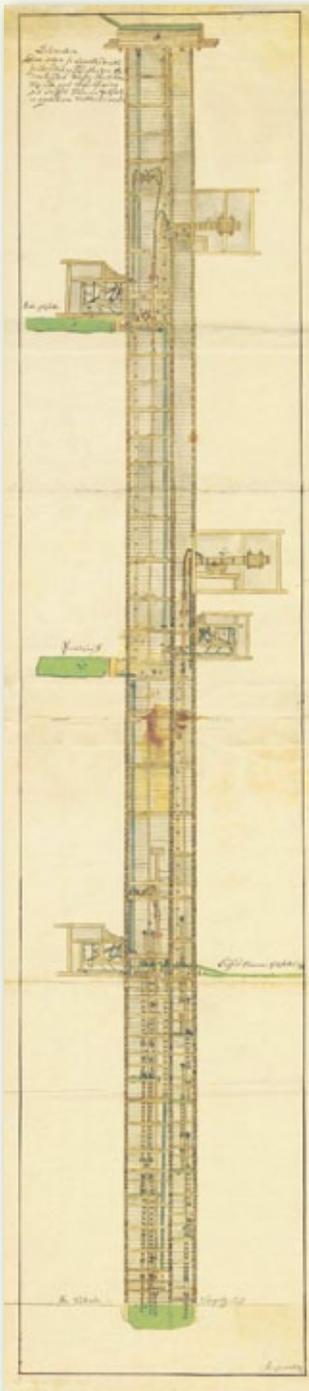


Hell's greatest contribution was in the development of pumping machines. When aged just 23 he invented a beam pump that was more powerful than other pumps of the day. This pump was put into operation for the first time in 1738, in the Štiavnické Bane, at the Siglisberg shaft. Hell subsequently invented a column pump driven by pressure from a high column of water. His machines, which were substantially more powerful and consumed far less water, were first used at the Leopold shaft in the Štiavnické Bane and later in Banská Štiavnica. Gradually they were adopted in other European countries. Mining conditions were further improved by another of Hell's inventions – an air pump driven by a combination of water pressure and compressed air. Hell also designed and built fire sprinklers and ore-crushing machines, and he oversaw the construction of water reservoirs. He became one of the most significant machine designers of his day. By virtue of his position as chief machinery engineer for the Banská Štiavnica area, the mining technology used in this area was among the most advanced in 18th century Europe. Nevertheless, Hell died in poverty on 10 March 1789 in Štiavnické Bane. No portrait of him survives, nor is there even a gravestone for him.



Column pumps at the Leopold shaft

Coin details

Denomination: €10

Material: Ag 900/1000

Cu 100/1000

Weight: 18 g

Diameter: 34 mm

Incuse edge inscription: STROJMAJSTER – KONŠTRUKTÉR –

VYNÁLEZCA ("Machine engineer – Designer – Inventor")

Mintage: limited to a maximum of 15,000 coins (brilliant uncirculated and proof)

Designer: Mgr. art. Roman Lugař

Engraver: Dalibor Schmidt

Producer: Mincovňa Kremnica / Kremnica Mint

The obverse side of the coin depicts the New Castle, which is the dominant landmark of Banská Štiavnica and was one of the workplaces of Jozef Karol Hell. Below it is a mining scene with wooden mine props, pumping pipes, and two lizards, relating to a legend about the discovery of gold and silver in the Banská Štiavnica area and the start of mining there. In the centre is the coat of arms of the Slovak Republic, and below that is the year "2013". The country name "SLOVENSKO" appears along the right edge of the design. The mintmark of the Kremnica Mint, "MK", and the stylised initials of the designer, Mgr. art. Roman Lugař, "RL", are placed next to the left edge.

