# Tycho Brahe and Quicksilver

The astronomer Tycho Brahe is regarded as the persona extraordinaire especially in Denmark. There is the ongoing research on Brahe's remains in Prague. Findings are impatiently awaited beyond his homeland and Scandinavia. Even though, the results might bring more questions than they would answer...

Thanks to the Kepler's article, we know on how the 53-year-old Count Brahe became ill after the banquet at Peter Vok of Rosenberg. Accordingly, he drank a lot but held back urinating due to the courtly etiquette. Already at the night, he had pains, unable to urinate. On the next day, he fell into delirium. Brahe awoke shortly on the day of his death. He repeated his worries of not dying in vain. Johannes Kepler spending eleven days with the dying man noted: "Dying looking at me, about whom he knew that holds the view of Copernicus' ideas, begged of me for all phenomena to be explained by his Hypothesis Tychonica". That is how the illustrious astronomer died, in agonizing pain in arms of his 'beloved' cousin Eric Brahe, on October 24, 1601.

*Brahe's grandiose tombstone in the Týn Church (in the pillar on the right side) is reddish as the Mars, or as reddish as metal of astrolabe could be.*

Brahe's funeral was aristocratic. His last journey proceeded on the Royal Route from the Emperor's Castle over the Prague's (Charles) Bridge by the Old Town Hall with the astronomical clock, to the Church of Our Lady before Týn. A memorable eulogy gave a Brahe's friend, a famed physician Johannes Jessenius.

It can be argued that as the astronomer, observing through clear chilly nights, Brahe developed a kind of urinary weakness. But a suspicion of poisoning has been raised shortly after his death. A forensic analysis on hairs by the Danish research done decades ago revealed high content of mercury. The finding did not answer the question: Did Brahe die of the natural causes only?

The Danes in fact analyzed tips of Brahe's moustache. The sample came from an inexpert and contaminant research recorded in Prager Tychoniana by prof. Studnička in 1901. We know that after opening a partially collapsed old crypt in the Týn Church, Brahe's remains were found inside a small tin coffer. After tampering with remains of nine other people including the Brahe's wife who died three years later, an archeologist removed a strip of Brahe's moustache about 8cm (3 inch) long. The cut out upper part of the sample went to Denmark during the cooperation with the Czechoslovak Socialist Republic. Scientists dissolved the sample and analyzed that by spectrometry detecting mercury and arsenic. The content of mercury, however inhomogeneous, has been confirmed later by an advanced method at the research of cosmic particles in the Max Planck Institute in Germany. The lab analyzed the hairs including rootlets.

Yet, what could not be confirmed was, whether the mercury was inside of the hairs and if by ingestion.

For certain, the salve used for embalming done on the dead man including his moustache contained a high percentage of mercury. The salve caused a reddish hue, seen for example on the embalmed Bohemian King Ladislaus V Posthumous ('Pohrobek'; Died in Prague in 1457).


On the other hand, a deliberate act of poisoning has pointed out a historian Peter Andersen. He found out from a volume diary of Eric Brahe archived in Sweden, that the cousin of Brahe had been sent to assassinate the famous man to Prague that year. But did he really do such thing? And who wished on his death? Accordingly, the King of Denmark and Norway, Christian IV avenged on the man for love affairs with his royal mother, the Queen of Denmark Sofie of Mecklenburg-Schwerin. Still, mercury inside the body would confirm the old suspicion of poisoning, yet not the deliberate act. There might be also a medial explanation. Variety remedies like ointments against rheumatic contained mercury. However, connection with alchemy is unlikely, as Brahe was not an alchemist.

Yet Brahe's contact with mercury can be explained also by the astronomy.
Once, Brahe noted on the upper regions: "The firmament, it is the clock showing years, months and hours." For adjustment of his observing instruments, he used a small turret clock set by sundial at noon. Brahe knew that the clock regulated by a verge escapement ran error influencing his measurements. Visual error he worked with was up to five minutes. For better results, Brahe relied on clepsydra. A reservoir of the device was refilled on the regular basis.
But, to make it more reliable, (dry and non-corrosive), let me propose an idea that he had the water clock modified for the toxic liquid metal. Using quicksilver in clepsydra in the past was almost certainly known to Brahe. Already, Castilian King Alphonse X boasted about unique astronomical clock on the principle of clepsydra with a drum filled by the escaping quicksilver.

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