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A New Candidate in Arabia for the Valley of Lemuel

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Title A New Candidate in Arabia for the “Valley of Lemuel”

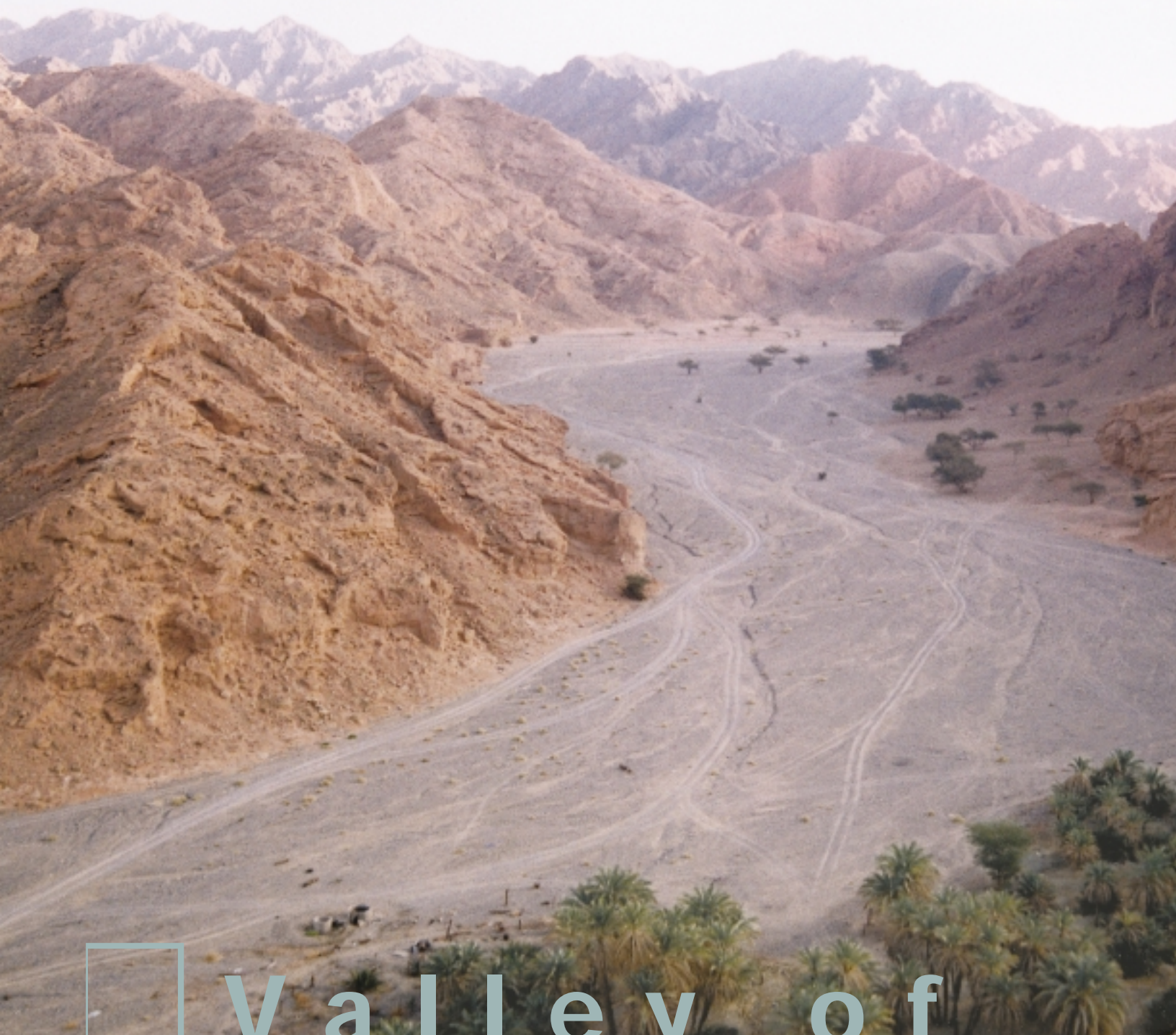
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Abstract The author serendipitously discovered a stream east of the Gulf of Aqaba that seems to share the physical features of Lehi’s “river of water” that “emptied into the Red Sea” and was “continually running.” The river Laman ran through the valley of Lemuel, described as “firm, steadfast, and immovable.” The stream and the canyon seem to fulfill the conditions of the river of Laman and the valley of Lemuel.

A New Candidate in Arabia for the



Valley of

L e m

By George D. Potter

The Discovery¹

Finding a river of running water in the ancient land of Midian was not what Craig Thorsted and I had in mind on that day in May 1995. In fact, he and I were searching for one of the Arabian candidates for Mount Sinai when our journey became one of unexpected discovery.

