

Foreign alchemists as the first mining tourists in Upper Hungary (present-day Slovakia) in the 16th century

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Abstract

The paper is devoted to scientific journeys and stays of foreign alchemists in Upper Hungary during the 16th century. It is the territory of present-day Slovakia, which avoided general occupation by the Ottomans. The local mineral resources, mining and metallurgical technologies attracted alchemists, who can be considered the first mining tourists in this area. Slovakia has become the destination of educational trips of Theophrast Paracelsus, John Dee, Edward Kelley, Leonard Thurneysser Georg Joachim Rheticus and others educators from Western Europe. At the same time, alchemists and prospectors of mostly Czech origin, such as Ján Sobieslavský, Jan Zemánek, Andrej from Olomouc, Jan Táboriga, Šebastián Čech and many others, were active in the area of the Carpathian Arc.

Keywords: alchemy, Upper Hungary (Slovakia), 16th century, mining tourism

Introduction

The beginnings of mining tourism in Upper Hungary have been processed so far by a monographic study of P. Rybár and P. Hronček (Rybár, Hronček 2017), who, in their work, outline the history of the beginnings of mining tourism since the 16th century in the world-famous medieval mining region. These authors date the beginnings of mining tourism to the first half of the 16th century, where they mention the Swiss alchemist Paracelsus as the "first" mining tourist in the region. Paracelsus had visited the territory of present-day Slovakia for the first time in 1521. Authors in their work do not comprehensively process only the 16th century but dedicate their attention to the younger periods as well.

The submitted study also presents other personalities of the alchemy (science at the time), who visited mining areas in Upper Hungary during the 16th century. These were mainly polymaths, who also dealt with alchemy, and therefore they were attracted to the rich mining areas of Upper Hungary. Whether mines and minerals themselves, but also mining and metallurgical technologies, mining towns and generally rich mining regions fascinated them. The most important motivating factor for undertaking these journeys was the rich occurrence of cementation waters, especially in Smolník, Špania Dolina and Ľubietová. Alchemists investigating cementation waters and the process of copper recovery by cementation have sought to prove the transmutation process, i.e. transforming metal (iron) into another metal (copper). Ignoring the physicochemical background of this process, they saw evidence of the conversion of iron to gold.

Mining tourism has started to form in the last decade as a separate tourism industry. The first definition of mining tourism was presented by Rybár and Štrba at the International Conference on Geotourism, Mining Tourism, Sustainable Development and Environmental Protection, Florence, 2016 (Rybár - Štrba, 2016): „There are significant differences between the nature of mining tourism and geotourism or industrial tourism. Mining tourism sites are often located in a natural environment with many geological features (e.g., mineral deposit exposures, rock formations exposed in mines, fossils, etc.), what can be a subject of interest of both geotourism and mining tourism. On the other hand, mining tourism covers the much broader area, including mining heritage in the form of mining insignia or spiritual heritage of miners that do not fit geotourism definition at all. Therefore, it can be assumed that mining tourism is not a part of geotourism“ (Rybár, Štrba, 2016). Here they indicate that mining tourism is an individual form of tourism, which in many cases is related to geotourism and industrial tourism but is on an equal level with geotourism and industrial tourism.

According to P. Rybár (Rybár 2016, Rybár, Hronček 2017) we can define mining tourism as follows: Mining tourism is a form of adventure and cognitive tourism for specialists and the general public (laymen). The interested person in mining tourism can take advantage of a combination of both experiences and knowledge of visiting in-situ mining sites and regions, visits of mining museums and from literature and archive studies, including mining documentation. In situ mine visits helps a tourist to know used mining technologies and processing methods of raw materials throughout the history. Visit of mining regions helps tourist to understand boom and bust of mining regions, and to know habits of miner community in different times of history. Visit of

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mining museums helps to a visitor to feel a bond with one of the oldest human activities – mining, developed mostly in the underground. All mentioned connects visitor with his/her ancestors.