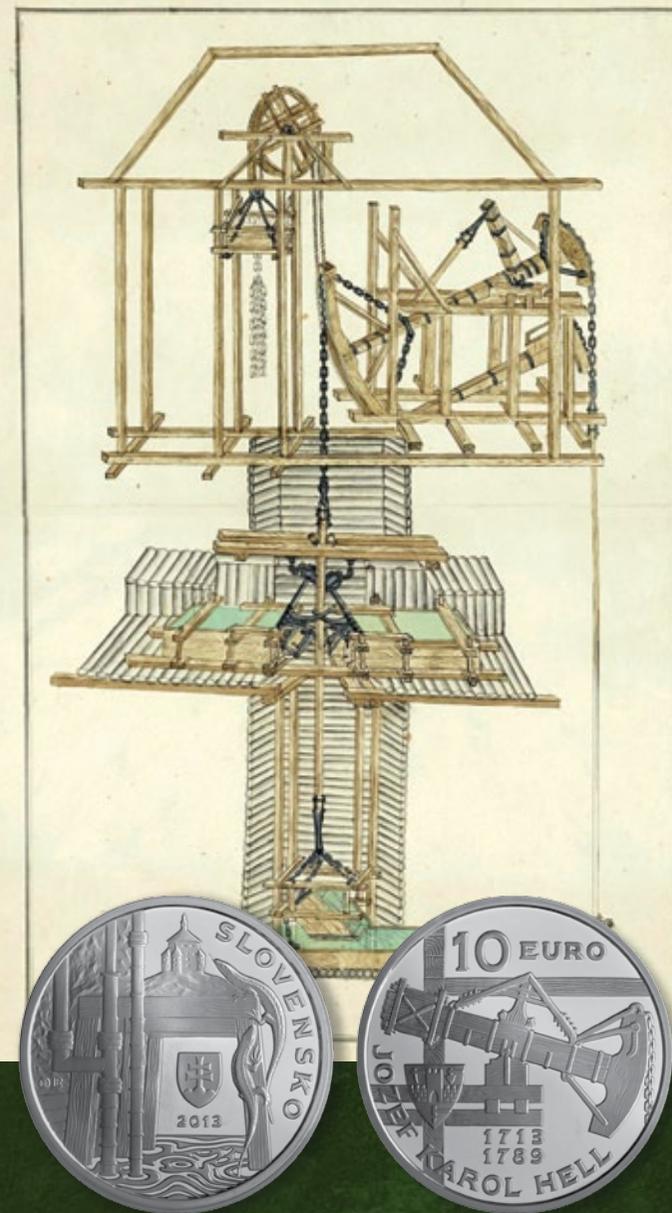
The reverse side shows the beam of a column pump along with the oldest coat of arms of Banská Štiavnica. In the upper part is the denomination "10 EURO", and along the lower edge is the name "JOZEF KAROL HELL". Above the name, in two rows, are the dates of Hell's birth and death "1713" and "1789".



Published by: © Národná banka Slovenska, May 2013

Cover photo: Beam pump
Deeds and plans of the time: State Mining Archive in Banská Štiavnica
Photo: Lubomír Luřina

<http://www.nbs.sk/en/banknotes-and-coins/euro-coins/collector-coins>



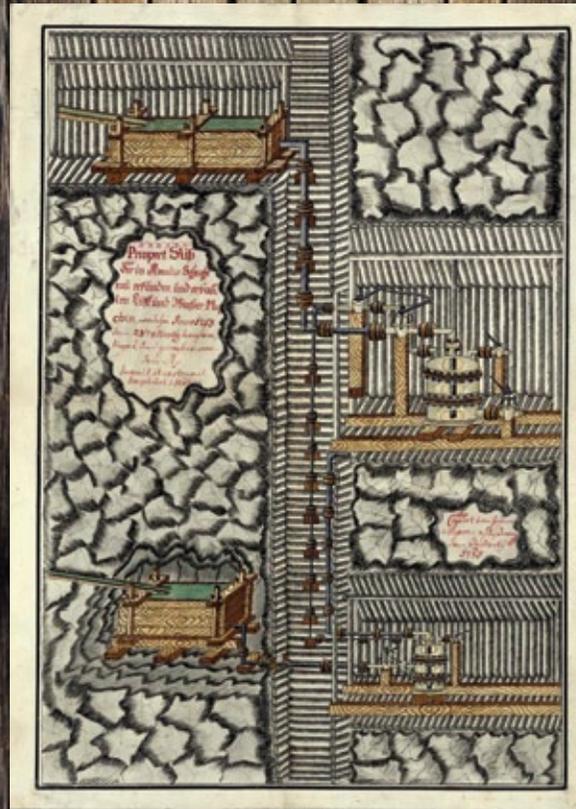
Jozef Karol Hell

300th Anniversary of the Birth Silver Collector Coin

In the second half of the 18th century Banská Štiavnica in central Slovakia underwent an extraordinary mining boom. This was due largely to the efforts of exceptionally skilled technicians, inventors and mine operators, the most significant of whom was Jozef Karol Hell, a machine engineer, designer and inventor.