We had come to the oasis town of al-Bad> to explore the Wells of Jethro, the priest of Midian. To obtain authorization to enter that area, we stopped at the mayor's office. The mayor sent one of his supervisors to show us the sites and explain their history. The supervisor was justly proud of the city's history and appealed to the Qur'an to relate the stories of Moses, Jethro, and the town of al-Bad>. Complimenting me on my knowledge of the Qur'an, he said that if we were really interested in Moses, we should visit the Waters of Musa (Moses) near Maqna. Maqna is a small, isolated village that lies 20 miles west of al-Bad> on the Gulf of Aqaba.

The official in al-Bad> explained to us that, according to local tradition, Maqna had been the first camp of Moses after the Israelites had crossed the Red Sea at the mouth of the Gulf of Aqaba. He said it was at the Waters of Moses that the Prophet Moses had touched his staff to the rock and 12 springs gushed forth, one for each tribe (see Qur'an 7:160). The official feared, however, that the springs might have dried up because in recent years the government had placed pumps on all the natural wells in Midian.

When we reached Maqna we stopped at a restaurant to inquire about the springs. Americans must be a rare sight in this remote village, for our truck was immediately surrounded by curious Arab children who shouted "Ameriki." The supervisor in al-Bad> had given us the name of a contact man in Maqna who would show us the Waters. Everyone, it seemed, knew the man. But he was away from the village.

Photography by George D. Potter and Richard Wellington

W E I





Shoreline of the Gulf of Aqaba as one approaches the mountains near the well Bir Marshah that block further travel south. Note the valley in the center of the photograph which leads eight miles upward to a pass that connects to the upper valley.

We decided to inquire at the first “official” building we could find. We came to a large complex that turned out to be a Saudi coast guard station. From the gate we were led to the captain’s salon for an interview. After a series of questions, the captain granted us permission to visit the Waters of Moses. We learned from him that the place was 12 miles to the north, along a restricted coast guard patrol road. He gave us written permission and promised a military escort.

(It wasn’t until my fourth trip to the area, 3½ years later, that I finally discovered that the Waters of Moses we had heard about in al-Badḥ were actually located at Maqna itself. By a turn of events, the captain had directed us to the wrong spot farther north along the coast. Some may say that it was by pure luck that we came, not to the traditional Waters of Moses, but to another source that we might easily never have seen. I see the experience as providential. By “mistake,” had we unintentionally stumbled upon the river Laman and the valley of Lemuel?)

As we drove north from Maqna, the scenery was typical of what I had seen along the shores of the Gulf of Aqaba of the Red Sea—lifeless sand plains and barren rocky valleys. The landscape reminded me of Moses’ words: “that great and terrible wilderness, wherein were fiery serpents, and scorpions, and drought, where there was no water”

(Deuteronomy 8:15). Nephi’s mention of a river valley, possibly with fruit trees, seed-bearing plants and grain, seemed totally out of place (see 1 Nephi 2:6; 8:1). Yet, this shoreline is the general area where the valley of Lemuel should be found.

Eight miles north of Maqna, we came to our first surprise. The southern end of the mountain range that here forms the shoreline seemed to drop directly into the waters of the Gulf of Aqaba. There was just enough room for the coast guard dirt road to pass between the giant cliffs on the right and the watery gulf on the left. We followed the narrow road for another four miles, with waves occasionally breaking over our path. Rounding the base of a cliff, we came upon a truly spectacular sight. A magnificent narrow canyon just ahead of us ended in a palm-lined cove. The brilliant blue shades of the clear gulf waters and the sky framed the scene.

First Impressions

We decided to walk up the spectacular wadi or canyon. After 3¼ miles it opened into a beautiful oasis with several wells and three large groves of date palm trees. However, what caught my interest most was the stream that started in the canyon near its upper end and ran down the wadi virtually all the way to the sea. The small desert river appeared to flow continually night and day, year after year.

At the time the Book of Mormon was first published, the claim that a river ran in arid northwestern Arabia could not be checked. Western explorers did not venture into this remote area until well after 1830.² Today it is a different matter. Geologists have thoroughly explored Arabia in search of oil and water. The Saudi Arabia Ministry of Agriculture and Water, with the assistance of the U.S. Geological Service (USGS), has spent the last 44 years surveying the kingdom’s water resources. Their studies have involved seismic readings, surface and aerial surveys, and satellite photo analysis. But the findings of the scientists regarding the possibility of an above-ground river have not been encouraging. Rather, they concluded that Saudi Arabia “may be the world’s largest country without any perennial rivers or streams.”³

Yet Lehi spoke of “a river of water” that “emptied into the Red Sea” and was “continually running” (1 Nephi 2:6, 8–9). How could we reconcile Lehi’s description and the geologists’ findings?

