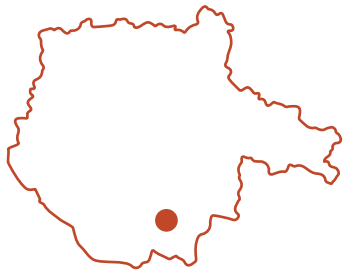
# Barrier (Rake) Is Not a Covered Footbridge

## The History and Form of the Timber Floating Facility on the Example of the Ponholz Barrier in Blansko near Kaplice



# Rechle nejsou krytá lávka

## Historie a podoba plavebního zařízení na příkladu rechlí Ponholz v Blansku u Kaplice

*Jarmila Hansová*

**Abstract:** This work was written as part of research into the history of timber floating in the Novohradské Mountains (the Gratzen Mountains) on Pohoří Brook and the River Černá. One of the necessary facilities along this navigation route was the barrier on the River Černá in Blansko, used to catch floated wood. Although this structure is a cultural heritage site, it has long been neglected and its history nearly forgotten. In the Heritage Catalogue and elsewhere, it is merely listed as a covered footbridge. This paper presents its construction history based on archival sources and field documentation. In order to place the development of this specific timber-floating device in context, it was necessary to consult 100-year-old German textbooks on forestry, as the subject has not been previously researched in the Czech lands. As a result, only four other barriers could be traced in the literature, all of which were in South-West Bohemia (Lenora, Český Krumlov, Plav, and the Vchynice-Tetov Canal). However, it can be assumed that many more barriers may have survived in the Czech Republic even after the demise of the once widespread timber floating. The contribution of this work is grounded, among other things, in entirely new discoveries about the essential structural components of the barriers. The article serves not only as a challenge but also as a partial guide for those interested in exploring this overlooked topic.

**Keywords:** barrier; rake; bar screen; covered footbridge; timber floating; Blansko near Kaplice; Lenora; Švařec; heritage protection

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**Abstrakt:** Práce vznikla v rámci výzkumu historie plavení polenového dřeva v Novohradských horách na Pohořském potoce a říčce Černé. Jedním z nutných zařízení této plavební trasy byly též rechle na Černé v Blansku, sloužící k chytání plaveného dřeva. Ačkoliv je tento objekt kulturní památkou, je dlouhodobě opomíjen a jeho historie téměř zapomenuta. V Památkovém katalogu i jinde je pokládán za pouhou krytou lávku. V této práci je prezentována jeho stavební historie na základě archivních pramenů i terénní dokumentace. Pro zařazení do kontextu vývoje tohoto specifického plavebního zařízení bylo nutné obrátit se ke sto let starým německým učebnicím lesnictví, neboť toto téma je u nás nezpracované. V důsledku toho se podařilo v literatuře dohledat pouhé čtvery další rechle, všechny situované v jihozápadních Čechách (v Lenoře, Českém Krumlově, Plavu a na Vchynicko-tetovském kanále). Lze však předpokládat, že se i po zániku kdysi hojně rozšířeného plavení dřeva mohlo na území České republiky dochovat mnohem více rechlí. Přínosem práce jsou mimo jiné zcela nové poznatky o podstatných konstrukčních součástech rechlí. Článek je nejen výzvou, ale i částečným vodítkem pro všechny, kteří by se chtěli tomuto badatelsky opomíjenému tématu věnovat.

**Klíčová slova:** rechle; hrablo; brlení; krytá lávka; plavení dřeva; Blansko u Kaplice; Lenora; Švařec; památková péče

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Five massive bridge piers made of stone blocks are located on the River Černá near the village of Blansko close to Kaplice (Český Krumlov District), less than a kilometre before it converges with the River Malše. Rather unusually, two of the piers are situated on land along the left riverbank, while the other three are positioned on its banks and in

*Fig. 1.* Blansko near Kaplice, the Ponholz barrier, general view upstream the River Černá, marking the land piers, photo: Marie Hansová, 2024

*Fig. 2.* Blansko near Kaplice, the Ponholz barrier, the side of an uncovered land pier, with the fifth pier behind, photo: the author, 2024

*Fig. 3.* Bridge spanning the River Černá, etching, Jan Bulíř, 1970s (?), source: private collection

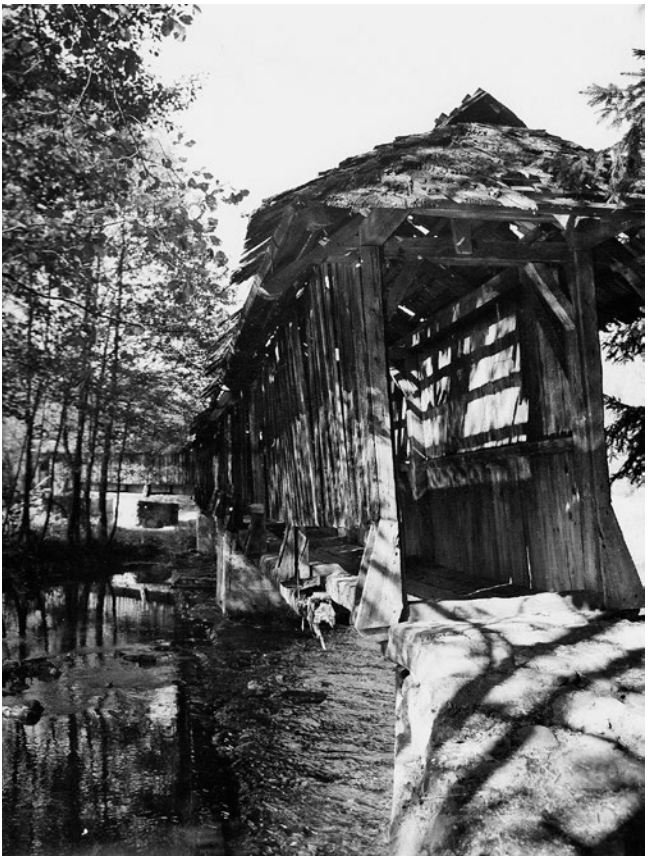
the middle of the riverbed. Today, they support a modern footbridge made of logs that have been warped over time and are connected by boards. The current condition of the footbridge does not exactly entice visitors to cross the river, especially since only a few prismatic posts serve as reminders of its railing. After all, this situation hardly bothers anyone, as the maker of this makeshift bridge (and owner of the former Buquoy gamekeeper's lodge) asserts that he manages it just fine, and there are very few visitors in this remote area. In fact, only a barely visible pathway, which has never been a significant connecting route, leads across the footbridge.[1] Besides, the River Černá can be easily crossed via a bridge located seven hundred metres upstream along the road connecting Blansko and Soběnov, near the former paper mill.

The present-day temporary footbridge replaced an old covered wooden one that was destroyed by arson before 2006. This act of vandalism damaged part of the cultural monument, which was designated as 'a covered footbridge' in 1958.[2] At first glance, only the five piers remain, with the two on the riverbanks disappearing amidst the dense undergrowth of the self-seeded grove. Several decades ago, there was a meadow at this site, where summer camps and school events for the nearby town of Kaplice were held.[3] We were fortunate to encounter a very low water level while documenting the barrier in May 2024, which revealed the riverbed, reinforced with stone paving and flanked

1 Národní archiv (hereinafter referred to as NA), fonds Stabilní katastr – indikační skici, sign. BUD 253, map of the Stable Cadastre of Blansko from 1826.

2 The 'covered footbridge' in Blansko near Kaplice is inscribed on the Central List of Cultural Monuments under the index no. 13795/3-1217.

3 I extend my thanks to my colleague Václav Hájek, who grew up in Kaplice, for providing this information. The photograph of schoolchildren gathered in front of the riverbank part of the barrier is published in KOVÁŘ, Daniel – MÖRTL, Pavel, 'Technické památky', in: *Novohradské hory a novohradské podhůří. Příroda, historie, život*, DUDÁK, Vladislav (ed.), Praha 2006, pp. 547–554, here p. 551.



↑ *Fig. 4.* Blansko near Kaplice, the Ponholz barrier, view from the right bank of the River Černá, photo: 1980, source: NPÚ, ÚOP in České Budějovice, collection of photographic documentation

← *Fig. 5.* Blansko near Kaplice, the Ponholz barrier, a part along the left bank of the River Černá, view downstream, photo: 1980, source: NPÚ, ÚOP in České Budějovice, collection of photographic documentation

*Fig. 6.* Blansko near Kaplice, the Ponholz barrier, the front view reveals the mortises in the beam against which the bar screen bars were propped, photo: V. Šolc, 1955, source: Etnologický ústav AV ČR, v. v. i., photo documentation collection Prague, sign. 5958 HK

*Fig. 7.* Blansko near Kaplice, the Ponholz barrier, rear view, photo: V. Šolc, 1955, source: Etnologický ústav AV ČR, v. v. i., photo documentation collection Prague, sign. 5957a HK

*Fig. 8.* Blansko near Kaplice, the Ponholz barrier, the reinforced riverbed below the barrier, downstream direction, indicated flow direction, photo: Marie Hansová, 2024

by two narrow beams on either side. The outer frames included rectangular mortises, spaced at greater intervals. Unfortunately, no thorough research on this structure had been undertaken previously because its existence, hitherto unrecorded, took us by surprise, leaving us unprepared to study it under challenging terrain conditions. During our next visit, it was already covered with water.

This unexpected discovery, part of the 'covered footbridge', demonstrates that it is not merely a bridge. The purpose of this device, referred to as the barrier, was to catch timber floating along Pohoří Brook and then down the rivers Černá and Malše to České Budějovice. In some cases, the timber travelled only along part of this route. The history of the barrier remains largely unknown, although the foundations of the system and the history of timber floating from the Nové Hrady forests by the Buquoy aristocratic family were described in detail in the extensive work *Novohradské hory* (The Novohradské Mountains), published in 2006.[4] The book also briefly mentions the barrier in Blansko, which has been essential for the timber floating business since its inception in 1780. It was called Ponholz, based on the local name of a nearby railway track, and it retained this name until the mid-20th century.[5] As will be substantiated in detail below, its original construction consisted entirely of wood, while the current stone piers date back to as late as 1858–1860.

Before the advent of railway transport, timber floating was practised on multiple large and small watercourses in the Czech lands,[6] including Zlatá stoka, a canal in the

4 BUREŠ, Michal – PAŘEZ, Jan, 'Plavení dřeva', in: *Novohradské hory a novohradské podhůří. Příroda, historie, život*, DUDÁK, Vladislav (ed.), Praha 2006, pp. 679–686; KOVÁŘ, Daniel – MÖRTL, Pavel, 'Technické památky', ibidem, pp. 547–554.

5 Státní oblastní archiv v Třeboni, oddělení Třeboň (hereinafter referred to as SOA v Třeboni, odd. Třeboň), fonds Buquoyské ústřední ředitelství Nové Hrady, inv. no. 57, sign. III G, cart. no. 24, timber floating programmes from 1931–1944.

6 Timber floating was economical in areas without access roads and where on-site utilisation of timber was not feasible. Occasionally, minor watercourses were used, e.g. during 1822–1831, when Křemže Brook in the Český Krumlov District was used for timber floating. LANDA, Miroslav, 'Plavení dříví v jižních Čechách', *Lesnická práce. Časopis pro lesnickou vědu a praxi*, 1978, vol. 57, p. 233.

Třeboň District.[7] With the end of this type of timber transport, which mostly occurred by the mid-20th century, the barriers disappeared as well, the fully wooden ones being the first to vanish. In the surviving examples, the awareness of their original function has diminished to a belief that they were solely used to catch floating timber, often accompanied by misleading interpretations. Alternatively, their floating history has been forgotten, as seen in the barrier in Blansko. Therefore, it is useful to explain the purpose and construction of this timber-floating device before delving into its history.

**The Barrier (Rake)**

The unusual Czech word 'rechle' originates from the German word *Rechen*, which means *rake*. However, the diminutive forms 'Rechl' or 'Rechel'[8] were also used, through which the term most likely evolved into Czech. In forestry terminology, this timber-floating device was often referred to as *hrable*, *česlo*, *brlení* meaning *rake* or *bar screen*.[9] The common German terms *Holzfangrechen*, *Holzrechen*, *Fangrechen*, *Rechen*, *Fanggebäude*, and *Sperrbau* clearly capture the essence – the rake for timber catchment. In scholarly literature, however, another explanation occurred, relating to the German verb *rechnen*, which means *to count*, because the floated timber was stacked in piles of precise dimensions and inventoried in timber yards near the rakes.[10] Nevertheless, we believe this meaning was derived secondarily and has no relation to the original German terms, as the word *Holzfangrechen* (*rake*) is entirely unrelated to counting. Moreover, not every type of rake was used for timber catchment and retrieval (let alone the possibility of counting it at the same time); they only directed the floating timber (*Abweisrechen*). However, timber was counted upon retrieval, resulting in significant losses of about 10% (known as *calo*). The reason for this was the entrapment and theft of logs along the way.[11]

The older Czech language operated with the term *rechle*, as evidenced, for example, by the navigation code issued by Peter Wok von Rosenberg in 1590, which mentions 'rechle' near Český Krumlov.[12] However, in modern times, this term does not occur in the standard dictionaries of the Czech language,[13] nor in the dictionary of foreign words.[14] The reason for this, in addition to the low frequency of this term, is certainly the existence of another Czech equivalent *hrable*, which also cannot be found in the above-mentioned dictionaries, but is (unlike the Germanism *rechle*) included in the Czech

7 SOA v Třeboni, odd. Třeboň, fonds Velkostatek Třeboň (hereinafter referred to as Vs Třeboň), inv. no. 943, sign. IA 6Walfa no. 5, cart. no. 25, an agreement between the Třeboň estate and the monastery farm regarding timber floating rules on the Zlatá stoka canal from 1781.

8 The terms 'Rechl' or 'Rechel' occur, for example, in all three surviving plans of the Blansko barrier, SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady, unprocessed, timber rafting file, *Grund und Aufriess über die in den Molschiner Bach neu aufzurichten kommende Holtz Rechln bey Bohnholz* from 1780 (fig. 26); Státní okresní archiv Český Krumlov (hereinafter referred to as SOkA), fonds Okresní úřad Kaplice (hereinafter referred to as OÚ Kaplice), cart. no. 10, *Situations-Plan zur Erbauung eines neuen Holzschwemmrechels bei Ponholz nächst Pflanzen* and *Plan des Holzrechels in Ponholz* from 1859 (figs. 28 and 29).

9 KUČERA, Josef Maria, *Deutsch-tschechisches und tschechisch-deutsches Wörterbuch für die Holz-, Forst- u. Jagdwirtschaft*, Prag 1942.

10 WOITSCH, Jiří, 'Z historie lesní dopravy a dálkového transportu dříví. Voroplavba I', *Lesnická práce*, 2018, vol. 97, no. 1, pp. 44–45, here p. 45. The author does not cite any sources to support his statement.

11 SCHEUFLER, Vladimír – ŠOLC, Václav, *Voroplavba na jihočeských tocích*, Praha 1970, p. 32.

12 'Mr Jägermeister should investigate this, ensuring that each year up to five *klafters* of timber are chopped in the upper stream, floated down here to Krumlov [...], and arranged at the barrier where the right person would sell it to J. M. Páně or the people in town.' This barrier was built by Wilhelm von Rosenberg in 1562 above Český Krumlov, according to M. Landa, on what is now the site of the bottom wing of Větřní Paper Mill. LANDA, M., Plavení dřeva, p. 583.

13 This word is found neither in contemporary nor older Czech language dictionaries: HAVRÁNEK, Bohuslav – BĚLIČ, Jaromír – HELCL, Miloš – JEDLIČKA, Alois (ed.), *Slovník spisovného jazyka českého, díl V. R-S*, Praha 1989; JUNGMANN, Josef, *Slownjk česko-německý Josefa Jungmanna, díl III. P–R*, Praha 1837.

14 KLIMEŠ, Lumír, *Slovník cizích slov*, Praha 1981.

forestry literature.[15] The terms *hrable* (*rake*) and *hrablový most* (*rake bridge*) were used, for example, by Hynek Hladík for an explanation of the facility that caught the floating timber at the end of the Schwarzenberg Navigational Canal (*partensteinské hrable*).[16] The expression *hrable* is also found in the Slovak language.[17] Some modern descriptions of rakes may also feature the term *hradlový most* (*sluice bridge*), especially of the rakes on the River Vydra at the beginning of the Vchynice-Tetov Canal near Modrava. Nonetheless, this is misleading because in water engineering a *sluice* is defined as a gate that completely forestalls the flow of water. In the case of rakes, this would be undesired because water had to flow through the bar screen to prevent a flood.[18]

The technical dictionary (*Technický slovník naučný*) from 1928 uses the term *bar screen* for this type of timber-floating device: 'In forest transport, a *bar screen* denotes any type of construction measures and facilities through which floating timber is navigated in the desired direction or captured and gathered at a particular location.' In addition, in a more general sense, a *bar screen* is understood here as 'bars or screens used to catch objects floating on or in the water. They are used in raceways of hydraulic structures, [...] inlets to tunnels, canals, bypasses, etc. [...] of pond outlets.'[19] Similarly, the German term *Rechen* can sometimes refer solely to the bars that catch the floating timber (bar screen).[20]

In search of the appropriate term for the timber-floating device in Blansko near Kaplice in the Český Krumlov District, we opted for *rechle* (barrier), as it continues to be used in the predominantly German-speaking frontier area of South-West Bohemia. For example, the authors of the fundamental publication on the history of timber rafting in South Bohemia used this term for timber-floating structures as well.[21] The term *rechle* was also incorporated into several geographic names, yet it typically appears only in South Bohemia. When entering this word in the GeoNames Database, which compiles the geographic names from across the Czech Republic, including local districts and land areas, seven examples of its use in local names appear: *Na rechlích* near the covered footbridge in Český Krumlov, at Plešivec (Český Krumlov District), *Rechle* in Lenora (Prachatice District), *Rechle* in Plav on the River Malše (České Budějovice District), *Rechle* on the River Vydra near the rake bridge at the beginning of the Vchynice-Tetov Canal near Modrava (Klatovy District), the local district *U rechlí* on the River Vltava in

15 ČABART, Jan (ed.), *Naučný slovník lesnický*, vol. 1, Praha 1959; POLENO, Zdeněk (ed.), *Lesnický naučný slovník*, vol. 1, Praha 1994.

16 The Partenstein rake was built in the late 18th century on the River Große Mühl before its confluence with the Danube below Partenstein Castle (*Partensteiner Rechen*). The rake ceased to exist in 1926 due to the end of timber floating in 1891. HLADÍK, Hynek, *Schwarzenberský plavební kanál v zrcadle historických dokumentů = Der Schwarzenbergische Schwemmkanal im Spiegel historischer Dokumente*, [Vimperk] 2021, pp. 26, 29–30.

17 BURKOVSKÝ, Július, 'Niekdajšie unikátne Horné hrable v Banskej Bystrici', in: *Z historie lesního dopravnictví = Z histórie lesného dopravníctva = From the forest transport history*, STEINOVÁ, Šárka (ed.), Praha – Banská Bystrica – Zvolen, pp. 24–33. I extend my gratitude to Zdeňka Prokopová for bringing this collection to my attention.

