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## Planning Research on Oman: The End of Lehi's Trail

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BRIGHAM YOUNG UNIVERSITY • PROVO, UTAH

**Title** Planning Research on Oman: The End of Lehi's Trail

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**Abstract** In February 1998, five Brigham Young University professors spent more than a week together in southern Oman to collect data for future research projects in the area, which seems to correspond to the end of Lehi's trail in the Old World. Future research must be performed in a professional manner and seek to reconstruct that part of the world in 600 BC. Botanical, archaeological, chronological, mineralogical, geological, and inscriptional studies in the area would depend on acquiring sponsors in Oman and on the availability of resources.

# planning Research on Oman

## *The End of Lehi's Trail*

IN THE PRECEDING ARTICLE, WARREN ASTON SUMMARIZES RESEARCH THAT HAS BEEN CONDUCTED IN THE PAST ALONG THE SOUTHERN COAST OF THE ARABIAN PENINSULA, ATTEMPTING TO EXAMINE POSSIBLE LOCATIONS FOR THE PLACE THAT LEHI AND HIS FAMILY CALLED BOUNTIFUL (SEE 1 NEPHI 17:5-6). IT HAS BECOME CLEAR THAT THIS BOUNTIFUL MUST HAVE BEEN LOCATED ALONG THE SOUTHERN COAST OF OMAN, A COUNTRY THAT OCCUPIES THE EASTERN QUADRANT OF THE ARABIAN PENINSULA.

IN FEBRUARY 1998, FIVE BRIGHAM YOUNG UNIVERSITY FACULTY MEMBERS SPENT MORE THAN A WEEK TOGETHER IN OMAN TO DETERMINE WHAT NEW RESEARCH PROJECTS OUGHT TO BE UNDERTAKEN IN THAT AREA. THIS ARTICLE REPORTS SELECTIONS FROM THEIR CONVERSATION AFTER THEIR RETURN. THEY FOCUS ON WHAT THEY LEARNED ABOUT THE REGION WHERE LEHI'S TRAIL ENDED AND WHAT THEY THINK SHOULD BE DONE IN THE FUTURE.

#### THE PARTICIPANTS INCLUDE:

**TERRY B. BALL**, ASSISTANT PROFESSOR OF ANCIENT SCRIPTURE AND AN ARCHAEOBOTANIST;  
**S. KENT BROWN**, DIRECTOR OF ANCIENT STUDIES, PROFESSOR OF ANCIENT SCRIPTURE,  
AND TEAM LEADER FOR THIS STUDY;  
**ARNOLD H. GREEN**, PROFESSOR OF HISTORY, A SPECIALIST IN THE MIDDLE EAST;  
**DAVID J. JOHNSON**, ASSOCIATE PROFESSOR OF ANTHROPOLOGY, AN ARCHAEOLOGIST;  
**W. REVELL PHILLIPS**, EMERITUS PROFESSOR OF GEOLOGY, A MINERALS SPECIALIST.

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The BYU faculty team at Shisur where the rock surface above an aquifer has collapsed because of the gradual drying of the climate over the centuries. From here to the next water well to the west is eight days by camel.

**Kent Brown:**

Before we discuss what we saw in Oman and our specific plans for the future, I think we should lay out our key ideas about what kind of work we think needs to be done.

**Arnold Green:**

It is important to address the matter of broader and narrower interests. We could focus just on the narrow issue of Lehi's journey and the events that took place in the land Bountiful according to the Book of Mormon text—that is a legitimate pursuit for Latter-day Saints. But if we do that, we fail to engage the interest of non-LDS readers and we miss the chance to contribute to the world of learning outside of our own LDS people.

To be sure, a research inquiry can properly arise from a religious community. The Catholics may want to research the Shroud of Turin. Jewish scholars may wish to explore some archaeological site where they believe there was an Israelite occupation layer. But if, in addition to the narrower question of interest to that group, they ask broader questions that would be legitimately raised by archaeologists or historians, it would help both that specific group and the larger world.