It might be thought that the climate was wetter in Lehi’s time. But that notion runs against both what little we know about the region from the Bible (e.g., Exodus 3:1) and the known meteorological history of the Near East.⁴ Scientists say of Arabia: “The past 6000 years have been marked by . . . arid conditions, similar to those of the pre-

sent.”⁵ Hugh Nibley also commented, “though some observers think the area enjoyed a little more rainfall in antiquity than it does today, all are agreed that the change of climate has not been considerable since prehistoric times—it was at best almost as bad then as it is now.”⁶

What can we reasonably say about the river Laman from the Book of Mormon? First, the river was quite surely not a major stream. Otherwise a permanent settlement, and a name, would have accompanied it. Second, Lehi gave the river a name, so it probably had no name that he was aware of (see 1 Nephi 2:8). It is hard to imagine that any substantial flow of water in the Near East would go unnamed, implying that the stream did not amount to much and probably was a localized phenomenon. Third, the river Laman was in the wilderness (see 1 Nephi 2:6), a place generally devoid of people. Fourth, the waters of the river Laman emptied into the sea (see 1 Nephi 2:9) in the area where Lehi had camped, which must have been at the north end of the Red Sea, near the Gulf of Aqaba. Fifth, Nephi described the stream as “continually running” (1 Nephi 2:9). Finally, the river Laman ran through a geographical feature that Lehi called the valley of Lemuel (see 1 Nephi 2:6–10). Our initial visit confirmed that the stream in the canyon met at least all of the physical criteria.

The Hebrew term for “river” enters into our evaluation of this stream because of Nephi’s account. There are several Hebrew words which Nephi could have used (see 1 Nephi 2:6; etc.). Most of them refer to any running stream.⁷ These terms for river could mean seasonal waterways that fill with water only after a storm, such as the “River of Egypt” (Wadi El-Arish). They could also refer to large, continually flowing currents such as the Euphrates River (see Genesis 15:18).⁸ Whichever word Nephi used that came into English as “river” could denote a large stream, a small continuously flowing one, or a seasonal flood. His choice of the phrases “river of water” and “continually running,” however, seem to point to a stream that flows more or less all the time, at least throughout the period that they camped nearby.

What were the characteristics of the valley through which the river Laman flowed? First, Lehi described it as “firm, steadfast, and immovable” (1 Nephi 2:10), terms that hint at impressive geological features. Second, the valley was located within three-day’s walk or camel ride beyond the northeast tip of the Red Sea (see 1 Nephi 2:5–6). Finally, the valley of Lemuel reached the Red Sea,

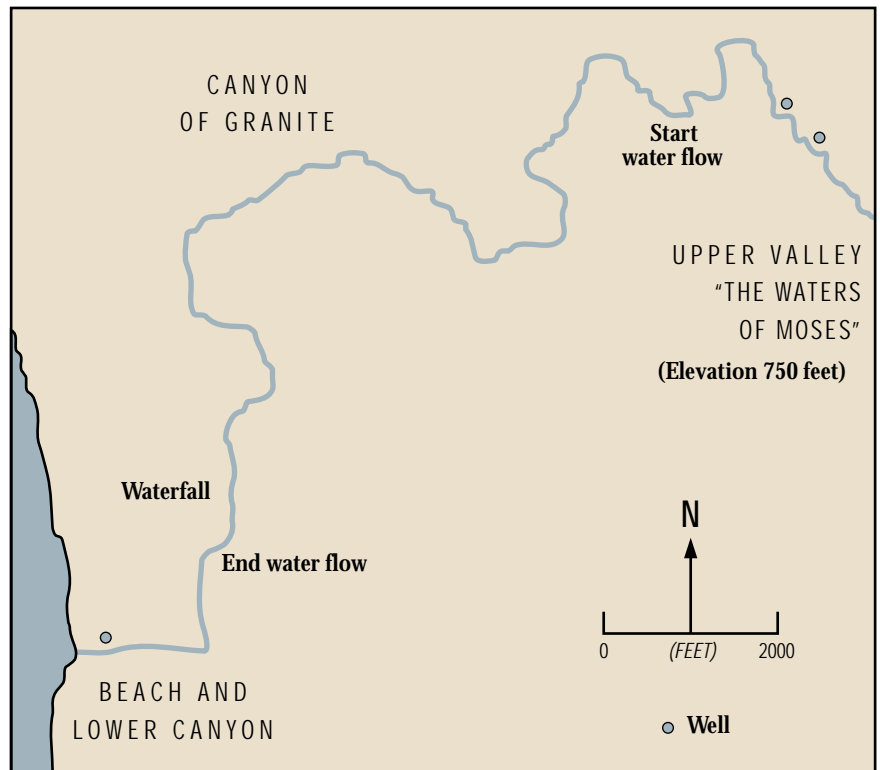
for Lehi observed the mouth of the river emptying into the sea (see 1 Nephi 2:8). So it was not strictly an interior valley; rather, it reached the seashore.