18 I would like to thank Hynek Hladík for this information.

19 TEYSSLER, Vladimír – KOTYŠKA, Václav, *Technický slovník naučný*, vol. XI, Praha 1935, pp. 608–609. German literature was once again utilised as a source to create the 'bar screen' entry: FÖRSTER, Gustav R., *Das forstliche Transportwesen. Darstellung seiner Mittel und Anstalten mit Rücksicht auf zweckmäßige Auswahl, Einrichtung und Benützung derselben*, Wien 1885; ENGELS, Hubert, *Handbuch des Wasserbaues für das Studium und die Praxis*, Leipzig – Berlin 1914.

20 In this context, the bar screen is described in *Ottův slovník naučný*: 'Rake (in German, *Rechen*) is a barrier resembling a picket fence, installed in water to prevent fish from escaping from ponds and fish tanks [...] or to catch floating logs and timber.' *Ottův slovník naučný, 4. díl*, Praha 1891, p. 719 (author of the entry: Kristian Petrlík, a professor at the Czech Polytechnics).

21 SCHEUFLER, V. – ŠOLC, V., *Voroplavba*, pp. 7, 20, 30, and 31. The authors used the word 'rechle' in its feminine form (e.g., on p. 30, they mentioned the floating barrier in Davle, and we noted it in the aforementioned Rožmberk navigation code. Although this form is still sometimes used, currently the pluralia tantum form prevails, which we also used in this study. Cf. Český národní korpus, SYN v12, available online: https://www.korpus.cz/kontext/query?corpname=syn_v12 [13. 09. 2024]. I am truly grateful to the Language Centre of the Institute for Czech Language for the telephone consultation.

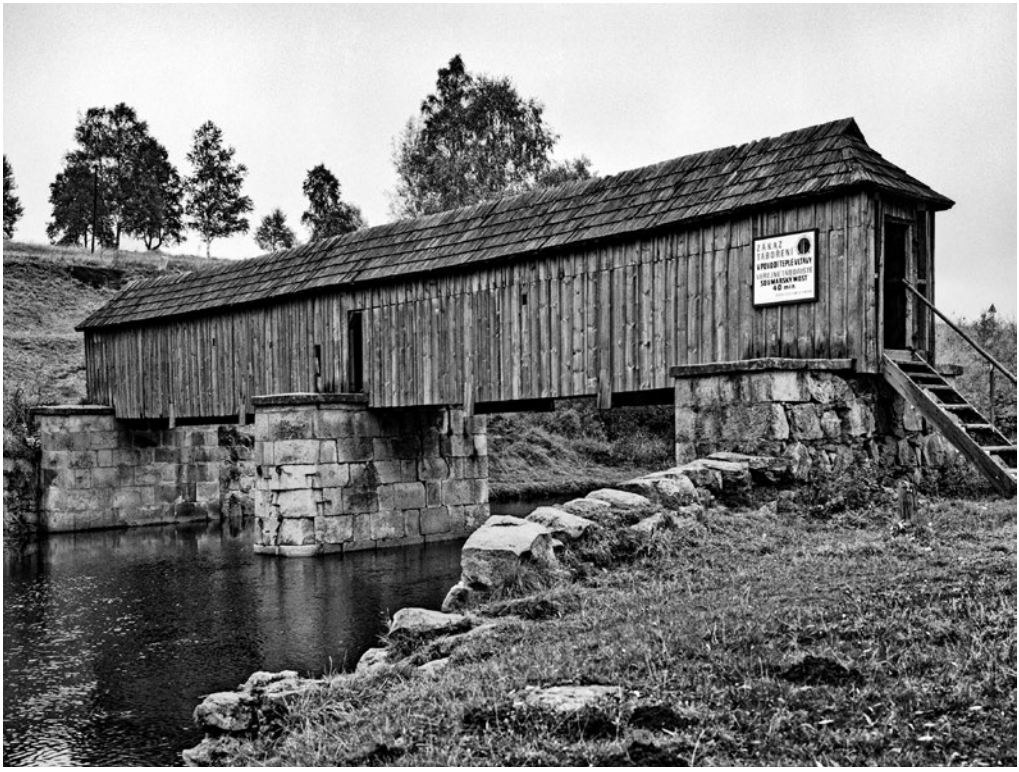


*Fig. 9.* Lenora, the Vogelberg barrier, photo: Vladimír Hyhlík, 1981, source: NPÚ Photo Archives, GnŘ, collection of photographic documentation

Březí below Boršov nad Vltavou (České Budějovice District),[22] *Rechle* Street in Vodňany, leading alongside the canal flowing off the River Blanice (Strakonice District), and the local district *Na Rechlích* on the River Otava near Kestřany (Písek District).[23] In all these locations, the barriers served as facilities for catching floating timber,[24] and they still exist in Český Krumlov, Lenora, Plav, and the Vchynice-Tetov Canal.

**The Most Famous Barriers that Have Survived and Why They Are Included among 'Covered Footbridges'**

Only two barriers, both under heritage protection, are the most renowned structures of this type in the Czech Republic. The barrier in Lenora on the River Teplá Vltava was painstakingly restored during 2014–2015, with special attention paid to the wooden construction of the covered footbridge.[25] Before that, in 2013, its depiction with the inscription 'A Wooden Bridge in Lenora' appeared on one of ten gold commemorative

22 The barrier was built by the Schwarzenbergs in 1730, and the logs retrieved from the water were primarily used by the nearby manor brewery in Plavnice. During the second half of the 18th century, the barrier fell into disrepair and was rebuilt in 1802. However, its new primary function was to capture timber during floods to prevent damage caused to the flat basin of České Budějovice. The barrier was dismantled in 1904, leaving only the riverfront piers behind. LAVIČKA, Roman – HAVLICE, Jiří – KOVÁŘ, Daniel – NIKRMAJER, Leoš – ŠIMÁNEK, Jan, *Velké dějiny malého města. 750 let Kamenného Újezda*, České Budějovice 2013, p. 304.

23 I am truly grateful to my colleague Mark Ehrlich for this research.

24 For more details on floating timber on the rivers Blanice, Otava, and Vydra, and on the construction of the Vchynice-Tetov Canal, see, for example: SCHEUFLER, V. – ŠOLC, V., *Voroplavba*; NEUMANN, Jiří, 'Ze staré Šumavy. Dříví se plavilo i po Blanici', *Obnovená Tradice*, 2001, vol. 12, no. 23, pp. 36–37; JANOUŠEK, Emil, 'Náčrt vývoje lesního hospodářství na panství prášilském na Šumavě', *Lesnická práce*, 1938, vol. 17, no. 3, pp. 128–160.

25 NPÚ, ÚOP v Českých Budějovicích, file archives, file for the structure Lenora – footbridge, no. 3637 PT.

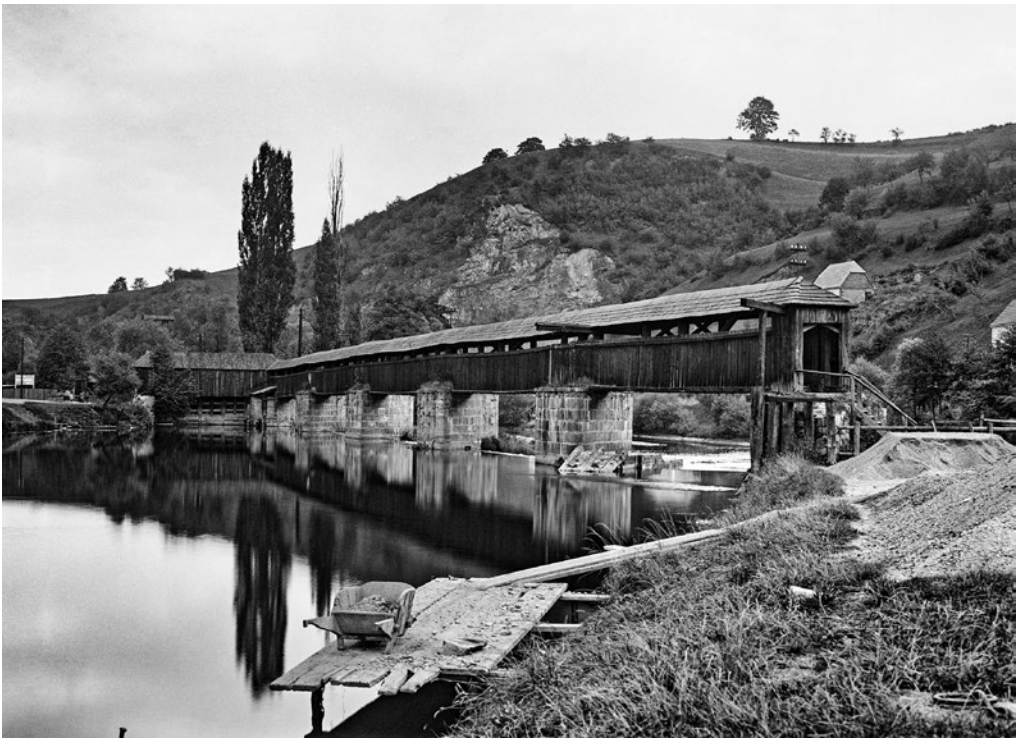


*Fig. 10.* Český Krumlov – Plešivec, the so-called upper barrier, photo: Orbis, before 1953, source: private collection

coins issued by the Czech National Bank to introduce significant bridges in the Czech Republic to the public.[26] The barrier in Český Krumlov, or more precisely in its Plešivec suburb, is the only representative of this type of structure which can be found in *Přehled technických památek v českých zemích* (An Overview of the Technical Monuments in the Czech Lands) from 1970: 'Český Krumlov: the footbridge called Rechle – a half-timbered covered footbridge for timber floating'.[27] It was designed by Rosenauer, the builder of the renowned Schwarzenberg Navigational Canal. A canal ran from the 'barrier's head' on the left riverbank of the Vltava, channelling a portion of the floating timber to the premises of Franz Pachner's paper mill.[28] With a length of 110 metres, it is considered the longest covered wooden footbridge.[29] Since 1987, a two-metre model of the Český Krumlov barrier, made by Josef Kolaja, has been displayed in the Museum of Velké Meziříčí (previously the Museum of Roads and Highways).[30]

26 Further information can be found on the website of the Czech National Bank: https://www.cnb.cz/cs/bankovky-a-mince/numizmatika/zlate-mince/mosty-ceske-republiky-/dreveny-most-v-lenore/ [accessed 13 Sept 2024].

27 VONDRA, Jiří, *Přehled technických památek v českých zemích. Rozpravy Národního technického muzea v Praze*, Praha 1970, p. 32. The overview does not provide any additonal examples of barriers.

28 This situation is very clear on the indication sketch of the stable cadastre of Český Krumlov from 1826, NA, fonds Stabilní katastr – indikační skici, sign. Bud 158. The barrier is marked on the map as 'Fürstlich. Holzrechen'. The barrier construction took 36 weeks and cost 2,247 guldens and 25 kreutzers. VESELÝ, Karel, 'Českokrumlovské rechle (for its 180th anniversary)', *Výběr z prací členů Historického klubu při Jihočeském muzeu v Českých Budějovicích*, 1978, vol. 15, no. 1, p. 45. In 1767, there was another barrier in Český Krumlov, near the princely brewery (it has not survived). LANDA, M., Plavení dřeva, p. 583.

29 MOŠNA, Václav – RENDEK, Jan, *Krásné mosty České republiky*, Praha 2012, p. 128.

30 JOSEF, Dušan, *Encyklopedie mostů v Čechách, na Moravě a ve Slezsku*, Praha 1999, p. 84. The model measures 210 cm and is found in the museum's repository under the accession number 6/88. The museum purchased it from Josef Kolaja in 1987. I extend my thanks to Lucie Pavelcová, a historian and archivist of the Museum Velké Meziříčí, for this information.

↑ *Fig. 11.* The barrier near Modrava at the beginning of the Vchynice-Tetov Canal with a footbridge replica built in 2000, photo: Zdeněk Kohlíček, 2012

→ *Fig. 12.* The barrier near Modrava at the beginning of the Vchynice-Tetov Canal during timber floating, no date, source: ROUČKA, Zdeněk, *Předválečnou Šumavou. Život – práce – krajina*, Plzeň 2006, p. 106

*Fig. 13.* Plav, a modern barrier from 1896, photo: Zdeňka Kočková, 2020

However, the other preserved barriers, also designated as cultural monuments, are far from achieving the fame of the barriers in Lenora and Český Krumlov. Although the rake bridge on the River Vydra, located at the beginning of the Vchynice-Tetov Canal, is a significant technical structure measuring 72 metres that was designed by Josef Rosenauer along with the navigational canal during 1799–1801, its construction seems to have never attracted much professional interest.[31] This is probably due to its long-lasting deterioration during the second half of the 20th century when its wooden construction disappeared. Not even after its replica was made in 2000 did this barrier capture the attention of the professional public[32] or popular science literature[33] despite the designation of the Vchynice-Tetov Canal as a national cultural monument in 2014. Similarly, the barrier in Plav, a unique example of technology (as described below), is not included in professional or popular science literature.

31 For instance, it is not mentioned even in the extensive essay by Emil Janoušek that also deals with the Vchynice-Tetov Canal. JANOUŠEK, E., 'Náčrt vývoje lesního hospodářství', pp. 128–158. Cf. also: *Využití díla Josefa Rosenauera pro rozvoj regionu Šumavy. Sborník příspěvků z mezinárodní konference (konané u příležitosti 200. výročí úmrtí Josefa Rosenauera), 13. a 14. května 2004*, Český Krumlov – Hradec Králové 2004, where this barrier was mentioned only briefly in one contribution: BĚL, Jiří, *Vchynicko-Tetovský kanál*, pp. 23–28, here p. 24.

32 The researchers of this artificial water work by Rosenauer typically focus their interest elsewhere, see, for example: HANZLÍKOVÁ, Hana, 'Vchynicko-Tetovský plavební kanál a režim vedení vody pro vodní elektrárnu Vydra na Čeňkově pile', in: *Dějiny staveb. Sborník příspěvků z konference Dějiny staveb 2008*, Plzeň 2008, pp. 229–236; see also BLAŽKOVÁ, Tereza, *Zapomenuté stopy dřevařů na Šumavě*, České Budějovice 2019, passim, who mentions it only briefly.

33 REICHARDT, Honza – REICHARDTOVÁ, Blanka, *Stará Šumava. Pláně a Povydří*, Praha 2004, pp. 182–189.

It was the covered footbridges that made the barriers in Český Krumlov and Lenora noticeable at first glance. Furthermore, their fame was enhanced by their location in busy areas frequented by many people, both locals and tourists. Although their timber-floating history remained recognised, it was the wooden roof and timber casing that attracted the most attention. Apparently, this view of the barrier as a bridge that 'always' has a covered footbridge resonates with many locals and informed supporters of historical monuments.[34] Considering the numerous existing wooden covered bridges and footbridges that primarily served as transport structures, it was logical to integrate covered barriers among them, particularly emphasising their canopies.[35] Encyclopaedias of bridges and overviews of other monuments refer to them as wooden covered footbridges, known as barriers (rakes), whereas calling them barriers with wooden covered footbridges would be more precise given the purpose of these structures. It is interesting to note how the barrier in Blansko goes completely unnoticed, although it has recently also received a covered footbridge, so picturesque that it became the central motif of an etching by Jan Bulíř, a painter from České Budějovice (fig. 3). This is certainly due to its location in remote areas.

**The Basic Types and Designs of the Barriers**

The descriptions of the barrier types and designs can only be found in old German textbooks on forestry – the Viennese textbook from 1903[36] and a similar book published in Berlin in 1921.[37] In Czech scientific literature, only a brief barrier description appears in *Technický slovník naučný* (Technical dictionary), where the Czech terminology is of great importance in addition to technical data.[38] The following interpretation is a synthesis of all three works, complemented by records from archival sources. In terms of the variety and hardly traceable translation of some (often obsolete) German expressions, their original wording is given in parentheses in the text below.

Barriers (*Fanggebäude*, *Holzrechen*, *Fangrechen*, *Holzfangrechen*, *Sperrbauten*) were built on watercourses that were used for timber floating (*Holztrift*). The larger watercourses were also used for floating tied timber, referred to as timber rafting (*Holzflößerei*),[39] for which barriers held little significance or were not allowed to obstruct it.

Many variations of barriers existed, ranging from simple to massive structures. Their form depended on the watercourse character, the function of the barrier, and the pressure exerted on it by the water current that carried timber. Barrier constructions were divided into floating, mobile (dismountable), and stable.

There are two basic types according to their function. The first type, referred to as the 'catcher' (*Fangrechen*, *Holzfangrechen*[40]), was designed to gather and retain floating timber in a specific spot, which was the function of the Blansko barrier. The

34 The author recognises this fact from her own experience, as she has been familiar with the Český Krumlov District throughout her life.

35 JOSEF, D., *Encyklopedie mostů*, pp. 83–84, 193–194.

36 ECKERT, Franz – LORENZ, Heinrich: *Lehrbuch der Forstwirtschaft für Waldbau- und Försterschulen sowie zum forstlichen Unterrichte für Aspiranten des Forstverwaltungsdienstes. III. Band. Die forstlichen Fachgegenstände*, Wien 1903, pp. 323–326.

37 GAYER, Karl – FABRICIUS, Ludwig, *Die Forstbenutzung. Ein Lehr- und Handbuch*, Berlin 1921, pp. 301–308.

38 TEYSSLER, V. – KOTYŠKA, V., *Technický slovník naučný*, p. 609. In the forestry literature, we could not find a title that discusses the construction of barriers as part of the timber floating interpretation. From this perspective, the interpretation of timber floating in the extensive book by the Schwarzenberg forest administrator appears overly concise and primarily focused on timber rafting: CHADT (ŠEVĚTÍNSKÝ), Jan Evangelista, *Dějiny lesů a lesnictví (hospodářství lesního a hospodářského lesního zřízení či úpravy lesa – soustav) v Čechách, na Moravě a ve Slezsku*, Písek 1913.

39 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 323, 329.

40 The term *Holzfangrechen* is used, for example, in Popis a ocenění stavebních objektů na velkostatku Vimperk (Description and Evaluation of Buildings at Vimperk Manor Farm Estate) from 1859, which describes the barriers in addition to the manor buildings. SOA v Třeboni, odd. Český Krumlov, fonds Vs Vimperk – nové oddělení knih, Book no. 2789, sign. VI A W gama 6, *Domaine Winterberg. Beschreibung und Abschätzung der Gebäude und Bauobjekte* (1859).

second, known as the 'regulation' type (*Abweisrechen*), was intended to deflect timber in a desired direction, for example, into a side canal. In many cases, regulation barriers were very long and often situated on weirs with sluices.[41] In Šumava, such a barrier was constructed near Modrava to direct timber into the Vchynice-Tetov Canal that bypassed the unnavigable section of the River Vydra.

