

PROJECT FOR THE ARCHAEOLOGY OF YEMENI TERRACED AGRICULTURE

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To many people Yemen is a rather obscure part of the Middle East, but as our work there has begun to demonstrate, the country holds considerable archaeological interest, which has resulted in a multipart project encompassing settlement survey and excavation, obsidian sourcing, and epigraphic survey. Past *Annual Reports* have described our results within a regional setting, but it is also necessary to state the important role that the project is playing in understanding the development of South Arabian civilization. In brief, prior to the 1980s when Alessandro de Maigret discovered the first distinctive traces of a Yemeni Bronze Age, the pre-conditions that enabled the civilization of Sab'a and the incense states to develop were unknown. Now, as a result of five seasons of survey and excavations, we can state that prior to the rise of the state of Sab'a, the mountainous area of southwest Arabia was well populated with numerous Bronze Age highland communities, mostly in the form of small hilltop towns and villages. This moist heartland then provided the core around which the incense states subsequently developed. Consequently throughout the first millennium BC this area provided the verdant hinterland for the new vibrant and affluent civilization that developed around cities such as Sab'a. Therefore it is no longer necessary for us to suggest that the incense trade and its cities grew up in a vacuum, without a predecessor, or developed simply as a result of southward emigration from the Levant to the north. Rather, its foundations were homegrown. Of these Bronze Age communities, the best example we have studied to date is the hilltop town of Hammat al-Qa, discussed below.

Project for the Archaeology of Yemeni Terraced Agriculture

The project has now been re-named the "Oriental Institute Project for the Archaeology of Yemeni Terraced Agriculture" (OIPAYTA). This is partly because the previous more ponderous title frequently resulted in my being unable to remember the name of my own project. Between 7 October and 12 November 1999 we conducted the fifth field season of the project. As in previous seasons a general survey of the region was conducted. In 1999 special efforts were made to re-examine sites that had been visited in the first season in order to improve our record of those sites and their environment. Second, a major endeavor was made to record as many South Arabian inscriptions as possible. Third, the important site of Hammat al-Qa was surveyed using a "total station" laser theodolite so that every building and ancient agricultural feature was recorded. Finally, soundings were made at Hammat al-Qa (DS 101), Hawagir (DS 293), and al-Miqta' (DS 322A). We also took the opportunity to analyze in greater detail the artifacts recorded from the 1998 field season, specifically the pottery and lithics from Ribat 'Amran (DS 226) and Kharraib (DS 227 and 228).

Funding for the 1998 and 1999 seasons came from the National Science Foundation, the National Geographic Society, and several private donors from the Oriental Institute. We are very grateful to all who have contributed to the project over the years. Because as many as three teams were in the field at any one time, we had three representatives (Ali Sanabani, Khalil al-Zubeiri, and Mu'ammal al-'Amry), all of whom are to be thanked for contributing enormously to the success of fieldwork. We particularly wish to thank Ali Sanabani, Director of the Dhamar Office of the Department of Antiquities, for lending his help and advice at every stage of fieldwork. Considerable gratitude must go to officials of the General Organization of Antiquities and