As with the stream, our first observations were that the valley we had found met these conditions. The fact that the stream and canyon fulfill the conditions reported by Nephi for the “river of Laman” and the “valley of Lemuel” convinced me that we may well have indeed discovered these Book of Mormon landmarks. Nothing my colleagues and I have learned subsequently has given us reason to change that view.

Characteristics of the Valley

The grandeur of the valley is difficult to describe in words or even portray in photographs. It is a narrow gorge cut through a massive granite mountain. It consists of three sections: the upper valley (or the Waters of Moses), the canyon of granite, and the lower canyon. The upper valley constitutes an oasis that lies at the south end of a twelve-mile long wadi—known locally as Wadi Tayyib al-Isr— that leads down from the north (see map). The upper valley

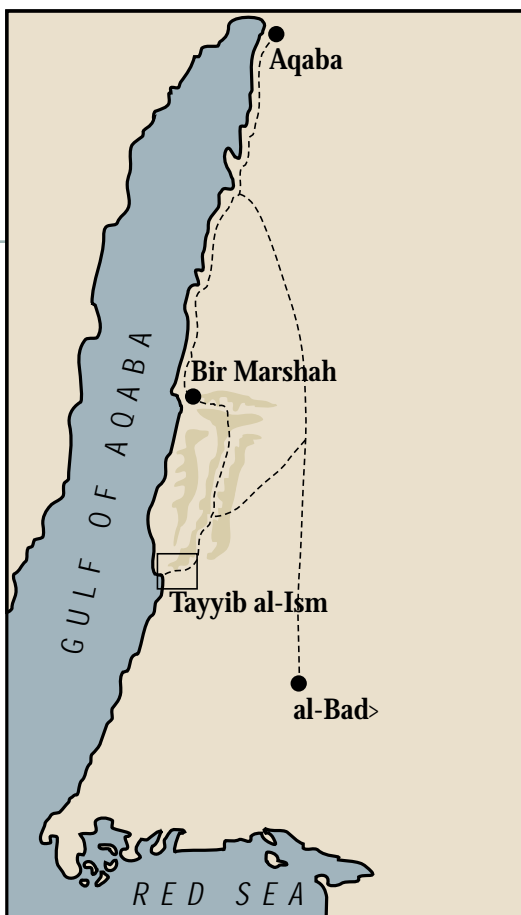
Sketch of the winding 3¼ mile course of the canyon, Tayyib al-Isr (east-west). The exit on the Gulf of Aqaba lies southwest of the point at which one enters the canyon from the upper valley. Sketch courtesy Timothy Sedor.



sits like a pleasant jewel, spread out over approximately one square mile with several hundred palm trees and 12 wells that local residents call the Waters of Moses.

The upper valley ends as the long, descending wadi veers west and runs against the eastern granite cliffs of the shoreline mountains. But rather than forming the usual impassable barrier, the coastal mountains have been breached by a narrow canyon. This deep fracture in the granite mountain border provides a passage to the sea; I call it the canyon of granite. Tim Sedor, a colleague in the exploration effort, has surveyed the length of this section of the Wadi Tayyib al-Isim to the Gulf of Aqaba; he concludes that it is approximately $3\frac{3}{4}$ miles.

Flash floods are a winter-time danger in this part of Arabia. If the family of Lehi and Sariah had camped here in the hot summer months, they could have stayed in the shade of the canyon. During the rainy winter months, however, campers would wisely move out of the canyon up to the much wider oasis that the upper valley offers. Climatically the shade provided by the steep walls of the canyon provides a pleasant environment year round, even during the terrible heat of an Arabian summer.



Although the trip from Jerusalem was perhaps the least difficult portion of the trek of Lehi's group, party members still murmured. Laman and Lemuel thought they would die (see 1 Nephi 2:11). Even in springtime, temperatures in Arabia reach over 100°F. The murmuring of the sons could well have been caused by exposure to the stark sunlight and extreme temperatures. A survival expert who advises the Saudi military has offered some insights into the environmental difficulties that would have faced Lehi and his family as they crossed this land. Based on his experience, he advises downed pilots in the desert first to find shelter from the heat, next to look for water, and only then to seek food. Within hours, he notes, the midday Arabian sun will kill a person who cannot find shade. Maximum daily temperatures average between 115°F and 125°F during the summer months in this part of Arabia.

