The Road to Wadi al-Jubah

Archeology on the Ancient Spice Route in Yemen

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The barren sand track leads south from the ancient silt fields of Marib through the sands of the Rub‘ al-Khali, along the edges of the rugged mountains of central Yemen, over precipitous passes, and finally to Wadi Beihan, where Hajar Bin Humaid and Timna are located (see Fig. 2). Timna was the capital of pre-Islamic Qataban, and Hajar Bin Humaid was a point for frankincense and myrrh transshipment from production areas even further to the south in Arabia. Fragrance-laden camel caravans moved north from the Wadi Beihan on their long and arduous journey to the markets of Egypt, Palestine, and Mesopotamia (Groom 1981). They traveled well-worn paths along the edges of the Arabian desert, past Marib, the capital of Sheba (Saba‘), and the most powerful of the ancient South Arabian kingdoms, as they plied their trade north. Apparently with the rise of sea trade for spices in the first centuries A.D. and especially with the advent of Islam in the 7th century A.D., the route came to be virtually abandoned. It was only with the introduction of powered vehicles in the 1960s that the route between Marib and the Wadi Beihan again regularly carried a variety of international commodities. Halfway between Marib and Wadi Beihan lies the Wadi al-Jubah, a mountain-ringed, defensible piece of arable land which is about 32 kilometer long and between 3 and 8 kilometers wide (Figs. 3, 4). Since 1982, the American Foundation for the Study of Man (AFSM) has sponsored three seasons of archaeological research within the confines of the wadi. At the present time two further seasons are planned in the current phase of operations. Prior to the arrival of the AFSM team, no archaeological research had ever taken place in the wadi. In 1976, Father Albert Jannone of the Catholic University of America visited the wadi, collecting pre-Islamic Arabic inscriptions (see Jannone in Toplors 1984:70–71). In addition, over the years a number of pre-Islamic Arab artifacts, including some artistic pieces, made their way from Wadi al-Jubah to the National Museum in Sana‘a. Thus, the initial problem facing the project in 1982 was how to tackle archaeological research in a largely unknown and unmapped area.

Fortunately, some important research had been done in both Wadi Beihan (Timna‘, Hajar Bin Humaid) and Marib in the early 1950s. Wendell Phillips and William F. Albright had led AFSM archaeological teams that had explored the pre-Islamic Arabic occupation, cemetery, and agricultural installations at these sites. The results of these projects have been published and are well known (Phillips 1955; Boveen and Albright 1958; Cleveland 1965; Jannone 1962; Van Beek 1969). Unfortunately, no clear-cut chronology, either epigraphic or ceramic, has come to be accepted for use in dating those or other archaeological remains in Yemen. Scholars have generally been divided between those who argue for a fairly early date (ca. 1100 B.C.) for the beginning of this pre-Islamic Arabic culture (e.g., Jannone 1962; Van Beek 1969), and those who argue for a much later (ca. 580 B.C.) starting date (e.g., Pernice 1956). The AFSM team members decided to conduct a reconnaissance in the Wadi al-Jubah in order to determine the archaeological potential of the preserved remains in a cost-effective manner (Toplors 1984). Eight weeks of survey in 1982 and 1983.
yielded the discovery of 101 new sites. These sites were found through visual reconnaissance during a circuit of the wadi, and through information gathered from the local inhabitants. Three cultural horizons were found during the reconnaissance: Neolithic, Pre-Islamic Arabic, and Modern.

**Neolithic Period**

Neolithic structures were found in various places around the edges of the wadi. At all times they were found at an elevation higher than the wadi floor, and usually in the lower channels of subsidiary wadis where they debouch into the main wadi. Four types of structures which tentatively have been identified as 'Neolithic' have been found (Fig. 5): round house-like structures, round courtyards, rectangular courtyards, and lines of stone found in the vicinity of the house-like structures. They are all constructed of stone and are covered with 'desert varnish' (patina acquired through time on exposed surfaces). In no case has any artefact been found in conjunction with these structures. Their identification as 'Neolithic' is based on two lines of evidence: first, systematic archaeological missions in Yemen found similar structures in other parts of the country; second, independent evidence for an early date was found at our site APA 506, where an ash deposit was found next to one of these structures. Beta Analytic Inc. analyzed the ash and determined a radiocarbon date of 5720 ± 90 b.p. (Beta 7823). The calibrated date determined from this radiocarbon date is 5230 ± 90 b.c., using a 500-year-carbon-14 half-life and one-sigma precision. (Alternatively, using the new C14 radiocarbon calibration tables with a two-sigma standard deviation, the ash should date between 5070 and 3867 B.C. [Klein et al., 1982:129].)

