

## TÂRGU JIU AND “*THE HEROES PATH*” MONUMENTAL COMPLEX OF BRÂNCUȘI

compiled by Iulian POPA, *University of Bucharest*

The city of Târgu Jiu (*the Fair on Jiu River*), with a population of about 80,000 people, is the capital of Gorj County (in southwestern Romania), at about 300 km away from Bucharest. Târgu Jiu prides itself as being the city of Constantin Brâncuși, keeper of the most impressive grand monuments created by the sculptor. Nevertheless, there are also several other interesting things to see in Târgu Jiu. Lacking old monuments, most of the city center is modern. The most beautiful architecture dates from late 18<sup>th</sup>, 19<sup>th</sup> and early 20<sup>th</sup> century.

Târgu Jiu holds one of the greatest cultural treasures of Romania - the ***Heroes Path Monumental Complex***, realized during 1937-1938 period. The *Heroes Path Complex* consists of a series of grand scale sculptures disposed on an east-west axis that cuts through the center of the city. The ensemble comprises three sculptures: *The Table of Silence*, *The Gate of the Kiss* and the *Endless Column*, on an axis 1275 m long, oriented west to east (Figure 14). The ensemble is considered to be one of the great works of 20th-century outdoor sculpture.

Right on the bank of Jiu River, the ***Table of Silence*** that is carved in travertine, marks the beginning of a symbolic journey imagined by the genius of Brancusi. Walking east towards the park's entry, the *Chairs' Alley* connects the Table to the second grand monument, the ***Gate of the Kiss***. Crossing the city center along the *Heroes Path Street*, you can easily reach the final monument, visible from afar. The impressive ***Endless Column*** is among the most famous monumental works of art in the world.

***Table of Silence*** - The perfect symmetry and circularity of the table and the surrounding twelve chairs creates a space of deep contemplation. Symbolizing the silence of deep thought and meditation, the table is created by two perfect stone cylinders. Around the table, at equal distance from it and from one another, there are twelve clepsydrae chairs. For some, the monument also symbolizes the Last Supper with Jesus at the center surrounded by the twelve apostles.

Following a charming alley through the park flanked by two rows of square clepsydrae chairs, the second monument – ***Gate of the Kiss***, is visible at a short walk away. The monumental gate at the entrance of the city is a symbol of love. The stylization of the kiss symbol has been a lifelong

purpose for Brâncuși. The gate, made from travertine blocks, is a sort of triumphal arch like many other around the world, but unlike others, it takes a humanly scale. Couples that pass through the gate have the custom of kissing under the arch.

On the same axis as the first two monuments but about 1 kilometre away on the other side of the city, the *Endless Column* is among the most famous and important monuments of the modern art of the world. The column was the only monument commissioned by the city to honor the heroes of World War I. The original name was “The Column of Endless Gratitude” and it was dedicated to the Romanian soldiers who died fighting on the shores of Jiu River, in 1916. The column is made of cast iron, has a height of 29.35 meters, weights almost 30 tons and consists of 16 overlapped octahedron modules. Brâncuși called the modules “beads”. Inspired by traditional motifs sculpted by peasants into their wooden house porches, the Endless Column has to be admired from all angles and distances, taking new forms and meanings.

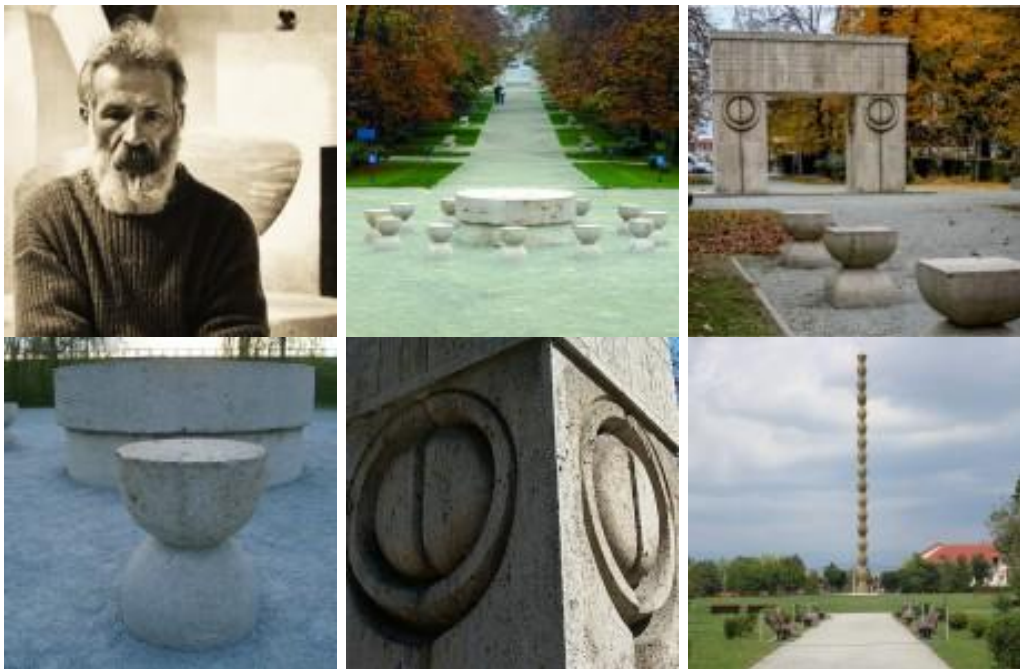


Figure 14. Constantin Brâncuși (1876 – 1957) and his sculptures in Tg. Jiu  
(<https://www.targujiu.info/ro/.....>)

The father of modern sculpture, **Brâncuși** was born (1876) a short distance from Târgu Jiu, in a peasant family of Hobita Village. Brâncuși was a Romanian sculptor, painter and photographer. He became famous in France,

as a pioneer of modernism and one of the most influential sculptors of the 20th-century.

