

THE CONTEXT OF THE KHIRBET ET-TANNUR ZODIAC, JORDAN

Dr. JUDITH S. MCKENZIE, ANDRES T. REYES & JOSEPH A. GREENE

(University of Oxford)

Khirbet et-Tannur are the remains of a Nabataean sanctuary (Fig. 1), of the 2nd century B.C. to the mid-4th century A.D., 70 km north of Petra. It is located on top of the northernmost hill of the former area of biblical Edom, as one heads north on the Kings' Highway. Overlooking the deep Wadi al-Hasa, it is 7 km from the ancient regional centre of Khirbet edh-Dharih, the third caravan stop north of the Nabataean capital Petra.¹

Khirbet et-Tannur was excavated in 1937 by Nelson Glueck for the Department of Antiquities of Transjordan and the American School in Jerusalem. In *Deities and Dolphins* (1965), published nearly three decades later,² he focused on the sculptural decoration and gave the impression that this represented an eclectic mixture of eastern and western deities. The re-discovery in the Semitic Museum of Harvard University, in 2001,³ of the unpublished scientific finds, records, and photographs from the excavation led to detailed studies of the finds by an interdisciplinary team of specialists and a re-evaluation of the architecture, phases, chronology, and iconography.⁴ This research has been helped considerably by excavations since the mid-1980s at other sites, especially Khirbet edh-Dharih and Petra. The results have thrown further light on the context of the Khirbet et-Tannur zodiac.

The so-called zodiac-Tyche ensemble consists of a ring of signs, framing the bust of a veiled Tyche (goddess of good fortune, identified by her mural crown) and supported by a Nike (winged Victory) (Fig. 2). It would have been painted, like the rest of the sculpture. This zodiac is distinguished by the order of its signs. They do not follow the usual single direction, but instead, half go anti-clockwise down its left-hand side (from Aries to Virgo), and the other half go

¹ See location map in Linant de Bellefonds and Villeneuve, in this volume. Main articles on Khirbet edh-Dharih: Villeneuve and al-Muheisen 2000; 2003; 2008. On the reconstruction of the temple: Seigneuret 2012.

² Earlier publications: Glueck 1937a; 1937b; 1937c; 1938; 1945: 178–200. Where Cincinnati Art Museum (CAM) numbers are not given here in the figure captions of the sculpture, the blocks are in Amman.

³ This followed a re-examination of the reconstructions of the main building phases (McKenzie *et al.* 2002a) as a result of a study for the *Petra: Lost City of Stone* exhibition in New York in 2003 (McKenzie 2003).

⁴ These studies are about to be published in McKenzie *et al.* in press a and b, and the purpose of this paper is to highlight those aspects relevant to the context of the zodiac.

clockwise down its right-hand side (from Libra to Pisces). This zodiac is also notable because the representations of the signs are a mixture of busts and animals.⁵ The upper fragment with the Tyche and most of the zodiac ring (diam. 0.36 m), was excavated by Nelson Glueck in 1937,⁶ and is in the Cincinnati Art Museum (CAM). The joining fragment, with the Nike on it, came to light in 1950, having been removed from the site prior to the excavation.⁷ It is now in Amman. A third fragment with the Nike's feet is missing.

The results of the recent work on Khirbet et-Tannur and the excavations at Khirbet edh-Dharih have solved a number of important questions concerning this zodiac, including: Was the order of its signs was deliberate? (It was.) What was its date? (In the first half of the 2nd century A.D.) Where was it originally located within the temple? (Probably in the front of the Altar Platform, positioned so that the rays of the sun on the vernal, and autumnal, equinoxes would have hit it.)

Each aspect which provides information about the context of this zodiac will be considered before returning to it in more detail. The periods of worship and dates of the building phases of the sanctuary will be presented first. Then, the identity, attributes, and powers of the deities worshipped there will be discussed, based on a re-examination of the iconography. This reveals a tightly organised iconographic program, focused around a supreme god and goddess, together with the heavenly bodies. Carbonized remains of offerings made to these deities have survived, along with evidence for feasting and night-time activity. These have been preserved due to the exceptional conditions – the dryness of the site and the fact that the temple remained largely undisturbed since being buried by the A.D. 363 earthquake. Finally, in the light of the new information about the context of the zodiac, its design and function will be discussed.

PERIODS OF WORSHIP AT KHIRBET ET-TANNUR

As a result of work at other sites in the past two decades on pottery, lamps, and architecture, and the re-examination of the phases and finds from Khirbet et-Tannur, it is now possible to date the periods of worship there more reliably than previously.

⁵ Previous discussions: Glueck 1952; 1965, 415–30; Starcky 1968, 231–32; Bunnens 1969; Gundel 1992: 220, 222 no. 50; Rosenthal-Heginbottom 2001; Janif 2006–7: 347–50; Wenning 2010: 577–79. See also Linant de Bellefonds and Villeneuve in this volume.

⁶ It was found in the west part of the Inner Temenos Enclosure: Glueck's registration book, entry no. 6 (ASOR Nelson Glueck Archive, Semitic Museum, Harvard University). As it was catalogued at the beginning of the excavation, it might have been moved by the illicit digging of the Altar Platform before the excavation.

⁷ Glueck 1952.

The earliest dated objects found at Khirbet et-Tannur are two Seleucid coins of the late 3rd and early 2nd centuries B.C.⁸ The earliest surviving structures are an altar for burnt offerings and the walled rubble platform on which it stood.⁹ The pottery indicates that these were erected by some time in the 2nd century B.C. The altar, which was repaired a number of times, contained layers of debris from burnt offerings of bones and grains. In the late 1st century B.C. an aniconic stele / betyl was dedicated in Nabataean to the Edomite god Qōs, as was an incense altar.¹⁰ An inscription of 8/7 B.C. dedicating a building by the head of the spring of al-La‘aban,¹¹ indicates construction work at this time, even though it has not been identified. Rooms were gradually added beside the Court, which extended around and in front of the walled enclosure. The relative quantities of different styles of painted Nabataean bowls¹² indicate that use of the sanctuary increased noticeably through the 1st century A.D.

The early structures established the basic plan and its orientation (almost due east), which were followed in the first half of the 2nd century A.D. when the whole complex was rebuilt on a monumental scale (Fig. 3) and embellished with Nabataean combinations of classical and Near Eastern iconography. This major rebuilding (Period 2) included enlargement of the Altar Platform with a niche in the front for the cult statues, which were also carved at this time. Around this, a tall enclosure was built (the Inner Temenos Enclosure), with a facade decorated with a Nabataean version of a traditional classical architectural order, with floral Corinthian capitals (Fig. 4).¹³

The frieze of the entablature of this facade was decorated with busts. Those above the engaged columns and pilasters have frames, in an arrangement reminiscent of the Urn Tomb at Petra.¹⁴ Between these, there were seven unframed busts (original height 0.55 m) of the celestial deities representing the visible “planets”,¹⁵ alternating with Nikes standing on globes. The exact order of the unframed busts is unknown. The easiest to identify are: Helios with radiate crown, Kronos-Saturn with reaping hook, and the head of Hermes-Mercury

⁸ Glueck 1965: 12, 183, pl. 57e–f, h.

⁹ Glueck 1965: 89.

¹⁰ Qōs stele / betyl: Savignac 1937: 408–409 (no. 2), pls. 9.3, 10; Glueck 1965: 514–15, pls. 196–97; Milik 1958: 236–38; McKenzie 2003: 187 fig. 196. Matīʿel incense altar: Milik 1958: 237–38 and fig. 1; Glueck 1965: 509–10 and pl. 194a–c. Association of the latter with Qōs, see J. Healey, “The Nabataean Inscriptions”, in McKenzie *et al.* in press b.

¹¹ Savignac 1937: 405–408 (no. 1), pl. 9; Glueck 1965: 512–13, pl. 194d; J. Healey, “The Nabataean Inscriptions”, in McKenzie *et al.* in press b.

¹² S. Schmid *et al.*, “The Pottery”, in McKenzie *et al.* in press b.

¹³ Floral capitals: Glueck 1965: pl. 175a–b; McKenzie *et al.* 2002a: fig. 10c. The Inner Temenos Enclosure had plain, Type 1 Nabataean pilaster capitals on the sides and back: McKenzie *et al.* 2002a: 56, fig. 10a.

¹⁴ Urn Tomb: McKenzie 1990: pls. 95a, 96b–c.

¹⁵ Glueck 1965: 411–12, 453–55, 464–71.

wearing a cap (Figs. 5–7).¹⁶ Like the zodiacal busts on the Khirbet edh-Dharikh temple facade,¹⁷ mentioned below, the busts alternated with Nikes. Each Nike usually held a wreath up in one hand and a palm branch in the other (Fig. 8).¹⁸ At either end of the frieze, on the front face of each corner block, above the pilasters, there were framed busts representing the god (as a storm god with thunderbolt) and goddess (as a Tyche) (Figs. 9–10). On the side face of each of these corner blocks, there is a bust holding a torch (Figs. 10–11).¹⁹ That they each hold a torch, and not a cornucopia, is indicated by the similarity of these to the torches of the Helios bust (Fig. 5), with lengthwise striations and, on the south bust, rim around the top.²⁰ Of the two framed male busts above the half columns, the one with a lyre might be Apollo, and Wenning has identified the remains of a crescent moon behind the shoulders of the other.²¹

Positioned above the doorway,²² there was the so-called Vegetation Goddess panel, with the bust of a goddess with a veil of “leaves” and flowing hair, framed by florals on either side (Fig. 12). The theme of a main god and goddess is repeated on two matching panels (w. 0.40 m) apparently from either side of the doorway of the entrance to the Forecourt – one with a bust of a god with a sceptre and the other with the goddess as a Tyche (Figs. 13–14). A pair of Period 2 incense altars apparently stood on the bases in the front of the Altar Platform, on either side of the cult statues (Figs. 15–16). Other Period 2 constructions included colonnades along both sides of the Court,²³ and

¹⁶ Helios: Glueck 1965: 144, 454, pl. 136. Kronos-Saturn: Glueck 1965: 470, pl. 153a. Hermes-Mercury: Glueck 1965: 469, pl. 147. Other pieces, based on their size (details in McKenzie *et al.* in press a), include: the fragment of the top of a head (Glueck 1965: 227, pl. 184c), a bearded head crowned with a wreath (Glueck 1965: 197, pl. 128), a very damaged bust photographed by Glueck (reproduced in McKenzie *et al.* in press a), a bust with a wreathed head with flowing hair and a beard, possibly Zeus-Jupiter (Glueck 1965: pls. 154a–b), a headless draped male bust (Glueck 1965: 417, pl. 137b), and an unidentified headless male bust at the site in 2001 (McKenzie *et al.* 2002a: fig. 15a). The seventh panel (Glueck 1965: pl. 3a) seems to be a Period 3 repair.