Concerning future work in Oman, our research must be done in a professional way according to the standards of our fields of research. A good place to begin is the context of the scriptural record: the fabled incense trail runs between the land of Judah and Oman and was one of the most important commercial routes of antiquity. The beginning of this trail lies in the frankincense-growing region of southern Oman, the same general area where Lehi and Sariah most likely emerged from the desert and pitched their "tents by the seashore," naming the place "Bountiful" (1 Nephi 17:5, 6).

If we place our future work in Oman in the context of how communication between the two areas was conducted, it will help answer larger questions. Such an approach will also help LDS students to see that we need to take account of historical and archaeological context and method as we try to answer questions that arise from the scriptures.

When we reach the stage of publishing a book or books on this research, it will be appropriate in the preface to address these questions of methods and context as well as questions that arise from the Book of Mormon itself.

**Kent Brown:**

I agree that it is important to look for evidence that will help us reconstruct the southern Arabian world into which Lehi and Sariah came soon after 600 B.C. There are several ways one can do that. In terms of the narrower focus that Arnie mentioned, we can establish that deposits of ores exist that people could have exploited for making tools. Gene Clark, who is a geologist with several years of experience in Oman and who made a previous exploration in this area, has made preliminary finds of ores, and so did we. Further, we can determine the kinds of trees that a person could have used to build a keel and a frame for a ship. In turn, that might clarify for us the size of Nephi's ship.

I also agree that one of the dimensions of future work should be an effort to uncover more about the incense trail, since it was so important to the economy of the ancient Near Eastern world. Moreover, what we learn may make a difference for the Sultanate of Oman. After all, the Sultanate will be the host for any field-workers we send. So we should pay attention to what we can learn that may help the Omanis. That is, people there may learn something from us about their past, the economy and botany of their country in antiquity, and the important roles that their ancestors played in ancient times.

**Potential Botanical Studies**

Terry, what would you say were the three or four most significant things that you learned?

**Terry Ball:**

Three important botanical studies can probably be done as a result of our visit. First of all, good collections of Arabian Peninsula vegetation are difficult to find in any herbarium in the United States for U.S. scientists to study. In Oman, we essentially obtained permission to make that collection, and we have obtained permission from the BYU herbarium to house the collection here. The BYU herbarium would thus become an important center for all U.S. botanists interested in Arabian Peninsula research. Making the collection will require about two years, with several months spent in Oman to collect samples during the various seasons.

The second important study would be to prepare a refer-

ence collection of the phytoliths or plant microfossils produced by the vegetation. Phytoliths are fossilized fragments of plants that one finds at archaeological or geological sites. The Dhofar region of Oman that we visited is a unique area in that it is relatively isolated and has only about 750 species of plants. Because there are relatively few, it is realistic to make a fairly complete and useful phytolith reference collection that archaeobotanists and paleoecologists (scientists who study ancient botany and ecology) can use to reconstruct the plant uses and ecosystems of the past.

**Revell Phillips:**

How do you do that?

**Terry Ball:**

You collect samples of today's vegetation in the region, then use acid to digest the softer portions of the plants, leaving only phytoliths or microfossils behind. These microfossils can then be used as a reference point to study and identify the plant remains that are found in such sources as ancient soils, pottery, food residues, and tooth tartar. So, for example, if you want to know if tamarind trees were present in 1000 B.C., you find living tamarind trees and extract or "manufacture" the microfossils they produce; we could then look at soil from 1000 B.C. to see if similar tamarind traces are present in it.

**Revell Phillips:**

Can one also find plants and vegetation that used to exist there but do not exist now?