When considering the cruel climate, one can begin to appreciate just how difficult the journey from Jerusalem must have been, and seemed. This would have been especially difficult for city dwellers from Jerusalem, particularly if this was their first exposure to severe desert conditions in summer. The canyon of granite would have offered an ideal place in which to wait out the summer months before continuing. At the same time it was off the main route southward, in case Nephi's part in the death of Laban had become known to pursuers.

The final section of our valley of Lemuel is the lower canyon and the beach. The granite canyon opens out into a flat gravel floor just a few feet above sea level. This level area at the mouth of the canyon is about $\frac{3}{8}$ mile long. This is the most impressive section of the canyon. Here the height of the canyon walls rises approximately 2,000 feet straight up from the canyon's floor.

The lower canyon provides important clues which tend to confirm that this could be the valley of Lemuel. First, Lehi found that the stream in the valley "emptied into the Red Sea," that is, into the Gulf of Aqaba (1 Nephi 2:8). The walls of our candidate for the valley of Lemuel end within 60 feet of the waters of the gulf.

Second, though the valley carries a stream to the sea, when Lehi first came into his valley (necessarily from its upper end, not from the coast) he apparently could not see from his camp that the river emptied into the sea; at least that is implied by 1 Nephi 2:6 and 9. Our candidate for the valley is less than four miles long, yet its towering walls permit seeing the Red Sea only during the last 375 yards as one descends to the coast. The beautiful palm-laden beach cove that one finally encounters is a spectacular scene. (See inside back cover.)



It may be worth noting that when Lehi's party was preparing to leave their valley, Nephi wrote of the Lord's gifts to them, including provisions (see 1 Nephi 16:11). In this spot such provisions might have included dried fish from the sea, dates and berries, found primarily in the upper valley, date pits (Arabs today make a coffee substitute from ground date pits), grain, and of course drinking water from the river.⁹

Approaching and Camping by the Waters

One may ask how easily a person can reach the canyon and stream when traveling from the northeast tip of the Red Sea, the direction of Jerusalem, where modern Aqaba sits. From Nephi's description, we know that after his family reached the Red Sea they continued another three days before making camp (see 1 Nephi 2:5–6). A reasonable estimate would be that they traveled between 45 and 75 miles during those three days, averaging 15 to 25 miles per day.¹⁰ The valley we are describing lies just over 70 miles

These mountains, 44 miles south of Aqaba, force travelers eastward and inland near the well called Bir Marshah.

Center: The pass that allows access from the seashore into the long valley known as Wadi Tayyib al-Isr can be seen to the right of center (looking north). *Below:* The upper reaches of the long valley as it runs southward toward the canyon.



(on the ground, not in a direct line) south of Aqaba, clearly within the limits of our estimate on the basis of Nephi's record.

A traveler can come to the valley from the north by either of two routes (see map on page 58). The most direct takes a person south from Aqaba 44 miles along the coast. Here one reaches a 6,000-foot mountain range that blocks further coastwise travel. So it is necessary to turn eastward near Bir Marshah and climb up through an eight-mile long wadi, finally cresting a ridge at about 1,500 feet elevation. Both people and pack animals can easily follow this route. From this point, keeping the coastal mountains to the right (west), a person travels south 20 or so miles into the long valley mentioned earlier, which leads down to our upper valley and the head of the granite canyon. The distance from Aqaba to the canyon is almost exactly 74 miles.

Another route, well-traveled in ancient times, follows the modern highway south from Aqaba. It runs up Wadi Umm Jurfayn and then south between mountain ranges to the town of al-Bad. About midway through the long mountain pass, one can turn west and south to reach the long, deep valley and on to our upper valley. But this route adds significant distance.

The river Laman might have had some name in Lehi's time, but it would have been known only to the local residents. Brown notes that "in a desert climate all arable land and all water resources have claimants."¹¹ How might Lehi have acquired the right to camp in a valley that was likely controlled by a local tribe? There are several reasons why this may not have been a serious problem for Lehi. First, Lehi had evidently been a wealthy man and, though he left his gold and silver in Jerusalem, his family probably carried among their provisions some items that could be exchanged for temporary camping privileges. Another possible scenario is that Lehi's group appeared small and nonthreatening enough that the locals required no payment of them. The hosts may even have pointed out to Lehi where he could find water and a campsite out of their way in the side canyon whose lower reaches they did not use themselves. (Nephi did not write that his family "found" a river, but only that they pitched their tent next to it; see 1 Nephi 2:6.) This latter possibility is enhanced when we note that Lehi apparently brought no sheep or goats with him into the wilderness. If that was so, the local shepherds probably did not consider the Lehites as a threat to their resources since they had no flocks. In other words, Lehi may have been treated as a welcomed, noninvasive tenant who, best of all, could pay, even if only nominally. (In order to offer sacrifice, by the way, he would have needed to buy a lamb or sheep from his hosts.)