¹⁷ Detailed discussion by Linant de Bellefonds and Villeneuve in this volume.

¹⁸ Glueck and Fisher had trouble determining their original positions, judging by their notes in the ASOR Glueck Archive. Fragments of a total of ten Nikes (the number required to fit the available space) can be identified, based on their size (Glueck 1965: pls. 179–82d, 183c–e, 184d, 186b–d, f–g, 190b–c). Not to be confused with the fragments identified by McKenzie as coming from a larger set of figures, without wings, wearing peploi (details in McKenzie *et al.* in press a).

¹⁹ Glueck 1965: pls. 53b, 55.

²⁰ Glueck 1965: pl. 55.

²¹ Starcky 1968, 233; Wenning 2010: 579–80. Glueck (1965: 228, 467, pls. 146a–b) identified both as Hermes-Mercury.

²² This is not absolutely certain, but the findspots of the blocks (at the foot of the facade) and their good condition (suggesting that it had not fallen from a great height) suggest its original position was immediately above the doorway, rather than in the main pediment. The latter might have been suggested by comparison with the main pediment of the facade of the Khirbet edh-Dharikh temple which has an arch in it. However, Seigneuret (2012 online: paragraph 32) suggests that, because the soffits of the two surviving voussours of that arch are well dressed, that arch would have been hollow, rather than a relieving arch.

²³ Replaced by new ones in Period 3 (correcting McKenzie *et al.* 2002a: 66–67, figs. 19a–b).

rooms behind them, at least some of which are triclinia, with benches around three sides for dining (Figs. 1–3).

Our study in 2002 determined that the cult statues, discussed below, were made at the same time as the Period 2 structures,²⁴ with the niche in front of the Altar Platform purpose-built for them (Fig. 17). The details of the Nike²⁵ and the Tyche on the zodiac-Tyche (Figs. 2, 28), such as their eyes and drapery, indicated that this carving also belongs to Period 2. But the problem remained of its original position in the Period 2 complex, for which it was made.

As the sanctuary faces almost exactly due east (within 1° 30')²⁶ (Fig. 3), the visitor on the vernal and autumnal equinoxes would have seen the rays of the rising sun pass through the doorway of the Forecourt, run along the Forecourt pavement through the doorway of the Inner Temenos Enclosure, and hit the niche in the front of the Altar Platform in which the cult statues of the god and goddess of the sanctuary stood (Fig. 4). The zodiac-Tyche ensemble was made to be built into, or placed against, a wall.²⁷ When the rays of the rising sun hit the niche containing the cult statues, one would expect that there would have been something between them to illuminate, rather than a blank wall. Unaware that its original location was unknown, Owen Gingerich, Professor Emeritus of Astronomy and the History of Science at Harvard University, assumed that the sun's rays would have hit the zodiac-Tyche on the vernal equinox.²⁸ Thus, it is reasonable to suggest that it originally occupied the space between the cult statues (Fig. 17), although it needs to be remembered that this is a hypothesis.

It is generally agreed that the Period 2 complex is contemporary with the main phase of the temple at nearby Khirbet edh-Dharih, which has decoration carved by the same workmen, based on comparison of the busts, Nikes, cornices, and floral capitals.²⁹ On the main entablature of its facade there was a row of busts of personifications of the zodiac, with surviving examples including Gemini, Taurus, Libra, and Cancer. These alternated with Nikes (but without globes, unlike those at Khirbet et-Tannur). The cultic platform (*mōtab*) inside the temple was also ornately decorated (see images and discussion in Linant de Bellefonds and Villeneuve in this volume).

It is not possible to date the Period 2 complex at Khirbet et-Tannur reliably from the surviving finds and records of the 1937 excavation. However, its date can be suggested using the results of the more recent and stratigraphic excavations at Khirbet edh-Dharih. These date its temple and two forecourts to the

²⁴ McKenzie *et al.* 2002a: 74, figs. 23a–b.

²⁵ McKenzie *et al.* 2002a: 77, fig. 23d.

²⁶ Confirmed in: Villeneuve and al-Muheisen 2003: 87, fig. 67.

²⁷ Not free-standing – unlike the impression given by the plaster cast of the two joined fragments, on display in the Jordan Archaeological Museum, Amman.

²⁸ Pers. comm. January 2010.

²⁹ So too, based on the capitals: Feydy-Dentzer 1990: 231.

first half of the 2nd century A.D. This is based on the fact that they seem to have been taken some decades to build (suggested by minor irregularities in the plan),³⁰ and they were built prior to the enclosure wall (peribolos) around them which has a *terminus post quem* of A.D. 156/7, provided by a coin of Antoninus Pius found in its foundations.³¹ Thus, the Period 2 structures at Khirbet et-Tannur, including the zodiac-Tyche, were erected in the first half of the 2nd century A.D. It is still not clear whether this occurred before or after the Roman annexation of Arabia in A.D. 106.

Some of the Period 2 buildings at Khirbet et-Tannur were damaged by an earthquake later in the 2nd or 3rd century. The resultant repairs (Period 3) included a new colonnade for the Court and elaboration of the Altar Platform. It was enlarged on either side and at the back (Fig. 3). The front was ornately carved, with both pilasters decorated with a vertical row of six busts of personifications of the zodiac (Fig. 18). The bust of Virgo (the “Grain Goddess”) was on the lower left and the one of Pisces (the “Fish Goddess”) on the lower right (Figs. 14–20). Formerly thought to be aspects of Atargatis,³² it is now accepted that these two busts are personifications of the signs of the zodiac, in the light of those at Khirbet edh-Dharih. The positions of the busts of Virgo and Pisces, at the lower left and right of Altar Platform 3 (Fig. 18), are the same as those of these two signs on the ring of the zodiac-Tyche (Fig. 2). This not only shows continuity from Period 2 to 3, but also confirms that the order of the signs is deliberate, and not the result of a Nabataean misunderstanding of classical iconography.

The most common pottery sherds at Khirbet et-Tannur come from fine Nabataean “bowls” with palmettes painted on them, like examples found in Petra in 2nd- and 3rd-century A.D. deposits (Fig. 26). Other pottery, lamps, and glass indicate worship continued at Khirbet et-Tannur through the 3rd century and into the 4th century A.D.³³ The Period 3 complex, in turn, was damaged by an earthquake (in the 3rd or early 4th century). The stairs of the Altar Platform were repaired so that it could still be used.³⁴ At the time of the next earthquake, in A.D. 363, the Inner Temenos Enclosure still had functioning doors, and worshippers were still lighting lamps in front of the Altar Platform and using Room 14. This earthquake, accompanied by a fire, caused so much destruction that worship at the site largely ceased, while Khirbet edh-Dharih was deserted

³⁰ Villeneuve and al-Muheisen 2000: 1535.

³¹ Villeneuve and al-Muheisen 2000: 1535 n. 16.

³² E.g., Glueck 1937c: 368–76, 374, figs. 5–6, 13–15; 1965: 315–20, 359–60, 381–83, 392; Drijvers 1980: 114–16; 1986: 357 nos. 25–28, 358.

³³ See specialist reports: D. Barrett, “The Lamps”, M. O’Hea, “The Glassware: Typological Analysis”, and S. Schmid *et al.*, “The Pottery”, in McKenzie *et al.* in press b.

³⁴ For a detailed presentation of the later phases, not identified by Glueck, see McKenzie “Architecture and Phases”, in McKenzie *et al.* in press a.

until the early 6th century.³⁵ However, a few cooking pots and lamps suggest some overnight visitors to Khirbet et-Tannur in the 5th and/or 6th century.

DEITIES WORSHIPPED AT KHIRBET ET-TANNUR

As mentioned, the zodiac-Tyche was probably positioned between the cult statues of the god and goddess in the niche in the front of the Altar Platform (Fig. 17). We do not know the exact names of these two deities, nor how the Nabataeans thought of them.³⁶ The Nabataeans initially worshipped their gods as aniconic stone blocks or betyls³⁷ (as with the Qōs stele) and continued that custom into the early Islamic period.³⁸ Consequently, when representing their deities in anthropomorphic form, they used iconographic features of representations of the gods and goddesses of the surrounding cultures, who might be considered equivalent.³⁹ The attributes they selected also provide an indication of the powers of their deities. The focus on a single god and goddess at Khirbet et-Tannur is suggested by the iconographic programme as a whole. This accords with Healey's conclusion that "a distinct feature of Nabataean religion of a tendency to restrict the Pantheon to a principal god and his partner, even if this tendency is not fully developed".⁴⁰

The cult statue of the god was found by Glueck leaning against the front of the Altar Platform.⁴¹ Although called Zeus-Hadad by Glueck, his iconography also relates to that of the Egyptian god Serapis. His attributes, like the Syrian storm god Hadad, include the bulls on either side of him and the thunderbolt in his left hand (Fig. 21).⁴² He wears a lion-headed torque round his neck, similar to the one worn by the god Aphlad ("? son of Hadad") on a sculpture of A.D. 54 from Dura-Europos.⁴³ He would have held the polished limestone sceptre, found behind him,⁴⁴ in his (now damaged) raised right hand, like the

³⁵ For a summary of the periods of occupation at Khirbet edh Dharih, see Linant de Bellefonds and Villeneuve in this volume.

³⁶ For more detailed discussion see: J.S. McKenzie and A.T. Reyes, "Iconographic Programme", in McKenzie *et al.* in press a.