**Terry Ball:**

Yes. But of course you have to have reference material in order to determine that. When you collect the microfossils



Looking north, one sees the complex system of hills and connected valleys that make up the drainage system of Wadi Afawl, which lies west of Salalah. Lehi's party would have needed guidance if they had come to the shoreline in this area.

from ancient soils, you can compare them to your reference collection taken from modern plants and conclude, "Yes, this has been here all along and this is what it is," or "No, this is an extinct plant, but we don't know what it is because it's not here now," although we may be able to learn what it is from comparative studies in other regions. Again, to do this study, besides the 750 species that grow in the Dhofar area, all 1200 species in Oman need to be sampled and the plant microfossils need to be extracted, described, measured, photographed, and stored for future reference.

Finally, the third study that I think would be really exciting would be an ethnobotanical study—that is, a study of how the people use those plants. The Jabalis, who have lived in the heavily vegetated Dhofar region, have used plants for centuries to make various products and have also developed a wonderful folk medicine from them. Many of the medicinal uses of these plants are legitimate, and medical researchers are always looking for new medicines to deal with the ever-evolving diseases they have to face. I think an ethnobotanical study in the Dhofar area has excellent potential to help.

**Kent Brown:**

In effect, such studies address the issue that Arnie raises about broader interests. These studies would meet the criteria that he has suggested.

**Arnold Green:**

And they would appeal to a wide audience and benefit both scholars and the larger society, while at the same time providing information that could help answer questions about how the Book of Mormon group managed to survive and build a ship.

### Potential Archaeological Studies

**David Johnson:**

From my point of view [anthropology], botanical studies like the ones Terry describes would be very useful in providing information for scholars dealing with the incense trade, along the entire route through Southern Arabia and finally into Jordan and the Mediterranean region. One could use microfossil studies of the soils at a Jordanian site, for example, to see whether there is evidence of specific plants being imported into that site from southern Arabia, from Oman and Yemen.

**Terry Ball:**

I just received an e-mail from Dr. Shahina Ghazanfar, of the National Herbarium of Oman, who is developing a register of the flora of Oman. She is going to send over samples of all the members of the frankincense family (*Bursaceae*) that grow in Oman. At present she is having difficulty classifying



David Johnson and Rosalea McIntire made a preliminary visual examination of a number of fallen structures at the mouth of Wadi Sayq. They may date to the early centuries A.D.

Chronologies of Ancient Near Eastern and Mediterranean Civilizations <sup>1</sup>	
Bronze	3400–1200 B.C.
Iron	1200–520
Persian	520–332
Hellenistic	332–63
Roman	63 B.C.–A.D. 363
Byzantine	363–638
Early Arab	638–1099
Crusader and Ayyubid	1099–1291
Late Arab	1291–1516
Ottoman	1516–1917



Dhofar Map

some of the species in the genus; we hope that a study of the microfossils that the trees produce will help her. I plan to do the study for her. We should get information about what microfossils are produced by frankincense from that study.

**David Johnson:**

I would also like to know, for example, whether some of the chambers cut out of the living rock at the ancient city of Petra were actually used for storing frankincense, myrrh, and other plant materials rather than being used as domestic dwellings or as tombs. By looking at microfossils from the soil, we may be able to determine that.

**Kent Brown:**

It is an intriguing possibility that one could demonstrate that a plant grown in the Dhofar area of Oman might actually have been stored or used in a building 2000 miles away in Petra. David, please give us your basic impressions of what archaeological prospects you saw along the Dhofar coast and at other places.

**David Johnson:**

The archaeological material along the Dhofar coast has been studied in the past and, as I learned, is starting again to be explored quite extensively. Italian researchers are renewing excavations at Khor Rori in the eastern Dhofar region, a site from the Graeco-Roman period (332 B.C.–A.D. 363) that was first excavated in the 1950s. It consisted of a colony from the Hadramawt region of southern Yemen that moved into Dhofar in order to extract frankincense. Also, a number of other sites have been surveyed as far west as Khor Mughsayl, which is in the western part of Dhofar. Archaeological material there seems to indicate a cultural history that involved extensive settlement starting in the Iron Age (1200–332 B.C.) and extending through the pre-Islamic era (A.D. 363–638) into the Islamic period (A.D. 638–1291). Apparently settlement was widespread at a number of sites along the coast, from Mirbat on the east to the Wadi Sayq on the west, itself almost at the Yemeni border, and probably farther west along the coast of Yemen, Oman's neighbor.