**Positioning and Directing the Barrier against the Current**

In an ideal scenario, the catchers (*Fangrechen*) were established at a site where the pressure from the gathered timber could have been largely supported by the natural banks of a brook or river. For example, when barriers were built in mountain canyons, a simpler construction could be employed. If these natural supports of the banks were missing, it required the construction of more massive barriers and stone piers, which was costly. Finding the ideal site for barriers was certainly an uneasy task, as their location was primarily determined by other requirements. They needed to be established at places where timber was processed or distributed.[42] Furthermore, barriers were built near enterprises with an enormous consumption of firewood – for example, on the River Volyňka in Anenské údolí (Anna's Valley) for the needs of the local brickworks.[43]

The barriers could be positioned in various ways against the water current. They could be built perpendicularly (direct barriers / *gerader Rechen*) if the pressure from water and timber was low and there was no risk of flash floods. Most of the barriers were situated at an acute angle (inclined barriers / *schiefer Rechen*), distributing the pressure over a larger area and thus strengthening their resistance. In areas with a very large amount of collected timber,[44] the builders opted for barriers angled towards the valley side or horse-shoe-shaped barriers (*Sackrechen*). Pressure on barriers could be reduced by placing them on a weir (as was the case of the Český Krumlov upper barrier) or by setting up side canals (*Abfallbäche*), spillways (*Spiegelschleusen*), sand canals (*Sandkanäle*), sand retaining grates (*Sandgitter*), and similar facilities in advance of them.[45]

It is obvious that the elevated level of water on which timber was floated (mostly from higher artificial reservoirs, referred to as splash dams) and driftwood that accumulated near the barriers significantly stressed the given site. Sand, clay, and other deposits could have accumulated. Likewise, piles of driftwood remaining at the barriers for days or weeks before being removed from the river, along with the manipulation of logs, damaged the riverbanks. As a result, old barriers had to be removed due to worn-out constructions and new ones had to be built a short distance away on a more stable site, as was the case with the Blansko barrier described below.

**Floating Barriers**

A *floating barrier* was the simplest type. At the close of the 18th century, one was established on the River Vltava near Davle for logs floated from the Novohradské Mountains owned by the Buquoys to Prague. Another recognised floating barrier was built below Vyšehrad in 1803 for logs floated from central Šumava, where the Schwarzenberg estates

41 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 323–326; GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 301–308.

42 Ibidem. Timber yards near the barriers will be discussed in the text below.

43 SOA v Třeboni, odd. Český Krumlov, fonds Vs Vimperk – nové oddělení knih, Book no. 2789, sign. VI A W gama 6, Panství Vimperk. Popis a ocenění stavebních objektů (1859), item 44.

44 For the idea of the vast quantity of timber, cf. the example of a large barrier in Plav on the River Malše (České Budějovice District). During the spring floating in 1932, this barrier (constructed in the late 19th century, very modern and solid for its time) captured enough timber to block about a two-kilometre stretch of the river all the way to neighbouring Doudleby, with logs piled up to one metre high. SOA v Třeboni, odd. Třeboň, fonds Buquoyské ústřední ředitelství Nové Hrady, inv. no. 57, sign. III C, cart. no. 24, the complaint of Družstvo pro umělý chov ryb a raků v Plavě (Cooperative for Artificial Fish and Crayfish Farming in Plav) from 30 May 1932.

45 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 323–326; GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 301–308.

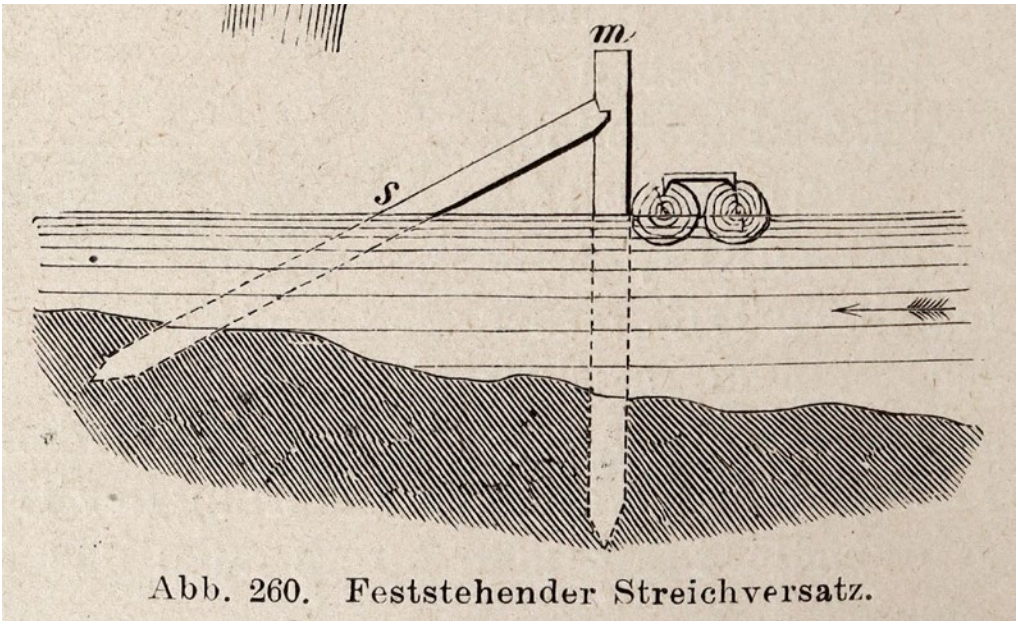



*Fig. 14.* A floating barrier supported by piles driven into the riverbed, source: GAYER, Karl – FABRICIUS, Ludwig, *Die Forstbenutzung. Ein Lehr- und Handbuch*, Berlin 1921, p. 300

were located.[46] Similarly, there was a floating rake at the end of the Schwarzenberg Navigational Canal, on the River Große Mühl just before it empties into the Danube. It directed the timber passing through the solid Partenstein rake bridge to the unloading canal which ran through the entire timber yard. There was another barrier beneath the floating one that caught the relatively high number of escaped logs.[47] Unfortunately, the authors of works about the Schwarzenberg Canal do not describe the structure of this floating barrier. Yet, the fundamental concept of this catchment system is outlined in Eckert and Lorenz's textbook on forestry. To prevent floating timber from escaping into adjacent waters, or to be able to direct it, for example, to the navigational canal, a well-dried spruce trunk was thrown into the water and tied to the bank with a withe. If it was too short, multiple trunks of this kind were used, either tied together with withes or with iron chains (*schwimmende Streichversätze*). In areas where these trunks had to resist greater pressure or served for the enclosure of the main watercourse, a solid structure was added. It consisted of an array of piles supported with inclined props driven into the riverbed.[48] One of the many varieties of floating barriers was also set up on the River Malše in Plav (until the barrier's modernisation in 1896) and before České Budějovice. The description of this barrier is included in a later chapter and placed into context with other barriers on the Buquoy timber-floating route.[49]

**Dismountable Barriers**

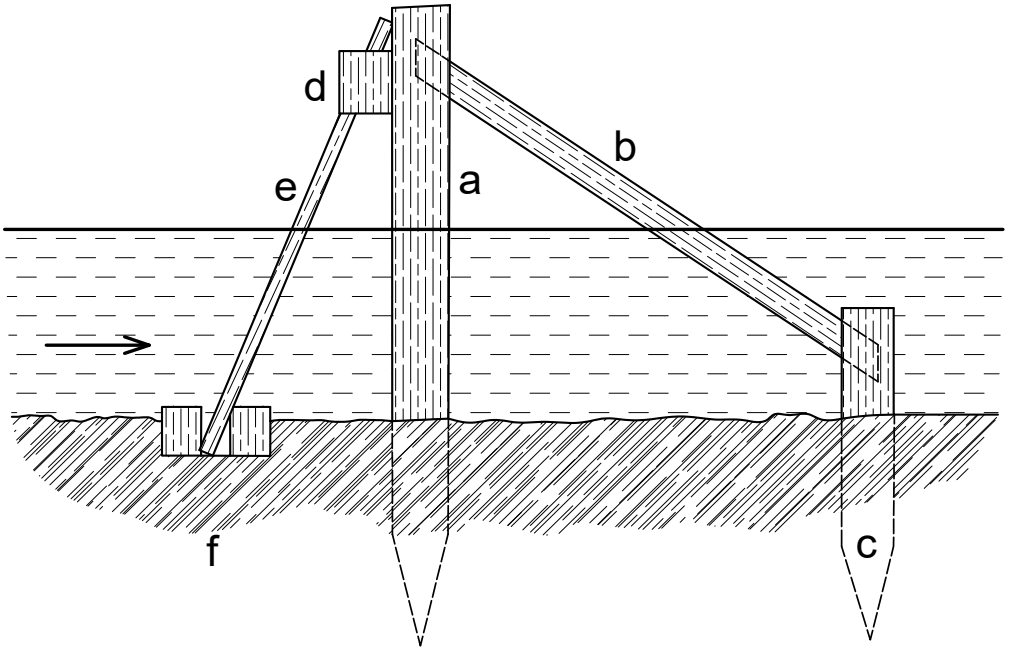
These barriers were built in locations where investing large sums of money in stable barriers was ineffective, especially on watercourses prone to severe flooding. They were always constructed prior to timber floating and dismantled afterwards (*transportabler, zerlegbarer Rechen*).

46 Timber floating was discontinued on all navigable waterways and most timber rafting watercourses in 1865 because it increasingly threatened water structures and the emerging steam navigation (stray logs). SCHEUFLER, V. – ŠOLC, V., *Voroplavba*, pp. 30–33.

47 HLADÍK, H., Schwarzenberský plavební kanál, pp. 26–27.

48 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 299–300.

49 The chapter entitled 'The Barriers on the Buquoy Timber-Floating Route on the Rivers Černá and Malše'.




↑ *Fig. 15.* A simple barrier consisting of piers in the form of piles (a) driven into the riverbed, supports on the downstream side (b) propped against short piles (c), girders made from spruce or larch beams (d) with drilled-in oblique openings for inserting the bars of the bar screen (e) braced between two thinner groundsill beams at the riverbed (f), source: ECKERT, Franz – LORENZ, Heinrich, *Lehrbuch der Forstwirtschaft für Waldbau- und Försterschulen sowie zum forstlichen Unterrichte für Aspiranten des Forstverwaltungsdienstes. III. Band. Die forstlichen Fachgegenstände*, Wien 1903, p. 324, redrawn by Veronika Babická

← *Fig. 16.* A simple barrier with a bar screen inserted through the openings drilled into the beam of the Vchynice-Tetov Canal, source: ROUČKA, Zdeněk, *Předválečnou Šumavou. Život – práce – krajina*, Plzeň 2006, p. 110

This type included mobile barriers (*beweglicher Rechen*) which could be mounted and removed as needed. The method of construction was highly variable. For example, Gayer described a barrier with solid foundations consisting of a groundsill (*Grundschwelle*) and piles. Above, trestle-shaped piers made of two beams (*Bockpfeiler*) were built and connected by two longitudinal beams (*Streckbäume*) positioned at the foot of the piers

and approximately in the middle. The bar screen was then pushed through them.[50] A variation of this type of barrier was, for example, located near the town of Volyně, as is evident from its description in 1859: 'A construction device was installed on the Volyňka riverbanks, regulated and terraced on both sides, to capture and retrieve the floating timber. It was built on each bank using a crown stringer, one fathom (*klafter*) long (1.896 m), positioned on two inserted wooden piles. During timber floating, supporting bridge beams were placed across on which a movable wooden bar screen was laid and fitted into the sills.'[51]

Another type, known as *Bockrechen*, resisted the force of swift Alpine watercourses. The structural foundation of its piers consisted of a trestle made of three sturdy beams. This barrier was primarily used in the Southern Alps, for instance, in Italy.[52]

**The Stable Barrier Construction**

The stable barrier consisted of the following components: supports or piers (*Träger*, *Rechenpfeiler*) on which longitudinal beams (*Streckbäume*) rested, propping up the bar screen (*Rechenspindeln*, *Rechenzähne*, *Spindeln*, *Sperrhölzer*, *Rechen*). At the bottom of the river or brook, the bar screen could then be supported by the groundsill beams.

Barriers primarily differed in the design of their piers. The simplest barriers were constructed from wooden piles driven deep into the riverbed (sometimes reaching the rocky layer) and spaced approximately four to five metres apart. On the valley side (the downstream side), they were supported by structures, with the lower parts braced against a short pile. Another type of wooden pier resembled bridge trestles (*Joch*). Professional literature defines the term *trestle* as a wooden bridge support based on piles. At normal and high water levels, it was reinforced with clamps attached to each pile. Horizontal planks were nailed between the clamps to protect the trestle from lateral damage. For heavier bridges, a double trestle[53] could be built, as seen, for example, in the Vltava barrier in Hory (Spitzenberg) near Želnava.[54] Similarly, log piers (*Rechenpfeiler aus Steinkastenbau*) exhibited great strength. In water structures, this refers to a square construction made of round logs, with gaps between the logs on the inner walls filled with mud or clay, and the interior filled with stones. They were used, for example, for artificial reservoirs (splash dams). These log structures were already used in the 16th century for sluices. The sturdiest barriers had piers made of stone. Where the piers could not be driven into a solid, rocky base, a sturdy pile sleeve had to be built. The longitudinal axis of the piers ran parallel to the watercourse's current to offer the least possible resistance to water.[55]

The strength and direction of flowing water had a decisive impact on the durability of the bridge piers. This is evident, for example, from the correspondence of the Schwarzenberg Building Directorate regarding the repair of the barrier on the River Volyňka near Volyně (Strakonice District) in 1821. The central log pier (*der mittlere Steinkasten*)

50 GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 305–306.

51 'Der Flößholzfangrechen am Holzplatze. Zur Auffangung und Ausladung des Flößholzes ist in dem regulierten und an beiden Ufern mit Stein terrassirten Wollinkafluß eine bauliche Vorrichtung eingebaut, welche an jedem Ufer aus einem 1 Klafter langen, auf zwei eingerammten Holzpilotten aufgesetzten Kronenholze construirt ist, worüber zur Zeit der Flöße Ensbäume gelagert, an diese die beweglichen hölzernen Fangrechen angelegt und in die Grundschwellen gestellt wurden', SOA v Třeboni, odd. Český Krumlov, fons Vs Vimperk – New Books Department, Book no. 2789, sign. VI A W gama 6, Panství Vimperk. Popis a ocenění stavebních objektů na velkostatku (1859).

52 GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 305–306.

53 The term *trestle* was also defined, e.g., in university textbooks for students of the subject Construction and Reconstruction of Bridges, POKORNÝ, Jiří – ŠERTLER, Hynek, *Mosty. Část druhá*, Univerzita Pardubice, Dopravní fakulta Jana Pernera, Pardubice, b. d., p. 268.

54 The timber that travelled from the upper areas of the Vimperk estate ended at this barrier where it was retrieved and transported by carriages to a canal near Nová Pec, an hour away, where the floating continued. GALLISTL, Thomas, *Českokrumlovsko na počátku 20. století. České komentované vydání z německého originálu Heimatskunde des polit. Bezirkes Krummau*, ŠPINAR, Jindřich (ed.), České Budějovice 2024, p. 38.

55 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 323–326; GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 301–308; SCHEUFLER, V. – ŠOLC, V., *Voroplavba*, p. 4.

*Fig. 17.* The Spitzenberg (Hory) barrier on the Vltava near Želnava, photo: Vladimír Hyhlík a Věra Pospíšilová, 1953, source: NPÚ Photo Archives, GnŘ, collection of photographic documentation

was exposed to the current from the wrong side, leading to severe rotting. This occurred due to the current's deviation from its original course caused by the alteration of the riverbed shape due to sand shovelling for the neighbouring timber yard (*Holzplatz*). During the repair, a new pier had to be installed in a different location, aligning its axis parallel to the water current. Another idea was to replace the expensive log pier with a cheaper bridge trestle that offered less resistance to the flow of water.[56]

Longitudinal beams (*Streckbäume*[57]) were attached to piers or trestles, known as pulls (*zátahy* in Old Czech) that provided support to the bar screen (*Spindeln*). They were made of square, hewn spruce or larch beams of varying numbers. It is impossible to cover all construction varieties; understandably, the cited textbooks present only the basic types. The simplest barrier could consist of a single beam, with drilled-in slanted holes for a bar screen to be pushed through. Alternatively, three beams lying side by side could be used, with the central one removed to install a bar screen during timber floating. If only two beams were used, they could be connected by spokes. In that case, the bars of the bar screen would run in between them.[58]

In the documented barriers in South Bohemia, a different method was employed to attach the bar screen to the beam. In the Blansko barrier, the bars leaned against the outer beam, which had mortises carved into it, as shown in the photograph from 1955 (see fig. 6). The same solution was applied to the barrier in Hory (Spitzenberg), but the beam supporting the bar screen was installed inside the covered footbridge.

56 SOA v Třeboni, odd. Český Krumlov, fonds Schwarzenberská ústřední stavební správa České Budějovice (1755) 1792–1950, cart. no. 290, inv. no. 783, sign. 21 I, water structures.

57 *Streckbaum*, also *Streckbalken*: the horizontal construction part; load-bearing beams are placed on the bridge piers of wooden bridges. *Deutsches Wörterbuch von Jacob Grimm und Wilhelm Grimm, Erstbearbeitung (1854–1960)*, a digital version in: *Digitalen Wörterbuch der deutschen Sprache*, available online: https://www.dwds.de/wb/dwb/streckbaum [accessed 1Sept 2024]. It is translated into Czech as: *podélník*, *trám*, *nosník podélný*, see KADLEC, Karel – HELLER, Karel, *Německo-české názvosloví úřední a právnické*, Praha 1926.

58 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 323, 329.

