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MINEHERITAGE



Rude



Rude



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Front page/Naslovna strana: St. Barbara Mine / Rudnik sveta Barbara





Rude

Rude is a small village located in the Samobor highlands, 4 km away from the town of Samobor near Zagreb. It is known for its copper and iron mine, St. Barbara Mine, which is now open as tourist site. The mine experienced its golden age during the 16th century. The amount of copper extracted here at that time was twice of England's, four times of Norway's and reached a third of Swedish copper production from the Falun mine [1].

The St. Barbara Mine has been a part of the Register of Cultural Heritage of the Republic of Croatia since 2015 – and it can be found on the list of protected cultural properties.



The location of Rude
Položaj Ruda

Rude

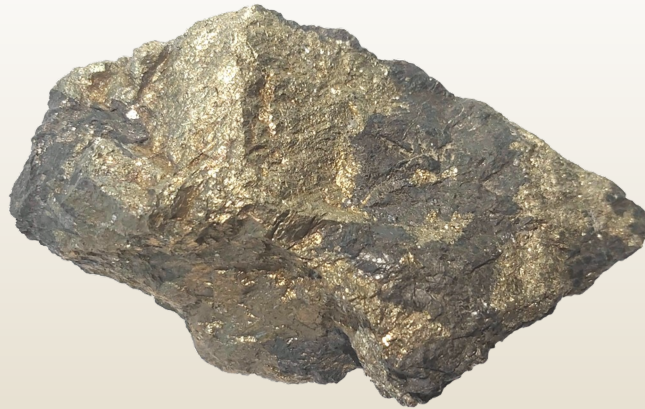
Rude su malo mjesto u Samoborskom gorju, udaljeno 4 km od grada Samobora, blizu Zagreba. Poznato je po rudniku bakra i željeza Sveta Barbara, koji je danas otvoren u turističke svrhe. Svoje zlatno doba rudnik doživljava u 16. stoljeću, kada je količina iskopanog bakra bila dvostruko veća nego u Engleskoj, četverostruko veća od Norveške, a dosegala je trećinu produkcije švedskog rudnika u Falunu [1].

Rudnik sveta Barbara se od 2015. godine nalazi u Registru kulturnih dobara Republike Hrvatske – na listi zaštićenih kulturnih dobara.



Copper and Iron

Minerals rich in copper and iron were found here. Copper was extracted from sulphur-containing minerals such as chalcopyrite. It is distinguished by its golden colour. The name originates from Greek words *halkos* and *pyrites*, which means copper and sparkler. Chalcopyrite is sometimes called “fool’s gold”. Iron was obtained from hematite and siderite ore. Hematite is often red and was named after its colour (the Greek word *haima* means blood). The colour of siderite



Copper ore – chalcopyrite
Ruda bakra – halkopirit

Bakar i željezo

U samom ležištu se nalaze minerali koji obiluju bakrom i željezom. Bakar se dobivao iz minerala koji sadrže sumpor kao što je halkopirit. Prepoznatljiv je po zlatnoj boji a naziv je dobio od grčke riječi *halkos* i *pyrites* što znači bakar i kresivac. Halkopirit se ponekad naziva i „lažno zlato“. Željezo se dobivalo iz hematitne i sideritne rude. Hematit je često crvene boje po kojoj je i dobio ime (grčka riječ *haima* znači krv). Boja siderita varira od žute do tamno smeđe, a naziv dolazi od

varies from yellow to dark brown, and the name originates from the Greek word *sideros*, which means iron.

Other minerals such as gypsum, galena, quartz, barite, pyrite, sphalerite, and goethite also appear in the deposit. Gypsum can vary from white, grey, green to red, and it has been mined for a short period of time. It is usually accompanied by a very similar mineral called anhydrite.

Iron ore – siderite
Ruda željeza – siderit



Iron ore – hematite
Ruda željeza – hematit



Gypsum
Gips

grčke riječi *sideros* što znači željezo. Osim rudnih minerala u ležištu se pojavljuju i drugi minerali kao što su gips, galenit, kvarc, barit, pirit, sfalerit i getit. Gips, koji se jedno kratko vrijeme i rudario, može biti bijele, sive, zelene ili crvene boje. Uz njega se često pojavljuje i vrlo sličan mineral anhidrit.

History of mining

The history of mining in Rude probably dates back to antiquity. The first reliable data on copper mining appears in 1481, when the settlement was called Rovi (Rovuje). In 1530, Leonard Gruber became the earliest known owner of Rude and Samobor. He was succeeded by Sebastian Moscon, who modernized the mine in the 1530s, and most likely opened new shafts. Moscon owned and managed the mine for nearly four decades. In 1582, Krsto Ungnad became the new owner. He increased the quality of Samobor's copper by opening new plants and employing 200 workers of German descent. Later, the mine ownership alternated between the Erdödy and Auersperger families. The significance of Rude is reflected in the fact that it was a stop on the copper road [2]. In 1591, the first miners' strike in today's territory of Croatia happened