Considered among the great masters of modern art, with works displayed in the world's greatest museums and valued at millions, Constantin Brancusi has created some of the most famous sculptures in the world (*Bird in space, Mademoiselle Pogany, The Newborn, The Kiss, Sleeping Muse, La Sagesse de la Terre*). Although he left Romania to live and work in Paris, he never forgot his homeland. Constantly longing for home, he left in Romania his most important legacy, right here, in Târgu Jiu.

Brâncuși considered the art a source of joy and for this reason he was pretty tight with explanations about his works. On a certain occasion he concluded: *"In art what matter is the joy. Is not necessary to understand. Are you happy to see it ? It's enough!"*

## KARST OF SOUTHERN CARPATHIANS BETWEEN TÂRGU JIU AND RÂMNICU VÂLCEA

compiled by Adrian IURKIEWICZ, *University of Bucharest*

This part of the trip shall focus on the karst features developed into the limestones outcropping on the southern slopes of Parâng and Căpățâni Mountains, as well as on the southern edge of the limestone ridge of Buila-Vânturarița. Here, the Jurassic (Tithonian) limestones have generated a well-marked karst landscape. The surface features are almost exclusively represented by deep gorges but the underground drainages have generated two of the most important cave systems in Southern Carpathians: the *Peștera Muierilor* on the *Galbenul Gorge* and the *Peștera Polovragi* on the *Oltet Gorge*.

### **Parâng Mountains and the SW-part of the Căpățâni Mountains**

On the way from Târgu Jiu to *Muierii Cave* the road passes through Baia de Fier, (The Iron Mine, the meaning of Romanian word *baia* also representing an archaism term for *mine*) a collectivity documented since the end of the 15<sup>th</sup> Century. However the last mining activity here was for graphite and it was closed in 1994 (after more than 40 years of exploitation) despite of the proved resources (<https://www.gorj24.com/zacamant-de-grafit-unic-in-romania-lasat-de-izbeliste-se-afla-in-judetul-gorj/>).

The geologic structure in the south-eastern section of Parâng Mountains and the south-western section of Căpățâni Mountains does not differ much to that of Vâlcan Mountains and consist of formations belonging to the Getic Domain (the Sebeș-Lotru series), a tectonic mixture strip consisting of the Tărăia Unit, and formations belonging to the Danubian Domain (the Schela Unit and the Lainici Unit).

The main aquifer formation in the area is represented by the Upper Jurassic – Early Cretaceous (Aptian) carbonate rocks (*The Oslea-Polovragi limestone formation*), occurring as an almost continuous strip of 9.23 km<sup>2</sup> between Gilortelul Mic stream to the south-west and Luncavăț stream to the northeast (Figure 15). Its maximum width, 1-1.5 km, is recorded in the section bounded by the streams Galbenul (to the west) and Cerna (to the east). Surface karst landforms are rather poorly developed, yet worth to be mentioned are the occurrences of grikes, natural bridges and porches, limestone escarpments, seasonal flow valleys, swallets and springs. Gorges are the most illustrative surface karst landforms in the area (ex.: the gorge sections of Valea Seacă and those of the streams Galbenul, Oltet, and Cerna).