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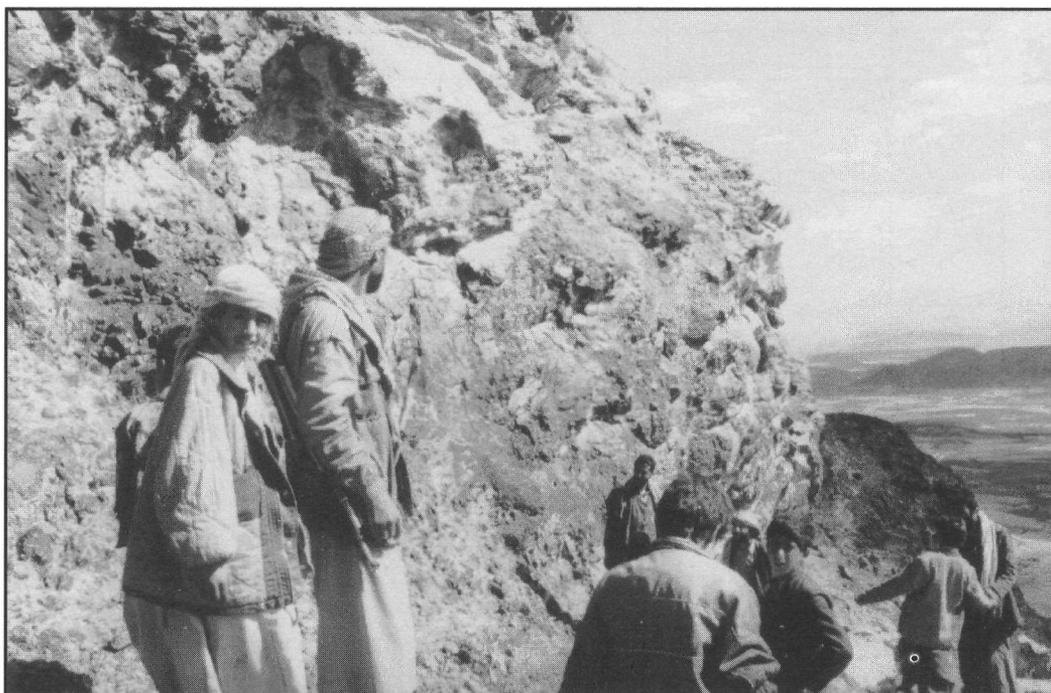


Figure 1. In center of view dipping from top right to lower left is obsidian source near village of Asakirah within volcano of Jebel Isbil

Museums, especially Yusuf Abdullah and Ahmed Shujar, and to Ahmed Shemsan, for help and advice before and during the season.

Archaeological Survey

Because we are now starting to get a more comprehensive picture of the cultural record of this previously little known area, in 1999 there was less emphasis on general reconnaissance. Hence we only recorded some 22 new sites, which brings the total number of sites on record to 322. Rather than simply covering additional ground, we decided to expend increased effort on improving our record of known sites, especially those that were recorded during the first field season in 1994, when we had scant knowledge of the cultural assemblage. Much of the survey and site recording in 1999 was conducted by Krista Lewis (graduate student, University of Chicago), who will be using her fieldwork in the area toward a doctoral dissertation.

A large number of Bronze Age sites continued to be recorded, demonstrating the high density of occupation that prevailed between about 3000 and 1200 BC. One of these sites is situated on top of an extinct volcano, a location which testifies to the disregard that early Yemenis showed for the risks inherent in occupying certain sites, or perhaps, more realistically, to the importance in their minds of defense and status. Therefore, the inhabitants probably considered it important to have part of their site in a defensible and lofty position even though living there entailed potential discomforts or risks.

Obsidian Sourcing

Part of the survey entailed a detailed study of sites at or near obsidian sources. Such a study should enable us to trace the process of manufacture of obsidian tools or their raw materials prior to their distribution, and to enable obsidian found on sites both within the Dhamar area and

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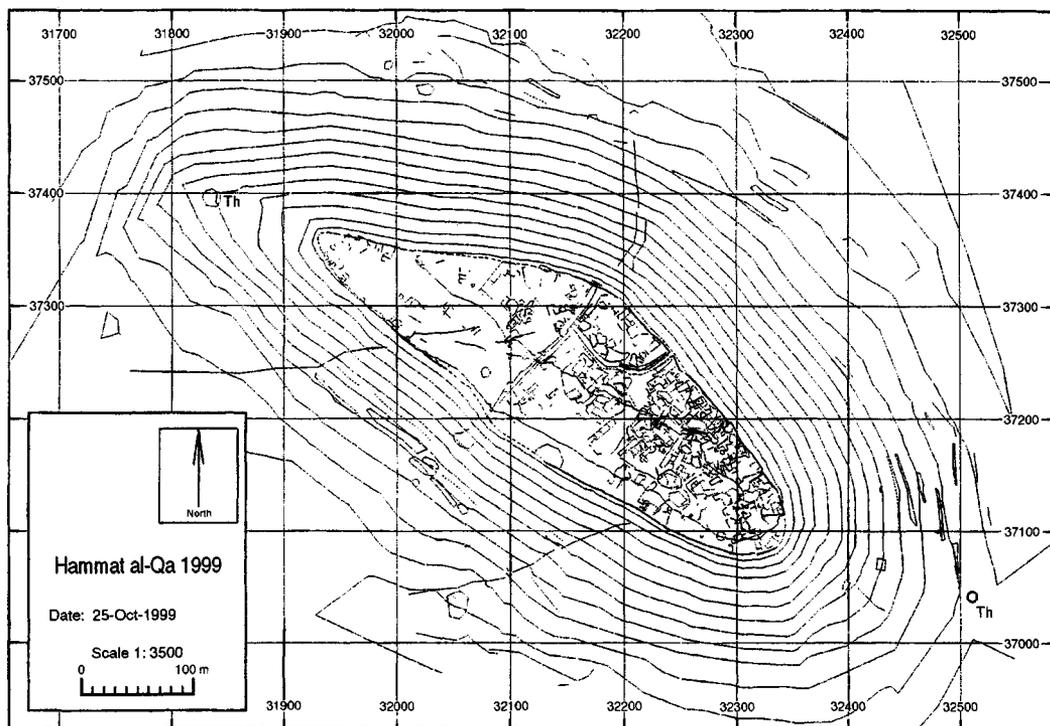