Povijest rudarenja

Povijest rudarenja u Rudama najvjerojatnije seže u antiku. Prvi pouzdani podaci o rudarenju bakra potječu iz 1481. godine kada se naselje zvalo Rovi (Rovuje). Leonard Gruber 1530. godine postaje najraniji poznati vlasnik Ruda i Samobora. Nakon njega dolazi Sebastijan Moscon koji 1530-ih godina modernizira rudnik otvorivši najvjerojatnije i nova okna. Moscon je bio na čelu rudnika skoro četiri desetljeća. Godine 1582. mijenja ga Krsto Ungnad koji povećava kvalitetu samoborskog bakra. Ungnad otvara nova postrojenja i zapošljava 200 radnika njemačkog porijekla. Kasnije, vlasništvo rudnika se izmjenjuje između obitelji Erdödy i Auersperger. Značaj Ruda odražava se u činjenici da je bio postaja na putu bakra [2]. Godine 1591. tu izbija prvi rudarski štrajk na području današnje Hrvatske. O samom rudniku saznaje se iz opisa meštra (kasnije i rudarskog sudca) Andrije Pribile iz 1785. godine.

here. The master Andrija Pribila (later also the mining judge) wrote the first description of the mine in 1785. Following the reorganization of mining in the Austro-Hungarian Monarchy, the Mining Substitution Court was established in Samobor in 1788. The court primarily dealt with mining rights and their implementation. The mine in Rude was one of the largest copper mines in Austro-Hungarian Monarchy. The last owners of Rude were Franz Reizer and later on, in 1926, Mavro Bernstein. The mine was closed in the middle of the last century. The revitalization began in 2002, and in 2012 it was opened for tourists.



Miners in front of a mine in Rude
Rudari ispred rudnika u Rudama

Slijedom reorganizacije rudarenja u Austro-Ugarskoj Monarhiji se 1788. godine osniva u Samoboru Rudarski substitucioni sud koji se prvenstveno bavio zaštitom rudarskog prava. Smatra se da je rudnik u Rudama bio među najvećim rudnicima bakra u Austro-Ugarskoj. Zadnji vlasnici Ruda su bili Franz Reizer a kasnije, 1926. godine, Mavro Bernstein. Sredinom prošlog stoljeća rudnik se zatvara. Revitalizacija započinje 2002., a 2012. godine je otvoren u turističke svrhe.

Map of the mine

The only existing underground map of the mine, drawn by Fran August Heermann, is mentioned in 1777. It was probably updated over time, adding new corridors. According to the map, the mining operations reached great depth. It shows an



Karta rudnika

Jedina postojeća jamska karta rudnika, koju je nacrtao Fran August Heermann, spominje se 1777. godine. Nagađa se kako je s vremenom nadopunjavana s novim podacima. Prema karti, rudarski radovi su dosegali do velikih dubina. Na njoj se vidi velika razgranatost hodnika te je vid-

astonishing branching of mining corridors and the ground plan of mining facilities such as: “*mining smithy, desulphurization furnace, smelter, ore screening building, large building for the same purpose, below the flow of ore roasting buildings can be found and finally the chapel of St. Anthony with a vestibule accessible from three sides is marked.*” [3].



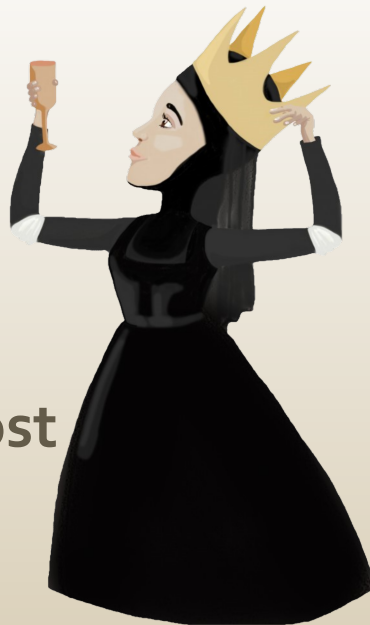
Underground map of the St. Barbara Mine (courtesy of St. Barbara Mine) / Jamska karta Rudnika sveta Barbara (ljubaznošću Rudnika svete Barbare)

ljiv i tlocrt rudarskih objekata: „*rudarska kovačnica, peć za odsumpoviranje, talionica, zgrada za prebiranje rude, velika zgrada u istu svrhu, izpod ove do protoka zgrada za praženje rude i napokon kapelica sv. Antuna s predvorjem sa triju strana.*“ [3].

Interesting fact

Barbara of Cilli (1381 – 1451) was the wife of the Czech and Hungarian king and the Holy Roman Emperor Sigismund of Luxembourg. She spent most of her life in Samobor, where she studied alchemy in the basement of her estate. She studied conversion of copper into silver and gold. In fact, she applied amalgamation and alloying to copper using other metals. Her experiments represent the beginning of alchemy in Croatia. After her husband's death, she dressed in black, which was why she received the nickname the "Black Queen". Towards the end of her life, she retired to Mělník Castle in the Czech Republic, where she continued to practice alchemy until her death [4].