³⁷ Patrich 1990: 50–113; Healey 2001: 155–56; Wenning 2001; 2008; Le Bihan 2012.

³⁸ Avner 1999–2000; Avni 2007.

³⁹ The intent seems to have been to utilize elements of the iconography of deities who might be considered equivalent, but it is not suggested that this practice involved complex theological explanations.

⁴⁰ Healey 2001: 189.

⁴¹ McKenzie *et al.* 2002b: figs. 23–25. It was found with charred grains behind it, suggesting that Glueck found it *in situ* in its final position in the last phase of the temple, before the A.D. 363 earthquake.

⁴² E.g., on a relief of Hadad from Dura-Europos: Perkins 1973: pl. 41; Bilde 1990: 158.

⁴³ Glueck 1965: 206–7; Perkins 1973: 77–78, pl. 31.

⁴⁴ McKenzie *et al.* 2002b: fig. 27b. The charred grains behind the statue, suggest that it was found standing in its position at the time of the A.D. 363 earthquake, having previously fallen

supreme Greek god Zeus (Roman Jupiter), to whom his hairstyle and beard also allude. On the front of the Alexander Amrou incense altar, which would have stood beside him, there is a standing (bare-chested) figure of Zeus holding a full-length sceptre and a thunderbolt (Fig. 15). The classical attire of the cult statue includes a chiton, which covers his chest, and a cloak draped over his left shoulder. These are strikingly similar to those on statues of Serapis in Egypt in the 2nd century A.D., such as one from Theadelphia (Batn Ihrit) (Fig. 22). The top of its head is damaged, but, like the Khirbet et-Tannur cult statue, seems to have supported a bushel (corn measure). The bushel on his head is the most distinctive attribute of Serapis, reflecting his role ensuring a good annual Nile flood and resultant grain harvest. Thus, the iconography used to represent the god of Khirbet et-Tannur indicates that he was a supreme storm god, producing rain to ensure a plentiful harvest, good pasture, and herds. These aspects are also reiterated elsewhere in the sanctuary, with thunderbolts depicted on the lintel above him (Figs. 17–18), and on the west altar.⁴⁵ The eagle which was an attribute of Zeus and Hadad⁴⁶ as storm and sky gods, and also associated with Qōs,⁴⁷ is depicted on the acroterion above the Vegetation Goddess (Fig. 4).⁴⁸

The supreme Nabataean god was Dushara, who was equated with Zeus.⁴⁹ The epigraphic evidence suggests that in the late 1st century B.C. the god of the Khirbet et-Tannur sanctuary was Qōs.⁵⁰ It is possible that Qōs (also assimilated with Zeus⁵¹) might have been identified with Dushara by the time the Period 2 complex was built, in the first half of the 2nd century A.D. Dushara was also associated with the Greek sun god Helios,⁵² as was Serapis,⁵³ whose bronze bust was found in the Temple of the Winged Lions at Petra.⁵⁴ Thus, the god of the cult statue was possibly Qōs-Dushara, represented with

from its position in the niche. Thus, it might have been placed in front of the sceptre which could have fallen out of its hand when it fell out of the niche.

⁴⁵ Glueck 1965: pl. 114c. Thunderbolt on a block apparently from the jamb of the doorframe of the entrance of the Inner Temenos Enclosure: Glueck 1965: pl. 105a.

⁴⁶ Perkins 1973: 94.

⁴⁷ A basalt eagle of the 2nd – 3rd century A.D. offered to Qōs: Milik 1958: 235–41 no. 3, pl. 19a; Bartlett 1989: 200; Healey 2001: 126–27.

⁴⁸ Glueck 1965: pl. 34a. It would not have stood directly on top of the Vegetation Goddess panel, but above a (lost) cornice framing it.

⁴⁹ Starcky 1966: cols. 986–93; Healey 2001: 85–107. Equated with Zeus in inscriptions: Healey 2001: 41–42, 101. On Dushara in figured form: Gaifman 2008: 57–67, pls. 3–4, 7; Kropp 2011: 182–90, figs. 1–3.

⁵⁰ On Qōs, with references: J.S. McKenzie and A.T. Reyes, “Iconographic Programme”, in McKenzie *et al.* in press a.

⁵¹ Milik 1958: 241; Augé and Linant de Bellefonds 1997: 388.

⁵² Healey 2001: 102–5.

⁵³ Clerc and Leclant 1994: 687–89 nos. 212–31, pls. 516–17 nos. 212–29.

⁵⁴ Hammond 2003: fig. 247.

elements of the iconography of the supreme gods of other cultures: Hadad, Zeus (Jupiter), and Serapis.⁵⁵

Only one side of the lion throne of the consort of the Khirbet et-Tannur god survives (along with part of her hand and foot) (Fig. 23). Glueck identified her as the supreme Syrian goddess Atargatis, the consort of Hadad, because of the lions and because he thought the Fish Goddess and the Grain Goddess represented aspects of her (Figs. 19–20).⁵⁶ However, as mentioned, in the light of the discoveries at Khirbet edh-Dharih, the busts on Altar Platform 3 are now known to be personifications of the zodiac. Atargatis was not generally worshipped by the Nabataeans *per se*, although she is represented at Petra in aniconic form, where she is identified by an inscription.⁵⁷ Allāt, like other Near Eastern goddesses, such as Atargatis and the Anatolian Cybele (adopted by the Romans as Magna Mater), had a lion throne and sometimes wore a mural crown (like a Tyche).⁵⁸ As Allāt (or al-‘Uzza in Petra)⁵⁹ was Dushara’s main partner,⁶⁰ it is possible that the cult statue of the goddess represents Allāt.

At the centre of the zodiac, there is a veiled Tyche with a unique object behind her shoulder (Fig. 2).⁶¹ It consists of two converging sticks, one tipped by an ear of wheat or a small pine cone, and the other by a shape like a pointed crescent moon. Both sticks are joined by a double cross-bar. This enigmatic object is only found on two other busts of Tyche. Both are at Khirbet et-Tannur, suggesting that this is the Tyche of Khirbet et-Tannur or, perhaps, of the nearby village of Khirbet edh-Dharih (Figs. 10, 14). As mentioned, each of these Tyches, in a square panel, is paired with a representation of the god, suggesting that they allude to his consort. Tyche is associated with good fortune and an abundant harvest. This attribute of the goddess is also expressed in the bust of the Vegetation Goddess, positioned prominently above the doorway of the Inner Temenos Enclosure (Figs. 4, 9). Her veil of “leaves” and straggly hair indicate that she is a water goddess. The “leaves” are probably seaweed.⁶²

⁵⁵ Another example of the Nabataeans’ sophisticated use of iconography is seen in the way the Nabataeans were clearly aware of the equivalence of the Greek gorgon Medusa with Humbaba, the hideous-faced demon from the Gilgamesh epic, because they used their heads on tombs for the same apotropaic purpose: McKenzie *et al.* 1998: 38–43; McKenzie 2001: 107–8.

⁵⁶ Glueck 1937b: 12; 1937c: 368–89, 374, figs. 5–6, 13–15; 1965: 315–20, 359–60, 381–83, 392

⁵⁷ Healey 2001: 140–41, pl. 7b.

⁵⁸ Bilde 1990: 168, 177 fig. 8. Allat: e.g., Gawlikowski 2008: 405, fig. 5; Collart and Vicari 1969: vol. 1, 223, vol. 2, pl. 108.3; Drijvers 1978: 332 (a), 344–46, pl. 63. Cybele: e.g., Weitzmann 1979: 185–86 no. 164.

⁵⁹ Starcky 1966: cols. 1001–2; 1981: 569; Krone 1992: 131–45; Healey 2001: 108–16. As al-‘Uzza is equated with Aphrodite / Venus (Healey 2001: 117) and there are no iconographic elements at Khirbet et-Tannur to associate the goddess there with Venus, it is more likely that she is Allat.

⁶⁰ Healey 2001: 108.

⁶¹ Glueck 1965: 396–98; Brilliant 1979: 181.

⁶² Pers. comm. Pascale Linant de Bellefonds.

Thus, Wenning suggests that she represents the goddess of the nearby spring of La'abān, which is mentioned in the inscription of 8/7 B.C.⁶³ The florals on either side of the Vegetation Goddess, reflecting fertile growth ensured by good rains, also accord with the role of Tyche. Thus, although the Fish Goddess and Grain Goddess did not, in fact, represent aspects of Atargatis, the Vegetation Goddess still represents the role of the goddess of Khirbet et-Tannur as a goddess of water and agricultural fertility.

There is a small cult statue of a goddess, surviving above the knees (Fig. 24), which was contemporary with the main cult statue (Fig. 21)⁶⁴ and related to it by the lion-headed torque around her neck. She is used as the basis for reconstructing the missing upper part of the main cult statue of the goddess (Fig. 17). The symbol of Serapis' spouse, Isis, is repeated along her crown⁶⁵ (Fig. 18). Isis was the supreme Egyptian goddess, goddess of heaven and earth, protectress of fertility and abundant harvests. She was worshipped by the Nabataeans in Petra in both aniconic and, as early as 25 B.C., in figured form.⁶⁶ On the Khasneh at Petra her symbol, with ears of wheat alluding to her identification with the corn goddess Demeter, is placed on top of the pediment.⁶⁷ Above this there is a female figure holding a cornucopia, like a Tyche.⁶⁸

The use of elements of the iconography of Serapis and Isis at Khirbet et-Tannur indicates Egyptian, rather than just Roman, influence in the classical features of its sculpture, in addition to eastern elements. This suggests continuation into the 2nd century A.D. of Alexandrian influence in Nabataean art, as earlier observed in Nabataean architecture in Petra in the late 1st century B.C. and 1st century A.D.⁶⁹ However, Roman influence is also observed, especially after the Roman annexation of Arabia in A.D. 106, as demonstrated by recent discoveries at Petra.⁷⁰

⁶³ Wenning 2010: 582–83.

⁶⁴ McKenzie *et al.* 2002a: 76, fig. 23c.

