstvo Bukovyny (druha polovyna XIX – pochatok XX st.) [Agriculture of Bukovina (second half of the XIX – beginning of the XX century)]*. Chernivtsi: Zoloti lytavry [in Ukrainian].
- Georgievskiy, P. I. (1893). *Istoricheskiy ocherk razvitiya putey soobscheniya v XIX veke [Historical sketch of the development of communication lines in the 19th century]*. St. Petersburg: printing house Yu. N. Ehrlich [in Russian].
- Hudeczek, K. (1918). *Osterreichische Handelspolitik im Vormarx 1815–1848*. Wien: Konegen [in German].
- Kaindl, R. F. (1894a). *Die Erwerbung der Bukowina durch Osterreich*. Czernowitz: H. Pardini [in German].
- Kaindl, R. F. (1894b). *Die Huzulen. Ihr Leben, ihre Sitten und ihre Volksüberlieferung*. Wien: Alfred Hölder [in German].
- Kaindl, R. F. (1898). *Geschichte der Bukowina. 3. abschnitt. Die Bukowina unter der herrschaft des österreichischen kaiserhauses (seit 1774) Festschrift zum fünfzigjährigen regierungsjubiläum Sr. Majestät Franz Josef I*. Czernowitz: H. Pardini [in German].
- Kovalchak, H. I. (1988). *Ekonomichnyi rozvytok zakhidnoukrainskykh zemel [Economic development of western Ukrainian lands]*. Kyiv: Naukova dumka [in Ukrainian].

- Krushevan, P. A. (Ed.). (1903). *Bessarabiya. Geograficheskiy, istoricheskiy, statisticheskiy, ekonomicheskiy, etnograficheskiy, literaturnyy i spravochnyy sbornik [Bessarabia. Geographic, historical, statistical, economic, ethnographic, literary and reference collection]*. Moscow: printing house A. V. Vasilyeva [in Russian].
- Polek, J. (1900). Die Vereinigung der Bukowina mit Galizien in Jahre 1786. *Jahrbuch des Bukowiner Landesmuseums*, 8, 49–114 [in German].
- Praschinger, H. (1989). Die osterreichischen Eisenbahn als wirtschaftlicher Faktor. *Verkehrswegs und Eisenbahnen. Die osterreichischen Eisenbahnen als wirtschaftlicher Faktor*. In K. Gutkas, E. Bruckmüller (Eds.), *Verkehrswege der Eisenbahnen. Beiträge zur Verkehrsgeschichte Österreichs aus Anlaß des Jubiläums „150 Jahre Dampfeisenbahn in Österreich“* (pp. 100–123). Wien: Österreichischer Bundesverlag [in German].
- Promyishlennost i tehnika: Entsiklopediya promyishlennyih znaniy: T. 9. Puti soobscheniya [Industry and technology: an encyclopedia of industrial knowledge: V. 9. Communication lines]*, (w.y.). St. Petersburg: Prosveschenie [in Russian].
- Strelko, O., Berdnychenko, Y., & Pylypchuk, O. (2021). Creation and operation of main railways in bukovina. *Plural.History.Culture.Society*, 9(1), 26–47. https://doi.org/10.37710/PLURAL.V9I1S_3
- Tsehanovetskiy, G. (1869). *Zheleznyie dorogi i gosudarstvo. Opyit issledovaniya o vazhneyshih predmetah ekonomiki i politiki zheleznyih dorog [Railways and the state. Research experience on the most important subjects of railways economics and policy]*. Kyiv: printing house of the Kyiv provincial government [in Russian].
- Verhovskiy, S. V. (1892). *Kratkiy istoricheskiy ocherk nachala i rasprostraneniya dorog v Rossii po 1887 g. vklyuchit [A brief historical outline of the beginning and the spread of roads in Russia up to 1887 inclusive]*. St. Petersburg: printing house of the Ministry of Railways [in Russian].
- Voronin, M. M. (1974). Pervyie nauchnyie kontaktyi russkih, zapadnoevropeyskih i amerikanskih uchenyih v oblasti transportnoy nauki i tehniki (1800–1850 hh.) [The first scientific contacts of Russian, Western European and American scientists in the field of transport science and technology (1800–1850)]. *XIII Mezhdunarodnyiy kongress po istorii nauki. Sektsiya XI. Istoriya tehniki – XIII International Congress on the History of Science. Section XI. History of technology*. (pp. 178–181). Moscow: Nauka [in Russian].
- Wandruszka, A., & Urbanitsch, P. (1973). *Die Habsburgermonarchie 1848–1918. Bd. 1. Die wirtschaftliche Entwicklung*. Wien: Verlag der Österreichischen Akademie der Wissenschaften [in German].
- Zhaloba, I. V. (1991). Derzhavni (kazenni) shliakhy Bukovyny kintsia XVIII – pochatku XIX st. [State (state) roads of Bukovina in the late eighteenth – early twentieth century]. *Mizhnarodna naukova konferentsiia “70 rokiv Khotynskoi viiny” – International Scientific Conference “70 Years of the Khotyn War”* (pp.

