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## 150 years of an ironwork masterpiece

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**Анотація.** Дана робота містить короткий звіт про важливість найстарішого моста для історії світового цивільного будівництва – про його особливості, які стали переломним моментом у будівництві вкликопрогонових мостів у середині XIX сторіччя.

**Аннотация.** Данная работа содержит краткий отчет о важности старейшего моста для истории мирового гражданского строительства – о его особенностях, которые стали переломным моментом в строительстве большепролетных мостов в середине XIX столетия.

**Abstract.** This paper reports briefly about importance of the oldest bridge, distinguished for the history of world civil engineering – and its peculiarities, which became keystone in the construction of large-span bridges at the midst of the 19<sup>th</sup> century.

**Key words:** bridge, span, damage.

On Oct. 12, 2007, the famous historic Tczew Bridge over the Wisla river in Poland celebrated its jubilee of 150 years of existence (fig. 1, fig. 2).

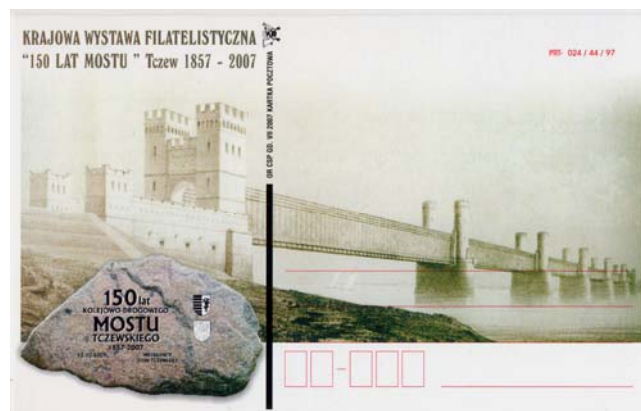


Fig. 1. Post-card commemorating the bridge jubilee:  
original shape of bridge

The construction of that originally rail/road bridge started in 1851 and was completed in 1857; it followed only few years after the opening of the well known, magnificent, solid tube Britannia Bridge (1850), over the Menai Strait in Wales. The Tczew (Dirschau) Bridge has been built by Prussia on the railway

route connecting Berlin and Königsberg (presently – Kaliningrad); the Wisla River was here the largest obstacle [1, 2].

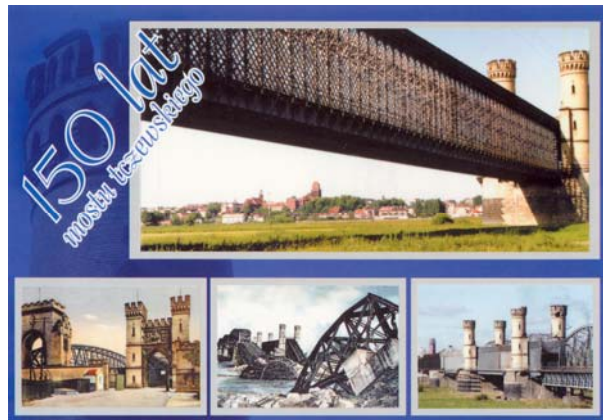


Fig. 2. Post-card commemorating the bridge jubilee:  
reference to history

The bridge was designed by the German engineer Carl Lentze and calculated by the Swiss engineer Rudolf E. Schinz. The inspiration came from the above mentioned tubular Britannia Bridge. However, the latticed tube of the Tczew Bridge made it much lighter and less prone to wind. The pioneer character of that bridge system was a substantial stimulus for the construction of several other similar bridges in Europe, to mention only two very near located – the Warsaw “Most Kierbedzia” (fig. 3) and that in Grodno (Hrodna – Byelorussia) shown on fig. 4, both completed only few years after the opening of the Tczew Bridge. They suffered heavy damages during the last world wars and presently do not exist any more.



Fig. 3. “Kierbedź Bridge” in Warsaw (1859-1864)

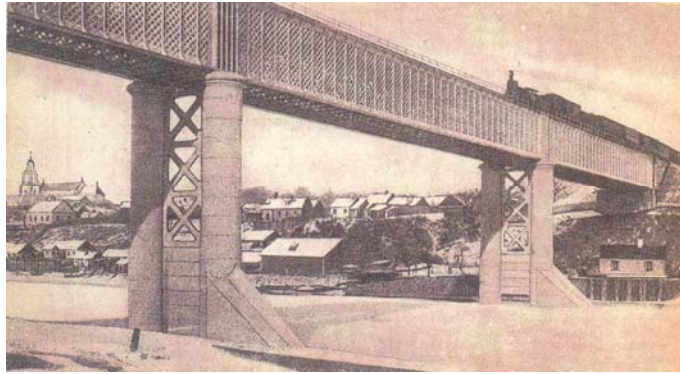


Fig. 4. Bridge in Grodno (1857-1862)

The historical Tczew Bridge had originally six superstructures, each two continuous, having spans 130 m ( $L = 3 \cdot 2 \cdot 130 = 780$  m) – comp. fig. 1. The dimensions are: clear internal width  $b = 6,20$  m, latticed web height  $h = 11,82$  m. Growing railway traffic caused that in 1891 a new, stronger two-track railway truss bridge has been opened – 40 m downstream of the historical one, which now became a road bridge only (comp. fig. 2, bottom – left). In 1912 both bridges have been elongated on the eastern side by ca. 250 m each – due to the broadening of the river bed. They functioned well until 1939 when, at the beginning of W.W. II, they have been partly destroyed (comp. fig. 2, bottom – centre). Provisionally repaired, in 1945 they suffered another heavy damage. The railway bridge of 1891 vanished completely, whereas the historic bridge kept two spans intact.



Fig. 5. The preserved Tczew Bridge original superstructure side view

Its present external and internal views are given in fig. 5 and fig. 6, respectively (comp. also fig. 2, bottom – right).

The actual bird's eye view of the present situation of both the bridges in Tczew (a new railway bridge has been constructed after W.W. II in the place of the damaged bridge of 1891) is demonstrated in fig. 7. It should be added that in 2004 the historic Tczew Bridge has been honored by the American Society of Civil Engineers (ASCE) as the International Historic Civil Engineering Landmark (fig. 8) [3]. Thus, that bridge has been found to represent, indeed, a valuable part of the world bridge history. It is really an "Ironwork Masterpiece" – also because its outstanding, everlasting aesthetical effect [4, 5].



Fig. 6. The preserved Tczew Bridge original superstructure internal view



Fig. 7. Present aerial view of the Tczew bridges



Fig. 8. ASCE plaque honoring the historic Tczew Bridge as the International Historic Civil Engineering Landmark

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