This date seems to be in general agreement with the French dating of the material we have. We hesitate to call our structures Neolithic, however, because we have excavated no stratified deposits at this time. The data are not sufficient to indicate that cultural period. Also, at the present time we are not sure how the date of Neolithic support is appropriate for the date indicated by the radiocarbon analysis, since so little is known about this time period in South Arabia.

**Pre-Islamic Arabic Period**

By far the greatest number of sites in the wadi date to the pre-Islamic Arabic (Qata'banian and Sabaean) period. Four types of evidence for this cultural horizon have been found: epigraphic, cemetery, irrigation/agricultural, and occupational.

Brummer records the inscription of the palm as evidence that he reached Wadi al-Jubal in 1976. Most of the pre-Islamic epigraphic evidence was found on blocks of building stone that had been incorporated into Modern buildings (Fig. 6). The problem of interpretation is compounded by the recent moving of building stones by farmers. It is clear that some blocks found in the Wadi al-Jubal originated elsewhere since the inscriptions on the blocks were recorded at other sites prior to their removal during the past 30 years. One inscription indicates that the block was on a date of 70. Previously unknown inscribed blocks cannot be assumed to have originally stood only at the site, but are found in a stratified context or at another site. One inscribed block found only at al-Jubali was used on a date of 460. This block is called in situ. It was found in the wall of an ancient well where it could easily have been removed while water was being drawn.

About 200 pre-Islamic graffiti, which were reset in the walls of a 6th-century Dilmun date, names, have been found lightly carved into various vertical mound faces around the edges of the wadi. Also, about 20 inscribed potsherds have been collected; these typically contain fragments of letters and names.

Remains of two or three pre-Islamic Arabic cemeteries on the floor of the wadi are known to us. We have not examined the cemeteries in detail, but informants describe typical pre-Islamic Arabic pottery as coming from these burials. In one case, a quantity of human bones was buried on a raised mound. Other human burials were found on a small rise, which was apparently a burial monument.

Many of the sites in the wadi are non-occupational; rather they relate to the pre-Islamic drainage and irrigation of the wadi agricultural system. The agricultural methods employed by the ancient Qata'banians and Sabaeans were one of the few things known as we started the work in Wadi al-Jubali. Since the 1980s expedition to Wadi Bethan in 1950–51, explored that system (Bowen and Albright 1950), and compared it with the massive dam and silts deposits at Marib. A German team has recently explored the Marib remains and tried to reconstruct how the system actually worked (Schmidt 1985). Brummer reports that the massive dam at Marib, with its channels and silt fields, served as a model to explain what we saw on a smaller scale in the Wadi al-Jubal, massive amounts of weathered silts, some silt tracks, remnants of channels, and some subsidiary dams. Problems exist, however. A fairly large dam might have been expected in order to parallel Marib, but no evidence for such a dam has yet been found. Many small localized dams exist, however, around the edges of the wadi. This situation is causing problems of interpretation that we hope to solve in our next two campaigns.

Channels which are covered with decapitated "concrete" led to ancient field systems. The fields are now large tracts of deeply weathered silt. A probe through the silt beds suggests that they are about 10 meters deep and that all of the accumulated is the result of man's agricultural deposition. Also, the bedding of the silt and the location of the confined channels stop the silt beds suggest that the system grew and changed over time, with the channels and human occupation sites rising as the silt deposition in the fields grew (Fig. 7).