Activities and journeys of foreign alchemists in the territory of present-day Slovakia in the 16th century

Alchemists and prospectors of Czech origin in the Tatra region

The manuscript called *Alchidemia magistri Friderici ae de ferrea porta* from 1573 is deposited in the collection of the Szirmay Library of the Evangelical College in Prešov under the inventory number K.V. 40. According to the title page, the author is the alchemist Joannes Sobieslavensis, who is considered to come from the Czech Soběslav, which would most likely correspond to the name Sobieslavský or the Slovak settlement Sebeslavce (today part of Blatnice). Sobieslavský could be a Czech form of the name according to the Turiec settlement of his origin, which would be indicated by the fact that he mistakenly signed with another "o" as Soboslavský.

The manuscript is not an original work but a transcription of existing alchemical recipes and prospecting records of the 16th century, but it also mentions the work of the original Slovak alchemist Mikuláš Kremnický from 1545 (Lazar, 1969). The work is on the title page dated to 1573, when the author began to write it, including records of the journey of prospectors of Czech origin in the Tatra region.

We learn about the deposits of precious metals under the Kamešnica Hill near Rajec (1573), at the Kláštorisko near Hrabušice (1560) or under Holica near Kubachy (today the village of Spišské Bystré) from Ján Zemánek, a goldsmith from Těšín. Andrej from Olomouc and Ján Táborita searched for minerals in Krompachy (1565), J. Táborita even in Poloma (1568). Šebastián Čech from Litomyšl searched for gold in the region from Trstená to Dunajec (1565). Jeronym Krumpír from Olomouc found gold nuggets large "as beans" in the Kadno (?) Stream (1565). Four alchemists - Ján Soboslavský, Václav Čech, Adam Žiakovič and Benodík from Podhradie reported on the gold deposit near the Kláštor near Hranovnice (1573). Some reports in the manuscript are anonymous, such as the description of the gold deposit in Lipovec near Vrútky, but referring to the prospecting records of Mikuláš Žatecký, Václav Kožišník from Hradec Králové and Pavel Tkáč from Myto.

In *Alchidemia*, there are also reports written by Andriš Heverik (1562) about the gold-bearing glaze near the Biele jazero (White lake). Sigismundus Opaniensis (1566) indefinitely describes the gold deposits in Žabie jazero (Frog lake), Pavol Ratiborský and Fabián Sartor (1567) in Mědodoly. Nicholas from Kladsko, Martin Postriháč from Pezinok, Pavol Slosiar from Litoměřice, Urban Súkeník from Pardubice and Chochol Kožušník from Hradec Králové mention another deposit near Tri Koruny (Three Crowns) near Červený Kláštor.

Paracelsus in the territory of present-day Slovakia

The famous Swiss doctor and alchemist Theophrastus Paracelsus von Hohenheim (1493-1541) also stayed in the territory of present-day Slovakia during his journey through Europe, since in 1537 he was a guest of the Bratislava City Council. His visit is also evidenced by a record from the town's accounting book, as he was hosted by the guild of Bratislava doctors and surgeons (all expenses were paid by the Bratislava city). According to historical sources, we know that the famous doctor on the eve of St. Michael was greeted by the city council delegates in front of the city gate and was accommodated in the house of the most respected burgher Blasius Beheim in the town hall square.

On the building of the Primate's Palace in Bratislava, there is a commemorative plaque with an inscription, which reads: "This building used to be the home of Paracelsus de Hohenheim" (In hac platea habitavit Paracelsus Paracelsus de Hohenheim). The plaque is a work of Ludwig Mack that is based on a 1540 engraving originally (in 1943) installed on another building. Another, less known journey to the central and eastern Slovak mining towns was undertaken by Paracelsus in 1521, who, in his paper *De Tinctura Physicrum*, mentioned the alleged ability of the Smolník mineral water to transmute metals.

The circumstances of Paracelsus's stay in central Slovakia were made clear by an Englishman John Merin. In his work he noted that "the famous Paracelsus spent some time in Banská Bystrica", where he stopped on his way to Transylvania. He set up a laboratory in the city where he performed experiments with sulfuric acid, antimony, mercury, copper, silver and gold, and he lived there with a goldsmith. Moreover, John Merin had access to the room serving the founder of iatrochemistry as both a temporary residence and a study room where, even in 1615, one could see the Merin's portrait he donated to his host hanging on a wall.