⁶⁵ It is related to the simple version of this symbol at Petra, as seen on the eye idol of Isis (Lindner 1988, fig. 5, pl. 10; Bienkowski 1991: 48 fig. 49; Alpass 2010: 102, fig. 8) and on “Isis mourning” on Nabataean terracottas (Zayadine 2003: 64 fig. 47; Vaelske 2012: fig. 5). This pattern is very reminiscent of one repeated along a frieze in the Egyptianizing scenes in the House of Augustus on the Palatine in Rome (Carettoni 1983: 74, 75, 76 fig. 12, colour pl. W3 on p. 80).

⁶⁶ Merklein and Wenning 1998; 2001; Healey 2001: 137–40; Alpass 2010; Vaelske 2012.

⁶⁷ McKenzie 1990: pls. 86d, 87b.

⁶⁸ McKenzie 1990: pl. 84a.

⁶⁹ Ronczewski 1932; McKenzie 1990: 87–97; 2001: 97–105, 108–9; 2007: 96–105; Dentzer-Feydy in Zayadine *et al.* 2003: 45–80 with the full variety of sources, especially Hellenistic; 2012; Bergmann 2012.

⁷⁰ Such as the Roman foot on the imperial cult Small Temple, beside the Qasr al-Bint: Karz Reid 2005: 173–77. It was erected by A.D. 106–114, when a statue to the emperor Trajan was erected in it: Karz Reid 2005: 123–26, figs. 55–56. Free-standing facade with exedra, for imperial statues, completed by A.D. 165–67 or so, in front of the Qasr al-Bint: Dentzer-Feydy in press.

Thus, the focus of worship at Khirbet et-Tannur, represented through sophisticated use of iconography, seems to be on a single supreme god and goddess who controlled the seasons to produce rain, and so plentiful crops and herds. The zodiac fits logically into this context, with the role of the heavenly bodies controlling the seasons reiterated by the busts of the celestial deities on the main entablature of the Inner Temenos Enclosure (Figs. 4–7). This aspect is also suggested at Khirbet edh-Dharrah by the zodiacal busts on its temple facade, and recent discoveries there which confirm that the two temples are inter-related, as discussed in this volume by Linant de Bellefonds and Villeneuve.

OFFERINGS

The significant differences between the plan of the extra-settlement sanctuary at Khirbet et-Tannur and the temple in its “mother village” of Khirbet edh-Dharrah reflect their different functions. Because the temple at Khirbet edh-Dharrah was re-fitted as a church in the 6th century, and subsequently used as an agricultural residence, how it functioned as a Nabataean sanctuary is only indicated by its architectural features and iconography. By contrast, the sanctuary at Khirbet et-Tannur was largely undisturbed after the rubble of the A.D. 363 earthquake covered it and, as the site had a single function, the finds from it provide information about religious practice there. The most notable of these are the burnt remains of cult offerings which, exceptionally, survived due to the dryness of the site.

Bones of young cattle had been burnt on the main altar, as well as burnt bones of goats, sheep, and even chicken.⁷¹ The colour of these bones indicates that they were burnt at a high temperature, i.e., as offerings (Fig. 25a). The scarcity of toe and cranial bones suggests they were slaughtered off-site, while the young ages of the animals also suggest ritual use. Glueck also found large quantities of charred grains of wheat. Each grain was individually picked clean, and the unusual proportion (two-thirds) of emmer wheat, compared with free-threshing wheat (possibly durum) also indicates that they were offerings (Fig. 25b–c).⁷² Wilma Wetterstrom also identified charred remains of offering cakes (Fig. 25d).

The associated meals for worshippers would have taken place in the banqueting rooms beside the Court (Figs. 1, 3). Sherds from cooking pots for the preparation of these meals were found, along with those of the plates and bowls on which they were served. The high proportions of open shapes in the pottery

⁷¹ S. Witcher Kansa “The Animal Bones” in McKenzie *et al.* in press b.

⁷² W. Wetterstrom “The Plant Remains” in McKenzie *et al.* in press b. Her observations are based on the samples preserved in the ASOR Nelson Gueck Archive in the Semitic Museum.

vessels also indicate that these meals were accompanied by much drinking, especially from “bowls” such as those decorated with palmettes (Fig. 26).⁷³ This is also suggested by glass beakers, dated to the 3rd and early to mid-4th century.⁷⁴ The pottery does not include the full range of types found at settlement sites, such as nearby Khirbet edh-Dharih.⁷⁵

Incense was also burnt as an offering and traces of it were identified on some small altars, although such traces rarely survive. Incense altars themselves were also left at the site as offerings, and their varieties indicate that some pilgrims came from afar.⁷⁶ On the other hand, the pottery and glass vessels were largely locally made,⁷⁷ and so probably bought in Khirbet edh-Dharih by worshippers, regardless of how far they had travelled.

The range of offerings suggests continuity of Iron Age practices (including Edomite) with burnt offerings of sacrificed animals, grain, and cakes, associated meals, and use of incense.⁷⁸ This is also reflected in the design of the temple complex, with its focus on the Altar Platform and banqueting rooms. The plan is unique for a Nabataean temple because of the tall Altar Platform (with a niche in the front for the statues and steps to the altar on top). The Inner Temenos Enclosure, which surrounds this, lacks any internal rooms or stairs to a roof. By contrast, most other Nabataean temples south of the Wadi al-Hasa (such as the temple at Khirbet edh-Dharih, and the Qasr al-Bint and Temple of the Winged Lions at Petra) have a roofed cella focussed on a low cultic platform (*mōtab*), on which betyls or cult statues would have been placed, and usually internal steps to the roof. In front of the cella they have a pronaos or vestibule with columns (or half-columns) across the front. When it has been identified, the main altar is outside the temple.

An arrangement which is conceptually similar to Khirbet et-Tannur is found at the Edomite sanctuary of Horvat Qitmit (*c.* 600 B.C.), which has dining rooms facing an open area for offerings, and use of incense.⁷⁹ The types of finds there are also similar, with burnt bones from young animals (with few toe bones), and pottery vessels which are largely cooking pots and bowls. Like Khirbet et-Tannur it was an extra-settlement sanctuary, and possibly dedicated to Qōs.

⁷³ S. Schmid *et al.*, “The Pottery”, in McKenzie *et al.* in press b. The bowls like Fig. 26 are from Schmid’s Dekorphase 3c, which lacks the fine background lines of 3b.

⁷⁴ M. O’Hea, “The Glassware: Typological Analysis”, in McKenzie *et al.* in press b.

⁷⁵ We are grateful to Francois Villeneuve for showing McKenzie the pottery drawings in 2010, prior to publication.

⁷⁶ A.T. Reyes and J.S. McKenzie, “The Altars”, in McKenzie *et al.* in press b.

⁷⁷ Chemical analysis indicates much use of recycled glass, unlike in Petra, suggesting the glass was made locally, even if the exact place has not yet been identified: Schibille *et al.* 2012; N. Schibille and P. Degryse, “The Glassware: Chemical Analysis”, in McKenzie *et al.* in press b.

⁷⁸ Detailed discussion of religious practice and design, with references and plans, in: J.S. McKenzie and A.T. Reyes, “Religious Practice”, in McKenzie *et al.* in press a.

⁷⁹ See n. 78 above. Beit-Arieh 1995.

NIGHT CULT

Other finds at Khirbet et-Tannur include two unusual types of lamps which cast a lot of light, suggesting considerable night-time activity there.⁸⁰ Both types are only found in sanctuaries. One is the so-called socket and saucer lamp type, which has a thick wick fed by oil through slits from the saucer on a built-in stand (Fig. 27). The others are multi-tier polycandela. These have a circle of nozzles at two levels, so that they had many wicks. The fragments of these found at Khirbet et-Tannur would have come from examples like the nearly complete ones found near the Qasr al-Bint temple in Petra (Fig. 29).⁸¹ Conventional lamps with a single wick were also used at Khirbet et-Tannur, including South Jordan slipper lamps, such as those left near the Altar Platform and in Room 14 at the time of the A.D. 363 earthquake (Fig. 28).⁸²

Archaeological evidence of a night cult, such as that provided by the unusual lamps at Khirbet et-Tannur, is rare. Many gods and goddesses have night-time processions, as part of ceremonies associated with annual renewal, but usually the only evidence which survives for this is in written sources, including those in the 2nd century A.D. for Isis in Kenchreae (a port of Corinth) and Serapis in Alexandria, and in the late 4th century A.D. for Kore (Persephone) in Alexandria.⁸³

A night aspect to the cult at Khirbet et-Tannur is also suggested by the iconography. As mentioned, on the frieze of the Inner Temenos Enclosure the busts around the corner, at either end of the row of planetary deities, each hold a torch (Fig. 11). The Tyche at the centre of the zodiac has a crescent moon behind her right shoulder (Fig. 30).

There is an enigmatic figure on the front of the Period 2 incense altar which apparently stood beside the cult statue of the goddess. This figure is holding a torch up in its right hand (Fig. 16). It is unclear what the badly damaged object in the left hand was, as it appears to have been too narrow to have been a torch. Close inspection reveals that this defaced figure had a radiate crown, with the halo behind it preserved. The figure is wearing the female dress of a peplos, like the Nike beside it.⁸⁴ It is also wearing long sleeves and a cloak, which hangs symmetrically over both shoulders and is pinned at the centre. Thus, the figure appears to be female, but represented with attributes of the iconography of the Greek sun god Helios (who is male), such as radiate crown, halo, torch

⁸⁰ D. Barrett, "The Lamps", in McKenzie *et al.* in press b.

⁸¹ Renel in press.

⁸² Similar examples were found at Khirbet edh-Dharrah. For lamps types there, see: Durand 2012.

⁸³ Isis: Apuleius, *Metamorphoses* 9. 9–10 (*The Golden Ass*) (Beard *et al.* 1998: 134–35). Serapis: Achilles Tatius 5. 2. 1–2. Kore: Epiphanius, *Panarion* 51. 22. 8–10, ed. K. Holl and J. Dummer 1980: 285; trans. Williams 1994: pp. 50–51; Bowersock 1990: 22–23.

⁸⁴ Glueck 1965: pl. 189a.

and perhaps whip.⁸⁵ Helios is sometimes represented with long sleeves and a cloak pinned asymmetrically, as at Palmyra⁸⁶ and, later, on the synagogue mosaic at Hammat Tiberias.⁸⁷ In both Ugaritic (in Syria) and in south Arabia there were female sun-deities,⁸⁸ so perhaps there is a kind of transfer of gender with the figure alluding to the goddess.