A third possibility is that there were no inhabitants in this valley. That is true today. Except for a stone box constructed in the earth by Bedouins, evidently for keeping valuables safe, and a few scattered remains whose date is not determined, there is little sign that the valley has seen long-term residents. The soil appears unfavorable for farming. Besides, the narrowness of the river valley severely limits its use for agriculture since the area of land available to cultivate is not enough to support a significant resident population. If the area was empty of people except for nomadic Bedouins, then Lehi was in no way beholden to locals.



The walls of the canyon. Notice the truck on the canyon floor. The walls continue upward to at least twice the height visible.

Colleagues have visited in July and August. We have observed that the volume of water in the river seems rather constant throughout the year (even though from 1995 to 1999 the volume seems to have decreased perhaps 50 percent due to the continued effects of pumping the water in the upper valley). We have also observed throughout the year that vegetation flourishes in the canyon where the river runs, and moss and algae line the banks of the stream.

The spring that feeds the river comes from an underground reservoir system. Dr. Wes Garner,¹³ our consulting geologist, painted the following picture of the system:

The River Runs Continuously

The question we posed while standing in the canyon of granite was: Does this desert river flow “continually” as 1 Nephi 2:9 says? Does it flow night and day, 365 days a year?¹² I could answer affirmatively only after our third excursion to the valley in November 1996. It had just rained for six straight days before our arrival—a freak storm, the heaviest in years. But this storm provided a reverse key of sorts.

On our first and second visits we witnessed the river during and just after the winter rainy season. As a result, we had expected the stream to be running. But in November 1996, after a seven-month dry spell, we were finally able to ascertain that the stream does flow constantly. The key came not from the flow at the moment we were there, which could have come from the recent rains, but from the flora in and around the river. We had earlier discovered the river’s source to be a spring some 600 feet down the canyon of granite from the upper valley. On our prior two visits, the grass, weeds, and herbs surrounding the springhead had been a lush green. On our third visit, they were still green even after seven months of no rain. This vegetation could not have survived those seven months unless the spring were feeding the river “continually.”

I have now visited the valley in the months of April, May, November, December and, most recently, January.

When the occasional rains fall in the long wadi to the north, they are trapped in the sands. This watershed of sand runs southward for 20 miles until its downward course to the sea is blocked by the granite underpinnings of the towering cliffs to the west. (Richard Wellington, my writing and exploring companion, has estimated the size of the watershed to be approximately 105 square miles). This subterranean rock runs deep beneath the surface, forming a dam. The subsurface waters are thus trapped at the upper end of the canyon in an underground reservoir. The canyon and its stream run westward from the area of this underground reservoir for 3 ¾ miles, starting at an elevation of 750 feet and ending at sea level in the Gulf of Aqaba. The floor of the canyon descends steadily. Within a few hundred feet, a spring begins to flow as the canyon floor drops to the level of the underground reservoir. The waters form the small river that runs above ground almost the rest of the way. At the point where the river comes to a level grade in the canyon floor, it runs just underground, leaving the soil moist. But soon the grade increases in its descent, and the river reappears. It is last seen as it reaches a gravel bed in the lower part of the canyon about ¾ mile from the beach. From there, the water runs underground to the gulf where it feeds a well used by the coast guard post a short distance away. (If Lehi’s camp were upstream a bit from the mouth, in the shade of the precipitous cliffs,



The desert stream that runs “continually” toward the Red Sea.

as we suppose, the stream would still have appeared to him to flow right into the gulf.)

It should be remembered that we were informed that the government had placed gasoline pumps on all the wells in the area. As a result, the supervisor whom we met in al-Bad indicated that the wells and springs in the region were drying up. We found this to be the case with the wells in the upper valley. Our geologist, Dr. Garner, confirmed to us that a lowering of the water table due to pumping could cause the river to dry up in the future.

There are at least two indications that a substantial river has flowed in the canyon for a very long time. First, there is evidence of significant erosion of rocks and the lower canyon walls. Second, water-laid calcite deposits that are found on the valley floor are at times 15 to 20 feet wide,

much wider than the current stream bed. At places in the canyon, one can find such deposits that have formed at higher layers on the rocks. We have measured these deposits 11 inches higher on the rocks than the level of the stream today. These observations point to the flow of a larger stream in the past, evidently long before the pumps were installed.