According to some authors, the Paracelsus's laboratory in Banská Bystrica was also mentioned in the work of the French geographer P. Fournier in the middle of the 17th century. In 1700 it was taken over by J.W. Tánzel in his Latin treatise *Hungaria seu disputationes de natura Hungariae*

Ladislav Juhás recently contributed the last indication of Paracelsus' stay in eastern Slovakia. He mentions the invitation of the provost from Leles to visit the Tokaj region, when in 1529 Paracelsus was also about to visit the estate of the Veľký Kamenec Castle on today's Slovak-Hungarian border: "It can only be assumed that it was

an invitation because the letter was only partially preserved and destroyed in a fire. One fact is historically known. Paracelsus investigated the health effects of unique Tokaj wine on the human body in the Tokaj area“ (Jesenský, 2011).

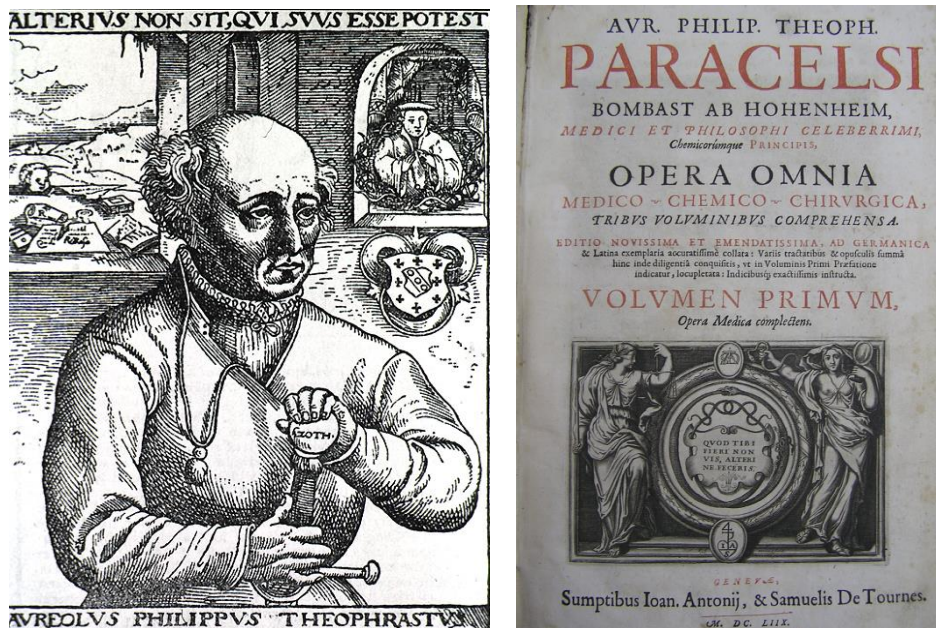


Fig. 1, 2. Paracelsus - Theophrast von Hohenheim (* 1493, Einsiedeln, Swiss – † 24. September 1541, Salzburg, Austria), Swiss philosopher, physician, and alchemist. (Archive M. Jesenský, left). Introduction letter of Paracelsus's summary work (Čaplovič Library in Dolný Kubín, right)

Interest in cementation water in Smolník and Špania Dolina

Towns Kremnica and Banská Štiavnica, in central Slovakia, were frequent places for visits of foreign alchemists, mainly as places of precious metals mining. In 1585, for example, Brandenburg Margrave Johann Georg sent two alchemists, Alexander Blinking from Strassburg and Vincent Reuss from Halle, to explore the mineral wealth of central Slovak mines. On November 25, 1585, they came to Banská Štiavnica, where, in a rather “tiddly state”, they got into a dispute in which Blinking killed Reuss. He was arrested and executed after the approval of the Brandenburg ruler. An analysis of the historical context suggests that at the beginning of this unfortunate journey stood the alchemist Leonard Thurneysser of Thurn (1530-1596) working at the court of the

Brandenburg monarch who visited medieval mining towns sometime in the 1660s, but more accurate information about his stay unfortunately, were not preserved. (Tibenský and Urbancová, 2003)



Fig. 3. Špania Dolina village (photo P. Hronček)