Figure 2. General contour map of Hammat al-Qa showing main town, relict terrace fields on slopes, and threshing floors (Th)

beyond to be traced to their source. Obsidian sampling by Colleen Coyle (graduate student, University of Chicago) is being conducted in conjunction with trace element analysis by James Blackman (Smithsonian Analytical Laboratory, Washington, DC). The analyses will eventually enable us to describe patterns of ancient obsidian trade back to the Neolithic period. Sites that appear to have been involved in the manufacture of obsidian tools, or raw materials for export, include sites DS 301 and DS 179. The term “obsidian source” is rather an abstraction, and it must be emphasized that such sources can range from a dense scatter of glossy, black obsidian waste on a mountaintop settlement (as at DS 301) to much more extensive workshops such as site DS 179, which consists of a vast area of obsidian flakes and other waste material spread over several square kilometers of ground (i.e., virtually a square mile). Usually the exact source is simply an outcrop of black volcanic glass on a hillside, or even a bed of rolled obsidian that erupted out of an ancient volcano. Tentatively, the Bronze Age site of DS 301, located to the southwest of the dormant volcano of Jebel al-Lisi, appears to have been involved in the manufacture of obsidian tools whereas DS 179, located a short distance to the northwest of Dhamar, appears to have been heavily involved in the manufacture of stone cores, primarily during the Iron Age and Himyarite periods. In addition, an obsidian source below the village of al-Asakirah within Jebel Isbil was sampled for analysis (fig. 1). Preliminary analysis of obsidian from this source suggests that sites in the Wadi Jubbah, some 90 miles away to the northeast, received some of their obsidian from this source.

Hammat al-Qa

Hammat al-Qa was described in *Oriental Institute News & Notes* 165 (Spring 2000), so it is necessary only to summarize the results from this important site that was occupied in the final cen-

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turies of the third millennium BC and the early second millennium. In 1999 Christopher Edens (currently director of the American Institute of Yemeni Studies) and Glynn Barratt (University of Birmingham, United Kingdom) undertook a general survey of all buildings on this hilltop town. Mapping was a two-stage process that first entailed fixing all wall alignments using a total station laser theodolite (fig. 2). It was then necessary to return to every wall or building with conventional tapes to record the buildings at a scale sufficient to show all their details (fig. 3). The latter exercise, which proceeded “stone by stone,” was particularly instructive because it enabled us to see precisely not only how each wall had been constructed, but also how at a later date they might have been dismantled to supply building materials for other growing parts of the site. This contrast is best brought out by figure 3, which shows the dense building plans within the main part of the site. This compares to a much more sparse and extensive scatter of buildings that occurred to the west of the main wall in the northwest “outer town” (fig. 4).

In addition we mapped off-site features such as relict field terraces, threshing floors, and rural buildings, which together provide evidence of where at least some of the crops eaten by the inhabitants were grown, threshed, and winnowed (fig. 5). By combining population estimates obtained from the number of houses mapped within the settlement to the area required to grow the crops the inhabitants needed for food, we can deduce that only a modest proportion of the surrounding lowlands (the *Qa*) would have been required for cultivation. The remainder of the *Qa* could have served as long-term pasture for the sheep and goats that would have constituted the household flocks.