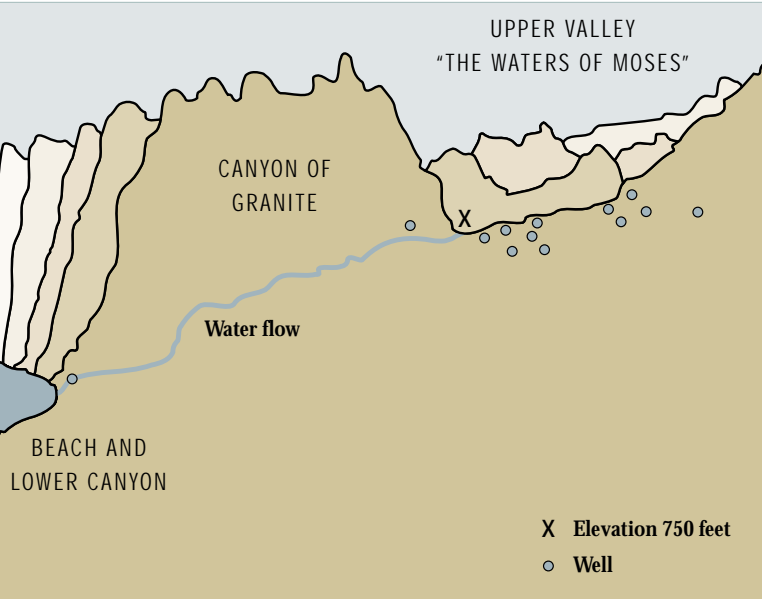
As I noted, the river flows under a gravel bed for the last $\frac{3}{8}$ mile as it approaches the Gulf of Aqaba. The reason the river does not reach the Red Sea today is simple. The elevation of the floor of the canyon is not the same as it was at the time of Lehi. According to geologist Garner, in Lehi's era this lowest part of the canyon was submerged by the Red Sea. Where the river ends today was below the surface of the Red Sea in ancient times. As the continental

plates have moved along the Great Rift Valley that forms the Gulf of Aqaba, they have pushed the eastern plate upward by one to five centimeters per year. During the 2,600 years since Lehi camped in the area, the canyon floor has risen out of the Red Sea, perhaps as much as 200 to 400 feet. Thus, not so long ago, the flat lower part of the canyon would have been below sea level. Therefore, if the river flowed at the same rate in Lehi's time as it does today, it would have reached all the way to the waters of the Red Sea. In the lower part of the canyon, the smooth stony floor of the canyon and the eroded cavelike undercuttings of the cliff seem to confirm that the lower part was once a sea floor rather than a river bed. The ancient river, carrying a significantly higher volume of water, would have run the entire distance to the Red Sea.

Conclusion

I have escorted over a dozen people into the valley. Several others have made their own way there based on my directions. Are we witnesses of the river Laman and the valley of Lemuel? In my view, the characteristics of the site are compelling evidence that this is so. In the four years since the discovery, I have surveyed the entire Arabian shoreline of the Gulf of Aqaba and the valleys that open onto it. With the exception of the springs at Maqna, which are not in a valley, I have found only rocky valleys almost entirely devoid of vegetation and with no flowing water. Although I have not conducted a thorough survey of the entire region, I have so far found no other place within three-day's walk of the tip of the Gulf of Aqaba that is as inviting as these Waters of Moses.

I have drunk from the pure spring-fed waters of what I believe is the river Laman. From the staggering heat of 120°F plus, I have walked into the cool confines of a deep canyon that I believe is the valley of Lemuel. On the shore of the Gulf of Aqaba, my tent has been blown over by the torrentlike winds that swirl each night along the shoreline. I have stood in awe of the force required to split open a pass through the four-mile wide granite mountain barrier to form this canyon refuge, with towering walls that could protect those camped in its shadows from the heat and from the tempests and sand storms that blow into Arabia from the Sinai Peninsula. I now seem to sense why Isaiah's words were so relevant to Nephi's family: "And a man shall be as an hiding place from the wind, and a covert from the tempest; as rivers of water in a dry place, as the shadow of a great rock in a weary land" (Isaiah 32:2). Here the handiwork of the Lord appears at every turn and reminds me of



a passage from the Qur'an: "Whithersoever ye turn, there is the presence of God, . . . all that is in the heavens and on earth; everything renders worship to Him" (Qur'an 2:115, 116). □

Left: Cross-section of the canyon showing the drop of the stream from the upper end (750 feet) to sea level. *Courtesy George D. Potter.*
Above: The erosion channel left by the stream when running high.