Another interesting facet of the ancient agricultural system is the frequency of wells found in and around it. This may be explained as a form of water recycling. Rain comes to this part of Yemen in the form of mountain cloudbursts during monsoon seasons twice a year, in the summer and in the winter. The irrigation systems caught the water and directed it to the fields during flood conditions. The wells may be explained as a means of bringing the water back to the surface after it had percolated through 15 to 20 meters of silt and wadi gravel. This would supply water during the long dry season when no rain could be expected.

The purpose of the well water is less clear. No mechanism for large-scale water raising has been found, but the use of well water for some kind of irrigation would still appear to have been possible (e.g., for growing pala trees). It could also have been used as a source of drinking water for both humans and animals.

Ancient mounds (hajar) containing the remains of human occupation are common throughout the wadi (Fig. 8). Small dwellings, villages, and one major ancient city have been found. Again, most seem to be found around the edges of the wadi where the ancient agricultural fields are best preserved. The larger small occupation sites usually are found on the silt flats. Probes have been excavated at two of these sites. At Hajar al-Khant (HK 25), the site was found to be sitting on top of about 5 meters of silt (Fig. 9). Typical pre-Islamic Arabic pottery (Fig. 10) was found at this site in association with obsidian debitage. Farther south at Hajar at Tamhir (HT 12), a larger probe discovered over 4 meters of occupation deposits. The top layer contained the collapse of a roofed structure. Broken pottery was found along with the car-
Typical pre-Islamic Arabic occupation site (Site B5), with Modern buildings on top, looking N-SW.

The carbonized roof collapse. Radiocarbon dating of three of these beams yielded the following information, which, again, is uncalibrated and presented at a one-sigma confidence level:

- Beta-7173: 2400 ± 80 B.P., 510 ± 60 B.C.
- Beta-7174: 2350 ± 80 B.P., 430 ± 50 B.C.
- Beta-7175: 2030 ± 70 B.P., 690 ± 70 B.C.

This indicates an abandonment of the site around 400 B.C. at the very latest, and very similar radiocarbon dates came from the uppermost (terminal) layers of two other sites in the wadi, Jubah al-Jaldalah and Hajar al-Hasan (Blake 1983). The bottom layer at Hajar al-Tamrah contained a few scraps of pottery and a chunk of charcoal. This piece (Beta-7176) yielded a date of 3290 ± 110 B.P., 1390 ± 110 B.C., uncalibrated. This dating evidence clearly supports the early chronology that was noted above, and it probably even pushes it back somewhat in time to the 13th century B.C.

Hajar al-Tamrah also yielded identifiable samples of wood, seed, bone, and obsidian. The wood seeds suggest that Ziziphus spina-christi was very common in the area. This is a small bushlike tree that produces an edible fruit. It has been called lotus and jubul in English. The faunal collection consists mainly of sheep, goat, and camel, but other species such as cow and various equids are present. The obsidian collection represents a microlithic industry. At the present time the analysis of this material is incomplete, and the full results will be presented in the forthcoming report on the site.

A number of medium-sized sites exist in the wadi. Some of them are concentrated at the north end where the mountains almost join. The area is naturally defendable, and three fortiﬁcation sites at this point may indicate a defensive barrier. In comparison, two other natural and less defensible entrances to the wadi in the southeast have modest defensive walls or barriers, but no major occupational remains nearby.

The most important occupational site in the wadi is located at the modern village of Jubah al-Jaldalah. The name of the site is Hajar ar-Raghuni (HE 3), but it is usually referred to by the village name (Jubah al-Jaldalah). The site is between 5 and 10 acres in size, and it is surrounded by a large defensive wall. Potsherds and ﬁnely worked stones litter the mound, as does the modern period garbage dump. Modern stone robbing has opened a number of cists in the defensive wall, and in January and February 1984, we excavated a small probe in one of these cists (Figs. 11, 12a–b). This probe went down about 6 meters and was then halted, when safety and limited work space necessitated that decision. Five occupational strata were isolated here. The top stratum appears to have been deposited after a major destruction of the defensive wall. Pottery from this top deposit seems to be of a later variety than that found at Hajar al-Tamrah, and it may date to the last third of the first millennium B.C. (note, however, that the radiocarbon evidence given above argues for similar terminal dates, ca. 400 to 300 B.C., at Hajar al-Tamrah and at Jubah al-Jaldalah). The second through fourth strata are all layers that are associated with the
active usage of the defensive wall. Pottery similar to that from Hajjar at Jobul al-Jadidah, many artifacts and pieces of material culture evidence were found: bone, beads, seeds, wood, stone, blades, obsidian, and other worked stones. Currently these items are being studied and prepared for publication.