In 1999, in order to provide some stratigraphic confirmation for the surface collections and survey, soundings were undertaken at three sites. Those at Hammat al-Qa and Hawagir were both supervised by Mark al-Taweel (graduate student, University of Chicago), with the assistance of Muḥammad al-ʿAmry (General Organization of Antiquities and Museums, Sanʿa). Excavations at al-Miqta were supervised by Krista Lewis and Ali Sanabani.

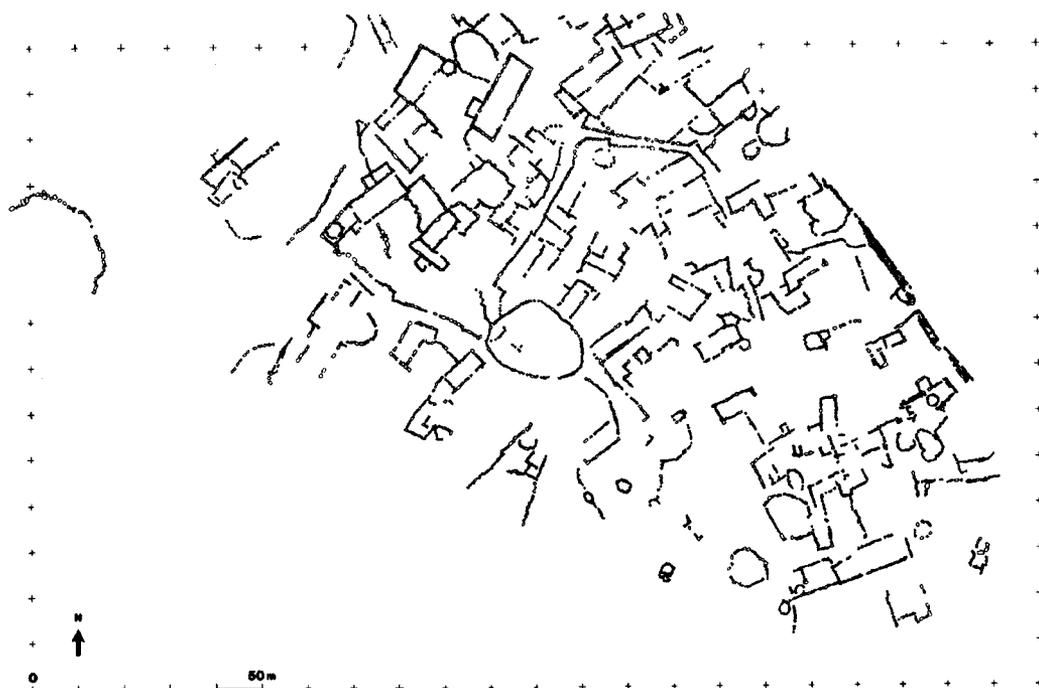


Figure 3. Detailed plan of southeast part of main town of Hammat al-Qa

Soundings at Hammat al-Qa

Two soundings were placed within the main town of Hammat al-Qa. The first, operation 6, suggested that the town wall was constructed in two phases. The first phase was probably in the Bronze Age. After a period of abandonment during part of the second millennium BC and probably the entire first millennium BC, the wall was rebuilt and a second wall of large rough tabular orthostats was placed over the earlier wall and gravel platform (fig. 6). Himyarite pottery from the construction phase of the gravel platform suggests that this later phase of wall construction took place during the Himyarite period or somewhat later. However, we do not know at present whether this later rebuilding was a major feature or merely surrounded part of the site.

The second sounding, operation 7, was positioned within an open space towards the center of the town. These excavations indicated that the open space had once contained buildings which were subsequently reduced to little more than a relict northwest-southeast wall surrounded by abundant building rubble. Such a result is important because it eloquently demonstrates that even when we see an open space on the ground, the area probably contained buildings, thereby suggesting that the density of buildings is greater than the remains visible on the surface.