During the Graeco-Roman period, at least, a number of sites along the coast were probably involved in the transportation of frankincense by sea from the Dhofar region westward to Yemen.

Then from Yemen, starting at a site called Qana, the frankincense was transported overland along the old incense trail. I think that the archaeological material on the surface at Khor Mughsayl and Wadi Sayq, for example, indicates participation in this trade during the Iron Age, the Graeco-Roman period, and possibly the Islamic period. In other words, frankincense was being gathered inland and then shipped out of Khor Rori or out of al-Balid, the other major site that is now being exca-

vated by the Germans. In order to aid coastal shipping, people established shipping support stations along the coast where sailors could take vessels into coves and anchor, replenish water supplies (you can only sail so far without drinking water), and then sail on to another station. In antiquity, with certain exceptions, sea journeys typically did not go far from land. These sites may also have served as collection and storage points along the coast for more frankincense or other trade items coming from the interior near the haven.

**Arnold Green:**

These stations also served security functions. It seems that there were a lot of towers.

**David Johnson:**

Yes. There seems to have been a series of watchtowers along the coast. They were designed to watch either inland or along the coast itself, because piracy was always a threat. Ships would have enjoyed some security against the people from the mountains. Of course, there was trade with mountain people, at least in the Graeco-Roman period. From what I have learned from people like Janna Owens of UCLA about the Iron Age, there were indigenous groups living in small towns along the coast. These seem not to have been agricultural communities. Instead, people made their living from the ocean, using stone tools. Human occupation at such small settlements may have extended back even into the Bronze Age (3400–1200 B.C.), though it is not very well documented at the present time.

It is really significant for future work to look at sites along the coast in order to elicit information about coastal trade, which itself connects into the longer frankincense and myrrh trade. The nature of that long-distance trade from India into the Roman Empire is something that has been investigated quite heavily in general, but not much in detail about its effects on Oman. These studies have provided a lot of information about changes in competition and demand, which are important for understanding economic behavior in long-distance trade contacts. The sites in Oman that interest us from a Book of Mormon perspective could also be significant for giving us some idea of what was happening at this source area for frankincense in terms of harvesting and marketing.

**Kent Brown:**

Your observations may help us understand parts of the Book of Mormon narrative. For instance, Nephi didn't mention other persons in recounting the journey from Jerusalem to Lehi's Bountiful. But the members of Nephi's party apparently met others along the way, because later Book of Mormon authors, who knew the fuller story, hinted that they did. And Nephi himself intimates that the party had met others.<sup>2</sup> Presumably, Bountiful on the seacoast would have

been no different. From what you say, David, Lehi's family could have had contact there with people involved in the frankincense trade, at least at certain periods when coastal settlements flourished.

Furthermore, other people were probably already in southern Arabia plying their trades of fishing and raising flocks. When I saw the goat trails in the mountains and hills, particularly along the coastal hills, I was reminded of the trails that one sees in the hills above the Jordan Valley. Those trails have been worn down by grazing sheep and goats over centuries of time. It occurred to me that shepherds had also been tending flocks in southern Oman for a very long time. In my view, we are probably justified in understanding that Lehi's extended family would not have remained totally isolated in Bountiful, even if they had wanted to stay apart from others.

David, would you theorize that, at least in Graeco-Roman times, some of the khors, those inlets, were kept open so that ships could come in and anchor? Or did ships anchor offshore?



Fallen rubble of a squarelike structure on the sandbar of Wadi Sayq. It may date to the Roman period. Dozens of such ruins lie across the sandbar.

**David Johnson:**

If one looks at archaeological material, say, at Wadi Sayq, one sees a whole settlement that is right behind the sandbar, almost all the way across the mouth of the valley except in one little place. The ruins seem to indicate that the sandbar was already there in the Graeco-Roman period.