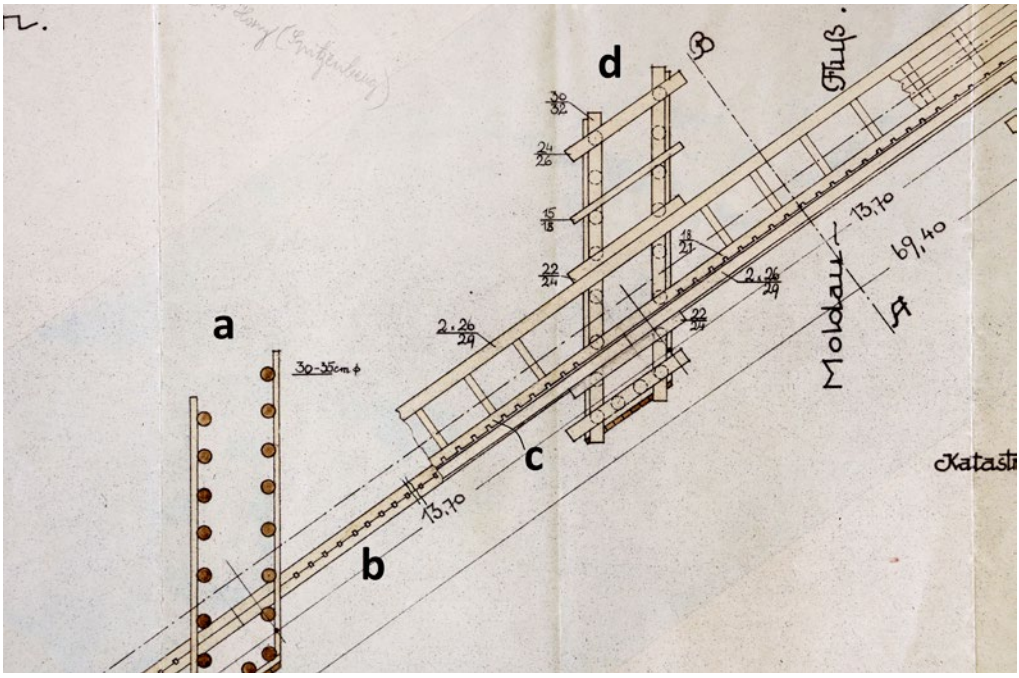



*Fig. 18.* A plan for the repair of the Spitzenberg (Hory) barrier, Markl, 1926, ground plan detail, source: SOA v Třeboni, odd. Český Krumlov, fonds Schwarzenberská ústřední stavební správa České Budějovice, plan no. 3147. Legend: a – establishment of a two-row bridge trestle at the riverbed level; b – groundsill beams in the riverbed to lock the bar screen bars; c – beam with mortises for inserting the bar screen bars at the footbridge level, featuring a clear gap in front for manipulating the bar screen bars during the beam's installation and removal; d – trestle reinforcement with clamps and planks underneath the footbridge

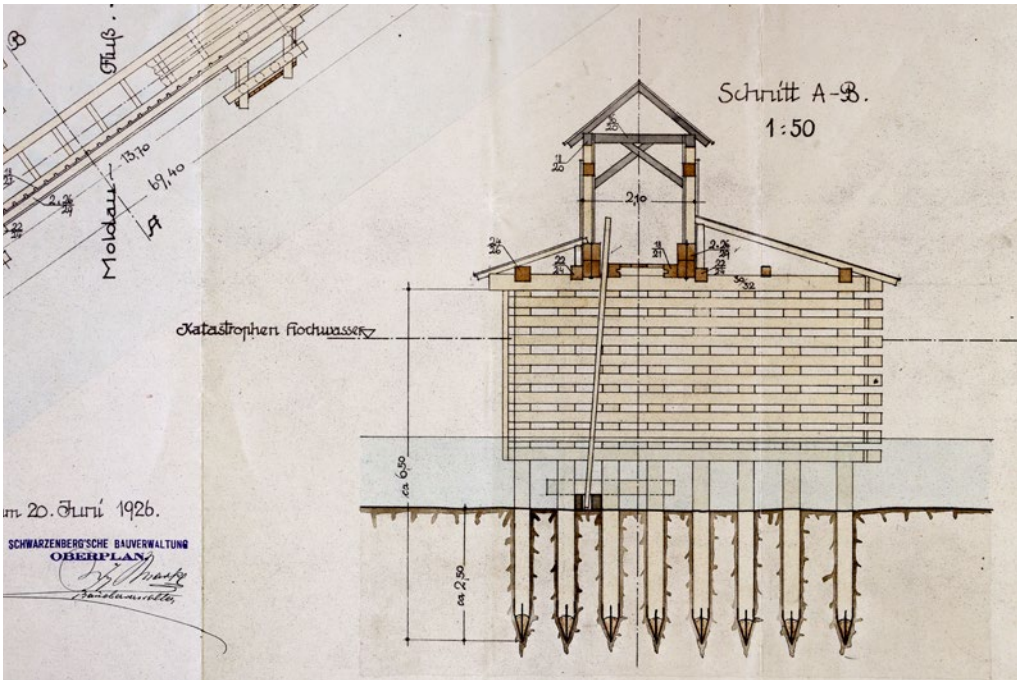



*Fig. 19.* A plan for the repair of the Spitzenberg (Hory) barrier, Markl, 1926, cross-section, source: SOA v Třeboni, odd. Český Krumlov, fonds Schwarzenberská ústřední stavební správa České Budějovice, plan no. 3147

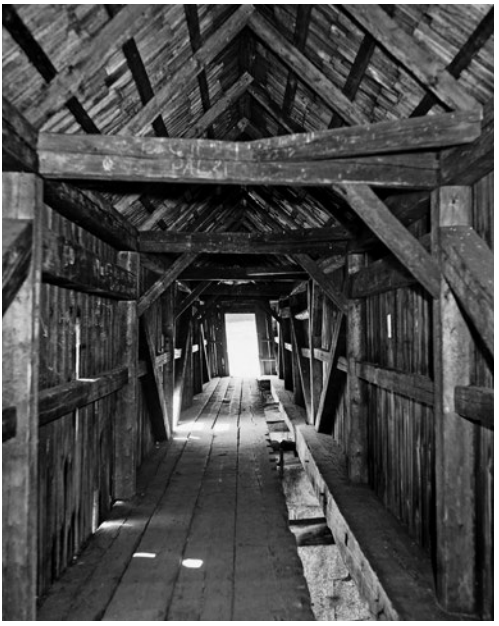


*Fig. 20.* Lenora, the Vogelberg barrier interior, with a visible gap in front of the beam with mortises, photo: M. Posselt, 1965, source: NPÚ Photo Archives, GnŘ, collection of photographic documentation

*Fig. 21.* Lenora, the Vogelberg barrier interior, state before the last repair (2012–2013), the beams were repositioned during previous repairs (e.g. in 1985), the beam with mortises has been dated to the 1860s by dendrochronology, photo: Radek Liška, 2012

This modified beam remains part of the footbridge deck in Lenora, which must now be considered a rare surviving element. Although it has not persisted in the Český Krumlov barrier following numerous repairs of the footbridge, it is depicted in a postcard from 1908. The neighbouring beam, again with carved mortises, which allowed smoother manipulation of the bar screen bars, is noteworthy. It remains unclear whether this beam was a fixed or removable part of the footbridge. Existing literature, after all, pays no attention to practical questions related to the bar screen fitting. The photograph of the Český Krumlov barrier interior evidently dates from a period without timber floating. This is substantiated by the low water level, as depicted in a postcard from the same series and year, as well as the large gaps between the bar screen bars. The question of why there were any bars left at all remains unanswered.

The bar screen (*Rechenspindeln*, *Rechenzähnen*, *Spindeln*, *Sperrhölzern*) represented the part of the barrier that captured floating timber. The origin of the Czech term for this element deserves attention. An adequate translation of the word *Rechenspindeln* can also be *česle* or *česlice*.[59] However, this term today usually refers to a barrier that catches floating debris at the entrance to raceways leading to mills or other hydraulic structures.[60] Sporadically, contemporary Czech literature uses the expression *vřeteno* (spindle),[61] a literary translation of the German *Spindel*. However, it is worth considering

59 ‘Česle = česlo, zbranidlo, jesle, šprle, brlení, prlení, záplava, der Fluthpfahl, die Rechenstange, Rechenspindel, der Rechen- stock, -klotz, der Rechen zum Holzfangen, beim Durchlass, Eisrechen, Rechenzinken; č. plavební, die Flossrechen, košová, Stein- korbrechen, jehlancová, Bockrechen; pažení č., die Rechenverschallung, stěna česlí, die Rechenwand’. KOTT, František Štěpán, *Česko-německý slovník zvláště grammaticko-fraseologický*, Praha 1878–1893.

60 Jungmann referred to *česle* as follows: ‘Česle et česlice, e, f., česlice, pl., bidélce hustě podlé sebe wražené, kde woda na kola teče, aby neřád pod kola se nedostal, a lopatkám neškodil, zbranidla, Mühlrechen, Rechen bei der Mühle vor den Rädern, Schutzrechen’. (Stakes inserted closely together at the point where water falls on the wheels to prevent debris from getting under the wheels and damaging the paddles). JUNGMANN, J., *Slownjk česko-německý*, p. 287.

61 BLAŽKOVÁ, T., *Zapomenuté stopy dřevařů*, p. 175.

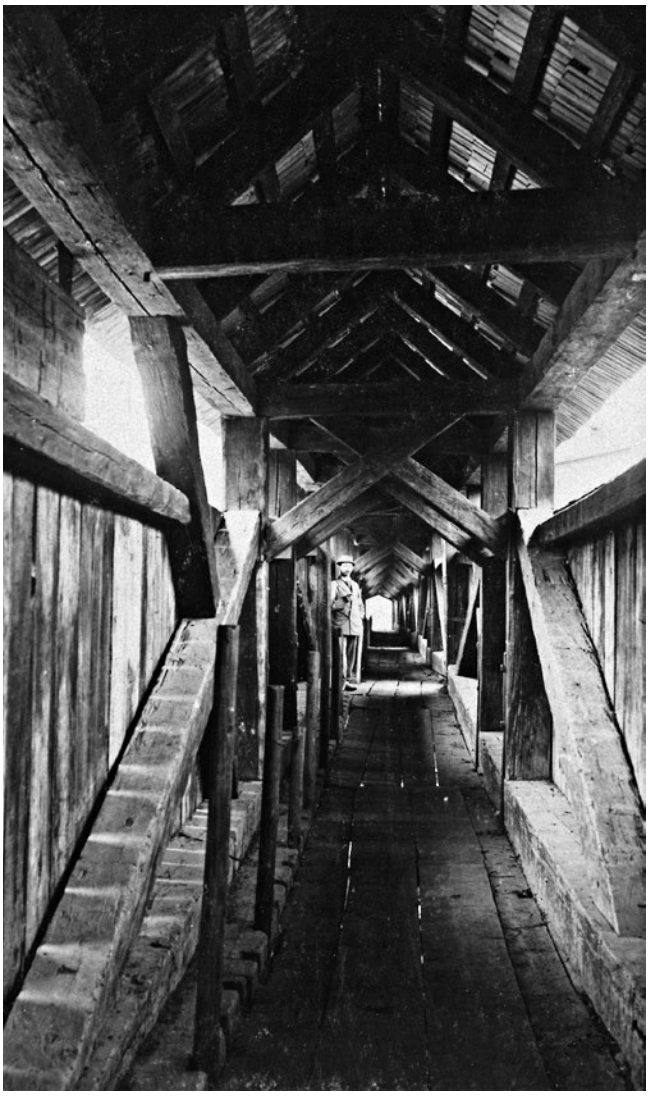


*Fig. 22.* Český Krumlov – Plešivec, the upper barrier interior, postcard from 1908, mortises in the left beam of the footbridge, some with inserted bar screen bars, source: SOkA Český Krumlov, album of the town of Český Krumlov II, sign. II/G/13

whether to use this term in connection with the barrier, because it does not occur in the above-mentioned Czech scientific literature.

The bar screens were made of debarked spruce or larch round logs (as stated in the 1903 textbook, trunks were used for larger barriers) that were either inserted through the load-bearing openings in the footbridge, with the strong end facing downwards or nailed to the footbridge beam in the case of the simple barrier. The gaps between the bars had to be narrow enough to prevent floating timber from slipping through. (The mortises in the Lenora barrier beam are spaced about half a metre apart, and approximately forty bars were positioned alongside the barrier.) If necessary, a wooden ring was attached to the tops of the bars to facilitate their lifting. In barriers that resisted only minor pressure, the bar screens were usually oriented vertically (*senkrechte Verspindelung*, a perpendicular bar screen). When facing greater pressure, the bars were angled against the water surface (*schiefe Verspindelung*). The angle varied depending on the weight and strength of the bar screen. Large round logs (6–8 m long and 20–25 cm thick at the base) could be positioned at a steeper angle (up to 60° against the water surface). Otherwise, a range of 25–30° was used, as oblique as possible. On the riverbed, the bar screen was either unfixed or inserted between two narrow

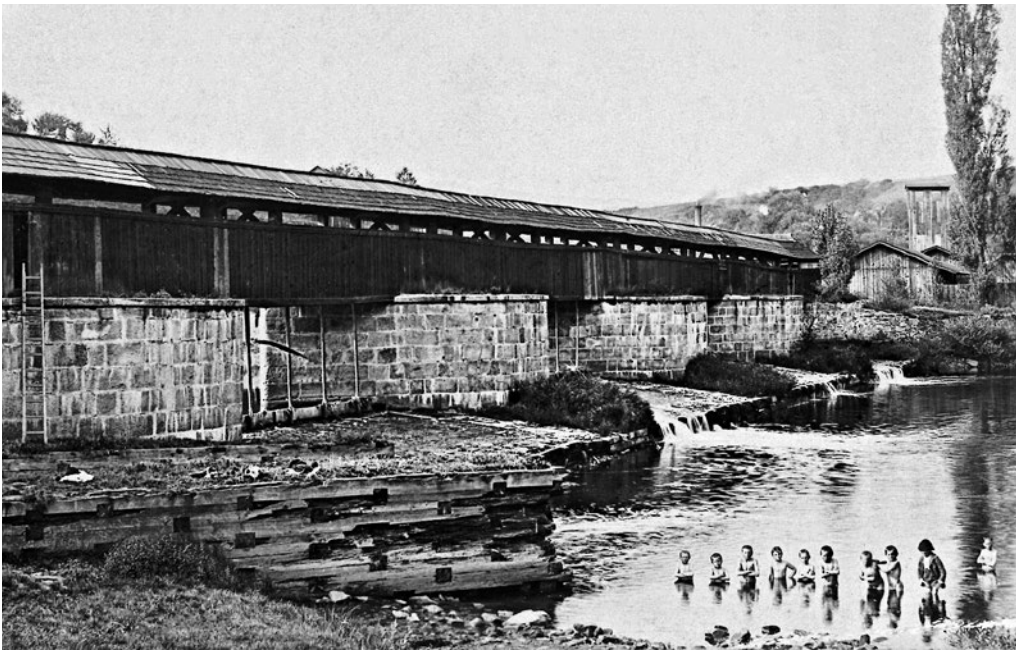


*Fig. 23.* Český Krumlov – Plešivec, the upper barrier, postcard from 1908, view upstream, source: SOkA Český Krumlov, album of the town of Český Krumlov II, sign. II/G/14

beams positioned side by side and adequately embedded (see figs. 15 and 19).[62] The old photographs of the barriers in Český Krumlov (figs. 22 and 23), Hory (Spitzenberg, fig. 17), and the Vchynice-Tetov Canal (fig. 12) show the bars positioned almost perpendicularly. It was similar to the barriers in Lenora and Blansko. It is apparent from the placement of the groundsills in the riverbed almost directly under the beams against which the bar screens were propped and which allowed only a very small angle of the bars (see figs. 8 and 24).

The importance of the bottom-end locking of the bar screen was highlighted in the official design revision for the new barrier on the River Volyňka in 1825 following its destruction by a flood. The most significant shortcoming of the design was the absence of the groundsill (*Grundbaum*[63]) for the insertion of the bar screen (*Spindel*) which could not be placed directly into the riverbed due to the rocky bottom and other obstacles. Consequently, the design was revised.[64] The beams of the groundsills were typically positioned on the riverbed surface and secured with short piles inserted into the riverbed on the front side. As the streambed was occasionally eroded by floods, they could be driven to the bottom.[65] These groundsill beams have survived below the barrier in

62 The forestry textbook from 1903 again uses the term *Streckbäume* for beams embedded in the stream bottom. The Schwarzenberg written sources from the mid-19th century for the first time called this element *Grundbaum* or *Grundschwelle*. SOA v Třeboni, odd. Český Krumlov, fonds Schwarzenberská ústřední stavební správa České Budějovice (1755) 1792–1950, cart. no. 290, inv. no. 783, sign. 21 l, water structures.

63 This element was also referred to as *Grundschweller* or *Streckbaum*. WAGNER, Theodor, *Entstehung, Wesen und Betrieb der auf der Excellenz Karl Graf Buquoyschen Domäne Gratzen in Böhmen bestehenden künstlichen Trift und Flösserei des Brenn- und Rundholzes*, Wien 1904, p. 11; GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, p. 302.

64 SOA v Třeboni, odd. Český Krumlov, fond Schwarzenberg Central Building Authority České Budějovice (1755) 1792–1950, cart. no. 290, inv. no. 783, sign. 21 l, water structures.

65 When building the barrier after a flood in Račí (Mitterberg) on the Vltava near Horní Vltavice (Prachatice District) in 1854, it was recommended to insert groundsills into the riverbed. SOA v Třeboni, odd. Český Krumlov, fonds Schwarzenberská ústřední stavební správa České Budějovice (1755) 1792–1950, cart. no. 290, inv. no. 783, sign. 21 l, water structures.

*Fig. 24.* Lenora, visible ground-sill beams used for fixing the bar screen bars in the reinforced riverbed beneath the barrier, photo: the author, 2024

Blansko near Kaplice (fig. 8). They could also be observed in the documented barrier in Lenora at low water levels and favourable light (see fig. 24); surprisingly, existing literature does not mention them at all.

To reduce the pressure from floating timber, a large, dried spruce trunk (*Schwimmer*) was placed in front of the bar screen.[66] The positioning of the floating beams in front of the bar screen to prevent the logs from slipping through the bars is shown in the photograph of the barrier at Hory (Spitzenberg) near Želnava (fig. 17). In 1926, Jan Kolář described a similar component at the barrier at the beginning of the Vchynice-Tetov Canal: 'Massive octangular beams float in front of the bar screen, tied to chains and preventing the logs from penetrating into the watercourse through the space below the bar screen. The beams have a considerable draught, which can be increased by placing two beams on top of each other. The position of the bridge, and hence the area of the bar screen, ensures that the logs are driven by the beams into the canal mouth. The bar screen is constructed of spruce bars from resilient trees growing in the shade, spaced 40 cm apart and about 8 cm wide at their narrower ends. The device is so efficient that the bar screen can capture plenty of logs accumulated, even during the largest floods.'[67] Nonetheless, even this barrier did not withstand everything. Based

66 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 323–326; GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 301–308.

67 KOLÁŘ, Jan, *Dřevěné mosty kryté v Republice československé se 63 fotografiemi a 30 tabulkami*, Praha 1926, p. 20.

on the record from 1931, surges of water swept the logs stuck on their way to the barrier, where 'due to the rapid rise of the water surface the spindles broke, sending 300–500 cubic metres of timber to the River Vydra at once, and hardly 10% could be saved with great effort.'[68]

Perhaps due to the potential escapement of logs, at least as suggested by the German forestry textbooks, many larger barriers featured double bar screens: one slanted, against which the timber pressed directly, and a perpendicular one behind it.[69] Although the textbooks do not specify the purpose of the second screen, it was most likely a safety measure.

Not only was the bar screen the most vulnerable part of the barrier, but it could also be a dangerous obstacle and lead to flooding due to the risk of being clogged by the accumulated wood, particularly the soaked logs (known as 'drowned' or 'sunken' logs[70]). Therefore, the aforementioned textbooks recommended constructing a regulation barrier to channel the timber into side arms, canals, floating depots, or reservoirs, where it would subsequently be retrieved and stacked in a timber yard. However, not all locations offered suitable conditions for this.

Most of the barriers would lower the bar screens only during timber floating. At other times, the bars were removed and stored on longitudinal beams and footbridges extending behind them.

The bars of the bar screens from the known barriers have not survived. This is probably why existing literature occasionally presents distorted information about this key component of the barriers (if it mentions it at all). Some authors suggest that they took the form of small beams.[71] Perhaps this conclusion was prompted by the right-angled notches in the load-bearing beam, into which the bar screen was inserted. Even without the essential knowledge from the aforementioned textbooks, plain reasoning reveals that, unlike a round log, a small beam was unsuitable for this purpose: its shape would offer greater resistance to water, the cut sides would absorb more water, and it would definitely not better withstand the pressure from water and timber, let alone the further effort in processing the round logs into beams.

The construction of barriers or rakes has evolved over time, resulting in significant technological advancements. Since this transformation exceeds the scope of this study, we at least provide references to the existing literature. For example, the modern barrier in Krampen (now in the village of Neuberg) on the River Mürz in Styria, Austria, was described by Vojtěch Kaisler in 1931, noting a foldable iron rake that was built in Plav on the River Malše according to the design of the engineer Jirsík in 1896.[72]

**Where Did the Covered Footbridge on Barriers Originate?**

None of the authors cited above even indicated that a barrier should or could have a covered footbridge. Yet, it is this component that is often associated with the construction of the barrier by the public, which is most likely due to the covered barriers in Lenora and Český Krumlov. In fact, a covered footbridge is a dispensable part. Where did the canopy covering the barrier originate?