- 46–48). Chernivtsi: Yuri Fedkovych Chernivtsi National University [in Ukrainian].
- Zhaloba, I. V. (1995). Rozvytok zaliznyts Avstriiskoi imperii vid pochatku budivnytstva do 1854 r. [The development of the railways of the Austrian Empire from the beginning of construction to 1854]. *Pytannia istorii novoho ta novitnoho chasu – Questions of the history of modern and contemporary times*, 4, 46–56 [in Ukrainian].
- Zhaloba, I. V. (1999). Pershyi proekt koliinoi dorohy na Bukovyni [The first project of a railway in Bukovyna]. *Pytannia istorii Ukrainy – Questions of Ukrainian history*, 253–261 [in Ukrainian].
- Zhaloba, I. V., & Yatsentyuk, F. S. (1997). Shlyahy spoluchennya Bukovini (kInets XVIII – persha polovina XIX st.) [Ways of communicating of Bukovina (end of the 18th – first half of the 19th century)]. *Anallele Bukovinei*. An IV. 3. 727–738 [in Ukrainian].

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Характеристика ґрунтових доріг кінця XVIII – початку XIX ст. та проєкт першої дерев'яної колійної дороги як попередників залізничних шляхів Буковини

***Анотація.** В історії буковинського суспільного життя 40–50-х років XIX ст. важливе місце займала гостра боротьба за впровадження залізничного транспорту. Ця боротьба протікала в умовах поглиблення кризи феодално-кріпосницької системи і розвитку капіталізму в Австрійській імперії. Примітивна середньовічна техніка перевезення вантажів і пасажирів водними шляхами і ґрунтовими дорогами, яка сторіччями задовольняла потреби феодално-кріпосницької Буковини, на початку XIX ст. все більше і більше ставала гальмом на шляху економічного і соціально-політичного прогресу буковинського краю. Початок транспортної революції в Англії мав величезний суспільний резонанс в Австро-Угорщині. Цьому сприяла наявність в даному періоді наукових зв'язків, що активно розвивалися, між австрійськими, західноєвропейськими і американськими вченими, інженерами і техніками. Бо новітні засоби транспортування поширювалися в першій половині XIX ст., в першу чергу, в промислово розвинутих регіонах Європи. В цих районах були кошти для будівництва шляхів сполучення, адже завдяки останнім могло розвиватися різне виробництво. Сьогодні для нас мають важливий історичний інтерес ті проєкти, які стосувалися будівництва характерних на ту пору*