Reports of the discovery of the Smolník 'cementing water' (Zementwasser), whose alleged miraculous capabilities and were related to the transmutation of metals, excited the entire scholarly public in Europe in the 16th century. “Cementing water” from Smolník contained copper sulphate, which was excreted and precipitated as copper on contact with iron. The first indirect mention of the production of cementation copper in Smolník is found in the contract between M. Thurzo of Levoča and the Chamber Count J. Donel from Smolník entered into in the year when ‘kunst’ pumps were in use. In 1566, a new gallery was excavated, which drained

the cementation water and water was collected into reservoirs. They were throwing pyrite into the reservoirs to make the water richer. The unusual properties of mineral water from Smolník were mentioned by several authors at that time like: Basileus Valentinus, Jacobus Tollius, Andreas Baccius, doctor from Bratislava - Daniel Geyer-Waldmann and Ondrej Smoczky

German naturalist and doctor Georgius Agricola (1494-1555) also writes about the phenomenon of cementation water from Smolník in one of his numerous works called *De natura eorum, quae efluunt ex terra* (1546): „This is where this kind of water is pumped from wells and flows into gutters. There, the water eats away at the iron extracted by local miners, which later changes its colour and turns into copper” (Tibenský and Urbancová, 2003).



Fig. 4. Town Smolník in 1748 (Slovak Mining Archive B. Štiavnica)

Rheticus in Košice

In 1574, Georg Joachim Rheticus (1514–1574), who is currently known above all as an astronomer and supporter of Kopernik's heliocentrism and was preparing to print the work of his master *De revolutionibus orbium coelestium* (1541) died in Košice under unexplained circumstances. Much less known is his profile of the scholar-chemist, although some researchers have long ago undertaken to evaluate Rhaetic's contribution to the history of chemical science (Burmeister, 1973).

The basic record of Rhaetic's stay and death in Košice remains a record in the chronicle, which until his death in 1623 was taken care of by the parish priest Joachim Leibitzer: “4. Decembr. Joachimus Rhaeticus mathematicus et Doctor Medicinae Caschoviae 2 hora matutina die Barbarae Catharro extinctus est.” (December 4, Joachim Rhaeticus the mathematician and doctor of medicine from Košice died at 2:00 a.m. on St. Barbara's Day).” (Wagner, 1774)

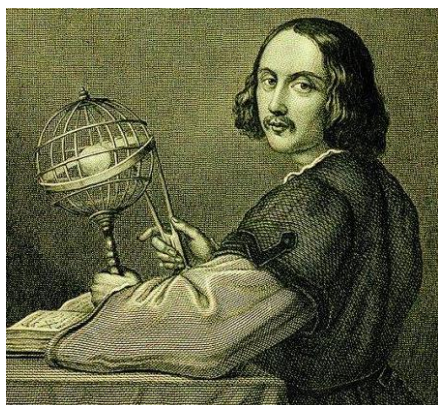


Fig. 5. Georg Joachim von Lauchen Rhaeticus (* 16 February 1514, Feldkirch, Austria – † 4 December 1574, Košice, Slovakia)

Apart from this statement from 1574, we do not know anything. Hungarian historian G. Székely states in one of his studies that Rheticus was invited by the duke of Moldova Despot to his court during the years 1561-1563 and it is not excluded that he decided to make a stop in Košice. (Kučera, 1974)

An interesting fact represents the record from German professor Karl Sudhoff, who in 1904 discovered in Florentine Biblioteca nazionale centrale, a Latin translation of Paracelsus's *De Alchimia liber vexationis* dated to 1575 and considered it to be Rhaetic's work. But someone else would have to complete the translation after his death. Rhaetic's biographer, K. H. Burmeister, on the other hand, assumes that Rhaeticus spent the last years of his life in Košice translating the treatises of the famous alchemist Paracelsus, who had twice visited Slovakia, making experiments in Kremnica with gold as well as mysterious mineral water in Špania Dolina, which turned iron into the

copper (Burmeister, 1968).

John Dee and Edward Kelley in Kežmarok

From the perspective of scholarly journeys of alchemists in the territory of present-day Slovakia, we cannot miss the sporadic, but significant mention concerning the trip to Kežmarok of two famous English alchemists, which were Dr. John Dee (1527-1608) and Edward Kelley (1555-1597). They stayed there on the occasion of their journey to the court of the Polish King Stephen Bátori (1533-1586) in Warsaw in 1583 at the invitation of the high-ranking nobleman Albert Laský (1527-1605). The arrival of the British alchemists dates back to the second half of 1583. However, the period documents do not exclude another possible stay of theirs from 22nd to 25th April 1584, i.e. at the time when Albert Lasky used military force in Kežmarok to win over the Kežmarok Castle (Wagner, 1776).