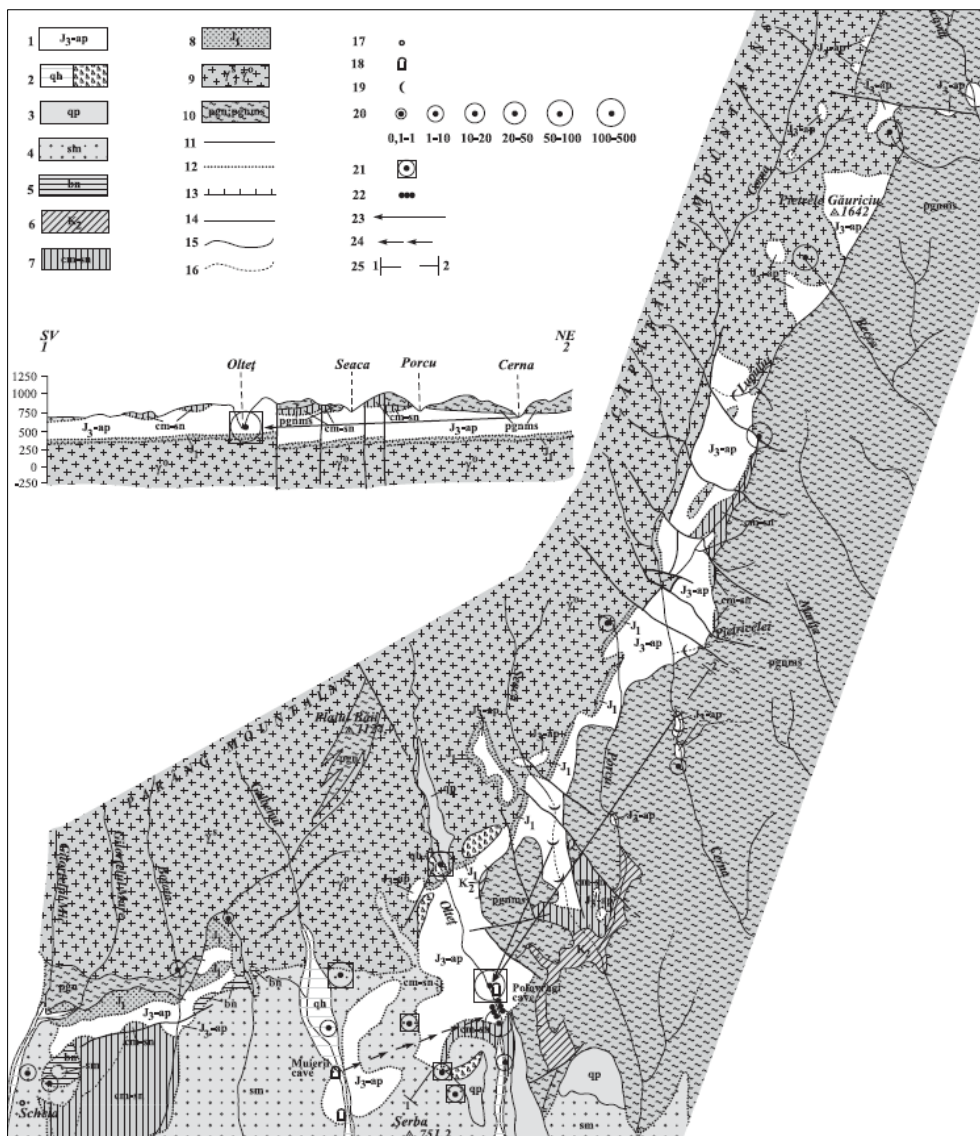


Figure 15. Hydrogeological map of the South-Eastern part of the Parâng Mts and the South-Western part of the Căpățâni Mts (Bandrabur & Bandrabur, 2010)

**Legend:** 1 - Mesozoic limestones (J3-ap); 2 - Alluvial deposits, colluvial deposits (qh); 3 - Boulders, gravels, sands (qp); 4 - Sands, gravels, marls (sm); 5 - Marls, limestones, sandstones, greenish breccias (bn); 6 - Carbonatic mylonites (K2 - Tărăia Unit); 7 - Clays, arenites - Cernădia Formation and marly limestones, clays - Nadanova Formation (cmnsn); 8 - Sandstones (J1); 9 - Granites ( $\gamma$ O -Oltet granitoids;  $\gamma$ S – Susita granitoids); 10 - Paragneisses, gneisses, micashists (pgn - Lainici-Paius series; pgnms - Sebes-Lotru Series); 11 - Geological boundary; 12 - Unconformity boundary; 13 - Overthrust plane; 14 - Fault; 15 - Perennial surface course; 16 - Temporary surface course; 17 - Locality; 18 - Cave; 19 - Ponor; 20 - Spring discharge (l/s); 21 - Catchment; 22 - Group of springs; 23 - Underground flow direction established by tracer experiments; 24 - Presumptive underground flow direction; 25 - Hydrogeological cross-section line.

The most important endokarst phenomena are *Polovragi Cave* (10700 m length) in the Oltet Gorge, and *Muierii Cave* (3566 m length) in the Galbenul Gorge. The systematic catalogue of the caves in Romania (Goran, 1982) indicates the existence of 74 cavities characterized by various genetic and topographic features, occurring mainly clustered in the gorge sections or in their close proximity.

### **GALBENUL STREAM AND MUIERII CAVE (*Peștera Muierii*)**

The Galbenul valley crosses through the first gorge sector within the limestone band in south Parâng Mountains. The valley is large, delimited by calcareous cliffs terminated by continuous scree deposits (Figure 17, Top). Over the 700 m long carbonate rocks section of Galbenul stream no permanent spring was identified. Yet the abundance of endokarst phenomena in the Galbenul Gorge area indicates that in the past, a rather intense hydrologic activity must have occurred there. Erosion levels are traced by cave entrances occurring on both sides of the valley.

The most important endokarst phenomenon is *Muierii Cave* at Baia de Fier. This was also the first show cave in Romania fitted with electric light. It is a large cave with a quoted length of some 4500m (Ponta et al. 2019) that apparently was explored (but not accurately mapped) to around 7000m (Goran et al. 2006). The cave develops on at least four levels in Late Jurassic - Aptian limestone out of which none is subject to perennial flow. The main part of the cave extends over levels two and three. The overall passage system strikes NNW-SSE, similarly to the fracture line on which it was developed and which additionally concerned the right side of Galbenul Gorge. The passages are a result of limestone dissolution by water infiltrated from Galbenul stream through underground flow paths along the fracture line, and they have evolved in parallel with the gorge incision that was completed by the main course of the stream (Bleahu et al. 1976). The Galbenul River bed is very close to the granitic basement overlaid by the limestone and hence most of its waters flow at surface and only the last cave system is temporary active.

