

Meybod Ice House, an ancient marvel of Persian engineering



Iranica Desk

Meybod Ice House (Yakhchal-e Meybod) is an ancient refrigerator located just outside the city of Meybod in central Iran. This impressive structure was built around 400 CE to store ice during the hot summers.

Meybod Ice House is a testament to the engineering ingenuity of ancient Persia. In a region with hot summers and no electricity, storing ice was a difficult task. The designers of the Meybod Ice

House came up with an effective solution by constructing a large, insulating structure to preserve ice throughout the summer.

*The ice house is a massive domed structure, approximately 5,000 cubic meters in volume. The walls are made of a special mortar call *sarooj*, composed of sand, clay, egg white, lime, goat hair, and ash. This mortar was resistant to heat transfer and provided excellent insulation, amazingiran.media wrote.*



Ingenious architecture

The architecture of the ice house utilizes some clever designs for storing and insulating ice. The domed structure has a deep subterranean storage chamber, accessed by a long corridor. This underground chamber stayed cool year-round, providing natural refrigeration.

The walls of the ice house are over two meters thick at the base. This thickness decreases progressively towards the top to minimize heat conduction from outside. Small holes and windows throughout the structure also aided in airflow and ventilation.

At its peak, the Meybod Ice House could store up to 5,000 metric tons of ice. The ice was brought to the ice house during winters from nearby mountains. It was packed with insulation and preserved for use during the summers.

Ancient air conditioning

In the scorching summers of central Iran, temperatures can routinely exceed 40°C. Storing ice wasn't just for food preservation – the ice made it possible to cool air and water for air conditioning in ancient Persia.

The ice was used to cool homes and palaces in Meybod. Using a traditional Iranian system known as *yakhchal*, people could circulate cool air from the ice house throughout homes. Tall windcatchers on rooftops funneled warm air out and pulled cool air in from the ice house.

Fountains and pools in homes were also cooled with ice. By cooling the circulating water, it was possible to provide a cold bath even in peak summer. This ancient form of air conditioning brought relief to people in Meybod over 1,600 years ago.

Restoration

The Meybod Ice House is incredibly well preserved despite its old age. The structure underwent major restoration work in the 1990s to preserve it as a relic of ancient Persia. UNESCO also named it a World Heritage Site in 2016.

The restoration was meticulous—many original materials were maintained during repairs. The walls were reinforced, cracks filled, and drainage improved, but the overall structure was kept intact. Modern materials

were avoided to prevent damage. Thanks to these efforts, visitors can see the ice house almost exactly as it was centuries ago. It remains one of the oldest and largest ice houses in the world. The impressive architecture and ingenious engineering make it a popular tourist attraction.

Awe-inspiring experience

Seeing the Meybod Ice House in person is an awe-inspiring experience. Its sheer size and advanced engineering make it hard to believe it was built over 1,600 years ago. Climbing down the access corridor, you feel like you're entering an ancient freezer.

Looking up into the soaring dome overhead, one can only imagine the busy activity of workers filling it with ice during winters. The ice would have glistened and shone through semi-translucent openings in the dome. In the hot summers, weary workers would have trekked down to chip off ice and transport it to homes. The steady supply of ice made life tolerable in the arid climate.

The ice house is a lasting legacy of Persian ingenuity. It attests to the advanced civilization that

flourished in ancient Iran. For any enthusiast of history or architecture, it is a fascinating peek into the past.

Legacy of ancient refrigeration

Few ancient structures serve their original purpose so well millennia later. While no longer storing ice, the ice house remains remarkably well-preserved. It represents how past civilizations adapted to challenges in remarkable ways.

The designs perfected in Persia continued to inspire ice storage around the world until modern refrigeration. Similar ice houses have been found in India, Pakistan, Uzbekistan, Lebanon, and Morocco. The basic concept was used globally for centuries.

Today, we owe a debt to the innovators who dreamed up the first ice houses. Their vision paved the way for ubiquitous refrigeration and air conditioning in the modern world. The Meybod Ice House stands as a monument to the human drive to overcome nature and find clever solutions. Its ancient stones can inspire innovative thinking even today.