Soundings at Hawagir

The roughly 15 ha Bronze Age site of Hawagir (DS 293) is located on the east side of the extensive lowland known as the Qa Jahran. The site was discovered in 1998, but at that time it was not clear to what extent the surface scatter of building rubble and Bronze Age pottery reflected the actual area of the site. Because this site is considerably bigger than any other highlands site of its period it was felt that soundings would help demonstrate both its true size and whether or not occupation levels and perhaps architecture still remained at the site despite several centuries or

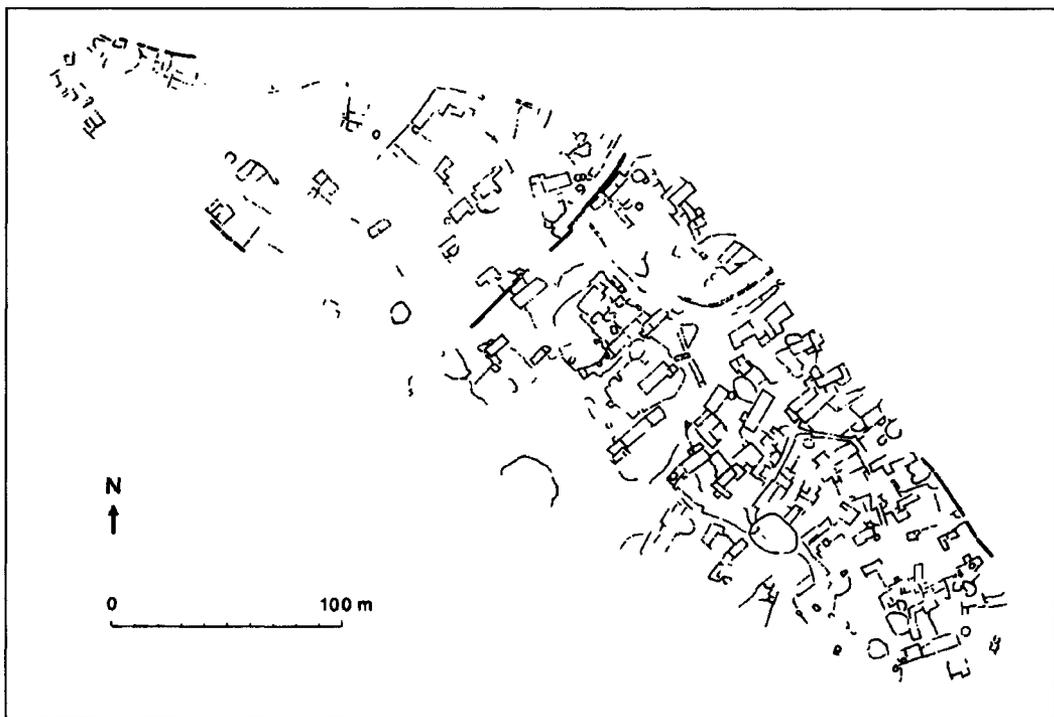


Figure 4. General wall plan of Hammat al-Qa

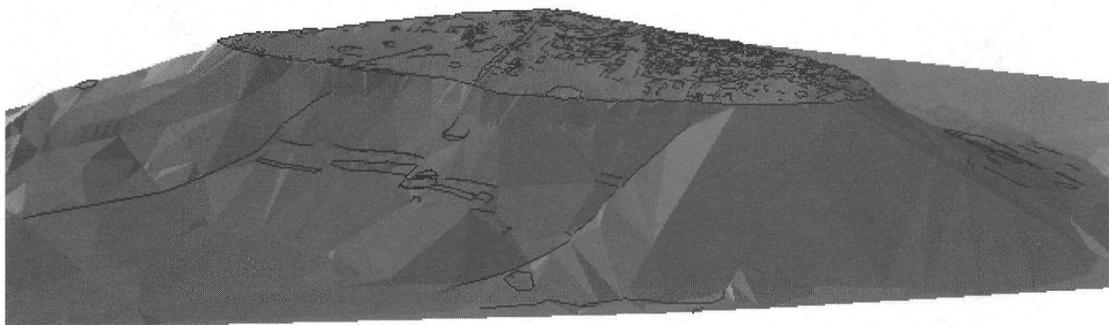


Figure 5. Oblique three-dimensional view of Hammat al-Qa

millennia of cultivation. We were fortunate therefore to have forged a link with the Department of Archaeology and Ancient History at Dhamar University in order to undertake a joint excavation program. This project, with the considerable help of Gemal Idris of Dhamar University and about ten of his students, enabled us to place four 2×3 m soundings in the northern part of the site.