The touristic track starts at upstream (northern) entrance of the cave and is following the main gallery throughout some larger halls. The longest passage, is *Galeria Electrificată* (Illuminated Passage) (570 m in length), that along with almost 1300 m of secondary lateral galleries (e.g., *Mousterian* and *Secondary* passages), situated at the same dry level, represent less than half of the entire cave network. The exit from the cave is through the downstream opening southeast oriented (Figure 16, Orghidan et al. 1984). *Muierii Cave* is

decorated with speleothems and contains significant bone deposits, guano, and sediments.

The cave system has been known scientifically to the end of XIX<sup>th</sup> century, but the earliest sounding took place in the Main Gallery only in 1929 and this led to the discovery of many Paleolithic artifacts. Subsequent excavations in other two galleries (*Mousterian* and *Secondary* passages) were undertaken under the direction of C.S. Nicolaescu-Plopsor from 1951 to 1953 and in 1955 (Soficaru et al. 2006). They also contributed to the discovery of an abundance of Paleolithic and more recent archeological remains and a large quantity of Pleistocene faunal remains. The massive bone deposits are considered to stay at the origin of a rare phosphatic mineral: the dahlite, which makes up small stalactites, draperies and deep red crusts in this cave (Diaconu et al. 1980).

A stalagmite collected from the upper level of the cave system was dated by U-series method to a time interval corresponding to MIS 5e (~121±5 to ~90±6 ka, Constantin 2003). The results of a complex dating of fossil samples (mostly bones of *Ursus Spelaeus*) had been published by Doboş et al. (2009). The applied methodology yielded ages from 30,000 to more than 50,000 (<sup>14</sup>C, years BP).

The conclusions of Soficaru et al. (2006) on the 30,000 (<sup>14</sup>C, years BP) human remains from Muierii Cave refers to a basically modern human derived morphological pattern that joins the sample of human remains from the sites of *Peştera cu Oase* and *Peştera Cioclovina* in S-E Europe, *Mladeč* in Central Europe, and *Brassempouy*, *La Quina Aval*, and *Les Rois* in Western Europe in filling out the morphological pattern of the earliest of modern humans in Europe.

A rehabilitation project is about to start targeting a modern (and ecological) approach for the design and implementation of the touristic facilities outside and particularly inside the cave.

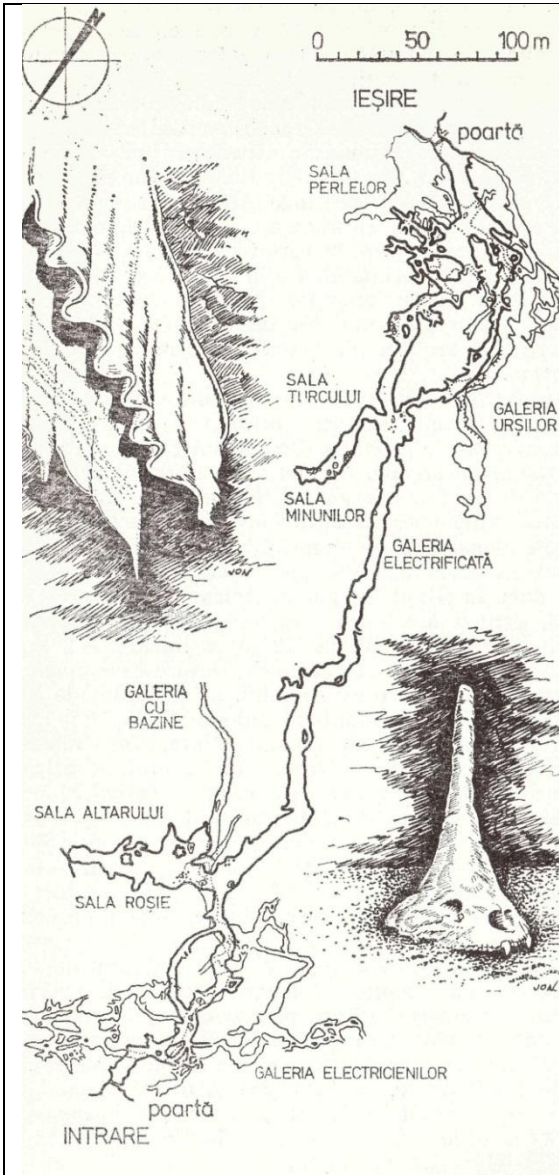


Figure 16. Sketch-map of Muierii Cave (from Orghidan et al. 1984)

Figure 17. Top: Galbenul Gorge; Middle: Muierii Cave entrance; Bottom: Sampling stalagmites; photo courtesy of *Ionut Mirea*

## POLOVRAGI MONASTERY AND OLTEȚ STREAM

The name of the nearby locality and the whole area is considered as coming from a miraculous and quite rare plant used by local therapists used as a remedy against different disease. The name of this real panacea is *polovraga*, a plant considered somehow similar to *ginseng*, from which only the root can be used for a naturist therapy.

