

Mining in Anatolia in Ancient age Mercury in Konya Region

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ABSTRACT

Mining has a very important place in the history of mankind. Mining practices have been developed together with technological activities. The Near East and Anatolia have an important place in global mining activities. The mines found naturally in the region had been processed by forging 11 000years ago and then in the following ages this process was continued by melting technologies. Konya and its vicinity situated in the Southern part of Anatolia used first examples of processed copper mine along with other mine pigments. Mercury is one of those. Mercury plastered skull found at Çatalhöyük is known as the first example of mercury implementation in this way. Nearby mercury deposits contributed to the first implementation of the mine at this site. These deposits had been worked out in the region for 9000 years. Mining activities of the Romans for mercury can be seen today as well. Systematic researches on these activities are going to contribute to the world mining sector.

Keywords: Ancient Mining, Anatolia, Çatalhöyük, Mercury, Konya

INTRODUCTION

MINING IN ANATOLIA

Anatolia: Planted like a bridge between Asia and Europe, the peninsula of Asia Minor has been from the beginning of history a battlefield between the East and the West (Ramsay, 1890.23).

These lands occupy a location in the Northern Hemisphere at a midpoint among Asia, Europe and Africa. It also covers an area nearly in the middle of the North-pole and equator (İzbirak, 1996.).

Turkey, locating on the Alps and the fold belt, has a geographical structure representing almost every geological time. Considering the features of land surface, it is easy to say that the country is a combination of mountainous areas, plateaus, and plains. Due to its location among the continents, it is affected by tectonic movements and rich in mines. Generally, Turkey is accepted among the countries which has many mine kinds (Atalay, 2000. 1,309.). Because of these reasons, first examples of mining activities are seen in the region.

EARLY MINING ACTIVITIES

Humans learned to make tools from stone 2.5 million years ago and 15 000 years ago they learned to make tools from obsidian. Mount Hasan, Acıgöl and Mount Göllü situated in the

inner parts of Anatolia and Bingöl and Mount Süphan situated in the Eastern Anatolia had important obsidian sources. These sources provided the needs of Near Eastern societies before the discovery of the mine (Mellaart, 1975.; De Jesus and Dardeniz, 2015.).

13 000years ago, some important pioneering steps were taken in the Near East in the mining history. A necklace made from hammered raw copper was found in Shanidar Cave in the North West of Iraq (Solecki, 1969.) and malachite beads made with the same method were found in Rosh Horesha in Israel (Goring and Morris 1987.).

10 000 years ago, ornaments made from malachite were in use in Aceramic Neolithic settlements of HallanÇemi-Batman, NevalıÇori-Şanlıurfa, Çayönü-Diyarbakır, and Aşıklı-Aksaray in Anatolia. Copper deposits of Ergani situated between Elazığ and Diyarbakır provinces became the main mine sources for the early Anatolian mining (Wijkerslooth, 1944. 1945.; Çambeland Braiwood, 1970.; Kaptan, 1990.; Yener, 2000.; Göymen and Aslaner, 2015.).

Some ornaments produced from raw copper and lead by forging method were found in Çatalhöyük situated between Taurus Mountains and Konya Plain in the South of Anatolia. The forged copper and lead ornaments are dated around 9000years ago.

The method of tool making by forging is accepted as a step to a new age (Yalçın, 2016.). It was acknowledged that the copper found at Çatalhöyük was brought from Ergani deposits and the lead was brought from Hadim and Bozkır deposits (Mellaart, 1975.).

The researches conducted in and round Konya proved that the region is rich in lead, iron, copper, mangan and mercury oxide sources (Bahar, 2009.;Bahar and Koçak, 2010.) (Pic. 2).

The analyses done after the excavations revealed that mine pigments such as iron, copper, lead, mangan and mercury, and charcoal were used to get various colours for architectural spaces and for painting the skeletons in religious rituals at Çatalhöyük (Mellaart, 1975.;Kölkankaya and Bostancı, 2012.;Çamurcuoğlu, 2015. Table.4.3). The mine pigments found at Çatalhöyük are related with the richness of mine sources in the region.

Mercury Sulfide or natural cinnabar which has been known since Neolithic Age, skulls with red ochre (ironoxide), skeletons, human and animal bones were discovered in E VI 20 at Çatalhöyük. The skull with cinnabar plaster (Picture 4) found in E VI 20 is the first example of its implementation in the world (Carter, 2009.; Croucher, 2012.).

Ancient sources indicate that the traditional use of mercury in the centres such as Athens and Rome was connected with Anatolian mercury use.