Given the celestial iconographic programme, with personifications of both the visible “planets” and zodiac signs, the presence of worshippers overnight at Khirbet et-Tannur to watch the night sky or await the rising sun might be expected, along with night-time rituals. The hilltop location would have provided a clear view of astronomical events.

THE ZODIAC

The evidence summarized above shows that the Khirbet et-Tannur zodiac was made for a sanctuary of a supreme god and goddess who provided agricultural abundance (rain and fertility to produce plentiful harvests and herds), and thus also a focus on the heavenly bodies which control the seasons.

The zodiac ring is supported by a Nike wearing a peplos with a rosette on each clasp (Fig. 2). She also has a distinctive armlet made of large links, which is identical to examples worn by some Nikes in Palmyra.⁸⁹ The feet of the Nike are missing, but she probably stood on a globe, like the Nikes on the Inner Temenos Enclosure frieze (Fig. 8) and at Palmyra.⁹⁰ Zodiac rings carried aloft are rare, although single Nikes at Palmyra sometimes support a tondo.⁹¹ The gods depicted at the centre of zodiacs elsewhere vary, although the moon goddess Selene and / or the sun god Helios are common.⁹² An association with the moon is suggested here by the crescent moon behind the Tyche (Fig. 30).

Before discussing the Khirbet et-Tannur zodiac, we should mention what a conventional Roman zodiac ring looks like. Normally, the signs run in a single direction, either clockwise or anti-clockwise, although the sign at the

⁸⁵ I am grateful to Pascale Linant de Bellefonds for drawing my attention to the presence of attributes of Helios.

⁸⁶ Sun god, in association with Allat (armed like Athena), probably second half of 2nd century A.D.: Drijvers 1978: 333, pl. 65.

⁸⁷ Talgam 2000: fig. 54.

⁸⁸ Healey 2001: 104.

⁸⁹ Illustrated in McKenzie *et al.* in press a.

⁹⁰ Glueck 1965: 432; Bunnens 1969: 396.

⁹¹ Bunnens 1969: 393, pl. 15 fig. 3. Example supported by Atlas: Glueck 1965: pl. 49a.

⁹² Goddess crowned by crescent moon, from Argos (2nd – 3rd century A.D.): Gundel 1992: 229–30 no. 76. Selene and Helios together, from Egypt and Hatra (Roman imperial period): Gundel 1992: 226–28 nos. 62 and 70. Helios in his chariot on synagogue floor-mosaics (3rd – 6th centuries A.D.): Hachlili 1977: 65–66, figs. 2–6; Weiss 2005: 107–9, figs. 49, 52; as on some earlier Roman examples: Gundel 1992: pls. 3 no. 84, 241 no. 131.

top varies. The conventional Roman symbols are: a ram for Aries, a bull for Taurus, twins for Gemini [either Castor and Pollux or Hercules and Apollo], a crab for Cancer, a lion for Leo, the figure of Virgo, the figure of Libra holding scales, a scorpion for Scorpio, a centaur with bow drawn for Sagittarius, a goat [sometimes with a fish's tail] for Capricorn, a water bearer pouring water for Aquarius, and two fish [usually facing in opposite directions] for Pisces.⁹³ These symbols are later used in synagogue mosaics, west of the Jordan, such as those at Hammat-Tiberias⁹⁴ and Beth Alpha, with the signs running anti-clockwise.⁹⁵

As mentioned, the most striking feature of the Khirbet et-Tannur zodiac is the unusual order of the signs (Fig. 2). The signs for spring and summer run anti-clockwise down the left-hand side, from Aries to Virgo. The signs for autumn and winter run clockwise down the right-hand side, also beginning at the top, from Libra to Pisces. As noted above, the busts of the personifications of the zodiac on the Period 3 Altar Platform follow this same order (Fig. 18). Examples of zodiac signs in straight lines are rare, but are painted on coffins in Egypt from the 1st and 2nd centuries A.D.⁹⁶

Because of the small size of the panels, the figures on the Khirbet et-Tannur zodiac are represented as busts, instead of full-length. These include Gemini (with pointed helmets indicating they are Castor and Pollux), Virgo with a damaged ear of wheat, Libra with scales above, Sagittarius with an arrow or spear, and the water carrier pouring water (Figs. 2, 30). Unusually, two animals are also represented with busts: the ram of Aries and the goat of Capricorn. The latter has horns in its hair, the way characteristic details are rendered on some of the busts at Khirbet edh-Dharih, such as the Taurus bust.⁹⁷ The other signs are represented by their animal symbols, such as the Taurus, Cancer, Scorpio and Leo. The fish for Pisces point in a single direction, following Egyptian practice,⁹⁸ rather than in opposite directions like most Roman examples.

Dots have been carved in relief on some panels (Fig. 30), with two dots in Aries, and one in each of Gemini, Leo, and Capricorn. As they are in relief, they were added when it was originally made. Any identifying painted details have disappeared. As the dots do not occur in every panel, they are not equivalent to the stars depicted in each of the preserved panels of the signs of the zodiac on the early 5th-century Sepphoris synagogue mosaic.⁹⁹ If the dots represent

⁹³ Glueck 1965: pl. 49a; Gundel 1992: 219–20 no. 49.

⁹⁴ Hachlili 1977: 63 fig. 2; Guidoni Guidi 1979: 139 fig. 5.

⁹⁵ Hachlili 1977: 64 fig. 3; Guidoni Guidi 1979: 137 fig. 3.

⁹⁶ Neugebauer and Parker 1969, vol. 3, 89, 91–93, pls. 46, 47a–b, 48, 50.

⁹⁷ See Linant de Bellefonds and Villeneuve in this volume, with illustration.

⁹⁸ Neugebauer and Parker 1969: vol. 3, pls. 47b, 50; Gundel 1992: 86 fig. 43 no. 12, pls. 1 no. 43, 217 no. 38; Cauville 1997: fig. on p. 27.

⁹⁹ Weiss 2005: 105 fig. 46.

visible “planets” positioned in these signs, they could signify their configuration at a specific date. However, Owen Gingerich found that they do not represent any possible combination, and thus their significance remains a mystery.¹⁰⁰

The unusual division of the zodiac signs divides the year into two halves focussed on the new year beginning with in Aries in spring (March / April) and the second half beginning in autumn in Libra (September / October). The Nabataeans followed the Babylonian calendar, in which the new year began on the first new moon after the vernal equinox.¹⁰¹ As Sourdél notes, a spring festival was celebrated in *Nisān* (March / April) in all the countries of the East (Syria, Babylonia, Palestine, and Arabia) with offerings of first fruits and often burnt offerings of sacrificial animals.¹⁰² Although all of these festivities are (or were) in *Nisān*, the exact day of the month ordained for them varies from one culture to another. Thus, whilst we do not know the exact date on which the Nabataeans might have had such a celebration, the division of the zodiac accords with a major festival at Khirbet et-Tannur in *Nisān*.

Given the due-east orientation of the Khirbet et-Tannur sanctuary (within 1° 30') (Fig. 3), and the arrangement of the zodiac signs, it is possible that such a festival occurred there on the vernal equinox, when the rays of the rising sun would have landed on the zodiac between the cult statues, or on the first new moon after this. Perhaps there was a harvest festival on the autumnal equinox. Festivals also could have taken place at other times of the year. In the late 4th century A.D., Epiphanius mentions how the birth of Dushara was celebrated in Petra and Elusa on the winter solstice (marked on 6 January).¹⁰³ Janif points out that Epiphanius in *Panarion* 51. 24.1 refers to *Tishrī* as the month of *aggathalbaeith*, i.e., of pilgrimage (*Hajj*) to the temple (*al-Bayt*), with this taking place on 8 November,¹⁰⁴ although Epiphanius does not indicate which temple. The other references to Nabataean annual gatherings, at Petra and Elusa, do not indicate what time(s) of the year they took place.¹⁰⁵

Healey notes that the evidence from pre-Islamic northern Arabia indicates that annual spring festivals are likely to have been held with aspects of

¹⁰⁰ O. Gingerich, “A Note on Attempts to Date the Zodiac”, in McKenzie *et al.* in press a. He explains how unsuccessful attempts were made to date it, soon after the discovery of the second fragment.

¹⁰¹ Cohen 1993: 299, 386, 401.

¹⁰² Sourdél 1952: 109–10.

¹⁰³ Epiphanius, *Panarion* 51. 22. 11; Healey 2001: 103, 160; Janif 2006–7: 345.

¹⁰⁴ Janif 2006–7: 342. On the implications of this date at Khirbet edh-Dharih, see Linant de Bellefonds in this volume.

¹⁰⁵ The annual gathering at Elusa in honour of Venus / Aphrodite [al-'Uzza] is mentioned by Jerome in his *Life of Hilarion*, written in A.D. 385/6: *Vita Hilarionis* 25 = Migne, *PL* 23: 42, sections 26–27; White 1998: 102. Diodorus Siculus (19. 95. 1–2), writing in the 1st century B.C., when discussing the plans of Antigonos I to begin a military campaign against the Nabataeans in 312 B.C. refers to an annual gathering in Petra, but he too does not give specifics about the time of year (Healey 2001: 161).

pilgrimage attached.¹⁰⁶ The hilltop location of the Khirbet et-Tannur sanctuary, with only one cistern for water, and no village immediately beside it, suggests that it was visited on specific occasions for such religious ceremonies, i.e., that it was a pilgrimage site. It would have been approached from Khirbet edh-Dharih, where associated rituals are suggested by the zodiacal iconography on its temple.¹⁰⁷

The only other surviving Nabataean example of a ring with a full set of zodiacal signs is on the shoulder of a relatively large (length 12 cm) lamp from the complex adjoining the Temple of the Winged Lions at Petra (Fig. 31).¹⁰⁸ It was found in “post-destruction debris” of the A.D. 363 earthquake in a room in a residential or workshop area beside the temple.¹⁰⁹ Based on comparative Levantine material, da Costa dates it to the 4th – 5th century.¹¹⁰ The order of the signs seems to be jumbled up, as no explanation for this has yet been found (although there probably is one). This order, running clockwise from the handle, is: Scorpio, Pisces, Aries, Taurus, Sagittarius, Libra, Leo, Aquarius, Capricorn, Gemini, Cancer, and Virgo.¹¹¹ It has the usual animals for Aries and Capricorn, unlike at Khirbet et-Tannur. The fish point in the same direction, as at Khirbet et-Tannur. Some of the figures are busts, except for Gemini and Libra which, despite the small space for them, are full-length figures. The bird on the spout possibly might be explained by the role of cock crow in marking the end of the night. In the 4th century A.D., following the night long vigil, after cock crow torch bearers descended into the crypt of the Koreion in Alexandria.¹¹² It is not clear if the head on the handle represents Helios, who is depicted at the centre of zodiacs on synagogues.

