

A true salt mining museum from Transylvania

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The deposit of salt formations from the Transylvanian plateau took place in middle Bandenian-Wielician. The absolute age attributed to the salt deposits from Transylvania is 13.6 – 13.4 million years. The salt sedimentation took place in isolated marine basins, in a warm and wet climate, with vague tendencies towards dryness, on grounds of an active subsidence. The subsequent tectonic evolution of the basin determined the formation of long folds N – S orientated, lying in the West and, respectively, East of the Transylvanian Plateau, on the axis of which the salt is concentrated in diamond-shaped seeds.

The salt deposit in Turda belongs to the western front which developed from Maramuresh, in the North, up to Sibiu in the South. To the same front belong the deposits at Ocna Dej, Sic, Cojocna, Valea Florilor and Ocna Mures. Lying in the north-eastern part of the town the deposit covers an area of about 45 square kilometres while the average thickness of the layer of salt is around 250 meters. In the axial area of the fold the average salt thickness frequently goes to over 1200 meters. The salt from Turda is a monomineral rock, consisting of mineral halide (NaCl) whose proportion surpasses 99 %. The insoluble elements, mainly formed of CaSO₄ do not surpass 0.7 %. The geologic reserve supply is of 37 750 million tons. The terrigenous formations at the surface are between 0.5 m and 20 – 25 m thick. The salt coming to surface as a consequence of the erosion of the sterile rocks by Valea Florilor and Valea Sarata at the deposit's surface contributed to it being known from very old times.

The continual exploitation of the salt deposit, in the beginning through surface mining and later in the depth, started during the Roman occupation in Dacia, having a substantial economic function in the development of Potaissa. The start of the exploitation by the Romans can be spotted in the microplateau of the Salty Spas.

The Roman exploitations were rectangular in shape, in a quarry with upturned steps. The extracted salt was conveyed on inclined planes placed at one of the quarry's ends. At 12 – 15 m depth the location was abandoned, because of the water accumulation on the quarry's floor and of the difficulty in conveying the extracted salt. It is assumed that the present swimming pool – The Roman Lake – could be a location for the salt exploitation of the previously described type.

Traces of Roman exploitation in the depths were found in Valea Sarata ("Salty Valley"), precisely on the north-western slope when in 1867, the main gallery of Ghizela mine unexpectedly gave onto some underground former mining work of which there had been no awareness when the gallery was in project phase. The exploitation compartments were pyramid – shaped, placed next to each other and separated by wattle. When the compartments reached depths ranging between 17 and 24 metres the exploitation was abandoned, to be continued in a new location. This exploitation system ensured not only small expenses but also a massive exploitation of the salt.

After the Aurelian withdrawal, up to the 11th century, there are no certain proofs of the salt exploitation being continued. It has been assumed that the local population continued the exploitation both for covering the internal needs and with a view to exporting it in the neighbouring countries where there was want.

In the first document (of which there is knowledge) recording information about Transylvania, issued by the Hungarian chancellery in 1075, there is mention of the salt mines' customs "in the citadel called Turda". The quoted document does not mention the existence of an exploitation in Turda, but the establishment of a salt customhouse "on the way of Ariesh and Muresh" can be an argument in favour of existence of an exploitation in function. As royal city, Turda might have had a role of defence for the neighbouring salt mines. During the 13th century there was official mention of the salt mine in Turda. Thus, on 1st May 1271 "the salt mine in Turda" was being offered to the Catholic Clergy of Transylvania.

After a time of progress between the end of the 14th century and the middle of the 16th century there came a time of decrease in the mining rhythm in Transylvania. To get an accurate record of the condition of the salt exploitation the royalty sent inspectors to the Transylvanian mines. In a report made in the spring of 1552 royal inspectors Paulus Bornemisza and Georgius Wernher made reference to the quality of the salt, to the method of exploitation as well as to the number and quality of the workers. In the same document the salt mine of Turda is referred to as the most important in Transylvania and the main "salt customhouse" (a form of coordination of the salt exploitation) was the one in Turda for its administrator (appointed by the King) controlled the other administrators.

The installing of the Habsburgs at the end of the 17th century and the growing demands of the society contributed to an increase in importance of the mining industry. The salt mines started being administrated direct by the Imperial court.

The effects started to be felt in Turda as elsewhere. The exploitation compartments situated where the Salty Spas are and those on the south-eastern slope of the Salty Valley (“Valea Sarata”) were gradually abandoned while other areas of exploitation were being looked for and new mines were opened.

In the year 1690 the first mining operations started in the perimetre of the actual salt mine, materialised in the wells from the compartment called “St. Teresa”. Not long afterwards mine “St. Anthony” (Sf. Antoniu) was opened.

Highly valuable information about the exploitation of the Turda Salt mines dates back the second half of the 19th century, in the year 1867, when mineralogist Johann Fridwaldsz’s work entitled “MINERO-LOGIA MAGNI PRINCIPATUS TRANSILVANIAE” was published in Cluj. The author mentions entering those mines from the wish to be able to reveal to the reader the real essence of these salt mines (*quod lectori meo veram salis fodinarum iconem exhibere valeam*) and “because these mines deserve the highest admiration and curiosity (*fodinae maxima admiratione et curiosa inquisitione dignae sunt*)”.”This mine”, says Fridwaldszky, “is reported to be so famous that it almost has no rival in the whole East”.