Epic narratives and heroic deeds in South Asia and Afghanistan

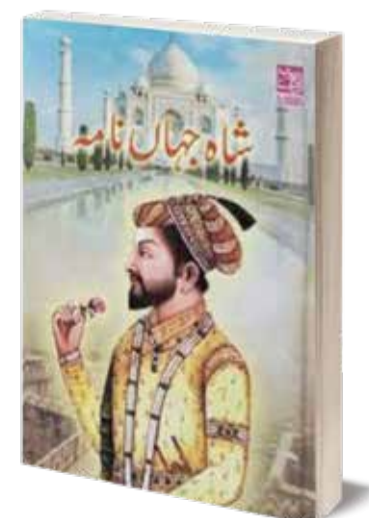
In South Asia, the Book of Kings (Shahnameh, a long epic poem written by the Persian poet Ferdowsi between c. 977 and 1010 CE) served as model to be replicated for recounting the heroic deeds of Mughal rulers as well. The court poets Kalim (died in 1651) and Qudsi (died in 1646), who both migrated to South Asia from Iran, composed long poems in the epic style of Ferdowsi to narrate the events of Shah Jahan's reign (1628–58) and imperial realm. Their works appeared under various grandiose titles like Book of Kings (Padshahnameh), Book of Shah Jahan (Shahjahannameh) and Victory Book of Shah Jahan (Zafarnameh-yi Shahjahan). The practice of situating contemporary events according to the Book of Kings' model was accompa-

nied by a general reverence for the work in South Asia, which, like elsewhere, included the production of exquisitely illuminated manuscripts and the appearance of court-sponsored 'Book of Kings-reciters' (Shahnam-khwāns) as well as others outside the court who memorized the text. The impact and proliferation of the Book of Kings model during Mughal times and after made the Subcontinent one of the more robust places for the re-imagination and circulation of the text. For example, The Heart-Opening History, for Shamsir Khan, a prose summary of the Book of Kings commissioned in Ghazni during Shahjahan's reign, circulated widely throughout the eighteenth and nineteenth centuries and elicited multiple illuminated manuscripts, both

during the time of Shahjahan and as late as the nineteenth century. Its massive circulation throughout South Asia caught the attention of British Orientalists: The Persianist James Atkinson regarded it as the best-known version of the Book of Kings in South Asia. Such features of the impact and reception of the Book of Kings in South Asia explain the viability of the transregional and interconnected market of the war-ballads of the first Anglo-Afghan War in the nineteenth century. Finally, in Afghanistan, several works drawing on the epic tradition of the Book of Kings predate the war-ballads of the first Anglo-Afghan War. The Shahnameh-yi Ahmadi concerns the deeds of Ahmad Shah Durrani (ruled from 1747–72), celebrated as the

founder of the modern Afghan state. Another work dedicated to many of Ahmad Shah's victories on the battlefield is simply titled Book of Conquest. A major feature of the texts listed above was that they were composed within the confines of a royal court. In couching their patron's glorious deeds (most notably on the battlefield) within the Book of Kings model, these poets honoured their patron's regal stature by linking it to monarchical prestige in a widely disseminated and respected epic tradition. One of the unique features of the war-ballads of the first Anglo-Afghan War is that praise for a particular individual patron did not appear to be of primary concern. As Nolle-Karimi has demonstrated, a strong and unified state

structure did not truly exist in mid-nineteenth-century Afghanistan, deeply affecting prospects for patronage. One finds heroes throughout these Anglo-Afghan war-ballads, but such heroes were not necessarily the patrons of poets, a practice quite atypical in the history of war-ballad production. While the Anglo-Afghan War ballads were not altogether disconnected from modes of patronage, as will be seen with The Victory Book of Kabul, they were more concerned with representing events and creating literary products than royal praise. The terms and circumstance of their production fell outside the strict confines of a particular court as they dedicated themselves to the narration of a recent event, not the deeds of a regal patron.



Shahjahannameh