Janna Owens said that she has worked on the biogenic elements left behind by living organisms in the sandbars at al-Balid to determine the dates they were laid down. If you noticed at Khor Mughsayl, as we came down the road and then turned onto the beach, there was no sandbar where the stream meets the sea. There was a khor or inlet there. We saw another one where we hired the boat, at Rakhyut. The determining factors for the occupation of these sites are a water





The village of Rakhyut was probably inhabited in antiquity because there was a steady supply of water. But only archaeological work can determine the dates of habitation.

supply and food. At Wadi Sayq we know there's a water supply.

At Khor Mughsayl there must have been some fresh water, and I would think also at Rakhyut. Rakhyut itself may have been occupied anciently. And there may be other khors west of Wadi Sayq and east of Mirbat. I would think those also served as shipping stations along the seacoast.

**Arnold Green:**

In this connection we'll need to develop a basic chronology. When we are dealing with the Eastern Mediterranean and we say *Iron Age*, that means something in terms of dates, and the Graeco-Roman period in the Mediterranean area has meaning in terms of dates, even though people debate about details. But what do such designations mean in terms of Dhofar—do the same dates apply? Does Iron Age in, say, Jerusalem, refer to the same years when we apply it to Dhofar? And what does the Graeco-Roman period mean there?

**David Johnson:**

The questions continue. For example, what kind of cultural occupations do we find in the Iron Age or Bronze Age? Juris Zarins of Southwest Missouri State University and Janna Owens have surveyed sites and determined preliminarily what occupations date from the Graeco-Roman period, Pre-Islamic, Islamic, and even the Iron and Bronze Ages.

**Arnold Green:**

What does that mean in terms of centuries or decades?

**David Johnson:**

The problem in answering your question is that little excavation has been done. A survey has been done, yes. But the next steps have to be major excavations. The only places that

are being excavated are al-Balid, where the prior archaeological emphasis has been only on the Islamic material, though there are probably earlier materials there, as the Germans will determine, and at Khor Rori, where the Italians are working. Khor Rori has a presumed connection with the Queen of Sheba, a rather romantic tie. But a number of other inland and coastal sites need to be excavated.

**Terry Ball:**

And at those inland sites the stratigraphy, or the arrangement of various strata or levels, is more intact than at sites along the coast, where the stratigraphy has been deflated or collapsed together. That is, at coastal sites the remains of successive civilizations are essentially mixed together because of erosion, so it is difficult to clearly separate them. At Khor Rori, although it sits on the coast, the remains of various civilizations are still separated into different strata, and also at al-Balid, at least for the Islamic period. It will be a challenge for the Germans when they excavate the Iron Age level at al-Balid, because the Iron Age there is deflated.

**David Johnson:**

Yes. But given the deflation or collapsing, a specialist should still be able to distinguish between Graeco-Roman material and Iron Age material at any of those sites.

**Terry Ball:**

The deflation or mixing of artifact layers tends to discourage excavation, doesn't it?

**David Johnson:**

What discourages excavation is excavating and not finding spectacular materials. As a result, funding is difficult to obtain. Even so, if we could excavate some of the material at Khor Mughsayl or Wadi Sayq, it would give a clearer picture of what was going on along the whole coast rather than just at the central sites, such as al-Balid and Khor Rori. The smaller sites fill in the picture of what the trade was like along the whole coast. One gets a distorted view by looking only at the major occupations and not at the smaller sites.

**Kent Brown:**

Could we return to the question about the sandbars? How do the large sandbars form across the inlets or stream mouths?

**Revell Phillips:**

The sandbars are formed by currents that move along the shore and shift sand along the coastline from west to east. Where these currents encounter deep water at the mouths of wadis (streams), they slow and drop their sand to form spits in the coastal waters that begin at the west side of the wadi and grow eastward. In time they enclose the wadi mouth and

isolate a back lagoon formed by a complete sandbar across the mouth of the bay. Many wadi mouths along the Dhofar coast are now enclosed by these bay-mouth bars, leaving isolated lagoons behind the bars.



