

ROYAL HARBINGER

Reporting Fact of the Matter

Weekly



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Zawar Mines: Zinc smelted for the first time in the world

1. Where in the world was zinc smelted for the first time?
2. Which agency conducted the first study of Zawar mines?
3. What things were found at Zawar?
4. To whom goes the credit of distilling zinc?
5. Why did Zawar prosper?

Zawar located on the bank of Tiri river, about 38 km south of Udaipur town in the Aravalli hills in Rajasthan, has the distinction of being the first in the whole world in smelting zinc through distillation technology. It is the only known ancient zinc smelting site in India. It is considered to be the beginning of Industrial Revolution in the World. The entire valley of Tiri at Zawar is marked by huge heaps of slags and retorts that indicate a long tradition of zinc smelting at Zawar. On some slag-mounds are found remains of houses made of used retorts and stones perhaps belonging to the smiths.

The archeometallurgical activity at Zawar was casually recorded by several Indian and British scholars between 17th and 19th century. However, the immense remains were highlighted between 1982 and 1990. Perhaps encouraged by these reports of British Museum, M.S. Baroda University initiated a study at Zawar jointly with Hindustan Zinc Ltd., Udaipur in 1983. This team carried out extensive investigations both for ancient mining as well as smelting of zinc at Zawar and discovered incredible evidence of mining, furnaces used for zinc smelting besides primitive smelt-

ing retorts from the dam fill of Zawar.

Zinc ores are widely distributed in the country but major deposits are found in the Aravallis. The mineralized belt of Zawar extends for about 25 km. Some other minerals that are distinct and could be separated manually were also found. This explains why zinc mining and smelting developed only at Zawar.

The entire valley of Tiri river in Zawar is dotted by massive dumping of slag and earthen retorts, indicating a long tradition of commercial production of zinc. Several radiocarbon dates bracketed between 12th and 18th century also confirm this activity. It appears that the main expansion of the industrial phase of zinc production began at Zawar sometimes between 11th and 12th century.

At Zawarmala a bank of seven distillation furnaces roughly squarish in shape were discovered. Each furnace had two chambers, upper and lower one separated by a thick perforated plate of clay. It is presumed by the excavators that the furnaces may have looked like truncated pyramids. Brinjal shaped earthen retorts filled with charge were placed on the perforated plate in inverted position in the upper chamber.

As many as 26 retorts were placed in each furnace for smelting and they were heated for three to five hours. The retorts were made in two parts and joined together after filling the charge. To prepare the charge the ore was crushed and ground and mixed with organic material and cow dung, rolled into tiny balls and left in the sun for drying. Then the balls were



placed in the retorts. A thin wooden stick was placed in the narrow opening of retort which perhaps prevented falling of charge in the lower chamber before heating when they were initially inverted in the furnace and at the same time would facilitate the escape of zinc vapor formed during heating.

The different sizes of retorts indicate the use of dif-

ferent size and shape of the furnaces. After heating, zinc vapor was collected and condensed in the lower chamber in small earthen pots.

It was surely an indigenous method that was derived for downwards distillation of zinc vapour. It was for the first time anywhere in the world that pure zinc was produced by distillation process on a commercial basis. It is possibly the

ancestor of all the high temperature pyrotechnical industries in the world.

The credit of innovating special retorts and furnace for distillation of zinc surely goes to the Bhil tribe of southern Rajasthan. These Bhils have been distilling alcohol since millennia. It was surely this local knowledge they could successfully employ for distillation of zinc.

It is interesting to note that both Charak Samhita and Susruta Samhita refer to 'pushpanjan', that was prepared by heating a metal in air and was used for curing eyes and wounds. This could be identified as zinc oxide as no other metal would react in the air to produce an oxide suitable for medicinal purposes. Therefore, these Ayurvedic texts are perhaps the earliest literary evidence of zinc in India.

Due to the huge quantity

of zinc production, the annual income from Zawar was quite handsome. It is likely that the revenue earned due to brisk trade of zinc at Zawar was utilized for construction of the large monuments, existing forts, huge water reservoirs, temple complexes, water structures etc. in Mewar.