засобів транспортування на аграрних землях, де промисловості майже не було. І до таких аграрних земель в першій половині XIX ст. в австрійській державі належала Буковина. Метою даної статті є ґрунтовний аналіз характеристик ґрунтових доріг кінця XVIII – початку XIX ст. та проєкту першої дерев'яної колійної дороги як попередників залізничних шляхів Буковини. Для досягнення поставленої мети, авторами спочатку виконано огляд процесу будівництва мережі залізниць в Австрійській імперії, за період першої половини 1830-х – другої половини 1850-х років. У порівнянні з досвідом появи та розбудови перших мереж залізниць у Австрійській імперії загалом, наведено аналіз стану та характеристик ґрунтових доріг Буковини. Увага уряду до розвитку шляхів Буковини пояснювалася військово-стратегічним та торгово-економічним і політичним значенням їх для Австрійської імперії. У кінці XVIII – першій половині XIX ст. на території Буковини було споруджено ряд державних трактів, які, перетинаючи край, забезпечували військовий взаємозв'язок двох австрійських провінцій – Галичини та Трансильванії, а також впритул підходили до кордонів Російської імперії та Дунайських князівств. У той же час вони сприяли відновленню значно призупиненого торгового руху Буковиною. Розглянуто першу спробу створити дерев'яну колійну дорогу, як прототип та попередник залізниці на Буковинських землях. Показано, що сама така ідея, безумовно, відіграла свою роль у формуванні стратегії розвитку краю в головах австрійських і буковинських чиновників, та стала передвісником подальшого будівництва магістральних та регіональних залізниць на Буковині.

Ключові слова: Австрійська імперія; транспорт; будівництво залізниць; періодизація; шляхи сполучення Буковини

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Характеристика ґрунтових доріг кінця XVIII – початку XIX в. и проєкт першої дерев'яної колійної дороги як предшественников залізничних шляхів Буковини

Анотація. В історії буковинської суспільної життя 40–50-х років XIX ст. важке місце займала гостра боротьба за впровадження залізничного транспорту. Ця боротьба протікала в умовах углиблення кризи феодально-кріпосницької системи и розвитку капіталізму в Австрійській імперії. Примітивна середньовікова техніка перевезення вантажів и пасажирів по водним шляхам и ґрунтовим дорігам, котра століттями задовольняла потреби феодально-кріпосницької Буковини, в початку

XIX в. все больше и больше становилась тормозом на пути экономического и социально-политического прогресса буковинского края. Начало транспортной революции в Англии имело огромный общественный резонанс в Австро-Венгрии. Этому способствовало наличие в данном периоде активно развивающихся научных связей между австрийскими, западноевропейскими и американскими учеными, инженерами и техниками. Ибо новейшие средства транспортировки распространялись в первой половине XIX в., в первую очередь, в промышленно развитых регионах Европы. В этих районах были средства для строительства путей сообщения, ведь благодаря последним могло развиваться разное производство. Сегодня для нас имеют важный исторический интерес те проекты, которые касались строительства характерных на то время средств транспортировки на аграрных землях, где промышленности почти не было. И к таким аграрным землям в первой половине XIX в. в австрийском государстве принадлежала Буковина. Целью данной статьи является основательный анализ характеристик грунтовых дорог конца XVIII – начала XIX ст. и проекта первой деревянной колеиной дороги в качестве предшественников железнодорожных путей Буковины. Для достижения поставленных целей авторами первоначально выполнен обзор процесса строительства сети железных дорог в Австрийской империи, за период первой половины 1830-х – второй половины 1850-х годов. По сравнению с опытом появления и развития первых сетей железных дорог в Австрийской империи в целом, приведен анализ состояния и характеристик грунтовых дорог Буковины. Внимание правительства к развитию путей Буковины объяснялось военно-стратегическим и торгово-экономическим и политическим значением для Австрийской империи. В конце XVIII – первой половине XIX в. на территории Буковины был построен ряд государственных трактов, которые, пересекая край, обеспечивали военную взаимосвязь двух австрийских провинций – Галиции и Трансильвании, а также вплотную подходили к границам Российской империи и Дунайских княжеств. В то же время они способствовали возобновлению значительно приостановленного торгового движения по Буковине. Рассмотрена первая попытка создать деревянный путь, как прототип и предшественник железной дороги на Буковинских землях. Показано, что сама такая идея, безусловно, сыграла свою роль в формировании стратегии развития края в головах австрийских и буковинских чиновников и стала предвестником дальнейшего строительства магистральных и региональных железных дорог в Буковине.

Ключевые слова: Австрийская империя; транспорт; строительство железных дорог; периодизация; пути сообщения Буковины

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