



ĀB-ANBĀR I. HISTORY

ĀB-ANBĀR “water reservoir.”

i. History

The term *āb-anbār* is common throughout Iran as a designation for roofed underground water cisterns. In Turkmenistan the term *sardāba* is found for similar structures (see, e.g., N. S. Grazhdankina, *Stroitel'nye materialy sardob Turkmenistana*, Izvestiya Akademii Nauk Turkmenistanskoi SSR, 1954, no. 4; G. Pugachenkova, *Puti razvitiya arkhitektury yuzhnogo Turkmenistana pory rabovladieniya i feodalizma*, Moscow, 1958, pp. 243, 394). Early Islamic sources in Arabic appear to use the words *eṣṭakr* for a covered tank or cistern (Le Strange, *Lands*, pp. 276, 285); and in 14th to 16th century texts, *maṣna'* can be understood as designating a cistern (*Jāme' al-kayrāt*, p. 28; *Vaqfnāma*, p. 875; *Tārīk-e jadīd-e Yazd*, p. 129).

The *āb-anbār* was one of the constructions developed in Iran as part of a water management system in areas reliant on permanent (springs, *qanāts*) or on seasonal (rain) water. A settlement's capacity for storing water ensured its survival over the hot, dry season when even the permanent water supply would diminish. Private cisterns were filled from *qanāts* (man-made underground channels) during the winter months before the floods, while surplus flood water could often be stored in open tanks, as well as in the large, public, covered cisterns (Wulff, *Crafts*, p. 258; Pugachenkova, *Puti*, p. 243). Water was brought to the cisterns by special channels leading from the main *qanāt* or holding tanks and was controlled by sluice gates. The *āb-anbār*, a



ventilated storage chamber, could then provide cool water throughout the summer months. Often rooms or pavilions were built within the complex of the cistern to provide a comfortable resting place as well.

While private houses may have had their own cisterns, filled in turn from the *qanāts* or streams, in desert towns like Yazd or Ṭabas the more noteworthy and elaborate structures were built for public use, often as part of a *vaqf*, within towns as well as on caravan routs (see e.g., A. U. Pope and E. Beaudouin, “City Plans,” in *Survey of Persian Art*, pp. 1391-1410). Two types of structures have been noted, a cylindrical reservoir with a dome and a rectangular one supported by piers or pillars (see M. Siroux, *Caravansérails d’Iran et petites constructions routiers*, MIFAO, Cairo, 1949). Each was marked by a portal, often with an inscription giving the name of the benefactor (builder or repairer) and the date (see, e.g., examples in H. Narāqī, *Ātār-e tārikī-e šahrestānhā-ye Kāšān o Nāṭanz*, Tehran, 1347 Š./1968). The portal opened into a steep, barrel-vaulted passageway, leading down to the reservoir.

Although a detailed study of all variations of construction techniques of the *āb-anbār* in Iran still remains to be done, Grazhdankina’s analyses of similar structures in Turkmenistan, as well as observations by Beazley, Wulff, Siroux, and Sotūda (see below), allow a general outline of the technique. The prime objective in constructing an *āb-anbār* is to provide a totally waterproof container for a large volume of water while allowing for proper ventilation and access. The excavation was lined with overfired brick set into a sand and clay mixture. It was then covered with a layer (about 3 cm) of waterproof mortar, *sārūj* (see Grazhdankina, *Materialy*, for specific analyses of the mortar). Larger cisterns were often lined with an additional double layer of bricks, covered with another layer of *sārūj* of slightly different composition, and finished with a hard plaster coat.

The early history of covered cisterns in Iran has not been studied, although it is possible that a major elaboration of construction techniques may have taken place during the Parthiann and Sasanian periods, when water management constructions (dams, weirs, *qanāts*) were built extensively. The geographers of the 10th century apparently described a fully functioning system of cisterns. The Ardestān desert road, as well as the road from Isfahan to Nāʾīn, was lined with open tanks and domed cisterns. In fact, these domes often served as the only sure markers on desert routes. ‘Azod-al-dawla (A. D. 943-89) built an enormous vaulted cistern at Eṣṭarkr.



Investigations in the ceramicists' quarter of 11th-12th century Marv have revealed a cistern located in close proximity to the mausoleum of Moḥammad b. Zayd. Its cylindrical reservoir had a 6.1 m diameter, and was apparently ventilated by a pair of window-like openings. Its covering has not survived or may not have existed. The cistern next to the *rebāṭ* al-Taḥmalaḯ, datable by its brick size to the same period and covered by a dome (17 m in diameter and 8 m deep), had a capacity of 150,000 liters (Pugachenkova, *Puti*, pp. 244, 394). Similar structures have been found recorded by Masson on the major desert routes of Central Asia and Turkmenistan, though most extant examples are of a considerably later date. The cistern associated with the 861/1456 mosque at Anaw is 6,5 m in diameter and was fed by three channels (Figure 8).

Regional surveys of the Yazd and Kāšān regions have listed scores of *āb-anbārs*, located either within settled areas or along caravan routes. While there are one or two earlier ones, most are dated or datable to the 18th and 19th centuries (see Narāqī, *Āṭār-e tārikī*; *Tārik-e jadīd-e Yazd*; *Jāme'-e Mofīdī* in bibliog.). The earliest dated *āb-anbār* is in Yazd, behind the *masjed-e jāme'*, and is dated 878/1473 (Ī. Afšār, *Yādgārḥā-ye Yazd* I, Tehran, 1348 Š./1969, fig. 166).

Āb-anbārs of the Safavid and later periods were built with two or more ventilating towers (*bādgīrs*). The *āb-anbār* of the *moṣallā* at Nā'in, most likely a nineteenth century building, illustrates the typical use of the towers for the ventilation, as well as the relationship of the cool room pavilion to the *āb-anbār* (Figure 9). The *āb-anbār* of Ḥājjī Sayyed Ḥosayn Sabbāg in Kāšān dated by its inscription 1240/1824 is a more elaborate example of a rectangular hypostyle type. Built within the main bazaar, it has a large portal decorated with *moqarnas* and glazed brick and tile inlay. A set of pavilions or rooms built above the reservoir and cooled by it has a separate access from a series of workshops (Narāqī, *Āṭār-e tārikī*, pp. 306-308; Siroux, *Anciennes voies et monuments*, p. 125). The use of *bādgīrs* was particularly well developed in Yazd, where there are several *āb-anbārs* with four *bādgīrs* as well as the famous *āb-anbāršāš-bādgīrs* with six.

BIBLIOGRAPHY



Jāme' al-kayrāt (the *vaqf-nāma* of Sayyed Rokn-al-dīn Ḥosaynī Yazdī), ed. Ī. Afšār, Tehran, 1341 Š./1962.

Vaqfnāma (of Amīr Čaqmāq and Settī Fātima) in Mofīd Mostfwī Bāfeqī, *Jāme'-e Mofīdī*, ed. Ī. Afšār, Tehran, 1343 Š./1964, I, pp. 871-939.

Aḥmad b. Ḥosayn b. 'Alī Kāteb Yazdī, *Tārīk-e jadīd-e Yazd*, ed. Ī. Afšār, Tehran, 1345 Š./1966.

H. Wulff, *The Traditional Crafts of Persia*, Cambridge, Mass., 1977.

M. E. Masson, *Problemy izucheniya tsistern-sardoba*, Tashkent, 1935.

E. Beazley, "Some Vernacular Buildings of the Iranian Plateau," *Iran* 15, 1977, pp. 97-101.