Jozef Karol Hell was born in May 1713, in south-central Slovakia, to the family of a chief mining machine engineer, Matej Kornel Hell (the precise date of Jozef Hell's birth is not recorded and is variously given as 12, 15 and 16; his Christening date is recorded as 16 May 1713). His place of birth was a village now called Štiavnické Bane, which in historical documents is called Piarg or by the names of its two parts Vindšachta and Siglisberg. His father did much to preserve the mining industry in Štiavnica ore region by devoting himself to refining whims (windlasses) – both those drawn by horses and those driven by water wheel – and water-driven pumps.

To use water energy in an area without any significant natural water flows required the construction of reservoirs. Until the end of the 19th century water from the "tajchy" reservoirs was used to power mining, pumping and even ore-crushing machinery.



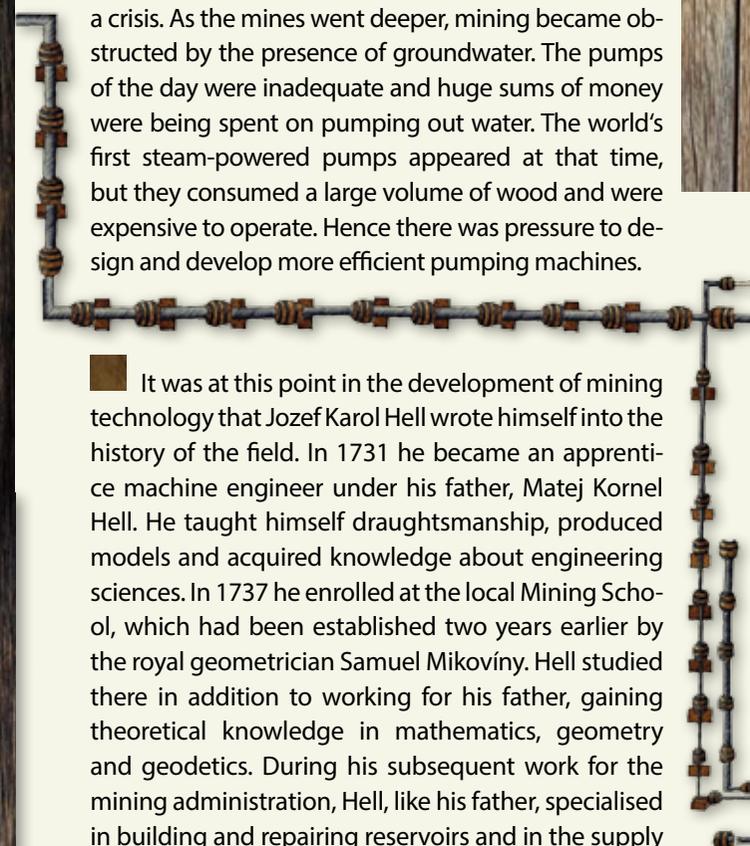
Plan of the column pump

Jozef Karol Hell

Štiavnické Bane Village

At the end of the 17th century and beginning of the 18th century the mining industry was facing a crisis. As the mines went deeper, mining became obstructed by the presence of groundwater. The pumps of the day were inadequate and huge sums of money were being spent on pumping out water. The world's first steam-powered pumps appeared at that time, but they consumed a large volume of wood and were expensive to operate. Hence there was pressure to design and develop more efficient pumping machines.

It was at this point in the development of mining technology that Jozef Karol Hell wrote himself into the history of the field. In 1731 he became an apprentice machine engineer under his father, Matej Kornel Hell. He taught himself draughtsmanship, produced models and acquired knowledge about engineering sciences. In 1737 he enrolled at the local Mining School, which had been established two years earlier by the royal geometrician Samuel Mikoviny. Hell studied there in addition to working for his father, gaining theoretical knowledge in mathematics, geometry and geodetics. During his subsequent work for the mining administration, Hell, like his father, specialised in building and repairing reservoirs and in the supply of energy for mining equipment.



Fire sprinkler

New Castle in Banská Štiavnica

J. K. Hell's manuscript