The evidence for pre-Islamic Arab culture in the Wadi al-Jabali is thus very extensive and very complex. The most significant data thus far are the radiocarbon dates which have come from Hajjar at-Turun, Jobul al-Jadidah, and other sites in the wadi. Although the dates must still be considered tentative until confirming evidence can be obtained (such as from the lowest unexcavated levels in the period at Jobul al-Jadidah, or from other excavated sites elsewhere in Yemen or on the Arabian peninsula), it is nevertheless clear that the dates line up strongly in favor of the early chronology of Janame, Van Beek, and others. The dates suggest that the South Arabian cultures began to form as early as the 13th century BC, which is about the same time that the cemeteries seem to have been introduced in the Near East and Yemen. A team of these dates (see Bullet 1978). The cemeteries in our probes may agree with this reconstruction, and may constitute evidence for a breakthrough in transportation that helped to facilitate the development of these 'nomad' cultures. The dates also support the biblical tradition of the Queen of Sheba's visit to Solomon (c. 900 BC and contemporary with Solomon), as well as the later Assyrian and Babylonian references to the Sabavors and other Arabs. Although the Wadi al-Jabali may have been abandoned after 850 AD, the earlier periods which are not yet understood, it is clear that pre-Islamic Arab culture continued to flourish into later centuries at other sites, such as Marib and al-Fai (Al-Ansari 1981). Since the Islamic periods are not represented at Wadi al-Jabali, it is likely that the natural caravan and cultural regions declined and remained backwater areas during those periods, while, during the Islamic period, the cemeteries in our probes may agree with this reconstruction, and may constitute evidence for a breakthrough in transportation that helped to facilitate the development of these 'nomad' cultures. The dates also support the biblical tradition of the Queen of Sheba's visit to Solomon (c. 900 BC and contemporary with Solomon), as well as the later Assyrian and Babylonian references to the Sabavors and other Arabs. Although the Wadi al-Jabali may have been abandoned after 850 AD, the earlier periods which are not yet understood, it is clear that pre-Islamic Arab culture continued to flourish into later centuries at other sites, such as Marib and al-Fai (Al-Ansari 1981).

Modern Period

Numerous examples of Modern occupation were also found in the vicinity of the reconnaissance in the Wadi al-Jabali. Pottery (Fig. 13), artifacts, and cemeteries all attest to Modern occupation. All of these remains, however, seem to be at most about 100 years old. Other examples of Islamic pottery or cemeteries have been found at this site. The small village at the north end of the wadi is the last of these. It may indicate that no one has resided in the wadi before that time, but this topic has not yet been studied.

Future Work

A reconnaissance survey and two stratigraphic probes have brought us to this point. We now grasp the types of remains to be found in the wadi and we have a sense of what to seek. In our next two campaigns, we will address these major areas of survey.

The Wadi al-Jabali continues our probe at Jobul al-Jadidah. We feel that the ceramic and radiocarbon evidence is readily available there, and we need to get more samples and remains to complete the sequence.

Second, we plan to complete an epigraphic survey of all known inscriptions in the wadi so that they can be published. This should be completed at the end of our next season.

Third, and of ultimate importance, we plan to bring in specialists to conduct a systematic study of the irrigation/agricultural remains. This entails both geomorphological and botanical investigations of the preserved remains. At the conclusion of this work, systematic mapping, collection, and study of remains in the best preserved area will take place. From this evidence we hope to learn in detail how and when our irrigation/agricultural system actually worked.

Many other studies, such as an investigation of the 'Neolithic' remains, the cemeteries, or mountain occupations, must wait for the find in the wadi to remain to be seen at a large-scale excavation of some of the occupational sites in the wadi might be carried out in the future.