The lagoon at Khor Rori was where frankincense harvested inland was loaded on boats and barges for shipping to the west. The lagoon has been closed by a sandbar.

At one time, and perhaps at various times, these bays were open so that ships could sail into the wadi mouths. But longshore currents have gradually deposited sand as spit bars that grew across the bays to deny access by boat. Generally, only deliberate dredging could have kept these harbors open for shipping. Ancient peoples were probably not capable of much serious dredging, and the harbors and associated settlements were abandoned or changed their character when the bays were closed by sandbars.

This also happened to many ancient cities along the northern Mediterranean coast. For instance, Ephesus, Miletus, and Tarsus were busy ports at the time of Christ, but they gradually silted to become malarial swamps and were abandoned in the first few hundred years A.D.

**Arnold Green:**

So the sand that forms the sandbars is brought by the ocean currents and not by the water coming down into the inlet?

**Revell Phillips:**

Yes. Usually, rock debris is brought down the wadi to feed the longshore currents, which move the material along the coast. However, if the longshore currents are weak and more material is introduced than the currents can move, a delta forms. The Mediterranean and Gulf of Mexico are examples of small, isolated bodies of water in which longshore currents tend to be weak. As a result, large deltas have formed at the mouths of the Nile and Mississippi. But where rivers empty into an ocean, as along Oman's south coast, deltas usually

don't form unless there is a huge amount of sediment, as in the Amazon River. We must remember that all sediment comes from the land, either by headland erosion or introduction by streams.

**Potential Mineralogical and Geological Studies**

**Kent Brown:**

Is that why you were looking for iron ore in the sand on the beach, knowing that it would have been carried down from the interior by streams?



A sandbar stretches to the east across Wadi Sayq. Many ruined structures are visible on the surface, just a few yards from the beach.

**Revell Phillips:**

We found very little iron ore in the beach sands west of Mirbat because the sands there are derived from the weathering of limestone rocks that contain no iron ore. East of Mirbat, we expect to find iron ore in the beach sands because they were weathered from inland igneous rocks (formed by volcanic activity) and metamorphic rocks (transformed by changes in heat and pressure) that were once molten and buried deep beneath the surface of the earth. We didn't need to search for iron ore in the beach sands east of Mirbat because it was so abundant in the soils surrounding the weathered igneous (granite) outcrops.

It is this igneous-metamorphic area east of Mirbat and south of Jebel Samhan that interests me. This is a well-defined area of eroded "basement" rock of very ancient age (from the Precambrian period). The modernization of Oman is so recent that I don't think the Omanis are totally aware of the area's mineral potential. If there is significant mineral wealth in the Dhofar, this is where it will be. The geologist Gene Clark tells me that government officials are very interested in any information about mineralization that we can provide. I would be very surprised if they were not interested in

the economic potential of any investigation we might initiate.

We stopped at one classical pegmatite that contained little garnet crystals. This type of low-temperature, water-rich igneous rock has the potential for many other gem minerals and unusual elements. I brought back samples of the diabase and rhyolite dike rocks for petrographic or microscopic examination.

The contrast in attitude between the government officials of Oman and other countries of the region was surprising to me. The Omani officials seem pleased at our interest in their country and were willing to help us. I believe they would welcome a mineralogical investigation of the Jebel Samhan area and may even support us with some sort of aid. I think our most significant accomplishment was in the people we met and befriended. They can be a real help to us.

**Kent Brown:**

We met the Deputy Minister of Oil and Gas and had his permission to take a few rocks out of the country for analysis. That contact could be helpful in the future. I might point out that we were aboveboard going in. I think that's an important point.



Revell Phillips sought to determine the presence of magnetite, a simple form of iron ore, by running a small magnet through the soil.