In short, in all four of the 2×3 m trenches the cultural deposits were never more than 1 m deep, and only in two soundings (operations 1 and 3) was there any evidence of *in situ* floors or stratigraphy. Abundant pottery was found, however, and it appears that Hawagir dates mainly from the later part of the Bronze Age (probably late second millennium BC), with a small amount of Iron Age pottery in the upper levels.

Therefore although we confirmed that Hawagir was a large site with remains of *in situ* Bronze Age deposits, we found that many of the archaeological remains within the modern



Figure 6. Rebuilt town wall at Hammat al-Qa showing earlier phase of town wall (by scale) overlaid by later phase (above gravel)

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Figure 7. Himyarite inscription on sluice of dam (Sedd edh-Dhib: OI al-Qa'ima) describing administrative relationship of dam to Dhu-Raydan. Originally recorded by Norbet Nebes. Photograph by Joseph Daniels

fields appear to have been disturbed by a combination of plowing, construction of terraced fields, and, in the worst case (operation 4), bulldozing. Nevertheless we now know that stratified Bronze Age deposits are present, and if the site is going to be investigated in the future, we would expect the best results to come from small undisturbed areas between the existing fields.

al-Miqta

This small site (DS 322) is located about 1 km east of Hawagir in the vicinity of an inscription on a rock face that refers to the construction of a temple. Because the nearby site was about to be destroyed by earth-moving activities, it was decided to place a sounding within the site in order to describe and date the function of the building and the site.

Excavations revealed that this low mound consisted of rubble overlying well-preserved and rather high walls. The western trench, which revealed the main part of a room floored with rough flagstones, contained abundant evidence of occupation. This included much domestic pottery as well as numerous quern stones and stone weights. The eastern trench exposed part of an outer wall of the building, together with a buttress and perhaps a secondary support wall. The building contained debris that appears to be the result of domestic rather than ritual activities, and it is therefore possible that the building was simply a house or farmstead. Based on the abundant Himyarite pottery, it can be tentatively suggested that this site was occupied during the late first millennium BC, or perhaps the beginning of the first millennium AD.

Epigraphic Studies

An important component of the 1999 field season was the recording of inscriptions, both monumental and in the form of graffiti on rocks, as well as associated rock art (fig. 7). This work was undertaken by Joseph Daniels (graduate student, University of Chicago), assisted by Khalil Zubeiry (General Organization of Antiquities and Museums, San'a). Although a number of inscriptions had been noted and recorded in a preliminary fashion during earlier field seasons, no detailed studies were made until the 1998 season when several inscriptions were recorded by Norbert Nebes (University of Jena). During the 1999 field season several new inscriptions, graffiti, and rock art were recorded, thereby furthering our knowledge of the religious substratum in the Dhamar region during the pre-Himyarite and Himyarite periods (late first millennium BC and first half of the first millennium AD). Of the twenty-five rock art and inscriptional sites recorded by Joseph Daniels, the following sample provides a taste of the range of fascinating information contained in such inscriptions.

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| <i>OI Sanabana 1a-d</i> | Cluster of early graffiti and rock art listing personal names, tribal, and religious affiliations. Himyarite period |
| <i>OI Sedd al-Ajma' 1b</i> | Dedication to local divinities/religious sites ('Athtar Dhu-Sana, Sharqan, Dhu-'Adnam) listing personal names and tribal affiliations. Himyarite period |
| <i>OI Sedd al-Ajma' 1c</i> | Fragment listing a personal name and tribal affiliation, attesting divine assistance from enemies. Himyarite period |
| <i>OI Sedd al-Ajma' 1d</i> | Monogram, personal name, and tribal affiliation, with accompanying Christian motifs. Himyarite period |
| <i>OI Sedd al-Ajma' 1e</i> | Inscription relating the allocation of water(?) to various places within the Dhamar region. Himyarite period |
| <i>OI Jebel Isbîl 1</i> | Rock art including ibexes and archers. Pre-Himyarite period |
| <i>OI Ulayb 1b</i> | Inscription citing the restoration of a Qatabanian temple and its restorer. Early Himyarite period |
| <i>OI 'Asam 1</i> | Fragment of an inscription (relocated within the wall of a building) listing the dedication of a funeral chamber. Himyarite period |
| <i>OI Khirbet Afîq 1</i> | Fragment of an inscription citing construction and fortification work performed under the auspices of the king of Saba. Sabaeen |
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