This lamp shows the direct relationship between the zodiac and the use of special lamps, suggesting a related night cult also occurred at Petra. In Room 468, opposite the Deir, the carved niche has a bust holding a torch at either end of the frieze (Fig. 32), reminiscent of the busts holding torches on the corner blocks at either end of the facade of the Inner Temenos Enclosure at Khirbet et-Tannur (Fig. 11). The two pilasters on the niche each have six completely plain panels carved in relief. One wonders if these originally had personifications or zodiac signs painted on them.

¹⁰⁶ Healey 2001: 161; Janif 2006–7: 351.

¹⁰⁷ See Linant de Bellefonds and Villeneuve in this volume.

¹⁰⁸ Hammond 2002; 2003: fig. 248. Also illustrated and discussed by Linant de Bellefonds and Villeneuve in this volume. There are also sealings of some individual signs, discovered in a tomb in the Negev, which they discuss.

¹⁰⁹ Find-spot: Hammond 2002: 168.

¹¹⁰ K. da Costa, “A Note on the Zodiac Lamp from Petra”, in McKenzie *et al.* in press a.

¹¹¹ Hammond 2002: 166.

¹¹² Epiphanius, *Panarion haer.* 51. 22. 9, ed. Holl and Dummer 1980: 285; trans. Williams 1994: 51.

Two major rock-cut monuments nearby, which notably are not tombs, are designed with recognition of the importance of the sun, so that its rays hit their back wall at particular times of the year, taking into account the surrounding topography. The Lion “Triclinium” is located in a narrow ravine beside the rock-cut path leading up to the Deir. It faces south-east and was designed with an oculus above the doorway of the facade and a high ceiling, so that the unfinished niche in its back wall is the first place the rays of the morning sun hit in January, despite the steep mountains surrounding it. We also observed, on the same day, that the last place the rays of the setting sun hit is the niche in the back wall of the Deir, which faces south-west.¹¹³ The chamber of the Deir is not symmetrical on either side of the entrance but designed so that the niche, which has a low podium, is centred in the back wall. This position, which is off centre relative to the doorway, takes account of the shadow cast by the mountains as the sun sets, so that its rays hit the niche last.

The strongest indication at Petra of using the sun to set the annual calendar is that fact the rock-cut obelisks on the High Place are orientated exactly east–west, so that they could have been used to calculate the start of the new year, and mid-year, as could have been done at Khirbet et-Tannur when the sun's rays entered the sanctuary, and hit the zodiac.

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¹¹³ Deir plan: McKenzie 1990: pl. 140. Lion Triclinium: McKenzie 1990: 159, pls. 135–136a. The oculus is now weathered so that it joins the doorway, but the original shape is clear. Generally, the height of the ceiling of the chambers behind rock-cut facades is level with the top of the doorway. In 1986 my assistant, Jane Lydon, noticed this. These observations were made on about 23 January, and recorded in my diary on 2 February. At the time I had the impression that this related to the winter solstice (see also Belmonte *et al.* 2013: fig. 6), but I did not have the chance to return in future years to determine precisely or relative to another date (see the results for Khirbet edh-Dharih in Villeneuve and Linant de Bellefonds in this volume).

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SOURCES OF ILLUSTRATIONS

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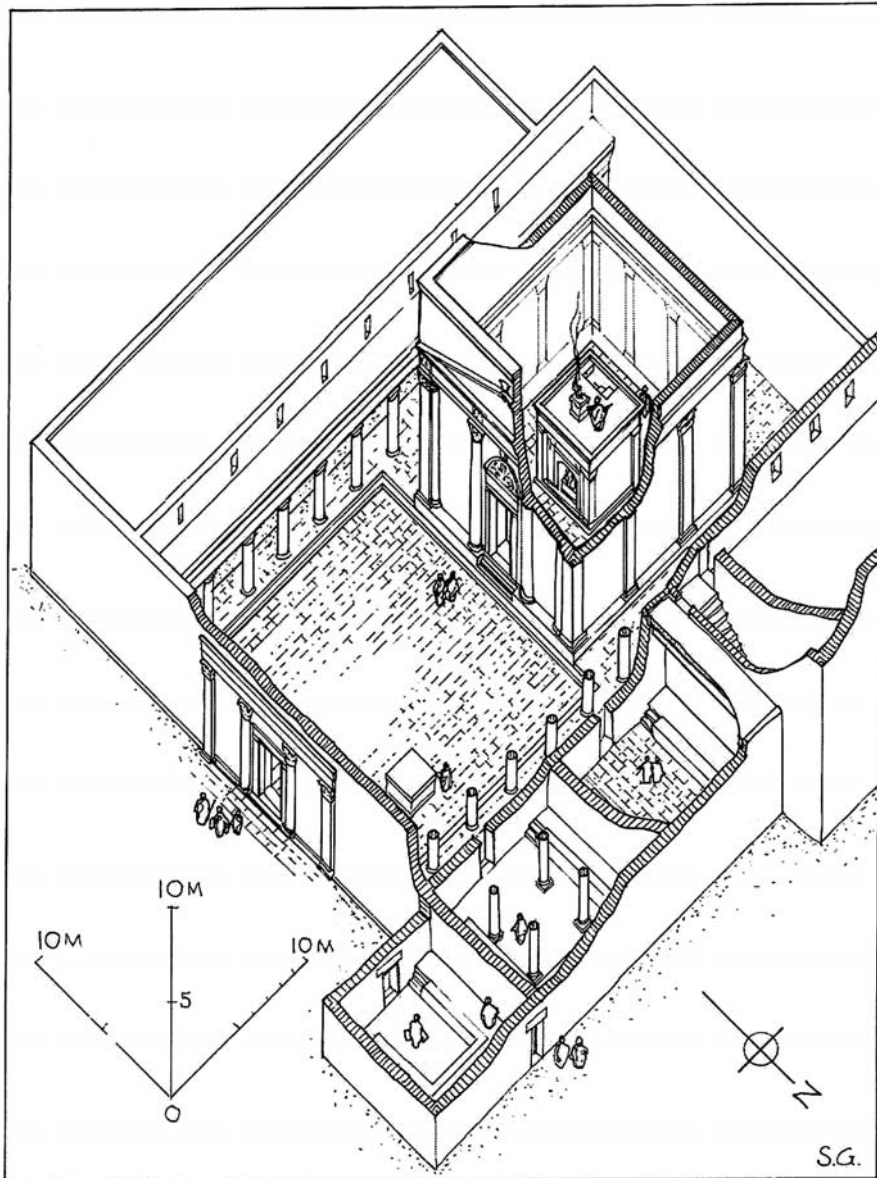


Fig. 1. Khirbet et-Tannur, axonometric reconstruction (Sheila Gibson).



Fig. 2. Khirbet et-Tannur, zodiac-Tyche
(top: CAM 233; bottom: Department of Antiquities, Jordan).

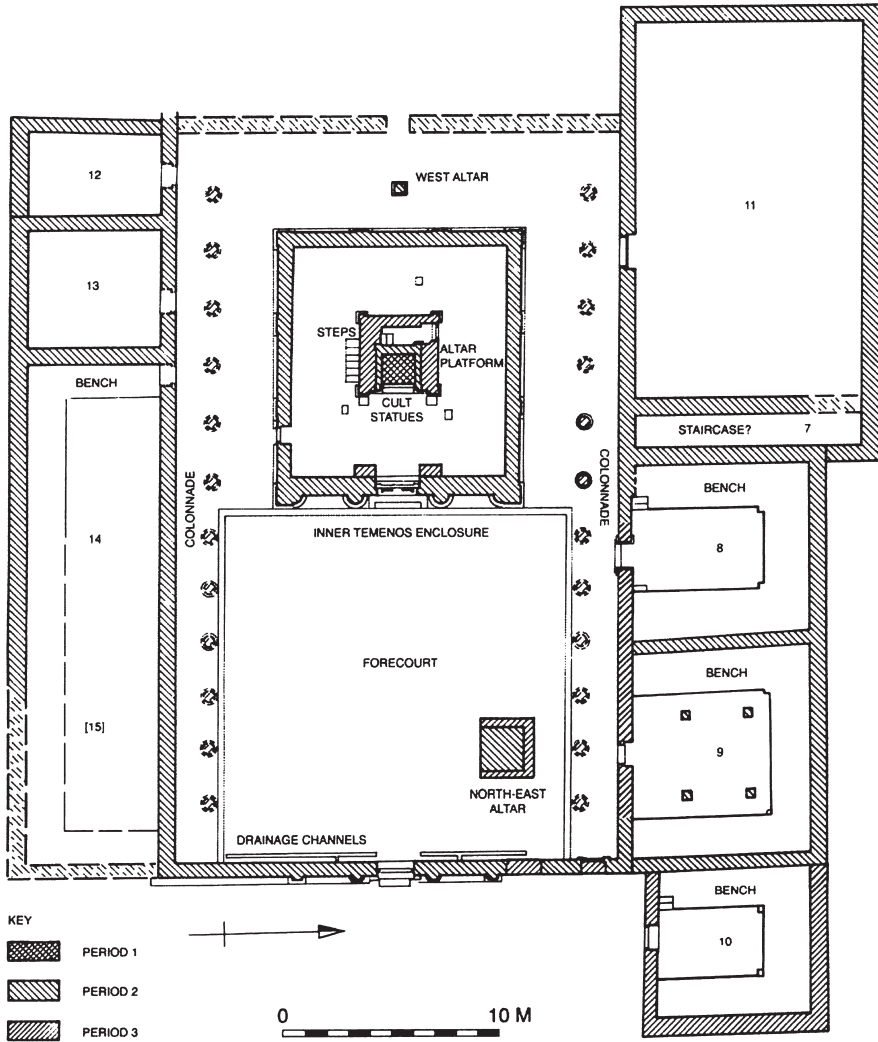


Fig. 3. Khirbet et-Tannur, plan.