**Revell Phillips:**

We need to do two things before we return. First, we need a sponsor in Oman for an excavation. Second, we need a letter from the U.S. Embassy to obtain topographic maps.

I am much more excited about this venture than when we started and very pleased with the attitude I sense among members of this team. As a scientist, I don't want to be associated with any research that begins with answers. If our objectives are more than just seeking to establish the site where Nephi may have built his ship—that is, if we also want to learn about the people and lifestyle in the Dhofar area when Lehi and Nephi were living there, and how those

things may have influenced what they accomplished—then I think this group can make a significant contribution both to our understanding of the Book of Mormon and to the larger world of scholarship.

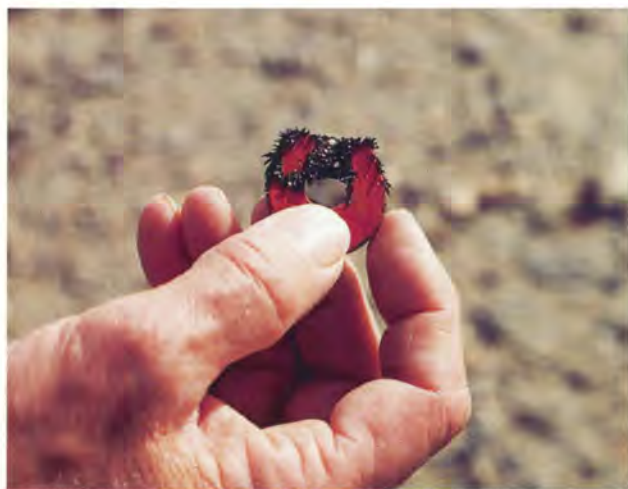
**Future Plans**

**Kent Brown:**

David, in terms of future involvement, do you see yourself excavating a site for a season?

**David Johnson:**

I see two seasons of work. The first season would be exploratory. At that point you find out what you really need to excavate. An excavating season requires five to six weeks. Obviously, a season in Oman would have to be during the winter, the time of our visit. A team wouldn't be able to get to the Wadi Sayq on a boat during the summer monsoon season because of the winds. And if one goes after the monsoon, there is more vegetation to worry about. That's wonderful for Terry's botanists but not for archaeologists who are excavating. Another dimension of an archaeological expedition is working through someone like Janna Owens to ensure coordination with what is being done by other groups. One would excavate, say, at either Khor Mughsayl or Wadi Sayq in a way that would complement what archaeologists are doing at other sites. That puts one in a position to share data and so on.



Revell Phillips displays magnetite on his small magnet. The possible connection with Nephi's ore that he smelted for tools is plain.

**Kent Brown:**

Revell, if there were to be a mineralogical survey of the area at the base of Jebel Samhan, would you imagine that it would be independent of an archaeological effort? As you have noted, it would perhaps have high payoff for the Omanis.

**Revell Phillips:**

It could. It's an area of real potential.

**Kent Brown:**

Terry, obviously there are things that a botanist could do that would measurably aid an archaeologist like David. Do you see long-term botanical studies there as essentially independent from archaeological work, or would the two types of studies go hand in hand.

**Terry Ball:**

Is botanical study independent or correlated with archaeology? The answer is yes—it is both. The initial work of collecting reference material is preparatory for an archaeological excavation, and so it is independent. Yet if we were excavating in an area that was already well studied and described, we wouldn't have to do all the background botanical work. But Dhofar is a relatively isolated and understudied island of vegetation surrounded by desert and sea. Of the 1200 species that are found in Oman, 750 grow in Dhofar, and most of those are found in the narrow coastal strip that is only between 2 and 20 miles wide and 180 miles long. Because it is so small and isolated, it has really been overlooked by everyone but the Omanis and the British.

Once the herbarium collection is gathered, and the reference collection of microfossils acquired, then botanists and archaeologists can work hand in hand on whatever plant remains are recovered from an excavation to make sense of them.