A New Candidate in Arabia for the Valley of Lemuel

George D. Potter

1. My efforts, of course, tie to the work of others. Earlier Latter-day Saints who attempted to visit the areas that may have been inhabited by Lehi and Sariah include Lynn and Hope Hilton. They posited that Lehi may have set up his first camp near the oasis town of al-Bad' in the Wadi Ifal; see Lynn M. Hilton and Hope A. Hilton, *In Search of Lehi's Trail* (Salt Lake City: Deseret Book, 1976), 62–75. My suggested candidate lies north and west of their choice. Before them, Hugh Nibley offered the view that Lehi had camped "not far above [north of] the Straits of Tiran" near "Mt. Musafa or Mt. Mendisha," Hugh Nibley, *Lehi in the Desert. The World of the Jaredites, There Were Jaredites*, 2nd ed. (Salt Lake City: Deseret Book and FARMS, 1988, orig. pub. 1959), 85. Actually, Mt. Mazhafa (Musafa?) is the granite mountain that forms the north side of the canyon that is my candidate for the valley of Lemuel. One must also consult the works of Eugene England: "Through the Arabian Desert to a Bountiful Land: Could Joseph Smith Have Known the Way?" in *Book of Mormon Authorship*, ed. Noel B. Reynolds (Provo, Utah: BYU Religious Studies Center, 1982), 143–56, and Paul Hedengren, *The Land of Lehi: A Book of Mormon Geography* (Provo, Utah: Bradford and Wilson, 1995), 3–6. Hedengren suggests that Lehi pitched his camp in the Wadi al-Nuwaybi, 18 miles south of Aqaba.
2. Andrew Taylor, *Traveling the Sands, Sagas of Exploration in the Arabian Peninsula* (Dubai: Emirates Printing, 1995), 19–31.
3. Ministry of Agriculture and Waters, Kingdom of Saudi Arabia, with the cooperation of the Saudi Arabia United States Joint Commission on Economic Cooperation, the U.S. National Graphic Center, and the U.S. Geological Service, *Water Atlas of Saudi Arabia* (Riyhad: Saudi Publishing, 1984), xv.
4. James Sauer, "The River Runs Dry," *Biblical Archaeology Review* 22/4 (July/August 1996): 63–64. Testing by taking core samples from dry desert lakes and by measuring tree rings has only been done in the Egyptian desert at latitudes compatible with the Arabian peninsula. Studies

show a clear shift toward a drier environment several thousand years ago with very few periods of greater moisture. See the summary by Karl W. Butzer, "Environmental Change in the Near East and Human Impact on the Land," in *Civilizations of the Ancient Near East*, ed. Jack M. Sasson et al. (New York: Scribner's Sons, 1995), 1:123–51.

5. Ministry of Agriculture and Waters, *Water Atlas of Saudi Arabia*, 9.
6. Nibley, *Lehi in the Desert*, 50–51.
7. See William L. Reed, "River," in *The Interpreter's Dictionary of the Bible*, ed. George A. Buttrick et al. (Nashville: Abingdon, 1962, 1976), 4:100–101.
8. The Hebrew term *nahar* is used for both rivers mentioned in *Genesis* 15:18. On the river of Egypt as Wadi El-Arish or Nahal Bezor, which are seasonal streams, see Manfred Görg, "Egypt, Brook of," and "Egypt, River of," in *Anchor Bible Dictionary*, ed. David Noel Freedman et al. (New York: Doubleday, 1992), 2:321, 378.
9. Currently one can find grain as well as three varieties of dates in the upper valley or in the canyon (see 1 Nephi 8:1).
10. Nigel Groom, *Frankincense and Myrrh: A Study of the Arabian Incense Trade* (London: Longman, 1981), 173, 211, notes that a loaded camel travels "slightly less than 2.5 miles an hour" and "rarely exceed[s] 25 miles" per day.
11. S. Kent Brown, "A Case for Lehi's Bondage in Arabia," *JBMS* 6/2 (1997): 206. Nibley made a similar point; see *Lehi in the Desert*, 66.
12. There has been discussion about whether the river Laman was seasonal or whether it flowed year round. Nibley holds to the view of a seasonal stream (*Lehi in the Desert*, 76, 78, 79–81). The Hiltons share the same view (*In Search of Lehi*, 64–65). From studying maps, Hedengren maintains that the "lower portion" of Wadi al-Nuwaybi has a "continual flow" (*Land of Lehi*, 3–6; quotations are from p. 4). Of course Lehi's party did not, in all probability, stay there anything like a full year. "Continually" may only refer to the period of their observation. But if, as suggested earlier, they were there in the hot season, then surely the stream would have run in the winter also.
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