Fig. 4. Khirbet et-Tannur, Period 2 Inner Temenos Enclosure, with doors open showing view to Altar Platform, reconstruction.



Fig. 5. Khirbet et-Tannur, bust of Helios, frieze of Inner Temenos Enclosure facade (CAM 225).



Fig. 6. Khirbet et-Tannur, bust of Saturn, frieze of Inner Temenos Enclosure facade.



Fig. 7. Khirbet et-Tannur, head of Hermes-Mercury, from a bust on frieze of Inner Temenos Enclosure facade (CAM 216).



Fig. 8. Khirbet et-Tannur, Nike panel with head, and feet on globe, frieze of Inner Temenos Enclosure facade (CAM 226).

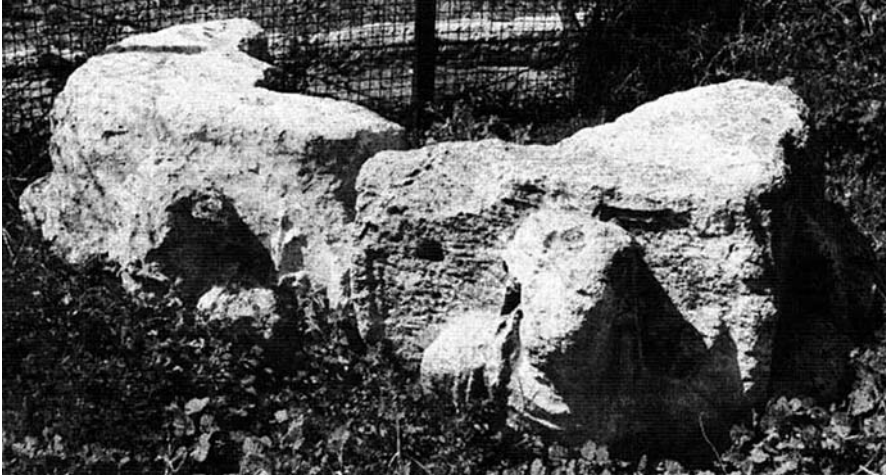


Fig. 9. Khirbet et-Tannur, corner blocks with framed busts, frieze of Inner Temenos Enclosure facade.

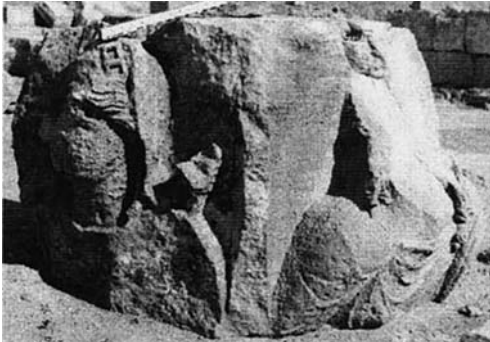


Fig. 10. Khirbet et-Tannur, veiled Tyche (on left) with mural crown, north corner block (on right in Fig. 9) from Inner Temenos Enclosure frieze.

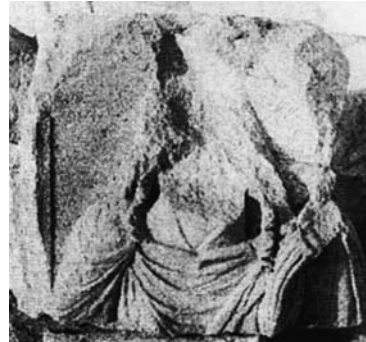


Fig. 11. Khirbet et-Tannur, framed bust with torch, on side of north corner block of frieze of Inner Temenos Enclosure facade (in Fig. 10).



Fig. 12. Khirbet et-Tannur, Vegetation Goddess panel,
Inner Temenos Enclosure facade.



Fig. 13. Khirbet et-Tannur, framed bust of god with sceptre, possibly from main doorway of Forecourt facade (CAM 263).



Fig. 14. Khirbet et-Tannur, framed bust of Tyche, possibly from main doorway of Forecourt facade.



Fig. 15. Khirbet et-Tannur, Alexander Amrou incense altar.

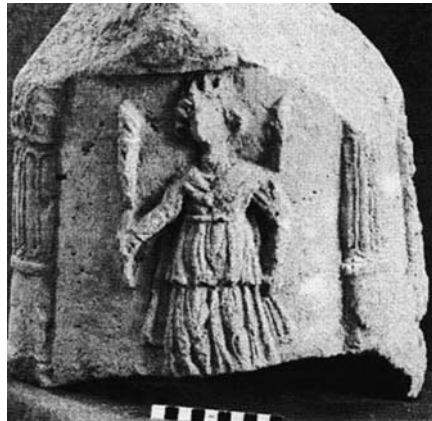


Fig. 16. Khirbet et-Tannur, circular incense altar, with a figure in female attire (a *peplos*), but with a torch and radiate crown (CAM 212).

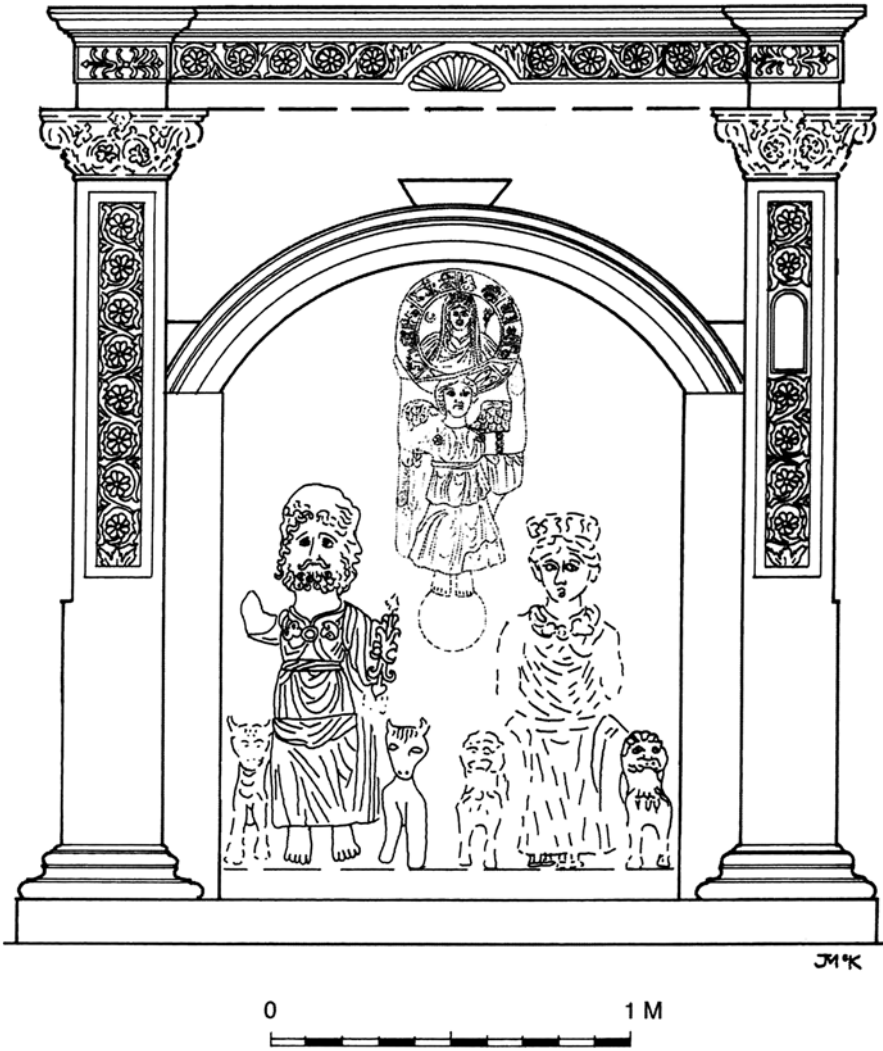


Fig. 17. Khirbet et-Tannur, Altar Platform 2, elevation.