The answer was derived from documents accidentally discovered in the Schwarzenberg archival fonds. In September 1866, the Český Krumlov Building Directorate expressed its opinion on the repair of the barrier at Lenora, referred to as Vogelberg

68 BLAŽKOVÁ, T., *Zapomenuté stopy dřevařů*, p. 175.

69 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*, pp. 323–326; GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 301–308.

70 NEUMANN, J., Ze staré Šumavy, pp. 36–37.

71 For example, JOSEF, D., *Naše mosty*, p. 89, describes the barrier in Lenora as follows: '... the barrier was used to hold floating timber and to quickly release it by pulling out the strong beams that passed vertically through the barrier floor'. Similar information ('the holes in the floor were used to insert the beams') is found in the entry on the Czech Wikipedia, available online: https://cs.wikipedia.org/wiki/Rechle u Lenory [accessed 18September 2024].

72 KAISLER, Vojtěch, Technické zdokonalení vodní dopravy dříví, *Lesnická práce,* 1931, vol. 10, nos. 1–2, pp. 5–34.

(based on the nearby hill).[73] The directorate provided a clear answer to the question of whether the barrier was to be covered with a shingle roof or kept roofless as previously: 'Based on experience, barrier footbridges, particularly their longitudinal beams and bar screens (*Rechenstege und namentlich die Steg- un die oberen Spindelbäume an denselben*), have a significantly longer lifespan when the footbridge on the barrier (*Rechensteg*) is covered with a shingle roof and clad with boards on the sides. Where there is no public road over the covered barrier (*über den gedeckten Rechensteg*), closable doors must be installed at both ends of the barrier to prevent unintentional damage. In the case of open footbridges (*bei offenen Rechenstegen*), longitudinal beams (*Stegbäume*) on the sides and on the top of the barrier should be protected against humidity by shingles, yet an entirely covered footbridge is certainly more durable than an open one. Therefore, we support a complete coverage of the footbridge on the Vogelberg barrier. However, if the footbridge is sometimes flooded, an open footbridge should be preferred.'[74]

The Lenora barrier was indeed repaired based on this recommendation, as evidenced by its current appearance, featuring the preserved roof and timber casing. Similarly, dendrochronological research of the support beams of the footbridge reveals that most of them (including the beam with mortises to insert the bar screen) were made from spruce trees felled between 1865 and 1869,[75] aligning with the quoted archival document.

Given an authentic historical perspective, based on long-term practical experience, the views of some contemporary authors regarding the importance of covered footbridges on barriers remain unacknowledged. The published opinions focus primarily on the most famous structures located in Lenora and Český Krumlov. For example, one can read that the covered footbridge in Český Krumlov, referred to as a 'barrier', served to count rafts, among other things.[76] However, that would hardly be possible because of the height of the timber casing and the absence of window openings in it. The Lenora barrier is reputed to have had a covered footbridge that served maintenance purposes;[77] elsewhere it is noted that this covered footbridge was intended to shield workers from the harsh weather in Šumava.[78] In fact, its barely lit, roofed corridor with sides lined with boards, resembling a shed, complicated the insertion of the bar screen bars into the openings of one of the floor beams and their locking into the groundsill in the riverbed. If the bars were significantly longer than the height of the canopy, it was impossible to insert or pull them out perpendicularly (because of the thickness of the beams). A question arises about how they were properly installed. The answer is given by the precisely executed plan for the repair of the Vltava barrier (now lost) in Hory (Spitzenberg), featuring a covered footbridge from 1929 (see figs. 18 and 19).[79]

73 The clear identification of this barrier is derived from Popis a ocenění stavebních objektů na velkostatku Vimperk from 1859, with its description being introduced by the title (in item no. 129): 'Bei Eleonorenhain. Der Schwemmholz-Fangrechen unterhalb der Glasfabrik am Vogelberge.' SOA v Třeboni, odd. Český Krumlov, fonds Vs Vimperk – nové oddělení knih, Book no. 2789, sign. VI A W gama 6, *Domaine Winterberg. Beschreibung und Abschätzung der Gebäude und Bauobjekte* (1859). The name Vogelberg (Ptáčník in Czech) is captured in an indication sketch of the stable cadastre of Lenora (Schattawa in German) from 1837. NA, fonds Stabilní katastr – indikační skici, sign. Pra 578.

74 SOA v Třeboni, odd. Český Krumlov, fonds Schwarzenberská ústřední stavební správa České Budějovice (1755) 1792–1950, cart. no. 290, inv. no. 783, sign. 21 I, water structures.

75 The dendrochronological samples taken in 2011 (prior to the repair of the barrier) by Ing. Rudolf Tesař, were evaluated by J. Kyncl. The dendrochronological evaluation filed in the file Lenora lávka, ref. no. 3637/PT, in the NPÚ, ÚOP v Českých Budějovicích, archive of files.

76 JOSEF, D., *Encyklopedie mostů*, p. 83.

77 VICENA, Ivo, 'Vývoj lesů na Šumavě v posledních 100 letech', *Lesnická práce*, 2018, 97, no. 7, pp. 24–29, here p. 27.

78 MOŠNA, V. – RENDEK, J., *Krásné mosty*, p. 126. Among various types of bridges, barriers are included in the chapter entitled 'Vltavské rechle. Zastřešené dřevěné objekty "zvláštního určení"' (The Vltava Barriers: 'Special-Purpose' Wooden Structures), which mentions only the barriers in Český Krumlov and Lenora.

79 SOA v Třeboni, odd. Český Krumlov, fonds Schwarzenberská ústřední stavební správa České Budějovice – building designs, design no. 3147, inv. no. 3148, sign. 9 I–36, plan for the repair of the barrier near the village of Hory (Spitzenberg), Markl, 1926.

The beam with mortises for inserting the bar screen was offset from the adjacent beam, creating a manipulation interstice through which the bars of the screen could be inserted at an oblique angle to the desired position and pulled out again. A similar arrangement is illustrated by the photograph of the interior of the Lenora barrier from 1965 (fig. 20).

There is no doubt that roofs and timber casing protected the barrier, as well as – or perhaps primarily – the wooden structures of small footbridges and significant road bridges from adverse weather. A wooden footbridge in Český Krumlov, which crossed the Vltava from the Jesuit College to the monastic garden, serves as an example of smaller, covered footbridges. It was established by Wilhelm von Rosenberg in 1591. It remains unknown whether it was covered at that time. After a flood in 1666, it was rebuilt, roofed, and lit by eleven windows. Though it reportedly was not as strong and large as the previous bridge, it was 'prettier and sturdy enough to be driven over by both horsemen and carriages'.[80] Its appearance is known from a late 18th-century *veduta*.[81]

A bridge over the River Ohře in Radošov ranks among the most significant covered bridges. It was part of an ancient route (also referred to as Via Magna) to Prague, and the site of the strategic crossing of the Ohře initially fluctuated between Radošov and Velichov. In Radošov, the original ford was replaced by a bridge in the 1360s, and its form changed due to reconstruction after floods, fires, accumulated ice during the spring thaw, damage caused by the army, rotting, and other factors. The first record of the bridge being roofed dates to 1567. During one of the subsequent repairs in 1743, a note on the bridge designs, one with a roof and one without, stated that the expected lifespan of the wooden beams of an unroofed bridge was only ten years.[82]

**Removal of Timber near the Barrier**

When the driftwood reached the barrier, it had to be quickly retrieved, washed, and placed in timber yards located near the barrier, as outlined in a textbook published in Berlin in 1921. If the logs did not naturally float to land, they had to be extracted. Long pieces could be partly rolled and partly pulled out with the assistance of horses, steam-powered lifts, or slides. Firewood was lifted by grapples or by a chain of human hands, which carried each log from the water to the land. Occasionally, paternoster (*Paternosterwerke*) facilities were employed. If the wood was intended for small merchants, it had to be sorted into classes immediately after removal from the water.[83] Approximately 300–350 workers from South Bohemia pulled out the wood from the massive Partenstein barrier at the end of the Schwarzenberg Navigational Canal, where most of the firewood destined for Vienna ended. Paid supervisors monitored the proper sorting of timber between five and seven o'clock in the morning.[84] Pulled-out firewood

80 SCHMIDTMAYER, Rudolf, Krummauer Geschichten aus der Zeit vom Jahre 1584 bis zum Jahre 1720, *Mitteilungen des Vereine für Geschichte der Deutschen in Böhmen*, 1912, vol. 50, pp. 373–405, here p. 375 and p. 377.

81 The journeyman's certificate with the *veduta* of Český Krumlov from the 1780s was published by MÜLLER, Jan, '"Město bělalo se..." Poznámky k ikonografii Českého Krumlova', in: *Český Krumlov. Od rezidenčního města k památce světového kulturního dědictví*, GAŽI, Martin – PAVELEC, Petr (eds.), České Budějovice 2010, pp. 843–876, here p. 859.

82 ZEMAN, Lubomír, 'Dřevěný krytý most přes řeku Ohři v Radošově opět stojí', *Zprávy památkové péče*, 2004, 64, no. 2, pp. 113–117. The author obtained historical data about the bridge from the archival research of Martin Ebel and Jaroslav Fiala.

83 GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 319–320.

84 This information was stated by the Schwarzenberg navigation director, Ernest Mayer, in a document that was published in 1828 in a continuation of the second edition of the magazine *Allgemeine Österreichische Zeitschrift für den Landwirth, Forstmann und Gärtner*. It was published in Vienna in 1831 as a separate publication entitled *Beschreibung der großen Schwemm-Anstalt auf der Herrschaft Krummau in Böhmen*. The work was first translated into Czech by Hynek Hladík as *Popis velkého plavebního zařízení na panství krumlovském v Čechách* and published in: ŠTEMBERK, Josef (ed.) – MAYER, Ernest – HLADÍK, Hynek, *Schwarzenberský plavební kanál – historie a současnost*, Vimperk 2013, pp. 38–39.

was transported on wheels or low carts to its destination, and round logs were chopped and stacked to the required sizes.[85] In the Czech lands, it was 80 cubic centimetres or one cubic metre.[86]

**Timber Yards**

The timber yard (*Holzlandeplatz*, *Holzgarten*) was in close proximity to the watercourse. The area was expected to be exposed to wind and draught and ideally covered with pebbles, sand, or grit at least half a metre deep, or equipped with a solid stone floor. The ground had to be several metres above the highest water level and secured against floods. If the yard was arranged so that driftwood could naturally land on it, it should have included a sufficient slope, closable by sluice gates and walls. In the case of small quantities of wood, riverside land located against the current above the barrier was sufficient for its storage.

For larger timber yards, it was practical to include a side canal (occasionally further branched) that turned off from the main watercourse. A regulation barrier had to be installed at this turn-off, the entry to the canal required a sluice gate, and another barrier was positioned before it emptied back into the main watercourse. The stacking of timber began at the farthest points from the water, paying attention to saving as much space as possible and leaving gaps because of draught between the stacks which were to be built as stably as possible. The wood had to be underlaid to separate it from the humid ground. After stacking, the firewood was numbered and measured. Regarding the remaining wood (not firewood), the entire trunks were sometimes stored for several years. The best method was to fully immerse them in water which had to be refreshed by a gentle tide to prevent the wood from rotting and being infested by insects. Afterwards, it could be cut easily.[87]

**The Barriers on the Buquoy Timber-Floating Route on the Rivers Černá and Malše**

The Buquoys began floating timber (whether untied or assembled into rafts) in the Nové Hrady area along Pohoří Brook and the rivers Černá and Malše in the 1780s.[88] This article focuses exclusively on log driving. Based on the description from 1795, it included timber that was either too thin or too thick for chopping. Therefore, it was cut into logs measuring two or three feet (0.63 m or 0.95 m) and subsequently floated down to České Budějovice for sale. The locations in between, such as Kaplice and Velešín, also needed wood supplies, so four barriers were installed on the timber-floating route to catch the wood, pull it out, and stack it in timber yards. Downstream the timber-floating route, which begins on Pohoří Brook below the eponymous pond, the first barrier was located on the River Černá in Ličov, while the next one was situated at Ponholz near Blansko, before the Černá emptied into the Malše. On the Malše, the barriers were near the Velešín mill and at the end of the timber-floating route before České Budějovice.[89]

Riemer's report from June 1783 provides an overview of the first floating of fathom-long timber (*Klafterholz*) on the aforementioned watercourses during 1780–1783. It states that the route measured 16.739 Viennese *klafters*, which is almost 32 kilometres. The wood (mostly soft) was cast into the water beneath the Pohoří Pond, with amounts fluctuating each year (612–2,481 *klafters*). The losses during transit varied, resulting in about 5–12% less wood being retrieved at the barriers. From 9 to 13 April 1780, the wood was floated only to the first barrier at the Ličov timber yard. A year later, from 23 to 28 April 1781, a smaller portion of the floated timber was retrieved in Ličov, while the remainder continued to the paper mill (in Blansko), with only 50 *klafters*

85 GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 319–320.
86 *Lesnická čítanka*, Písek 1930, p. 197.
87 GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, pp. 315–317.
88 BUREŠ, M. – PAŘEZ, J., Plavení dřeva, pp. 679–686.
89 RIEGGER, Joseph Anton, *Skizze einer statistischen Landeskunde Böhmens, II. Heftchen. Einige Beylagen zum II. Heftchen*, Leipzig – Prag 1795, pp. 29–30.

removed. The largest portion of the floated logs and timber was captured at the Ponholz barrier. Between 8 and 19 April 1782, timber was first floated all the way to the Velešín barrier. Shortly afterwards, from 22 to 28 May, a small amount of timber was floated, with a portion retrieved in Ličov and the remainder in Pohholz. The first winter floating, from 4 to 9 November of the same year, was again to Ličov. In 1783, the first logs from the Buquoy forests arrived at České Budějovice. Floating started on 7 April at the Velešín barrier. They began pulling the logs out at the České Budějovice barrier on 15 April, and to their amazement, nearly 75 *klafters* of additional wood arrived. The timber from the Pohoří forests travelled the entire timber-floating route just a few days later. Floating lasted three weeks, from 23 April to 13 May 1783, with only one stop at the Ličov barrier.[90]

The correspondence regarding the initial trials of timber floating during 1781–1783 mentioned another barrier located on Pohoří Brook in Pohorská Ves, which also included a timber yard.[91]

Another previously unknown barrier was found on the River Černá at the current road bridge in Černé Údolí (Schwarzthaler Brücke). This information dates back to the end of the Nové Hrady timber floating era and was noted in the timber floating programme by the Buquoys in 1931.[92] However, it remains unclear why the Buquoys' forester, Theodor Wagner, omitted this barrier in his description of the timber-floating route from 1904.[93] Perhaps it had not yet existed?

It arises from Wagner's publication that two of the original barriers established in the late 18th century were situated in different locations in 1904. The barrier in Ličov was moved further against the Černá current, in front of its confluence with Pohoří Brook, to Třebíčko near Gabriela, before Benešov nad Černou. On the Malše, the barrier near Velešín was removed, and a new one was constructed downstream at Plav, which was modernised in 1896. The Buquoys' forester recorded all the remaining barriers: 1) The barrier in Gabriela (*Rechen in Gabriela*) was a simple capturing barrier without a weir (*Fangrechen ohne Schwellung*). It consisted of a groundsill at the bottom of the brook (*Grundschweller*, *Streckbaum*) and a longitudinal beam (*Spindelbaum*), which was supported at both ends and secured by chains on piles for added stability. A bar screen (*Spindeln*) was set against this stringer. 2) The barrier in Ponholz (*der Ponholzer Rechen*) was positioned obliquely (*schiefer Rechen*) to capture a greater amount of wood. It ranked among solid collecting structures (*Fanggebäuden*) with stone block piers.[94] 3) In Plav, a provisional barrier was installed annually during timber floating until 1895, with a raft secured with chains placed in front of its driven piles. The local steep rocks formed a narrow valley where the Malše bent sharply to the left, causing the water to press against the rocky curve. In 1895, this natural catcher (*Fang*) was equipped with a durable iron barrier designed by the country's construction administrator Jirsík.[95] The right-bank rock served as a natural pier, while two stone-block piers were built on the opposite bank and in the middle of the river, where all three supports were tied together with iron girders. Four moving iron grates reaching the river bottom were suspended from the girder between the rock and the central pier. If lowered, a chain secured them

90 SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady (unprocessed), timber rafting file, statement on log floating from 1780–1783 (Scheitter-Flössungs Extract), signed by Johan Franz Riemer, 1 June 1783.

91 SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady, unprocessed, timber rafting file, reports by Karel Josef Pieringer on timber floating from 9 November 1781, 4 May 1782, and 8 August 1783.

92 For further details, see the article VYSKOČIL, Aleš – FLORIÁN, Jaromír – SVITÁK, Zbyněk – BUREŠ, Michal, Plavení dřeva na Novohradsku ve světle meziválečných plavebních programů a reliktů dochovaných v krajině, in this issue of the magazine.

93 WAGNER, T., *Entstehung, Wesen und Betrieb.*

94 Cf. Wagner's further description in the following part of the text.

95 The year 1895, stated by Wagner, refers only to the origin of the project for the new barrier which was not permitted and constructed until 1896. Státní okresní archiv České Budějovice, fonds Okresní úřad České Budějovice, cart. no. 1017, collection of documents and maps of the water book, no. 322, file on the construction of the barrier on the River Malše near Plav (1895–1896).

from their potential opening from the back. Only the sturdy wooden poles of the bar screen were installed between the central and left piers, as the water did not exert strong pressure there. According to Wagner, this barrier, built for 48 thousand crowns, was the first of its kind and perhaps the only one in Bohemia and Austria. Its purpose was to collect all the wood destined for the České Budějovice timber yard, which would subsequently release it gradually. Moreover, during floods, it prevented the timber from washing out of the river and protected České Budějovice from immense damage (that would otherwise have occurred), given that the retained timber formed a continuous belt three to four kilometres long before the barrier. 4) The barrier in České Budějovice, above the so-called Špitálský Weir, was dismantlable (*zerlegbarer Rechen*) and was designed to capture smaller amounts of firewood released in small portions by the main barrier in Plav (about 2,000 $m^3$). The main structure of the barrier consisted of four rows of piles driven into the riverbed and connected by bridge trestles. Floating timber was not caught by the bar screen but rather by strong tree trunks laid on the water and tied together (*Langholzgestöre*). These were positioned adjacent to the piers and secured with chains. During imminent floods, these chains were tied to the riverbank piles to alleviate the pressure on the piers. The trunks rose and descended in relation to the water level. After the timber-floating period, this barrier was dismantled.[96]

**The Ponholz Barrier in Blansko**

In written records, this barrier was consistently referred to as Ponholz which also concerns the sporadic Czech-written literature.[97] Constructed in 1780, this timber-floating device was named after the local forest, as the barrier's constructors regarded the village of Blansko, located two kilometres away, as too distant. The name was deeply rooted and long established. In the stable cadastre of the village of Blansko, the name 'Bomholz' marked the land near the current Jarošov Pond, which was situated somewhat away from the newly built barrier, while fields and meadows 'Semenze' and 'Jamki' lay in its proximity, on the left riverbank of the Černá.[98] However, these Czech names appear to be of later origin because the 1758 map reveals only the name 'das Panholz',[99] in the same location as on the stable cadastre map.[100]

The name Ponholz, or Pohnholz, near Blansko first appeared in written sources in 1613 when Jan Jiří of Švamberk sold it along with other land to the town of Kaplice. At least since the late 16th century, the local route near Benešov nad Černou, the site of a future settlement that later became part of this town, bore the same name. Ponholz is a slight corruption of the word Bannholz (*Bann* = ban), which designated a forest where only its owner or authorised users were entitled to hunt, cut trees, and graze cattle.[101]

The naming of this barrier suggests that these devices, when located outside villages and towns, adopted local geographic names, which may be completely forgotten

96 WAGNER, T., *Entstehung, Wesen und Betrieb*, pp. 11–14.

97 KLOUDA, Josef, 'Plavení dříví po Malši (vzpomínky současníka)', in: *Výběr z prací členů Historického klubu při Jihočeském muzeu v Českých Budějovicích*, 1965, vol. 2, no. 1, pp. 14–21, here p. 20: '... the logs were partly caught in Benešov and partly in Ponholc near Blansko.'