Cinnabar was first mentioned by Aristoteles (384-322 B.C) in the Ancient World (Meteorologica IV, 8, II). Theophrastus (371-286 BC) of Eresus, pupil of Aristoteles and the head of Lyceum at Athens mentioned that the Callias of Athens (415 B.C) introduced the method of getting mercury from cinnabar to Athens from West Anatolian city Ephesus in his book on minerals *De Lapidibus* (On Stones) (*De Lapidibus* I.60).

Four hundred years after Theophrastus, the Roman architect Vitruvius Marcus Pollio (b. 80-70, d.15 B.C) mentioned the production of mercury from clod of earth which was also named as anthrax in Ephesus and the transfer of the foundries to Rome in his book on architecture *De Architectura* (Vitruvius, VII 8.1-2; 9.4).The ancient Roman mercury mines in Ladik district in Sarayönü county in Konya province and in the Bağbaşı Dam area near Bozkır and Hadim counties and in Sızma district

in Selçuklu county are like open air museums on ancient Roman mining (Picture 1, 2).

Ladik(AncientLaodikeiaKatakekaumene/Combusta)

Ladik, a district of Sarayönü county, is one of the important mining centres both in the Ancient Age and present. The mound which was named earlier as LaodikeiaKatakekaumene and later renamed as CLAUDIA- LAODIKEIA in the Roman Period provides pottery findings which could be dated as early as II. Millennium B.C.

Strabo mentioned about LaodikeiaCombusta as a Lycaonian town; others included it either in Phrygia or in Pisida. Greeks called the city as LaodikeiaKatakekaumene “Burnt Ladik” due to its name and Romans called it as Laodiceia Combusta. The name of “Laodikeia Katakekaumene “Burnt Ladik” was given based on the many mining activities and charcoal and mine wastes around the settlement.

There are deposits belonging to Roman period at the site of Çırakman. The adits were blocked since the mining activities are finished. There is a mine workshop, graves of the old miners, and ruins of a church belonging to a later period 300 m west of the mercury adits.

Coordinates of these units are: N3809706 E03222749 Elevation: 1330 m. Precision: 11 m (Workshop), N3809716 E03222737 Elevation: 1358 m. Precision: 8 m. (Grave).

Yıldız and Bailey conducted reconstruction studies for the mine workshop here (Picture 5; Yıldız and Bailey 1978). The workshop still visible today was mentioned in our earlier studies (Bahar, 2009.;Bahar and Koçak, 2010).

Another important mercury mining centre in the region is at Sızma 10 km South of Ladik.

Sızma (Ancient Zizime)

Sızma in Selçuklu county was an important settlement for the Roman period in Konya and its vicinity. It is 10 km south of Ladik and 30 km northwest of Konya.

The mound which has the same name with Sızma, was excavated by Robinson in 1922 and this important place has been settled since chalcolithic period (Picture 3). ETİBANK¹

¹Etibank was a state bank founded to finance mining activities in Turkey in 1935. It was re-structured in 2004 and named as EtiMaden for production, exploitation and marketing of Turkey’s mines.

operated these mercury mines until 1970. There are adit remnants built for mining purposes 1 km west of town centre. Entrances of the most of these adits were blocked. Although there are not any findings representing the Roman Period, we think that these mines were operated by the Romans as well. Because it is thought that these mines have been known since Çatalhöyük Neolithic and were used on wall paintings.

As it is understood from the name of the settlement there was a mother goddess cult in the name of Zizimene in the Ancient Age. The cult was very active around Konya. Since the mine deposits of Sızma are 10 km south of Ladik-Çırakman mines, we are in the opinion that these two deposits were operated together in the Roman Period as they were under Etibank managership.

Mercury had been produced in the mines which was later operated and abandoned by Etibank. Many people from Sızma and Ladik worked in this mine. Extracting the mercury which is a poisonous mine required new technology and I think from this reason the mining activities discontinued in time. Deaths at young ages in the region was based on the mercury mining.

I have conducted many researches around Sızma since 1994 and noticed that there are many grave steles and architectural fragments around the mound, on the wall of the town houses and in the municipality park. Of these; the stele with damaged letters on the parapet of the old bridge at the entrance of the town, the Zizimene statues on the wall of dilapidated village room² and the steles in the garden of the municipality building were photographed by us. Some of the architectural and sarcophagus fragments were drawn. In addition, a sarcophagus is in use at the fountain by the mosque.

Two conglomerate caves 50 m south of the graveyard were searched. Despite they were dug by human beings they look like natural caves with their rough craftsmanship. One of the caves has a couple of storeys and niches and regarded as a burial place in Ancient Age.