There are a few brass cannons at Udaipur also which might have been made by zinc obtained from Zawar.

Content Courtesy: Dr. J.L. Kharagwal

Veteran journalist Ashok Mathur's blog (ashokmathur@udaipur.com) with over forty articles on udaipur's palaces, temples, lakes, gardens, festivals, fairs, wildlife etc. is getting very popular. It has interesting content for udaipurites as well as tourists.



सह-अस्तित्व एक बेहतर कल के लिए



- डॉट जोन्स सस्टेनेबिलिटी इंडेक्स द्वारा धातु एवं खनन क्षेत्र में एशिया पैसिफिक में पहला तथा विश्व स्तर पर पांचवां स्थान
- भारत में 2.41 गुना चाटर पॉजिटिव प्रमाणित कंपनी
- सभी ऑपरेशन्स आईएसओ: 14001 पर्यावरण प्रबन्धन प्रणाली से प्रमाणित
- जलवायु परिवर्तन की चुनौतियों एवं पर्यावरण फुटप्रिंट को कम करने के लिए प्रतिबद्ध

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Talking of Azad Qalam in the Times of Godi Media

- Dr.H.S.Chandala

The Indian Mass Media, particularly the electronic media is in a big crisis. It is known, apart from a few channels, Godi Media or embedded media which is controlled by the state or by the direct beneficiaries of the state. The result is that the state narrative becomes the national narrative and anybody expressing an opinion other than the one propagated by this media is dubbed as anti-national.

The corporate capital controls a lion's share of the Television channels. RIL Chairman and Managing Director Mukesh Ambani in his statement delivered on August 12, 2019 at the 42nd Annual General Meeting of the company said that the 72 television channels owned by Reliance Industries have a reach of 800 million Indians and this represents 95% of the TV-viewing universe.

In such a situation there is a need to talk of somebody who wrote for almost half a century in the print medium and also made several significant films to showcase the more realistic darker side of the story of independent India and raised pertinent questions before the state and people in power. He is none other than Khwaja Ahmad Abbas who was born on 7 June 1914 and after spending a life time in communicating to the world through all possible media of his time passed away on 1st June 1987. K. A. Abbas, was an Indian film director, screenwriter, novelist, and a journalist in the Urdu, Hindi and English languages.

He started his journalistic career with Bombay Chronicle in 1943 and then moved to The Blitz in 1947. From 1947 to 1987 he wrote a column called the Last Page in the Blitz. This column was also published in Hindi and Urdu with the title Azad Qualam Se. It was perhaps the longest running column in the world when it stopped with his death in 1947. It was a real Azad voice which came out through this column. When Mahatma Gandhi criticized cinema as something immoral Abbas had the courage to write an open letter to Gandhiji in this column requesting him to watch films himself before giving his opinion about it.

He had written a book called "Return of the Red Rose" when Indira Gandhi became the Prime Minister. It was like return of Jawahar Lal Nehru to him. But when she imposed emergency he opposed her decision despite the fact that the Communist Party of India, of which once he was a member, had supported it. There occurs a column titled "Naxalites, My Brothers!" written in 1973. In this longish essay Abbas describes the Naxalites as "young men (and women too) who have become personally and politically disillusioned with the slow process of democracy which are holding up dynamic social change in India: who are impatient to do away with the hypocrisy, the cant, the him burg, the corruption, the favoritism the nepotism, the callousness, the indifference to the needs of the people, of the establishment in India."

There are numerous such instances in the journalistic writings of Abbas which can be shown today as a model of independent and fearless journalism. Khwaja Ahmad Abbas wrote seventy one books in English.

He wrote scripts for most of Raj Kapur films including Awara, Shri 420, Mera Naam Joker, Bobby and so on. He gave break to Amitabh Bachchan in his film Saat Hindustani. He travelled round the world twice and interviewed dignitaries like Yuri Gagarin, Roosevelt and Khrushchev.

Khwaja Ahmad Abbas), popularly known as . He won four National Film Awards in India, and internationally his films won ... Shehar Aur Sapna (1963) won the National Film Award for Best Feature Film, ... In this book also)