98 NA, fonds Stabilní katastr – indikační skici, sign. BUD 253, Map of the Stable Cadastre of Blansko from 1826.

99 SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady – maps and plans, maps nos. 2736–2758, Collection of maps of Pohoří Brook, the River Černá, and the River Malše for timber floating from the Nové Hrady estate to České Budějovice, E. J. Paurnöpl, geodesist, 1758, map no. 2748: 'das 13. Stuck des Schwartzau flus des driten Thails'.

100 NA, fonds Stabilní katastr – indikační skici, sign. BUD 253, Map of the Stable Cadastre of Blansko from 1826.

101 KALNÝ, Adolf, 'Nové datum novohradského urbáře z roku 1553', *Jihočeský sborník historický*, 1966, vol. 35, pp. 183–186; SAILER, Herbert, *Kaplitz. Geschichte eines Städtchens im Böhmerwald. I. Teil. = Kaplice. Dějiny jednoho městečka na Šumavě. 1. díl*, České Budějovice 2017, p. 103; KLIMESCH, Mathäus, Die Ortsnamen im südlichen und südwestlichen Böhmen, *Mitteilungen des Vereines für Geschichte der Deutschen in Böhmen*, 1908, vol. 47, no. 2, pp. 125–219, here p. 189; MÄRTEN, Johann, *Heimatskunde des Bezirks Kaplitz*, Krummau 1894, pp. 130–131.

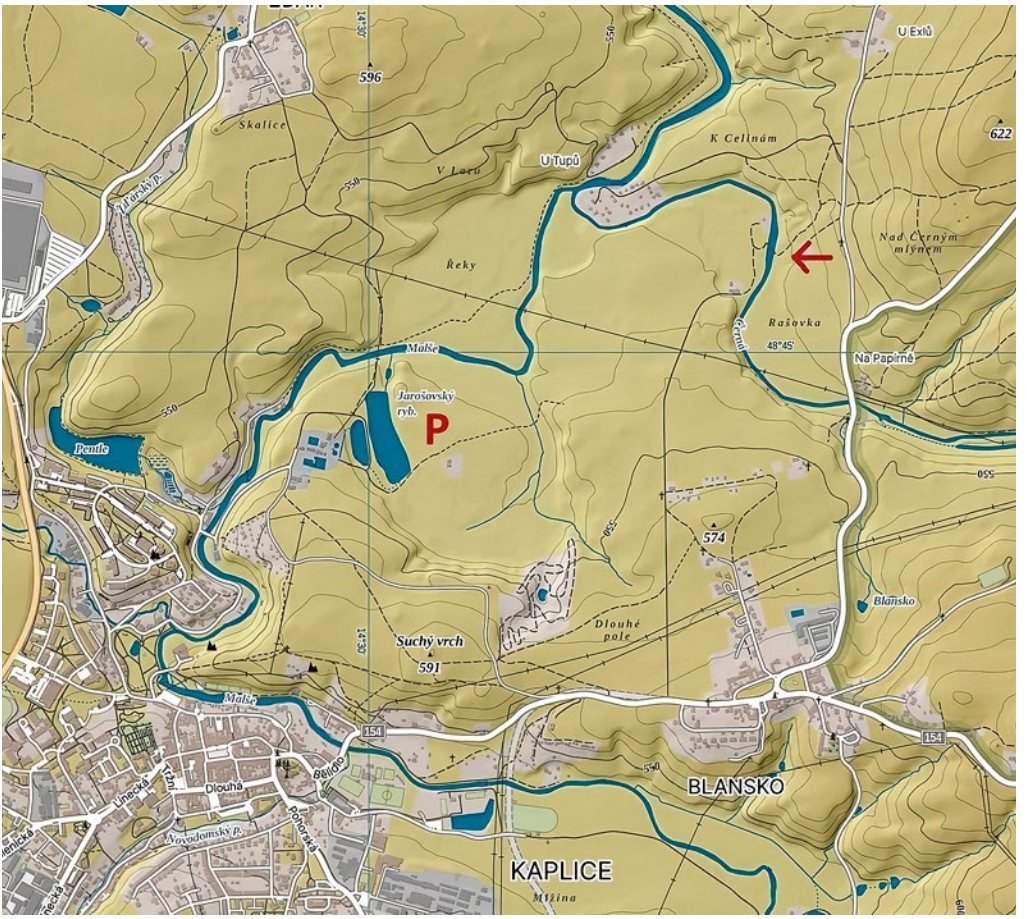



*Fig. 25.* The situation of the Ponholz barrier outside Blansko near Kaplice on the current map, with the highlighted site (P) is referred to as Ponholz in 1758 and 1826; the arrow indicates the current position of the barrier remainder, source: mapy.cz

today or exist only in their Czechised variant. The barrier in Lenora, which is concealed in archival documents under the name 'Holzfangrechen Vogelberg', is a similar case, as it was named after the neighbouring hillock currently known as Ptáčník (Bird's Hill).[102]

**The Construction of the Oldest Barrier in Ponholz**

The Ponholz barrier near Blansko captured its first logs on 28 April 1781.[103] The appearance of this barrier can be viewed in a design from 10 October 1780. Apparently, this plan served as a manual for constructing other rakes along the Nové Hrady timber-floating route. Our hypothesis is supported by the title 'Layout and Design of the Newly Established Barrier on the River Malše' and the fact that this design is perforated, suggesting it was copied. A hand-written name, 'bey Bohnholz',[104] was added to the title on the design, indicating that it was also used for constructing the barrier on the River Černá near Blansko. The question remains whether the size of the barrier in the design

102 For further information, see note 73.

103 SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady (unprocessed), timber rafting file, statement on log floating from 1780–1783 (Scheitter-Flössungs Extract), signed by Johan Franz Riemer, 1 June 1783.

104 'Grund und Aufriess über die in den Molschiner Bach neu aufzurichten kommende Holtz Rechln bey Bohnholz'. SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady, unprocessed, timber rafting file. (The plans in the file are unregistered and lack signatures.)

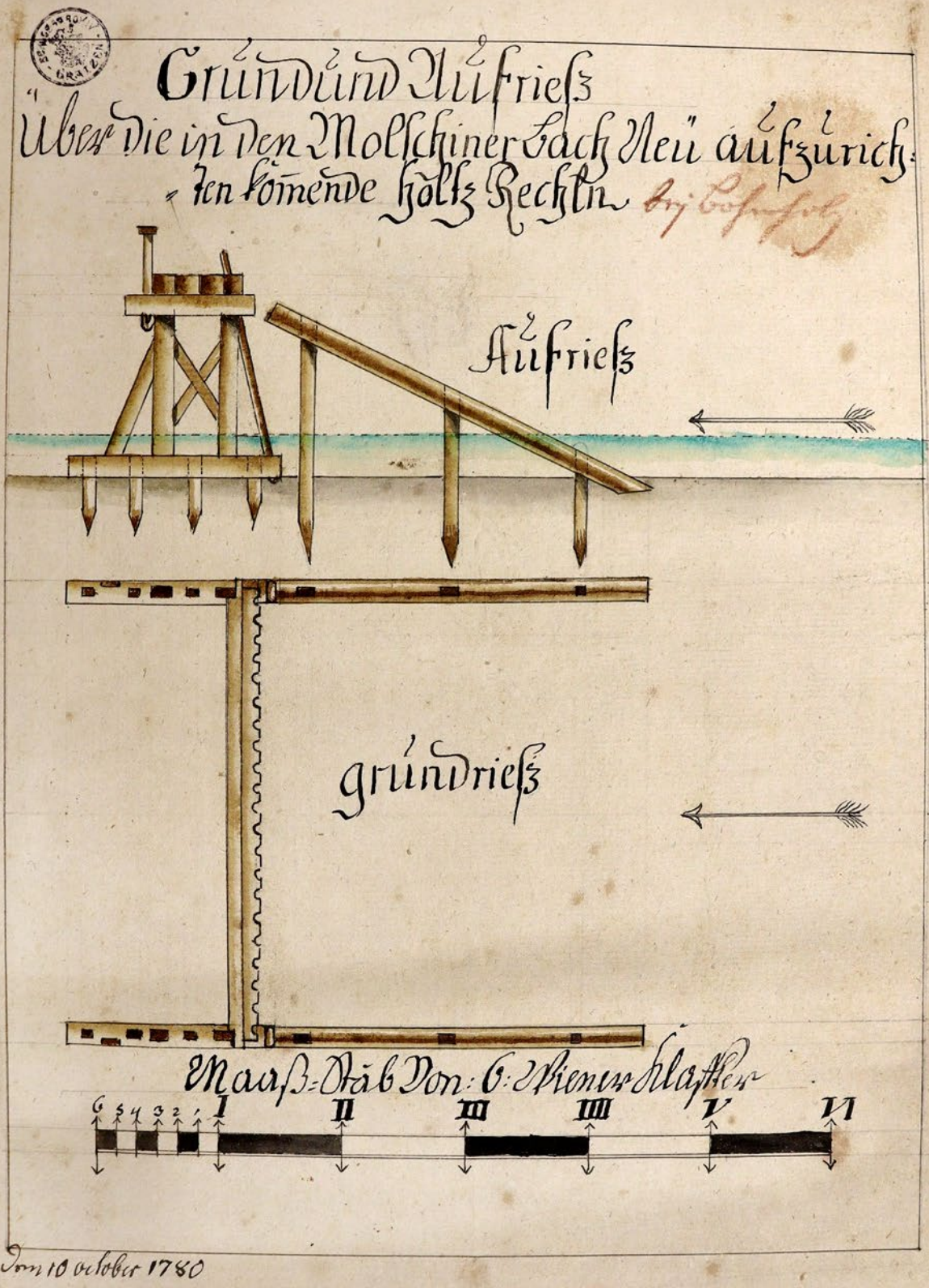



*Fig. 26.* Plan of the Ponholz barrier outside Blansko near Kaplice, Johan Franz Riemer, 1780, source: SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady, timber floating file

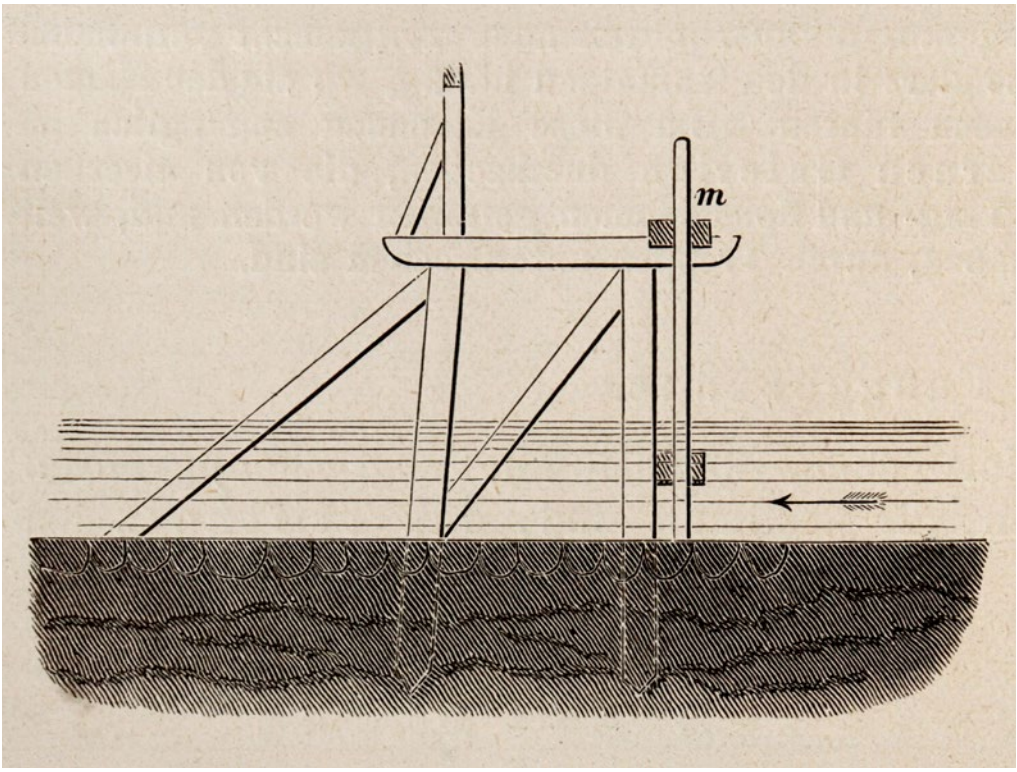



*Fig. 27.* A sample of simple barrier construction, source: GAYER, Karl – FABRICIUS, Ludwig, *Die Forstbenutzung. Ein Lehr- und Handbuch*, Berlin 1921, p. 302

corresponded to a concrete situation or was merely a fundamental guideline. According to the scale (in Viennese *klafters*[105]), they were just over three metres high. However, the size marked in the design (almost seven and a half metres) does not correspond to the site at all, because it would not have been sufficient to get over the River Černá (the clear width of the new barrier in Ponholz, whose side piers aligned with the Černá banks, was nearly 21 metres in the first version of the design from 1858[106]).

The construction appears to have been a common type of simple barrier used for centuries. This information is derived from a drawing that illustrated the explanation of the development of this type of timber-floating device in a forestry textbook from 1921.[107] Typologically, the two designs are very close. The textbook drawing features a perpendicular bar screen with bars passing through drilled-out openings in the longitudinal beam of the footbridge, with their bottom ends supported by a stringer fastened to piers near the bottom of the watercourse. However, the top of the bar screen in Blansko rested against mortises gouged in the leading edge of the beam, as demonstrated in the layout design. The bars of the Ponholz barrier were approximately three and a half metres high. The method of locking the bottom ends of the bar screen is not apparent from the design; perhaps their builders were supposed to prop them against the riverbed.

This first barrier in Ponholz stood for twenty-five years about one hundred metres downstream from the current barrier bridge. In 1799, the master carpenter Mathias Mittasch, who came from the Buquoys' town of Rožmberk nad Vltavou, was hired to repair

105 1 Viennese *klafter* = 1.896 m.
106 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, Plan for the construction of a new barrier in Ponholz, Bažant, 1859.
107 GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, p. 302.

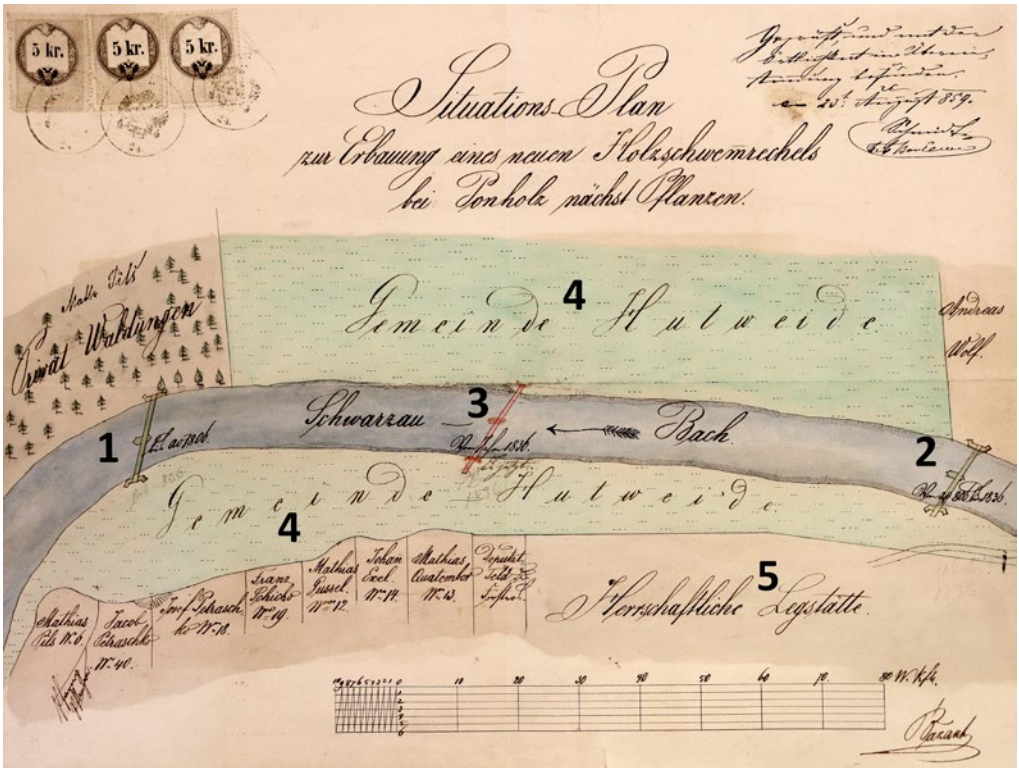



*Fig. 28.* The situation plan for the construction of the new Ponholz barrier outside Blansko near Kaplice, 1859, source: SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10. Legend: 1 – the position of the barrier built in 1780/1781, which remained on the site until 1806; 2 – the position of the barrier built in 1806, which remained on the site until 1836; 3 – the position of the wooden barrier built in 1836, which was replaced by a new barrier with stone piers in 1859/1860; 4 – municipal pastures; 5 – manorial timber yard

them. The Buquoys frequently commissioned work on the Nové Hrady timber-floating route from him: On 11 March 1799, the Buquoy clerk Janský reported to the manor lords that Mittasch had chopped wood for a new reservoir at the Huť Pond and for the repair of the Ponholz barrier in Ličov. The Buquoy Timber-Floating and Construction Directorate concluded a contract, signed in the Soběnov gamekeeper's lodge on 15 March 1799, with Mittasch for the construction of the Ponholz barrier. Mittasch vouched for the building and necessary craftsmen as well as labourers and promised to carry out and complete the building in the summer of that year. He was to receive 119 guldens and 30 kreutzers for the work, including the design of the Ponholz barrier, which he also drew up. The sum was to be paid to him in two instalments: 40 guldens during the construction and the rest after its completion and inspection by the manor lords. Wood from the Kohout Forest[108] in the Soběnov forest district was designated for the construction of the Ponholz barrier, for which the price of delivery was also set: 14 long soft trunks, 54 kreutzers each, 73 mid-sized soft trunks, 39 kreutzers each, and 32 small soft trunks, 3 kreutzers each. The trunks, along with other materials for the repair of the Ličov barrier, were to be delivered from the forest to the weir near Ličov Mill (Hauslmühlwehr) by four subjects who had previously applied for this job. On the same day, 15 March 1799, they committed contractually to deliver the material to the intended building sites, where removal from the forest was to be confirmed by the Soběnov forest district gamekeeper and delivery to the construction site was to be confirmed by the master carpenter Mittasch from Rožmberk. Only after this process would they receive their wages.[109]

108 The summit of Kohout Hill is about 6 km from the Blansko barrier.
109 SOA v Třeboni, fonds Vs Nové Hrady, unprocessed, timber rafting file.