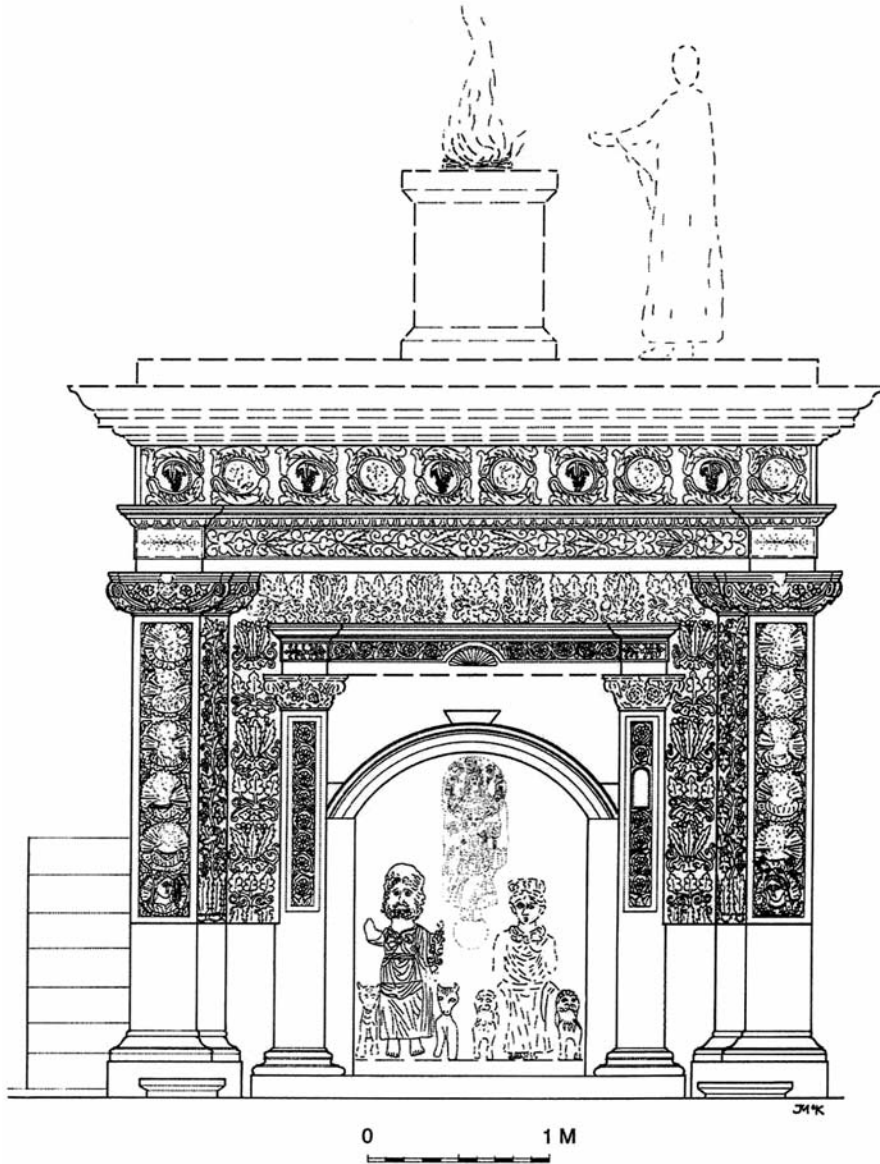


Fig. 18. Khirbet et-Tannur, Altar Platform 3, reconstructed elevation.



Fig. 19. Khirbet et-Tannur, Grain Goddess, Altar Platform 3 (CAM 227).



Fig. 20. Khirbet et-Tannur, Fish Goddess, Altar Platform 3.



Fig. 21. Khirbet et-Tannur, cult statue of god, *in situ* in front of Altar Platform, after excavation in 1937 (sandstone, 30 cm scale).



Fig. 22. Theadelphia (Batn Ihrit), statue of Serapis, sycamore wood covered in painted plaster, h. 1.9 m (Greco-Roman Museum, Alexandria).



Fig. 23. Khirbet et-Tannur, lion and foot from the main cult statue of the goddess, sandstone (CAM 218a, 218b, 278, 287).



Fig. 24. Khirbet et-Tannur, a small statue of goddess, showing side of crown with symbol of Isis (limestone, not at same scale as Fig. 23).

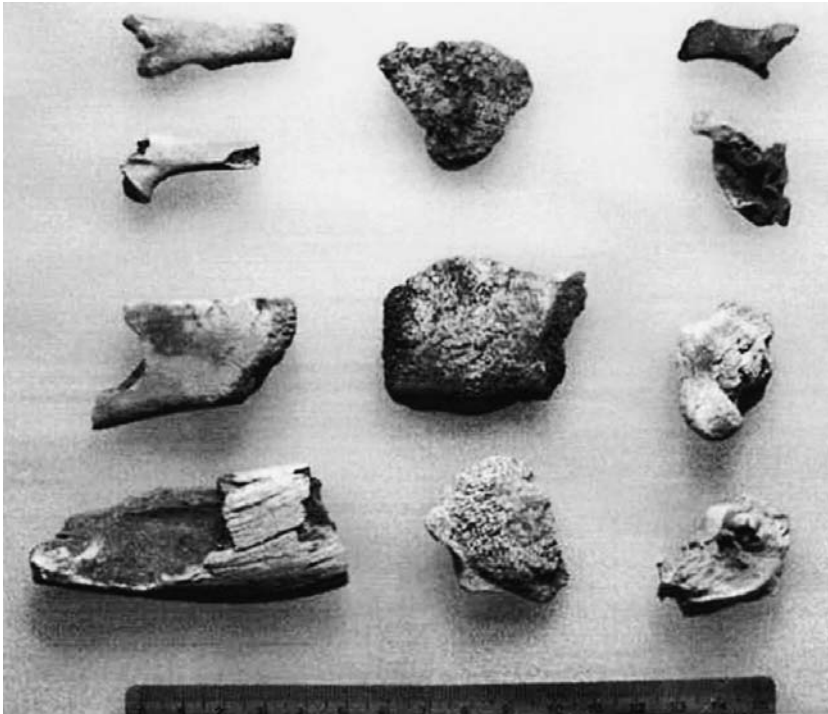


Fig. 25a. Khirbet et-Tannur, burnt bones, from inside the Altar Platform.



Fig. 25b-c. Khirbet et-Tannur, burnt emmer wheat (top) and free-threshing wheat.

Fig. 25d. Khirbet et-Tannur, pieces of burnt offering cakes.

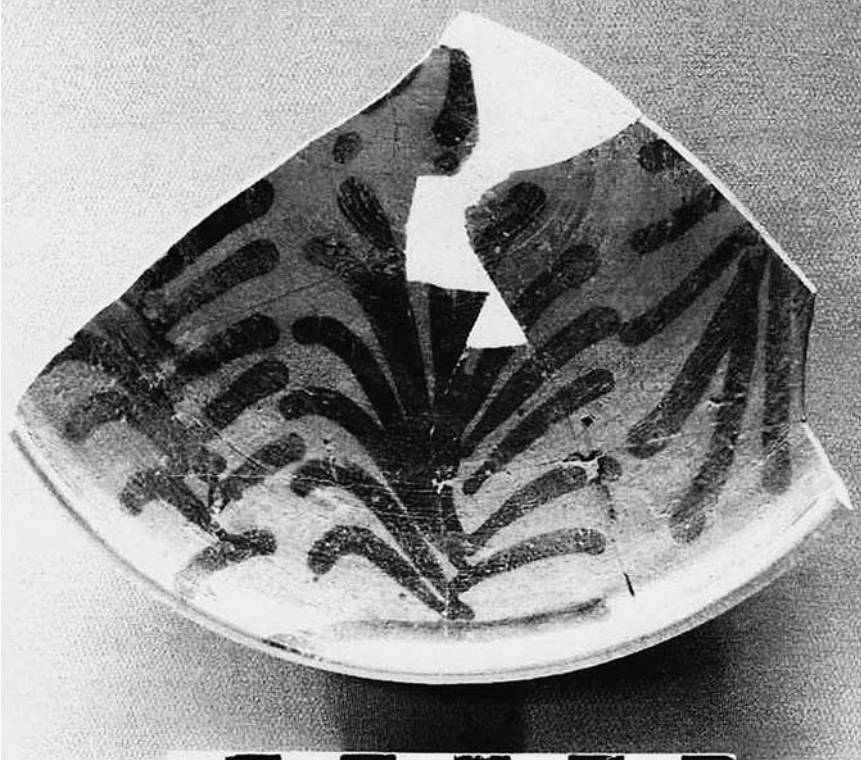


Fig. 26. Khirbet et-Tannur, fragment of a Nabataean painted fine ware "bowl" decorated with painted palmettes.



Fig. 27. Khirbet et-Tannur, "socket and saucer" lamp, with chipped rim.

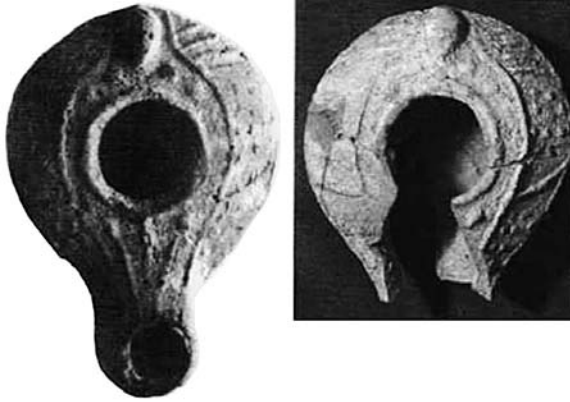


Fig. 28. Khirbet et-Tannur, South Jordan slipper lamps from same mould, from south-west corner of the Altar Platform and Room 14, width 5.8 cm, length 8.5 cm.

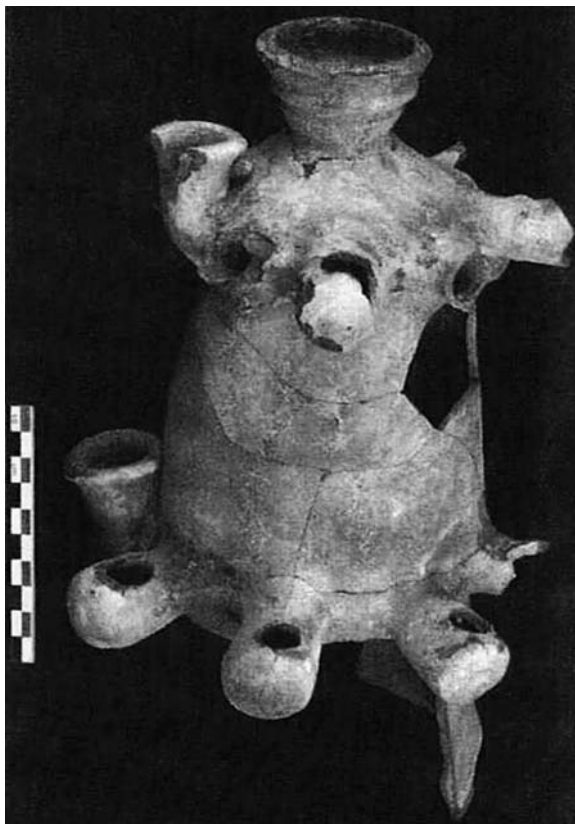


Fig. 29. Petra, polycandelon (lamp with many spouts), from excavations in front of the Qasr al-Bint, Petra.



Fig. 30. Khirbet et-Tannur, zodiac-Tyche, upper block (CAM 233).



Fig. 31. Petra, zodiac lamp, Temple of the Winged Lions, length 12 cm.



Fig. 32. Petra, niche in Room 468.