The chronicles attest the monastery at the beginning of the 16th century (1505), by two local rulers *Radu Comisul* and *Petre Spătarul* (Ciocoi et al. 2013). Two centuries later (1693) the ruler Constantin Brâncoveanu restores the church in the byzantine style adding also the surrounding wall. The significant inside painting of the church has been completed by the disciples of the painting school of Hurezi Monastery. The paintings have been preserved intact, as the coloring, with sober and harmonious nuances stands out on a blue background. The iconostasis is remarkable, richly ornamented with floral interlaces, a masterpiece of old Romanian sculpting. The icon depicting “The protection of the Mother of God” is at the exterior, and it is said that it punishes the ones with evil thoughts. The legends say that a young man chased by a Turk was looking for a shelter inside the monastery. The chaser, angry with his own inability, shot the icon; short after he fell off his horse and was fatally injured. Starting with 1968 the monastery is administrated by nuns.

The monastery has a museum that accommodates a collection of 650 glass and wooden icons, manuscripts with psalm chants, items donated by Matei Basarab and Constantin Brâncoveanu and an old book deposit of over 3,000 volumes in Romanian, Slavic and Greek.

**The Olteț Gorge** starts behind the Polovragi Monastery. Before reaching the depression located in front of the Carpathians (the «Oltenia section of the Subcarpathian Depression»), Olteț stream cuts through the E-W striking limestone bar a gorge whose vertical extension is in excess of hundred meters, marking the geomorphologic limit between Căpățâni and Parâng Mountains (Figure 19, two upper photos).

The nature has created a great, overwhelming and unmistakable landscape extending over some two kilometers. At a certain point an abrupt path can be seen on the right side of the forest road. After approximately one hour of walking on foot on the marked trail, passing “Cornet” and “Sub Cruce” layovers, you reach “Crucea lui Ursache”, where there is the Dacian Fortress of Polovragi. Built in the 2<sup>nd</sup> and 1<sup>st</sup> centuries B.C, it was the only

fortification with a stone wall in Oltenia, used as a refuge by the Dacians and for the defense of the road leading to Sarmizegetusa Regia. Legends say that the Dacians reached the fortress in Orăștiei Mountains through the galleries of Polovragi Cave, covering a distance of 40 kilometers.

In spite of being located just 5 km east of Galbenul gorge, the Oltet gorge displays a completely different appearance. The high walls of the valley are tightly spaced one to another: the distance between them varies from 4-5 m next to the stream-bed, to 10-20 m in the upper part. Several erosion levels can be traced within the walls, more prominent being the levels highlighted by the cave-entrances lineaments occurring at 25 m and at 60 m above the streambed. The most important cavity is Polovragi Cave, a former underground meander of Oltet stream; the cave entrance is located 20 m above the streambed and some 200 m upstream the place where the stream exits from the gorge.

## **POLOVRAGI CAVE**

Polovragi Cave is situated in Gorj County, at 1.2 kilometres from Polovragi village. In terms of geographic location, the cave is situated in Căpățâni Mountains, on the left side of the Olteț Gorges, at about 200 m from the entrance of the gorges downstream, at an elevation of 650 masl. The summarized statistical data on the cavern refers to 10,793 m of passages and 91m vertical range (−62 m, +29 m) with a branching index of 6.81 and an extension of 1520 m (Ponta et al. 2019).

Polovragi Cave was declared Natural Reserve by the Government of Romania by Law 5/2000 concerning the approval of the national territory arrangement plan - Section III - Protected areas, according to which it is part of the "protected natural areas of national interest". The Polovragi Cave–Oltețului Gorge karst area is part of the Protected Natural Area 2440 located in the Natura 2000 ROSCI0128- "Nordul Gorjului de Est" site. It is classified according to Law 462 as a natural reserve, IUCN category IV, Class B.

The main entrance of the cave was known for a long time, as *Cave of Pahomie* from Polovragi. A brief description of the cave was made by Joannes in 1868, followed by another description made by Alexandru Vlahuță in his well-known volume of *România Pitoreasca* (1901). The first data regarding the location of the cave were published in 1929 by P. Jeannel and E. G. Racoviță (Orghidan et al. 1984).

The cave was extensively explored and mapped by the members of Focul Viiu Speo-Club that in only two years (starting with 1974) mapped some 9300 m (Orghidan et al. 1984). More recently i.e. subsequent to the year of 2000, the same club resumed the exploration concluding in a total length slightly less than 11 km of galleries, thus ranking the cave on the eleventh place among Romanian caves.

For description purposes, Ponta & Aldica (2009) divided the whole network of galleries in three sectors as i.e. the Access Section (1), the Upstream Section (2) and the Downstream Section (3):

(1) The *Access Passage (Zona de Acces)*, with 1224 m of passages, extends between the upstream entrance and the Wonder Hall (Sala Minunilor). The passages are in general small, formed along E–W and NE–SW oriented fractures, and developed on three different levels, most of them being formed by surface sinking streams. It has an average height of 1 m, and in time most probably was completely submerged as suggested by cave morphology (horizontal ceiling, narrow passages), and large argillaceous deposits.

(2) The *Upstream Section (Zona Amonte)* is of maze type, specific to phreatic caves, with many narrow passages, frequently less than 1–1.5 m high. This sector cumulates a total length of 2,880 m of galleries, where fractures striking N-S or E-W were identified. Occasionally, at faults crossings, the passages widen into large chambers, with breakdown blocks and flowstone domes (Goran, Constantin and Horoi 2006)

(3) The *Downstream Section (Zona Aval)* (partly shown in Figure 18), includes the 2–7 m wide and 1.3–10 m high main passage extending between the Wonders Passage and the downstream, main entrance, over more than 5000 m of passages. Side passages are between 50 and 200 m long, and they are either abundantly decorated (the Wonders Passage, the Soda Straws Passage), or very tight (Constantin & Goran 2006).