I have already made inquiries in the BYU Botany Department, and some graduate students are interested in doing part of the work. The project is worth a dissertation or more.

**Kent Brown:**

Could it be the basis for several studies?

**Terry Ball:**

Yes. And I anticipate it will be done.

**Kent Brown:**

Basically, we need sponsors—both in a ministry in Oman and in individuals who would be willing to donate money to assist in these efforts.

**Terry Ball:**

I believe we will have a sponsor in Oman for the botanical study as a result of our trip. However, we need to get all the permits and information necessary, and plan how to transport specimens to BYU for study.

**Arnold Green:**

Two other avenues of inquiry could be productive. A certain amount of evidence exists in ancient Sumerian texts

about northern Oman because the Sumerians mined there for copper. That raises the question whether references to Dhofar might exist in ancient Sabaeen sources. From the archaeology at Khor Rori, we find some evidence of references from later sources. But even earlier than that, there may have been inscriptions or an archive found in ancient south Arabia that would yield important data for Dhofar. If an archive can be systematically searched for references to the area where the frankincense was gathered, we might get some idea of the time periods involved and the early names for that locality. On a hunch I looked up *Salalah* and *Dhofar* in my Arabic dictionary. *Salalah* means something like “rattle” or “shake.” But *Dhofar* means either “conquest” or “success.” I wondered if the latter meaning couldn't be stretched to mean “plentiful” or “bountiful,”—that is, success in an economic or agricultural sense—and whether that meaning preceded the Islamic period as a name for that region. Of course, the text in Nephi says, “we called [it] Bountiful”; it doesn't say that it was called Bountiful earlier (1 Nephi 17:5).

**Terry Ball:**

Anyone coming off the desert and seeing the vegetation would name it something like that.

**Arnold Green:**

Another avenue worth following is the study by the Palestinian woman working with Scott Woodward, a BYU professor who is doing trailblazing work on tracing connections between peoples by using DNA. Her name is Rana El-Farra, and her dissertation will analyze DNA from hair samples of people throughout the Arabian Peninsula to see whether she can reconstruct migration patterns. If we could steer her in the direction of Dhofar, where she could take hair samples from Jabalis and from other Dhofaris, she might reach conclusions that would offer insight into when people arrived in that region, or whether they are related to people elsewhere in the Arabian Peninsula. That might be an interesting insight into the area. I am on her Ph.D. committee. She doesn't have to go to Oman herself. But somebody going there for geology or botany purposes could collect hair samples.

**Kent Brown:**

Naturally, further studies will depend on the availability of resources. Such resources, of course, take the form of funds and persons with needed skills. For our recent trip, we received important support from BYU's Ancient Studies program, the Foundation for Ancient Research and Mormon Studies (FARMS), the Department of Ancient Scripture, and the Near Eastern Studies program. In addition, we received generous assistance from Rod and Rosalea McIntire of Muscat. Without their help, we would have accomplished much less than we did. □

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## ENDNOTES

### Planning Research on Oman: The End of Lehi's Trail

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1. Taken from Eric M. Meyers, ed., *The Oxford Encyclopedia of Archaeology in the Near East* (New York: Oxford University Press, 1997), 5:411.
2. For example, Nephi, who had grown up "at Jerusalem" dozens of miles from the sea, knew the difference between ships constructed "after the manner of men" and his ship which was "built after the manner which the Lord had shown unto [him]" (1 Nephi 18:2). How had he learned this? Further, during the journey through Arabia, when the extended family was probably more than 1000 miles from Jerusalem and had already suffered severe hardships, including running out of food twice (see 1 Nephi 16:17–19, 39), some knew that it was possible to return home (16:36). How so? The most natural answer in both cases is to assume contact with others. See also other Book of Mormon passages reviewed by S. Kent Brown, "A Case for Lehi's Bondage in Arabia," *Journal of Book of Mormon Studies* 6/2 (1997): 206–17.