After a detailed presentation of the way the mine was built (in the shape of a bell – i.e. cone-shaped), of the special care for avoiding the water infiltration, of the means of evacuating the water and the salt conveyance, this is how Fridwaldszky presents the condition of the mines and miners in Turda: ”The mines in Turda have five important wells, out of which the first is called the upper well, the second one – the lower well, the third one called ‘clujeana’, the fourth one – St. Terezia, and the fifth one St. Anthony. The diametre of the upper well’s floor is about 90 metres and the height is about 110 metres. The salt in this well is clear and only rarely mixed with earth, it is cut trough by 87 workers (*fossore*) aided by 18 unqualified workers (*volone*). The lower well’s diametre is 72 metres and its height is 106 metres.

The quality of the salt is as good as in the upper well. In what concerns the third well, this one has a diametre of 80 m and a height of 118 metres. There are 63 workers here and 12 unqualified ones. The mixture of salt with earth diminishes every day so that soon there will be only clear salt. In the well called St. Terezia there are 30 workers and 15 unqualified ones, it is 52 metres long in diametre and 70 metres in height. The most recent well – St. Anthony - has almost the same dimensions as the others...”

The author mentions also the existence of a bigger and older mine which was closed on 19 June 1762 because there was a danger of collapse.

Only three years from Fridwaldszky, the problem of the salt exploitation in Transylvania is resumed by J.E. von Fichtel in the work entitled “Contributions to the mineral history of Transylvania in 1780”. Among the graphic annexes to the work there is “The plain of the Transylvanian salt mine from Turda” which mentions five wells called, from north to south, the upper mine, Joseph, Teresia, Anthony and “clujeana”. It is worth noting that the three cone-shaped exploitations which are part of the Turda Salt Mine are mentioned in Fichtel’s work with the actual name. On the same plan, on the south-eastern side of the Salty Valley are included two lakes, which could be, according to their position on the plan the lakes known today as “Lacul Ocnei” (The Mine Lake) and “Lacul Rotund” (The Round Lake) from the area of “Durgau – Valea Sarata”, the latter being but abandoned exploitation compartments which had collapsed because of salt dissolving in the roof and filled with the water coming from snows and rains.

The Turda Salt Mine which was from its very beginning one of the most important in Transylvania, started to decline after 1840 because of the ever bigger competition from the salt mine in Ocna Mures, gradually coming to be but a reserve to the latter.

Up to 1862 salt was extracted in Turda from the three old wells of “Iosif”, “Terezia” and “Anton”. During this year the salt exploitation in the “Anton” well, where extraction had reached the depth of 108 metres, was stopped because of a high infiltration of clay in the deposit. The biggest problem which the Salt Customhouse in Turda was confronted with during this time consisted in the transportation of salt from the “mouth” of the wells in Valea Sarata to the storehouses in Turda Noua, the way being rather abrupt. To make transportation easier and to cut the expenses, in 1853 was decided the building of a conveyance gallery which was to start from Turda Noua. This gallery, called Franz Joseph, reached the depth of 780 m in 1870, being furthered to 137 m till the end of the century.

Along with the diggings for the conveyance gallery, St. Terezia well was also modernized, it being provided with two more side compartments – “Rudolf” and “Ghizela”, extraction being concentrated in “Rudolf” mine though.

In the first year of 20th century the extraction depth of this mine reached 38 metres, the extraction floor of this mine having reached 80 metres in length and 50 metres in width.

After the modernisation of “Terezia” well no other mine openings were made. Through the opening of the mine sectors “Rudolf” and “Ghizela” as well as through the building of the conveyance gallery “Franz Joseph” for the evacuation of the extracted salt, both production and transport were resolved for some good time onwards. Nevertheless, productivity remained low due to the extraction technology and the technical equipment unchanged for centuries. In the Turda Mines the salt was extracted manually with pick-axes, hammers, chisels and steel wedges. The attempts to using explosive materials did not lead to the expected results (the result was very much finer salt) which was why they were soon abandoned.

After the First World War the salt exploitation became state monopoly, so the private firms had no right of concession or exploitation of the mineral in Romania. The importance of the exploitation in Ocna Dej and Ocna Mures increased due to the highly productive technology implemented in these mines. Even through the opening of the “Salty” factory of chemicals and the requirements of the army in the first World War led to a rise in production with the Turda Salt Mine, after 1918 the decline became steady, ending in the closing of the mine in 1932. Prisoners were never used as workforce in the Turda Salt Mine, and nowhere in Transylvania. The salt was exploited by free people who were hired for one year, their work contract being signed on January 7. A salt cutter received 12 florins a year. All of them, as a group, received a barrel of wine, an ox and 100 loaves of bread on the four major celebrations (Christmas, Easter, Ascension Day, All Saints’ Day). Sometimes the ox was sold back for 4 florins and a loaf of bread for two florins. A closer look at the historic documents reveals the fact that the pay for a day-labourer in agriculture was bigger than a salt miner’s. Through centuries the hard labour and the low wages made the miners in the salt exploitations join the labourers in other mines for protests.

After its closing in 1932 the salt mine was forgotten till the second World War, when it was reopened and used as an antiaircraft shelter.

Up to the year 1992, when the salt mine was opened to the public, getting the status of touristic site, the first 500 metres of Franz Joseph conveyance gallery had been used for quite a long time, as a warehouse for cheese storage.

The Turda Salt Mine is today a genuine history museum of Salt exploitation. The excellent condition of the mining compartments and of the equipment used for salt transportation, as well as the care with which the mine was prepared for touristic use, have turned it into a place of mingled history and legend. The ever higher number of tourists coming here from most various parts of the world to visit the mine are but a confirmation of its historical and touristic value.

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