For the sake of convenience, there is still further evidence of John Dee's earlier stay in Slovakia when he was commissioned by Lord Chancellor Francis Walsingham (1532-1590) to attend the coronation ceremonies of Maximilian II in Bratislava on 8 September 1563, of which he himself states in his travel diary in a supplementary record of 10 October 1563: „So I found myself in Pressburg on the coronation of the Austrian Emperor Maximilian II ...” (Postel, 1996). Since it is not directly related to the mining interest in Slovakia by an abovementioned Elizabethan scholar, we mention it just as an interesting fact.

The testimonies of Dee's and Kelley's stay in Kežmarok could support the results of the Bela Polla archaeological survey at the Kežmarok Castle: the discovery of a furnace and a reduction furnace for metallurgical works. According to him, both objects were built at the time, "when the castle masters were from Laszky family, namely Hieronym Laszky, who held in his court alchemists and allowed them to work just in his Kežmarok estate. (Polla, 1971) This view is also supported by the opinion of Zdzislaw Zwoźniak: "We will find the first traces of Laski Alchemist's activity in the castle in Kežmarok, who belonged to the Laski family". (Zwoźniak, 1978)

According to the findings of archaeological research in the castle, alchemical work may be related to the discovery of remnants of a reduction furnace. B. Polla reminds us of having similar furnaces around year 1000, but in some areas this technology has preserved "deep into the Middle Ages and even into modern times". (Polla, 1971) The second object identified Belo Polla as a melting furnace composed of three parts and used for testing purposes. His work hypothesis thus became the assumption that two of the objects listed in the research journal as a burnt object and an ore smelter "are related to the work of the alchemists at Kežmarok Castle in the 16th century. For the time being, this remains only a work hypothesis, supported in particular by the time of operation and the work of alchemists." (Polla, 1971)

Although this is only a hypothesis, the mentioned findings are nevertheless a promising indication of John Dee's and Edward Kelley's stay in a place known for its alchemical tradition.

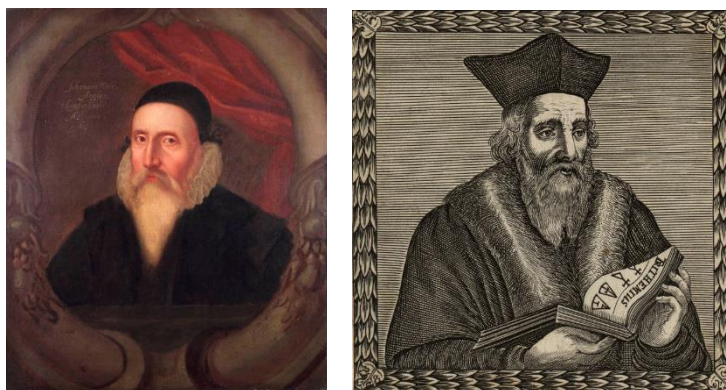


Fig. 6, 7. John Dee (* 1527 London, England - † 1608 Surrey, England)(left), Edward Kelley (* 1555 Worcester, England - † 1597 Most, Bohemia) (right)

Conclusion

We should look to the late medieval period and to the beginning of modern times (16th century) to find the beginnings of (organized) targeted mining tourism in the territory of Upper Hungary, i.e. in the territory of present-day Slovakia. Alchemists, who studied cementation and the associated metal transmutation process, were the first to undertake purpose-built study trips to world-famous mining areas.

Educators, not only from neighbouring countries (especially from the Czech Republic) but also an educated elite from all over Europe, made their trips to the Carpathian Mountains. Our research has confirmed that at least twenty-five scholars have undertaken scientific journeys because of mining science to the territory of Upper Hungary. We only know those who left written testimony about their journey or were included in the writings of other scholars. However, it can be assumed that, given the wealth and world renown of mining and metallurgy in the Carpathian Mountains, it was most likely that there were more journeys that we could now identify with mining tourism. Since they were not recorded by written history, they were consigned to oblivion.

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