The future destiny of the barrier becomes apparent from the situation plan of 1858. However, we were unable to verify the years marking the transfers of the Ponholz barrier in other sources. As indicated, the initial barrier was demolished in 1806 and rebuilt on a different site about 250 metres upstream. The new site was chosen 'to facilitate the removal of floating timber'.[110] The barrier remained there until 1836 when it was moved approximately 150 metres down the river. The described relocation of the barrier was plotted in the situation plan of 1858, which illustrated its oblique position to the river flow.[111] This positioning was advantageous because of the reduced pressure from water and driftwood on the bar screen. In all cases, the barrier was fully wooden. When the last one, established in 1836, required repair after more than twenty years, the Buquoy timber-floating authority began to construct stone piers for a new, increasingly sturdy barrier on the same site in 1858.[112] The plan further indicates the location of the Buquoy timber yard on the flat left bank of the Černá, yet with a wider strip of municipal land between the timber yard and the river, used as pasture.

**The Construction of the Ponholz Barrier during 1858–1860 and a Dispute with the Village of Blansko**

The information regarding the origin of the present-day barrier in Ponholz is known only because of the dispute that arose over its construction. When the Buquoy timber-floating authority learned that the poor condition of the existing barrier (*Holzrechen*, *Rechen*) no longer guaranteed the effective collection of wood, they decided to build a new and sturdier one. In 1858, they commenced erecting stone piers in the River Černá. However, they proceeded without obtaining a building permit![113] It should be noted that in this respect, the clerks of the Buquoy estate were very sparing in their actions and frequently evaded the legal order established after the end of the patrimonial administration. This was attested to by the numerous complaints from the owners of waterworks and other interested parties about illegal constructions carried out or initiated by the Buquoy estate authority on the Nové Hrady navigable watercourses.[114]

When the inhabitants of Blansko discovered that a stone pier for the new barrier was being installed in the middle of the Černá riverbed during the autumn of 1858, they expressed concern over the narrowing of the river's flow cross-section. They feared that, in the event of high water, municipal land would be flooded and destroyed, prompting the mayor of the village to request a solution from the district court in Kaplice on 25 October 1858. A month later, the court summoned the economic directorate of the Nové Hrady estate to discontinue the construction under the penalty of 10 guldens of the Convention currency unless they obtained a permit from the regional authority for which they had to apply first.[115]

110 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, a letter from the Nové Hrady estate administrator from 8 September 1859 to the České Budějovice Regional Authority (the correspondence regarding the dispute over the construction of the new barrier in Ponholz with the village of Blansko).

111 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, a situation plan for the construction of the new barrier in Ponholz near Blansko, 1858.

112 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, a situation plan for the construction of the new barrier in Ponholz near Blansko, 1859.

113 The entire case is documented in SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, the file including the correspondence regarding the dispute over the construction of the barrier in Ponholz during 1858–1860 among the Nové Hrady Estate Authority, the Kaplice District Authority, the České Budějovice Regional Authority, and the village of Blansko.

114 There were indeed quite a few such cases. To illustrate one in particular: in 1877, two mill owners in Benešov nad Černou complained that the Buquoy Navigation Authority had two weirs completely rebuilt above their mills to gather the water, which was subsequently discharged during timber floating, helping to raise the water level. However, the mill owners lost water and, consequently, their earnings during the one or two days when the weirs were dammed up before timber floating commenced. Neither the millers, nor the relevant authorities, who then duly resolved this case with the Nové Hrady Estate Authority, were asked for their consent regarding the construction of the weirs. SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 17.

115 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, the file including the correspondence regarding the dispute over the construction of the barrier in Ponholz during 1858–1860.

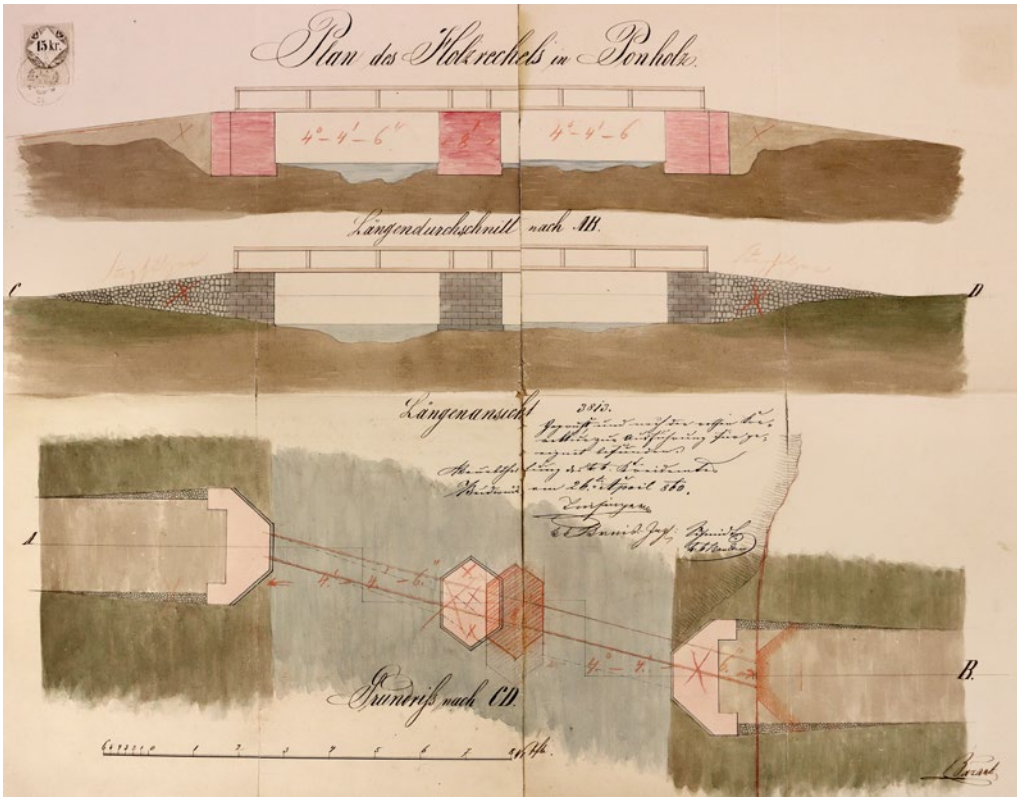



*Fig. 29.* A plan for the construction of the new Ponholz barrier, Bažant, 1859, corrections following an official meeting are marked in red and areas are hatched; the plan was approved by the regional authority on 26 April 1860, source: SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10

The counts' administration of the Nové Hrady estate did not submit an application for the permit, including a design of the intended structure, to the Kaplice District Authority until 4 July 1859, more than half a year later. It seems they intended to address the issue after the spring timber floating during which they still used the old barrier. The district authority forwarded this application to the regional authority, which requested a situation plan with the designated land of the neighbours. The administration sent the required draft on 8 August 1859 with a plea to process it as quickly as possible, on the grounds that 'due to the late season, construction would start late anyway'.[116]

Subsequently, the regional authority convened a local investigation for 23 August 1859. It was held in the Buquoys' gamekeeper's lodge in Ponholz near Blansko. The authority also invited the owners of the neighbouring land, largely the inhabitants of Blansko. The first item on the agenda was to design a new barrier aimed at reducing the flow of water in the river. After the measurement, it came to light that above the barrier, Černá Brook was 9° 3' 0" (9 Viennese *klafters*, 3 feet and zero inches,[117] equalling about 18 m) wide, while at the site of the planned construction, it measured only 9° (about 17 m). When deducting the width of the intended pier 1° 2' 0" (about 2.5 m), only 7° 4' 0" (about 14.5 m) would have remained for water flow. To achieve a normal flow rate, it was necessary to move the right-bank pier by 1° 5' 0" (about 3.5 m) deeper into the bank, select a forebay to widen the brook bed and level the bay behind the

116 SOkA Český Krumlov, fond OÚ Kaplice, cart. no. 10, the file including the correspondence regarding the dispute over the construction of the barrier in Ponholz during 1858–1860.

117 The Viennese units of measurement were valid during 1764–1876. The following abbreviations were commonly used for these units: 1° = 1 fathom (Klafter) = 1.896 m; 1' = 1 foot (Schuh) = 0.316 m; 1" = 1 inch (Zoll) = 0.026 m.

proposed pier positioned on the brook bank. Instead of backfilling, access to the bank piers was to be secured by wooden footbridges (*durch Steghölzer*), same as in the existing situation, to ensure the unimpeded exit of water in the event of a major surge. These changes were marked in the plan submitted by the manor lords which survived as part of the document.[118]

The village of Blansko agreed to the construction, but only in exchange for compensation for the land on which the barrier piers were to be built and for the damage caused to the grass. They requested three cubic *klafters* (*Raumklafter*, equalling 20.5 $m^3$) of hard wood thirty inches (80 cm) long, and if hard wood was not available, four cubic *klafters* (27.3 $m^3$) of soft wood of the same length. Furthermore, they requested oversight of the banks before and after timber floating along with repairs for potential damage caused by driftwood. The owners of local fields also consented to the construction but objected to any damage caused by the construction or timber floating. The representatives of the Nové Hrady estate were unprepared for the requirements raised by the village, as they had not familiarised themselves with the original contracts regarding the entire process of timber floating and storage. They promised to do so and would require the consent of the estate owner, Jiří Jan Jindřich, Count of Buquoy. Before the end of the hearing, they once again emphasised the urgency of promptly constructing the barrier due to the autumn timber floating at the beginning of October.[119]

Two weeks later, on 8 September 1859, the administrator of the Nové Hrady estate provided the regional authority with a detailed elaborate explanation of the estate's right to utilise the municipal pasture for timber floating. He needed to review the commission protocol, compiled by the regional authority on 25 March 1784, i.e. after the provincial authority had permitted timber floating for the Nové Hrady estate.[120] The protocol of the regional authority primarily addressed compensation for the owners of land, waterworks, and others who suffered damage from timber floating. Consequently, the estate rented a portion of the municipal pasture due to the removal of floating timber, while the village kept a strip of the pasture for driving cattle through. They paid the village of Blansko 4 guldens for this (1 gulden and 68 kreutzers of the new Viennese currency). This arrangement lasted only until 1806 when the barrier was relocated to the land of Mr Wolf, a resident of Blansko. The estate compensated him annually with one *klafter* of wood until 1857, even though the barrier had been moved to its current location on the municipal pasture starting in 1836. The village of Blansko would not receive this one *klafter* of wood until as late as 1858. The Nové Hrady administrator regarded the current demands of the village of Blansko as excessive. He argued that the České Budějovice Imperial and Royal Local Committee for the Purchase and Modification of the Land Burden, pursuant to the Imperial and Royal Patent of 1852, imposed on the village of Blansko a duty to inform the superior of the Imperial and Royal Political Office about any potential compensation for damage within fourteen days after the termination of timber floating. He additionally emphasised that wood from the forests of the counts in the districts of Hojná Voda (Heilbrunn), Bělá (Zirnetschlag), Pohoří (Puchers), and Lužnice (Luschnitz) was always floated to the timber yard located in Ponholz in the village of Blansko, established in 1780, in early spring to partially use the water from melted snow. At that time, however, the municipal pasture, which was used for removing driftwood for a maximum of twenty days, seemed to be of no use, in his opinion. Therefore, he again marked

118 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, the file including the correspondence regarding the dispute over the construction of the barrier in Ponholz during 1858–1860.

119 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, the file including the correspondence regarding the dispute over the construction of the barrier in Ponholz during 1858–1860.

120 The original and copy of this protocol have survived and are both stored together in SOA v Třeboni, odd. Třeboň, fonds Vs Nové Hrady, unprocessed, timber rafting file. The protocol was drawn up successively on 23–27 March 1784, as it was necessary to record the method of compensation for all parties involved. The protocol with the village of Blansko was created on 25 March 1784.

the requirements of the village of Blansko for annual compensation in the form of three *klafters* of hard wood or four *klafters* of soft wood, equalling 20 guldens of the Viennese currency according to the price of wood, as not only excessive but even unfathomable. The wood was floated at high cost from the manor lords to the Ponholz timber yard to provide firewood for Kaplice and its surroundings, as well as for the inhabitants of Blansko. Nevertheless, the manor lords were willing to pay the village of Blansko 10 guldens of the Viennese currency each year to remove any cause for possible dispute.[121]

When this interpretation was presented to the regional and then the district authority, a meeting of the disputing parties was convened for 13 October 1859; however, they maintained their positions, unwilling to reach an agreement. There was a long silence, during which, however, the old wooden barrier could be used for timber floating. After nearly half a year, on 24 March 1860, an authorised adjunct of the Nové Hrady Economy Office arrived at the Kaplice District Authority and accepted the unwavering proposal from the village of Blansko. Its representatives then finally declared that they had no objections to the construction of the barrier. Five days later, both parties reached a mutual settlement. On 27 April 1860, the regional authority granted permission for the construction of the new barrier near the timber yard in Ponholz in accordance with the previously reviewed plan.[122]

**The Last Appearance of the Ponholz Barrier in Blansko from the Timber-Floating Era**

The barrier was most likely built in 1860 because the manor lords had no reason to postpone its construction; rather the opposite is true. A description from 1904 provides evidence that the barrier was built according to the design and, moreover, it was roofed: 'The Ponholz barrier was built solidly and stably in every respect. Its main supports were formed by stone-block piers, connected by a single beam. The entire structure is covered, with the necessary bar screen placed inside.[123] To prevent the bar screen from breaking, the middle longitudinal beam was lowered and secured with chains to rest against the piers. The entire structure was built at an oblique angle to the river flow, ensuring minimal pressure from water and wood.'[124]

Two additional piers on the left bank of the River Černá, which form part of the barrier and previously supported the covered footbridge, were constructed as late as the 20th century. This extension deviated from the axis, bending slightly. According to the aforementioned forestry textbooks, this shape was suitable for capturing barriers designed to collect a large amount of driftwood. Beginning in 1860, this amount probably continuously increased in Ponholz; hence, an investment in the local barrier proved worthwhile. It played a crucial role in the timber-floating route, as some significant timber-floating activities terminated at this very spot. As a result, it was necessary to ensure it was indeed sturdy. It may have included a double bar screen, which was a common practice for most large barriers.[125] This is also suggested by the essential, newly discovered element, the sill beams in the riverbed, positioned on both sides of the reinforced riverbed below the barrier (see fig. 8). However, it remains unknown whether the second bar screen was ever installed in Ponholz.

Compared to other barriers, which were used along the Nové Hrady timber-floating route at the time of the current barrier in Ponholz (in 1860), it should be stated that the one in Ponholz was the most stable and the sturdiest. Particularly illustrative are the old photographs of another barrier on the Černá, established in Gabriela and Černé

121 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, the file including the correspondence regarding the dispute over the construction of the barrier in Ponholz during 1858–1860.
122 SOkA Český Krumlov, fonds OÚ Kaplice, cart. no. 10, the file including the correspondence regarding the dispute over the construction of the barrier in Ponholz during 1858–1860.
123 *'Das ganze Gebäude ist eingedeckt und es werden darin die notwendigen Spindeln deponiert.'*
124 WAGNER, T., *Entstehung, Wesen und Betrieb*, p. 11.
125 GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*, p. 303.

*Fig. 30.* The Ponholz barrier on the re-ambulated Map of the Stable Cadastre of Blansko near Kaplice, 1872, plotted in today's size, after 1904 extended by the riverbank section, source: Katastrální úřad pro Jihočeský kraj, katastrální pracoviště Český Krumlov

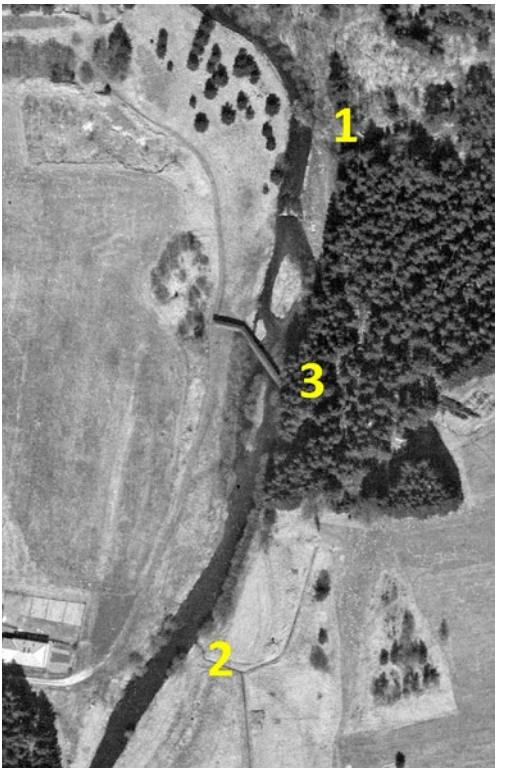



*Fig. 31.* An aerial photograph of the Ponholz barrier outside Blansko near Kaplice, photo: 1967, source: Vojenský geografický a hydrometeorologický úřad Dobruška © Ministerstvo obrany ČR. Legend: 1 – the position of the barrier built in 1780/1781; 2 – the position of the barrier built in 1806; 3 – the position of the wooden barrier built in 1836, which was replaced by a new one on stone piers in 1859/1860 (cf. fig. 28)

Údolí,[126] whose simple wooden construction survived into the 20th century. It must have been affected by its position on the upper stream of this rivulet, before its confluence with Pohoří Brook. In contrast, considerably more timber arrived at the Ponholz barrier situated just before the Černá flows into the Malše. The size of the Ponholz barrier was only surpassed by the modernised barrier in Plav in 1896, which, as it seems, was unparalleled in the Czech lands at that time.

**Barriers Identified to Date or the Challenging Search for Further Examples**

The search for the existing barriers revealed that only five (not always completely) preserved structures of this kind have been identified to date, and not all of them receive heritage protection. The Central List of Cultural Monuments of the Czech Republic contains the following structures: The 'U rechlí footbridge' (no. ÚSKP 44649/3-1191) spans the Vltava in Český Krumlov, located in the Plešivec suburb (Český Krumlov District), and a 'covered footbridge' (no. ÚSKP 45624/3-3637) is located on the Teplá Vltava in Lenora (Prachatice District). A small meander of the River Černá, near the village of Blansko (Český Krumlov District), reveals a 'covered footbridge' (no. ÚSKP

126 Undated image of the barrier in Černé Údolí of the Buquoy forest warden F. Peřina can be viewed in the database Historische Datenbank Böhmerwald, available online: https://www.bwb-ooe.at/hist-db/ [accessed 21 September 2024].

*Fig. 32.* The remains of the barrier in Gabriela, photo: V. Šolc, 1955, source: Etnologický ústav AV ČR, v. v. i., Photo Documentation Collection Praha, sign. 5936HK

13795/3-1217). A modernised 'weir basin', referred to as a 'barrier' (no. ÚSKP 102466), stands out on the Malše in Plav (České Budějovice District). On the River Vydra in Šumava near Modrava, timber was directed into an artificial canal by a barrier or a rake (*hrablový*) bridge which is inaccurately stated as a (sluice) *hradlový* bridge, which is part of the Vchynice-Tetov Canal (no. ÚSKP 26816/4-3299, designated a national cultural monument in 2014).