²Village Room is a Turkish tradition in all villages in Anatolia. The room serves for the guests and they are in the care of prominent families or whole villagers. The needs of the guests such as dining, heating and accommodation are provided by the villagers without a fee.

Bağbaşı Dam (Yelbeyi) Mercury Adits

Another important mercury deposit close to Konya is located in Göksu Valley between Bozkır and Hadim counties. The place which is now within Bağbaşı Dam area is next to Yelbeyi Rock Monument. The memorial belonged to an Isaurian man is known as “Yelbeyi Rock Monument” by the academic world and must be related with the mercury mines operated nearby in the Roman Period (Picture 9), (Bahar, 2009.; Bahar and Koçak, 2010).

CONCLUSION

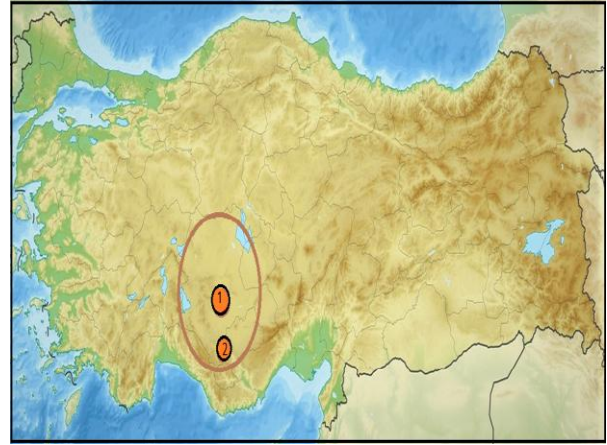
Mining has become the improvement factor for today's technologies. Anatolia has a special place in the mining history of the world and Konya and its neighbourhood has a special place for the mining history of Anatolia. Remains and findings of archaeological excavations conducted in or around Konya revealed the ancient mercury mining in the region. Partial studies around here should be increased in terms of contribution to the world mining.

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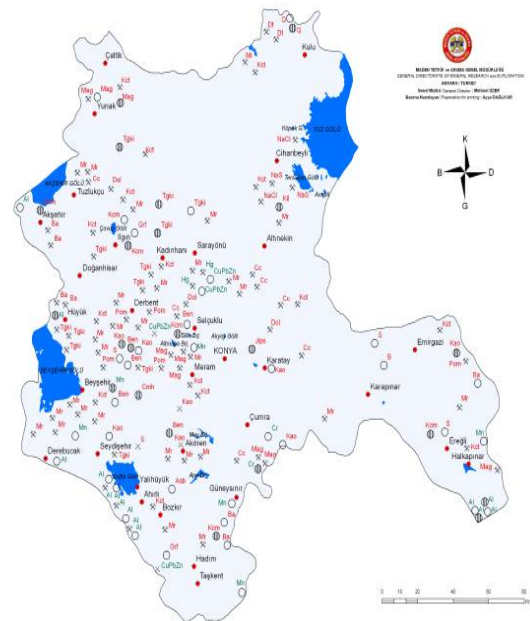
APPENDIX



1.Mercury deposits around Konya 1) Ladik and Sızma 2) Bağbaşı Dam Area



2.Ladik and Sızma Mercury Deposits



3.Mineral Map of Konya,MTA(Maden Tetkik ve Arama Enstitüsü (MTA), Ankara, Turkey.)

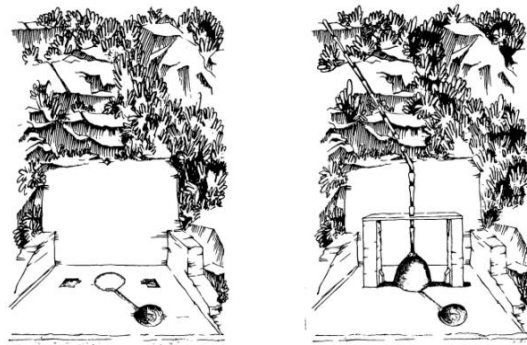
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4. Skull plastered with mercury sulphide found at Çatalhöyük E VI 20, PXRf analyses done. (Photo: Scott Haddow, Carter 2009)



7. Sızma mercury clods.



5. Cinnabar extracting workshop at LadikÇırakman
a) Ancient workshop b) Reconstruction of cinnabar extraction process (Yıldız&Bailey, 1978:71, fig.43)



8. Yelbeyi Grave Monument (might be belonged to mercury miner?)



6. Ladik Çırakman Mercury Workshop (Bahar 2009)



9. Bağbaşı Dam Area (Yelbeyi) Mercury Deposits

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