Barbara of Cilli, also known as the "Black Queen" / Barbara Celjska, poznata kao i „Crna kraljica“



Zanimljivost

Barbara Celjska (1381. – 1451.) bila je supruga češkog i ugarskog kralja te njemačko-rimskog cara Žigmunda Luksemburškog. Veći dio svog života provela u Samoboru gdje se podrumu svog posjeda bavila alkemijom. Proučavala je pretvorbu bakra u srebro i zlato. Tu se zapravo radilo o amalgamiranju i legiranju bakra s drugim metalima, što ujedno predstavlja i začetak alkemije u Hrvatskoj. Nakon smrti muža oblači se u crno zbog čega je dobila nadimak „Crna kraljica“. Krajem života se povlači u dvorac Mělník u Češkoj gdje se nastavila baviti alkemijom do svoje smrti [4].

Legend

Legend has it that mining in Rude was also done by dwarfs known as “Bergmans”. The Bergmans lived in a narrow corridor inside the mine and mined gold and other valuable metals. Workers often described them as dwarfs with yellow skin, large beards, snake eyes, and dressed in green clothing.



“Bergman”
„Bergman”

Legenda

Legenda kaže da su u Rudama također rudarili i patuljci poznati kao „Bergmani“. Bergmani su, živjeli u jednom uskom hodniku unutar rudnika te su iz njega iskapali zlato i druge vrijedne metale. Radnici su ih često opisivali kao patuljke žute kože, velike brade, zmijskih očiju i odjevene u zeleno ruho.

Mine today

The St. Barbara Mine is the only mine revitalized for visitors. It all started on the initiative of late Professor Boris Šinkovec from the Faculty of Mining, Geology and Petroleum Engineering, in 2002 with the exceptional commitment of local Folklore Ensemble KUD "Oštrc". 350 m of the Kokel and Holy Trinity shafts and 220 m of access roads to both shafts were renovated. The support of timber can be seen in one part of the mine. Solid rock, which does not need support in another part of the mine, allows the visitor to see the minerals.

Mine interior
Unutrašnjost rudnika



Rudnik danas

Rudnik sveta Barbara jedini je rudnik uređen za posjetitelje. Sve je započelo na inicijativu profesora Rudarsko-geološko-naftnog fakulteta, prof. dr. sc. Borisa Šinkovca, 2002. godine te uz iznimno zalaganje lokalnog Kulturno umjetničkog društva KUD „Oštrc“. Obnovljeno je 350 m rovova Kokel i sveto Trojstvo te 220 m prilaznih puteva do oba rova. U jami se mogu vidjeti dijelovi s drvenom podgradom, kao i dijelovi sa živom stijenom što omogućuje razgledavanje minerala.

The tour of 350 m of mine shafts takes about forty minutes. The temperature is constantly about 11 °C. The mine is open to visitors from March 21st to December 4th on weekends, holidays and public holidays from 10 a.m. to 6 p.m. Protective equipment is provided for everyone and the mine can be visited only with a tour guide. For more information about St. Barbara Mine please visit <http://www.rudnik.hr/en/>.



Mining trench simulation
Simulacija rudarskog rova



The map of revitalized St. Barbara mine / Mapa revitaliziranih rovova u Rudniku sveta Barbara

Obilazak 350 m rudnika traje oko četrdeset minuta, a temperatura je konstantno oko 11 °C. Rudnik je za posjetitelje otvoren od 21. ožujka do 4. prosinca vikendom, blagdanima i praznicima od 10 do 18 h. Zaštitna oprema je za svakog osigurana te se rudnik posjećuje isključivo uz stručno vodstvo. Za više informacija o rudniku pogledajte <http://www.rudnik.hr/hr/>.

Preserving the tradition

An important part of Rude's cultural heritage is the salty cheese and walnut cake called Rudarska greblica (Miner's cake). This cake was once the main meal of miners. In the end of 2007, the cake was declared an intangible cultural heritage of the Republic of Croatia. The event called "Miners Cake's Day" has been held regularly since 1985 on the first weekend of July. As part of the event, a competition in baking the best cake is organized.

Miner's Cake
Rudarska greblica



Očuvanje tradicije

Važan dio kulturne baštine Ruda predstavlja slani kolač od sira i oraha zvan Rudarska greblica. Ovaj kolač je nekada bio sastavni dio obroka rudara. Krajem 2007. greblica je proglašena nematerijalnom kulturnom baštinom Republike Hrvatske. Manifestacija zvana „Dani Rudarske greblice“ se redovito održava od 1985. godine prvog srpanjskog vikenda, u sklopu koje se organizira natjecanje u pečenju najbolje greblice.

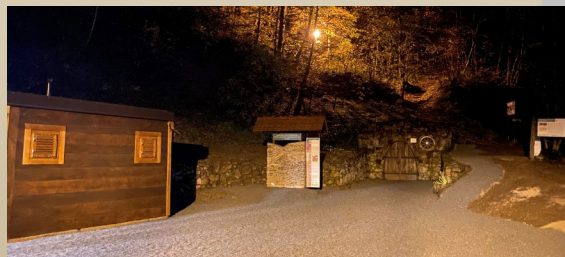
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The old city of Samobor / Stari grad Samobor



Entrance into mine / Ulaz u rudnik

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