Since timber floating was a widespread and necessary economic sector in the past that relied on timber-floating devices, the above-stated list of barriers seems incomplete to us. It is certainly appropriate to explain that after this method of timber transport was discontinued, many barriers disappeared without a trace, particularly if they were merely wooden structures. Nevertheless, it can be assumed that barrier bridges emerged on solid stone piers elsewhere in the Czech Republic, although their original purpose may have been forgotten (like the barrier in Blansko). But what guidance should one follow when searching for them?

Given this unexplored theme, it is essential to improvise and define a somewhat smaller space at the outset. It is difficult to envision searching for further barriers among hundreds or rather thousands of bridges and footbridges. However, based on our experience with the barrier at Blansko near Kaplice being presented only as a 'covered footbridge', it might be instructive to direct our attention to other covered bridges or footbridges. While roofing is certainly not an essential component of the barriers, it remains an attractive element that – very likely – contributed to the preservation of the barriers in Lenora, Český Krumlov, and Blansko as well as their subsequent listing among the protected monuments. Two sources were selected for

a quick search: the Heritage Catalogue and a 1926 book by Jan Kolář that focuses on documenting covered wooden bridges in Bohemia, Moravia, Silesia, Slovakia, and Subcarpathian Ruthenia.[127]

The Central List of Cultural Monuments in the Czech Republic includes (at least) thirteen other monuments referred to as a *footbridge*, *wooden footbridge*, *wooden bridge*, *covered wooden footbridge*, *covered bridge*, *half-timbered covered footbridge*, and *covered wooden road bridge*, none of which are related to timber floating in any way.[128] Jan Kolář also does not state that the bridges he previously selected served as timber-floating facilities. The only exception was some barriers in the Schwarzenberg estates: 'A special feature is the Šumava bridges in the Schwarzenberg estate, where floating timber is captured and directed into a canal, allowing it to continue floating and be collected at specific spots. Ordinary footbridges, embedded in the longitudinal walls and topped with roofs, extend over the inlets into the canals. Stoplogs that close and open the canals are operated from these footbridges.' The author referenced examples such as a wooden bridge near the Vchynice-Tetov Canal on the River Vydra, a bridge spanning the River Otava between Dlouhá Ves and Nové Městečko along the Sušice district road, a bridge over the River Vltava in Horní Vltavice, and the 'wooden crossing of larger dimensions' across the River Vltava in Český Krumlov.[129] Interestingly, this author recognised the timber-floating history solely in the context of the 'covered bridges' in South Bohemia. For the objects examined, he almost exclusively described their construction, including surveys and photographic documentation for many, while addressing their history only sporadically.

The structural design of the canopies on the bridges and footbridges does not convey much about the purpose of the bridge, as a straightforward utilitarian solution was applied, for example, on both the road bridge in Radošov and the studied barriers in Lenora or Český Krumlov. The roof is covered with shingles, the sides are typically clad in plain boards, and mostly sporadic light prevents a view outside. No examples were found of efforts to decorate bridge coverings, such as incorporating details typical of the wooden architecture of the given region. Could this be attributed to their short lifespan, which may have been consistently threatened by the elements? As will be discovered below, more important information can be derived from the location of the bridge or footbridge, the width of the bridge deck, and its commencement.

The potential barriers must naturally be sought in the watercourses that were used for timber floating. Therefore, it is worth mentioning that the vast majority of covered footbridges listed in the Heritage Catalogue and J. Kolář's book from 1926 are found on navigable rivers. Timber was floated on the Elbe,[130] the Mže,[131] the Ohře,[132] and the Otava[133] since the Middle Ages. Later, this type of transport was launched on the Jizera (with the earliest record on timber rafting dating from 1513[134]), the Úpa (log driving on the Úpa and Elbe in the second half of the 16th century[135]), the Zdobnice (from the 17th century[136]), the Odra (navigable at least as early as the 17th century[137]), the Svratka

127 For the purposes of this study, the structures in Slovakia and Subcarpathian Ruthenia have been omitted due to the complexity of tracking down further information. KOLÁŘ, J., *Dřevěné mosty kryté*.

128 Ústřední seznam kulturních památek (ÚSKP/Central List of Cultural Monuments), available online: https://www.pamatkovykatalog.cz/ [accessed 20 October 2024]. The term *rechle* (barrier) appears solely in relation to the barriers in Plav and Lenora. The term *hrablo* (rake) is exclusively associated with the Lenora barrier. In contrast, the term *brlení* (bar screen) is found only connection with the Plav barrier.

129 KOLÁŘ, J., *Dřevěné mosty kryté*, p. 20.

130 IŠA, František, 'O plavení dřeva na Jizeře v 16. století', *Boleslavica*, 2015, vol. 8, no. 15, p. 23.

131 NOŽIČKA, Josef, *Přehled vývoje našich lesů*, Praha 1957, p. 44.

132 LŮŽEK, Bořivoj, 'Plavení dříví po Ohři', *Český lid*, 1970, vol. 57, pp. 81–83.

133 IŠA, František, 'O plavení dřeva na Jizeře v 16. století', *Boleslavica*, 2015, vol. 8, no. 15, p. 16.

134 Ibidem, p. 25.

135 Ibidem, p. 24.

136 Ibidem, p. 24.

137 NOŽIČKA, J., *Přehled vývoje našich lesů*, p. 152; IŠA, F., 'O plavení dřeva', p. 22.

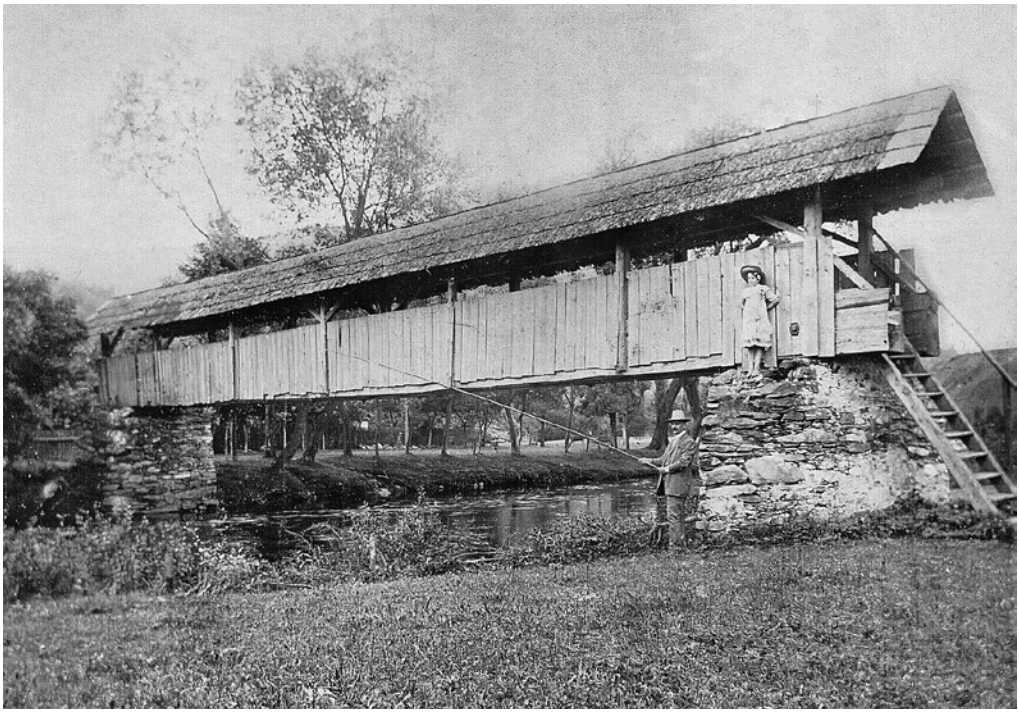


*Fig. 33.* Švařec, a covered footbridge on the River Svratka (Žďár nad Sázavou District), photo: 1910, source: private collection

(navigable since the early 18th century[138]), and the Moravice (certainly navigable in the late 19th century[139]).

However, it cannot serve as a reliable clue either, as the wide array of covered bridges constructed could only have been necessitated by a pathway or road across the watercourse. Nevertheless, if the footbridge is found on a site without a significant road, particularly if it was not recorded by the stable cadastre, one must sharpen their senses. Why was it necessary to build the most durable bridge right here? The heritage-protected covered footbridge over the Svratka in the village of Švařec (Žďár nad Sázavou District, no. ÚSKP 17477/7-7084), where only a narrow path winding among small houses existed, as noted by Dušan Josef, serves as a prime example.[140] In the map of 1826, this footbridge, marked by a simple line, connects the municipal meadow on the right riverbank with the fields on the opposite side of the river.[141] At first glance, the Švařec footbridge closely resembles the barrier in Lenora, which was noted by Dušan Josef forty years ago. He was particularly interested in the steps, providing access from both sides to the Švařec footbridge supported by high stone pillars.[142] The same component was discovered in the barriers in Český Krumlov and in Blansko near Kaplice. Although this may not be an unmistakable sign of the barrier, it is evident that the steps would likely represent an insurmountable obstacle in more significant bridges. In this instance, only

138 NOŽIČKA, J., *Přehled vývoje našich lesů*, p. 175; VERMOUZEK, Rostislav, 'Plavení dřeva po Svratce a Svitavě', *Lesnická práce*, 1971, vol. 50, no. 1, pp. 43–45.

139 An artificial navigational canal for transporting timber to the Žimrovice paper mill is located on the River Moravice. Its construction began between 1889 and1891, and it remained in use until 1966. SIMANOV, Vladimír, 'Historie lesnické techniky v letech 1945–1992. Technické památky v lesním hospodářství', *Lesnická práce*, 2017, vol. 96, no. 1, pp. 40–43.

140 JOSEF, Dušan, *Naše mosty historické a současné*, Praha 1984, pp. 184–185.

141 Ústřední archiv zeměměřičství a katastru, imperial imprint of the stable cadastre of the cadastre village of Švařec Švařec, 1826, sign. 3079.

142 JOSEF, D., *Naše mosty*, pp. 184–185.

pedestrians were considered. The history of the noteworthy footbridge in Švařec[143] has not been thoroughly researched, although it has received deserved attention – recently, sensitive reconstruction has taken place.[144] The results of potential detailed archival research would certainly be interesting with respect to other covered footbridges and bridges that once existed on the River Svratka. They include three non-preserved covered bridges in the Žďár nad Sázavou District (in Dalečín, Štěpánov nad Svratkou, and Unčín)[145] or a small bridge in Pernštejn (Brno-Country District, no. č. ÚSKP 27538/7-4246) across the Nedvědička that empties into the Svratka. A narrow footbridge in Doubravník (Brno-Country District, no. ÚSKP 11465/7-8606) also deserves attention. It was reportedly established in 1899 as 'access to the C. M. Kopřiva Paper and Pasteboard Factory'.[146] It recalls that this paper mill urgently needed a constant supply of a large amount of wood. If the factory purchased floating timber to produce the cellulose (required for pasteboard production), could this footbridge have served as a bar screen?

Future researchers investigating the barriers and history of timber floating would undoubtedly find the potential overlap between the bridge and barrier functions intriguing. Both instances were highlighted by the historian Daniel Kovář in Březí near Boršov nad Vltavou (České Budějovice District). In 1776, during one of the renovations carried out by the Schwarzenbergs from Český Krumlov, the local bridge over the Vltava was fitted with a structure for capturing floating timber. This may have been a temporary measure because the barrier, built by the Schwarzenbergs in 1730 slightly upstream of the Vltava, had deteriorated. A new barrier replaced it as late as 1802 and served its purpose until the end of the 19th century. In 1904, it was dismantled and removed. Protests from residents of the surrounding villages, who used it as a shortcut to the other side of the Vltava, had no effect.[147]

Further detailed archival research is likely to reveal many surprising and insightful facts, as the history of timber floating (outside the Vltava River basin) remains insufficiently explored.[148]

In addition to written information, it is naturally essential to pay attention to field documentation. It seems that the relics of the riverbed adjustments below the barriers have not yet been surveyed, particularly concerning the presence of groundsill beams and riverbed reinforcements associated with locking the lower part of the bar screens. It is crucial to note that during the research for this study, these (extensively preserved!) elements were discovered in the Ponholz barrier in Blansko near Kaplice, as well as in Lenora. The barriers in Český Krumlov and the Vchynice-Tetov Canal are situated on weirs that also functioned as supports for bar screens. The barrier in Plav has not been examined in this context.

## Conclusion

The primary motivation for compiling this study was the discovery of detailed archival materials regarding the Ponholz barrier in Blansko near Kaplice while researching the sources on the history of timber floating by the Buquoy family in the Novohradské

143 The drawing of the footbridge in Švařec appeared on a commemorative stamp featuring the motto: 'Protect Old Bridges!' which was used for documents promoting the popularisation of historical bridges in the Czech lands. Ibidem, pp. 184–185.

144 The general renovation of the wooden structure of the footbridge was carried out in 2006 when both main support beams, each measuring 22 m, and the deck were replaced. In 2023, the footbridge received a new shingle roof. The original, authentic components of the footbridge include the roof truss and riverbank supports made of quarry stone which, however, may be significantly older than the rest of the footbridge. I extend my thanks to Jan Večeřa from the NÚP, ÚOP in Telč for this information.

145 KOLÁŘ, J., *Dřevěné mosty kryté*, unpaginated pictorial appendix, figs. 19–22.

146 Cited from https://pamatkovykatalog.cz/kryta-drevena-lavka-14701324 [accessed 25 September 2024].

147 LAVIČKA, R. – HAVLICE, J. – KOVÁŘ, D., – NIKRMAJER, L. – ŠIMÁNEK, J., *Velké dějiny malého města*, pp. 303–304.

148 This issue has been recently summarised by IŠA, F., O plavení dřeva, passim.

Mountains, particularly Pohoří Brook and the River Černá.[149] When processing this microhistorical probe, it became necessary to place the Ponholz barrier in a broader context to better understand the construction and purpose of this remarkable water structure and to evaluate its qualities from the perspective of heritage protection. However, it has come to light that the issue of barriers remains 'intact' among professionals and is overshadowed by the current deep interest in timber rafting, which attracts the attention of both the public and experts. In 2022, the cultural and historical interest in this field was symbolically sealed with the inscription of timber rafting onto UNESCO's List of Intangible Cultural Heritage.[150] The barriers, as a specific type of water structure, have not been examined even by the authors studying the Schwarzenberg Navigational Canal, which was built specifically for timber floating at the end of the 18th century. This is likely due to the small number of such facilities on this canal, which are further overshadowed by the technical curiosities and rarities of other types and regarded as minor topics. No evaluation could be obtained even for the surviving South Bohemian barriers of the same type as the one in Blansko, specifically those in Lenora (Prachatice District) and Český Krumlov (Český Krumlov District). Notably, the Lenora barrier is the most recognised and frequently cited in the literature as a remarkable technical monument. However, the interest of both experts and amateurs primarily focuses on their covered footbridges, which lack significance for the true purpose of the barrier. Another surviving barrier that has been successfully identified in the Czech Republic is located in Plav (České Budějovice District). Nevertheless, this barrier represents a sporadic example of modern construction from 1896. Dating back to the late 18th century, the next barrier is located in the Vchynice-Tetov Canal (Klatovy District), where it channelled timber from the Vydra watercourse into an artificial canal. Even these structures have not been evaluated by experts. In addition to the barrier in Blansko, there are only five preserved examples of this type in the Czech Republic.

Aside from the basic overview of the surviving barriers, a study on the construction of this specific water structure is also absent, apart from a brief vocabulary entry in *Technický slovník naučný* (Technical Dictionary) from 1935.[151] To gather information, it was thus necessary to search through German textbooks published for forestry students approximately a hundred years ago.[152] However, the authors of the entry in this technical dictionary referenced information from German and Austrian literature.

Barriers likely existed in many watercourses used for timber floating from hard-to-access mountain areas, even in the first half of the 20th century. After this method of wood transport was abandoned, mainly due to the rise of railway transport, these timber-floating structures were also discontinued (or removed). Often, no visible traces remained, especially if they were primarily constructed of wood. Perhaps the only relic that may have survived is the adjustment of the riverbeds beneath the barriers in connection with the locking of the lower section of the bar screens. This element was first described and documented in this study concerning the barriers in Blansko and Lenora. It was an essential functional component that could be found in the old forestry textbooks mentioned above, as well as in documents relating to the barriers in Šumava, at the Schwarzenberg estate of Vimperk.

149 VYSKOČIL, A. – FLORIÁN, J. – SVITÁK, Z. – BUREŠ, M., 'Plavení dřeva', in this issue of the magazine.

150 In addition to the Czech Republic, five other European countries aspired to inscribe the timber rafting tradition on the UNESCO list: Latvia, Germany, Poland, Austria, and Spain. The subject of the inscription is the ancient tradition associated with the construction of rafts and their navigation down rivers. It encompasses not only the handcrafted methods used to build a raft, but also the knowledge required to navigate it down the river, along with the specific culture linked to this tradition, including typical customs and verbal art of the raftsmen reflected in their songs and slang. Czech UNESCO heritage, available online: https://www.unesco-czech.cz/vorarstvi/predstaveni/#page_start [accessed 12 September 2024].

151 TEYSSLER, V. – KOTYŠKA, V., *Technický slovník naučný*, pp. 608–609.

152 ECKERT, F. – LORENZ, H., *Lehrbuch der Forstwirtschaft*; GAYER, K. – FABRICIUS, L., *Die Forstbenutzung*.

The barriers with durable construction of piers, especially those made of stone, especially the barrier at the beginning of the Vchynice-Tetov Canal, where only the wooden components eroded, had the highest likelihood of preservation. However, if a barrier was covered by a roof, it could attract attention and survive as a remarkable technical monument, especially if it served as a bridge crossing a watercourse. This underscores the significance of the barrier in Český Krumlov today. If this utilitarian function were absent or negligible, a wooden covered footbridge, which has been and still is considered the most interesting feature of the barriers, could save the structure. The barriers in Lenora and near Blansko were fortunate in this respect. Nevertheless, their modern destinies vary significantly. Lenora, which is more in the spotlight, enjoys great interest from experts and the public. In contrast, the barrier in Ponholz, located outside the network of roads, and in the Kaplice region that is only sporadically visited by tourists, stands half-forgotten (including its history); even the wooden covered footbridge, which disappeared due to a fire before 2006, did not bring it any popularity. Yet, this study indicates that as far as construction and significance are concerned, the barrier in Blansko can confidently be placed alongside the often-cited timber-floating devices in Lenora and Český Krumlov. All the listed, existing barriers deserve thorough research into their building history, as the published information about them is fragmented, superficial, and sometimes burdened by unfounded fabrications.

Presumably, there may be more unrecognised barriers in the Czech Republic. We have at least attempted – albeit in a somewhat improvised manner – to suggest a way to identify them and verify their purpose. For example, the covered footbridge in Švařec (Žďár nad Sázavou District) seems to have served as a barrier in the past. However, without a basic survey, grounded in archival research and detailed terrain documentation, reliable information cannot be obtained. Even the nearly iconic Lenora barrier certainly deserves to fill the unusual information void that surrounds it with deeper knowledge. The lack of research on this topic makes the five known surviving barriers, located in the southwestern part of the Czech Republic, appear as a true rarity. But is this really the case?

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