Electric lighting and tourist facilities have been installed along some 900 m of the main passage, although in that section most of the decorations had been vandalized since long. This sector also includes the functional stream (lower) section of the cave with active passages and chambers that amounts to 850 m total length.

The black painting of Death on cave walls has probably been done by one of the monks who inhabited the cave between the 16<sup>th</sup> and the 20<sup>th</sup> centuries. As in case of *Women Cave* a modern (and ecological) rehabilitation project has been designed for *Polovragi Cave* but it's still before the feasibility-tendering stages.

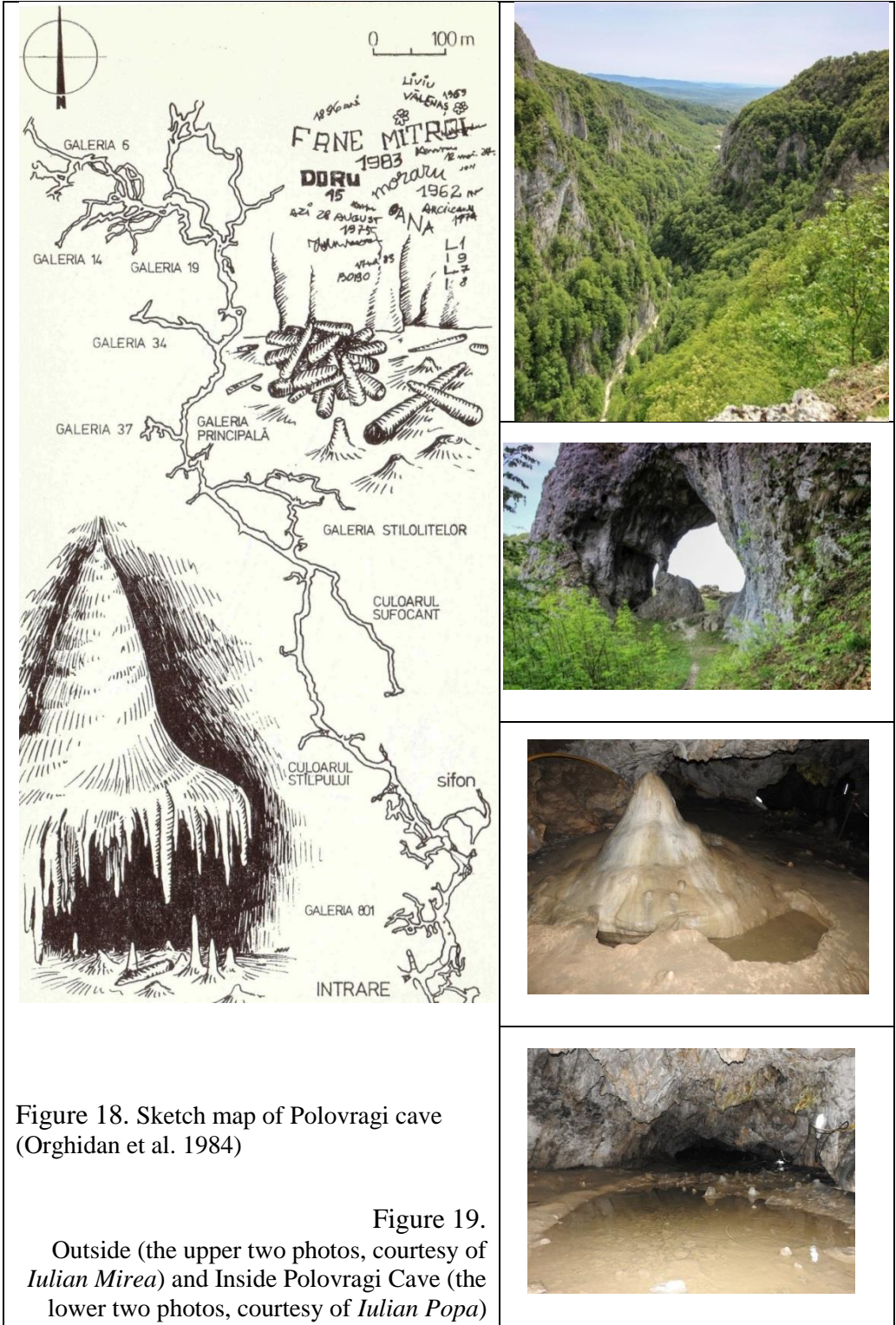


Figure 18. Sketch map of Polovragi cave (Orghidan et al. 1984)

Figure 19. Outside (the upper two photos, courtesy of Iulian Mirea) and Inside Polovragi Cave (the lower two photos, courtesy of Iulian Popa)

## HUREZI (HOREZU) MONASTERY

compiled by Adrian IURKIEWICZ, *University of Bucharest*

The Hurezi Monastery, the most important monastery founded by the martyr Voivode, Constantin Brâncoveanu (1688–1714), was built between 1690 and 1693, the great church of the complex being consecrated on 8<sup>th</sup> September 1693. Being considered the most representative edifice built in the “Brâncovenesc” style in the country, the Hurezi Monastery is, perhaps, the largest monastic complex in Romania and is considered to be a masterpiece of this style characterized by its architectural purity and balance, the richness of its sculpted detail, its treatment of religious compositions, its votive portraits, and its painted decorative works. It extends on more than 3 ha, including the monastery itself, the Infirmary Church, the “Sfinții Apostoli” Hermitage and the “Sfântul Ștefan” Hermitage, as well as the “Sfinții Îngeri” Church, also built by one of the abbots of the monastery, a church lying southwards of the precinct of the monastery. In 1993, the Hurezi Monastery was included in the UNESCO World Heritage List.

Hurezi Monastery mainly consists of two precincts: the inner one is delimited by brick walls including the core complex of five churches. The entrance has a wide vault, with a massive, wooden gate. Apart from the main church of the complex, the other four were built from 1693 to 1700 and slightly after (Figure 20).

The outer one has buildings on three sides and a high wall to the sunrise, thus completing the image of a real fortification assembly. In the belfry tower there are four bells, weighing between 300 and 1000 kilos. The name of ruler *Brâncoveanu* is inscribed on three of them. The *Brâncovenesc* style, which can be found at several other churches and monasteries in Wallachia, is the only true and original Romanian style and is honoring the name of the ruler who, in a period of constant battles between the world powers of that time, put cultural development of the country above everything and made it the goal of his life. To some extent the church can be considered an approximate replica of the famous *Curtea de Argeș Monastery*.

Built on a three-cusped plan, the “Sfinții Împărați Constantin și mama sa Elena” (*Saints Constantine and His Mother Helena*) Church is of 32 meters long and 14 meters high and develops the model of the Episcopal Church of the Curtea de Argeș Monastery, in the sense of more elongated shapes and by adding a veranda typical of the “Brâncoveanu” style, with arcades supported by ten stone columns, decorated with ornaments characteristic of the late Renaissance. Rectangular panes and ornamental niches with circles decorate its façade. The frame of the entrance door is made of carved marble, the

inscription including the emblem of Wallachia and that of the Cantacuzino family. Here, in the Church of *Saints Constantine and Helena* is where Constantin Brâncoveanu prepared his burial sarcophagus; this remained empty following the martyrdom of the voivode and his four sons on August 15, 1714 in Constantinople (Gabriel Herea, 2009).



Figure 20. Images from the core complex of churches

All the churches have been preserved in their original shape. The coherence of the programme is coupled with the unity of the architectural style: the churches, rectangular in plan, have high slender turrets whose heights equal

the length of the edifice. The porches opening to the court by arched vaults within the dome are supported by ten stone piers adorned with late Renaissance motifs (Corina Popa, 1995).

The constructions and the churches were endowed with carved wood furniture: pews, high back chairs, iconostases that borrow the adornment of the door frames where the foliage is in relief or flat, suggesting its connection to the *Baroque* metal work. For ten years a number of artists, masons, stone cutters and wood sculptors, icon and wall painters had been working earnestly to perfect this remarkable monastic masterpiece.

The churches preserve most of the original wall paintings. Painted between 1692 and 1702 by twelve painters led by Greek painters Constantinos and John, they represent the early *Brâncovan* (or *Brâncovenesc*) style in wall painting. The two Greek masters, who also painted the Lady's Church (*Biserica Doamnei*) in Bucharest, built in 1683, were outstanding promoters of *Byzantine Renaissance*, both as regards icon and wall painting. Alongside the religious scenes shown, in the pronaos there is a portrait gallery of the Brâncoveanu, Basarab and Cantacuzino families.

The prince, several boyars and priests made of Hurezi the main artistic centre of the Râmnic bishopric, so that *Polovragi*, *Mamu*, *Surpatele*, *Cozia* and *Govora* monasteries, were either built or restored and painted by the same artists who at Hurezi established a very unique style and a real school of painting.

Initially Hurezi (Horezu) was a monk monastery, but in 1872 it became a monastery of nuns. Several rehabilitation stages occurred during 1827, 1872, 1907-1912, and 1954. The last rehabilitation works were conducted during 1960-1978, concluding in the full restauration of the monastic assembly.

## OLARI, STRET OF THE CERAMISTS

compiled by Adrian IURKIEWICZ, *University of Bucharest*

**Horezu ceramics** is a unique type of Romanian pottery that is traditionally produced by hand around the town of Horezu in northern Oltenia (Vâlcea County), close to the famous Horezu Monastery. It reflects the development of knowledge and skills in the branch of pottery of many generations working and leaving in this area which is why the craftsmanship of Horezu pottery was inscribed on UNESCO Intangible Cultural Heritage Lists in December 2012 ([https://en.wikipedia.org/wiki/Horezu\\_ceramics](https://en.wikipedia.org/wiki/Horezu_ceramics)).

The craft of working the clay was transmitted through the ages by the families of ceramists who managed to keep it alive in the ancestral village hearth, now known as “Olari street”. On the main street of the village there are 18 ceramists’ workshops, where the artisans work the clay with the same unparalleled craftsmanship as their ancestors (<http://www.horezu-infoturism.ro/EN/olari-village-of-the-ceramists>).

Each potter has his own technique of shaping, but each respects the sequence of the process. Men select and extract the local (very specific) type of clay, which is then cleaned, cut, watered, kneaded, trampled and mixed – eventually transformed into a body from which they produce a red pottery. The potters then shape each object with a special finger technique requiring concentration, strength and agility. Usually the women decorate the shaped ceramics before firing with special techniques and tools in order to draw traditional motifs. Their skills in combining decoration and color determine the personality and uniqueness of these pieces. Colors are bright shades of brown, red, green, blue and so called “Horezu ivory”. Horezu potters use many traditional tools like a mixer for cleaning the earth, a *pottery wheel* (*roata olarului*) and comb for shaping, a hollowed-out bull’s horn and a fine wire-tipped stick for decoration, and a wood-burning stove for firing (<https://ich.unesco.org/en/RL/craftsmanship-of-horezu-ceramics-00610>).

Horezu is a singular historical Romanian ceramic center in which this trade remained the main source of income for many families of potters out of which the most known are OGREZEANU, VICSOREANU, IORGA, FRIGURA, BASCU or TAMBREA (<http://www.horezu-infoturism.ro/satul-de-ceramisti-din-olari>). Today this craftsmanship is transmitted as always in the family circle, but also in workshops from master to apprentice, and pottery festivals and exhibitions. The Olari centre produces a type of pottery having its own unitary character, well-defined through its shape, decorations, technique and

colours (bowls, plates, pots, pitchers, cups of various sizes, for home or decorative use - Figure 21).

The village of Olari from Horezu commune has always been recognized as a specialized center in ceramics. The potters from Horezu realized in the beginning regular vessels that they would sell at the fairs organized in the vicinity of their village or they would give to the waggoners who would sell them in some other villages. Usually, the trade was made outdoors (several vessels in exchange for maize, poultry or animals). The notion of “regular vessels” comes from the fact that these vessels were used in everyday usage. The vessels were not decorated, but there were only a few enameled stains of color on them.



Figure 21. Images from Olari Street

## TROVANTS MUSEUM NATURAL RESERVE AT COSTEȘTI

compiled by Adrian IURKIEWICZ, *University of Bucharest*

The *Trovants Museum Natural Reserve*, is located at 8 km from Horezu, nearby the village of Costesti and is the only one of this kind in Romania and in Europe. It was created in 2004 and subsequently was declared UNESCO monument. Nowadays is managed/administrated by "Kogayon Association", a non-governmental organization of environment protection.

The term "*Trovant*" is usual in Romanian geology and denominates sandy concretions, representing local cementations in a sand layer. The trovants represent local cementation in the reservoir of sand that contains them, some of the very strange shape. The diameter of the trovants is from centimetric to metric. This term has been used for the first time by Murgoci (1907) with respect to indurated blocks inside a largely unconsolidated formation. The origin of the term could be ascribed to the Italian *trovante* (*erratic boulder*, Țicleanu 2011). Noteworthy, in a previous note in English, Murgoci used the term *concretion* for the same type of rock (Jean-Paul Saint Martin et al.).

One of the most important places of Romania where the trovants occur is the sand quarry from the Costesti village on the route from Horezu to Râmnicu Vâlcea (Figure 22). The cemented elements can be found in sand formation of Upper Miocene (around 6.5Ma) displaying a deltaic environment. Local exploitation of sand and weathering (erosion) make new trovants to appear continuously from the (Upper Miocene) sand formation (Figure 23). The main outcrop (the quarry) was integrated and arranged in an open-air museum of trovants, covering a total surface of 2500 m<sup>2</sup>.

As regards the origin of trovants, several hypotheses are mentioned by Tita (2002) i.e. wind erosion and the variations of temperature (1), water infiltration in a sand deposit generating triggering the creation of some concretions by cementation (2) or by seismic shocks (3). However according to Țicleanu et al. (2008) the epigenetic origin as hypothesized by (1) and (2) is out of discussion and in fact *the trovants* represent diagenetic textures reflecting paleodynamic (paleoseismic) conditions and correspond to specific compactations of the sandy sediments containing locally solutions (especially carbonate) accumulated in the sand, which during important seismic shocks and under the influence of the internal cohesion forces tended to spherical forms. In the process are involved: gravitation force, seismic shocks, solution cohesion forces (particularly surface tension) and the adhesion strength between the sand grains and the liquid (Țicleanu, 2011).

The two essential conditions for the trovants formation are the occurrence of sand sediments and conservation of a significant porosity, despite the normal compression caused by the pressure and segregation of specific minerals from secondary components dispersed in the host rock.



Figure 22. General view of the sand quarry



Figure 23. Trovants still buried in sand

Complex aggregates of two or more trovants can often be found (Figure 24). The large trovants found in the thick sand beds reflect great initial amounts of solutions in the bulk of the sandy sediment. The perfect spherical shapes (Figure 25) which sometimes can be found suggest great magnitudes and durations of the paleo-earthquakes (Țicleanu 2011). Noteworthy, there is no mineralogical difference between these pseudo-concretions and the surrounding sands. Their cement is often carbonate-type and no distinct nucleus can be found inside them.



Figure 24. Aggregates of trovants



Figure 25. Exhumed spherical trovant

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