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Warren P. and Michaela J. Aston
**And We Called the
Place Bountiful:**
The End of Lehi's Arabian Journey

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AND WE CALLED THE PLACE BOUNTIFUL

The End of Lehi's Arabian Journey

by

Warren P. and Michaela J. Aston

A summary of the scriptural and historical evidences concerning the Arabian Bountiful, with an evaluation of all possible coastal locations on the Arabian peninsula based upon exploratory fieldwork by the authors in the Sultanate of Oman and the Republic of Yemen from 1984 to 1990.

The study concludes that an objective and precise identification of Bountiful with a present-day location is now feasible and introduces data on physical traces revealing very early human involvement at the site.

Writing years later on the American continent of his journey from the Old World, Nephi was able to acknowledge that the place Bountiful was "prepared of the Lord" (1 Nephi 17:5). After some eight years and over 2000 miles of difficult desert travel from their Jerusalem home, the Lehites had "exceedingly rejoiced when [they] came to the seashore" at Bountiful (1 Nephi 17:6). The text makes it clear that the place to which the Liahona had led them was more than just a welcome contrast to the almost waterless desert wastes encountered after Nahom. Bountiful was so named because it was exceptionally fertile in its own right, particularly for Arabia.

A close examination of the direct and implied references about Bountiful in the First Book of Nephi yields a surprisingly detailed profile of the place:

1. Bountiful was "*nearly eastward*" of Nahom (1 Nephi 17:1). As Nehem in Yemen lies near sixteen degrees north latitude, coastline further east than Salalah in Oman and further west than al-Mukalla in Yemen is likely outside the parameters implied in Nephi's generalized statement of direction.

2. Terrain and water sources permitted reasonable access from the interior deserts to the ocean coast (17:5).

3. Usage of the descriptive term translated as Bountiful seems to indicate that both the general area (17:5, 7) and the particular location where the Nephites camped (17:6) were fertile.

4. Bountiful was a coastal location (17:5) suitable for a seashore encampment (17:6) and the construction and launching of a ship (18:8).

5. It was very fertile, notable for its "much fruit" and honey (17:5, 6; 18:6) and perhaps small game which could be hunted (18:6). Agricultural and fishing pursuits are further possibilities.

6. Enough timber of types and sizes to permit building of a vessel able to carry several dozen persons and remain seaworthy for at least a year was readily available (18:1, 2, 6).

7. Freshwater supplies available year-round would have been necessary for the extended stay necessitated by construction of the ship.

8. There was a mountain prominent enough to justify reference to "*the mount*" (17:7, 18:3) and near enough to the coastal encampment that Nephi could go there to "pray oft" (18:3).

9. Cliffs can be reasonably implied by the incident recorded by Nephi (17:48).

10. Ore from which metal could be smelted and tools fashioned was available in the vicinity (17:9-11, 16). First Nephi 17:11 also suggests the presence of flint near the ore source.

11. That Nephi required a specific revelation and great effort to locate ore and then fashion tools indicates that, despite the attractiveness of the place, Bountiful seems to have

had little or no resident population which could have contributed tools or manpower to the ship building process.

12. Suitable winds and sea currents were required to bear a vessel out into the ocean (18:8, 9).

The Relevance of the Incense Trade Routes

Many writers have correctly pointed out that Lehi's journey from Jerusalem paralleled the well-travelled overland trade route over which incense and other commodities were transported from southern Arabia to the Mediterranean area. Although Nephi's account indicates detours away from the more direct trade routes for the purpose of hunting and perhaps growing crops (16:14, 16, 17), it is indeed likely that his journey followed the commercial route for much of the time until Nahom was reached.

Nahom, in addition to being a place of burial, also marked the juncture at which the major incense trail branched eastwards to Shabwah and ultimately to the port of Qana on the Hadhramout coast (see figure 1). It may seem apparent therefore that Lehi and his party merely followed a trade route for their entire journey to Bountiful and that this fertile place can be equated with the frankincense-growing region on the Arabian coast.

The underlying assumptions behind this reasoning do not stand up, however, when a closer look is taken at the scriptural account itself and the historical realities of incense production in Arabia. The trade routes are in fact largely irrelevant to any aspect of Lehi's journey shortly after his departure from Nahom for the following reasons:

First, the turn "nearly eastward" (17:1) at Nahom placed Lehi on, or close to, the trading route to Shabwah, but Nephi's account makes it apparent that the group branched off at an early stage into the untravelled deserts away from commerce and settlements. The dictates of geography and population distribution force us to one conclusion: Lehi's path could only have been slightly Northeast from the trail to Shabwah, thus avoiding also the agriculturally productive Hadhramout valley. Had Lehi travelled southwest of Shabwah, the few opportunities for passing through the mountain ranges near the coast would have led to coastal points too far south of Nahom to be referred to as "nearly eastward."

From this time onward the Lehites travelled cautiously in a remote region where the smoke or light from fires would have invited bedouin attack (17:2, 12). This, the most difficult stage of their desert odyssey, occupied the largest part of their eight-year journey in the wilderness. The Liahona, which earlier had led them to the "more fertile parts," now likely functioned in directing them to scarcer water sources until Bountiful was reached.

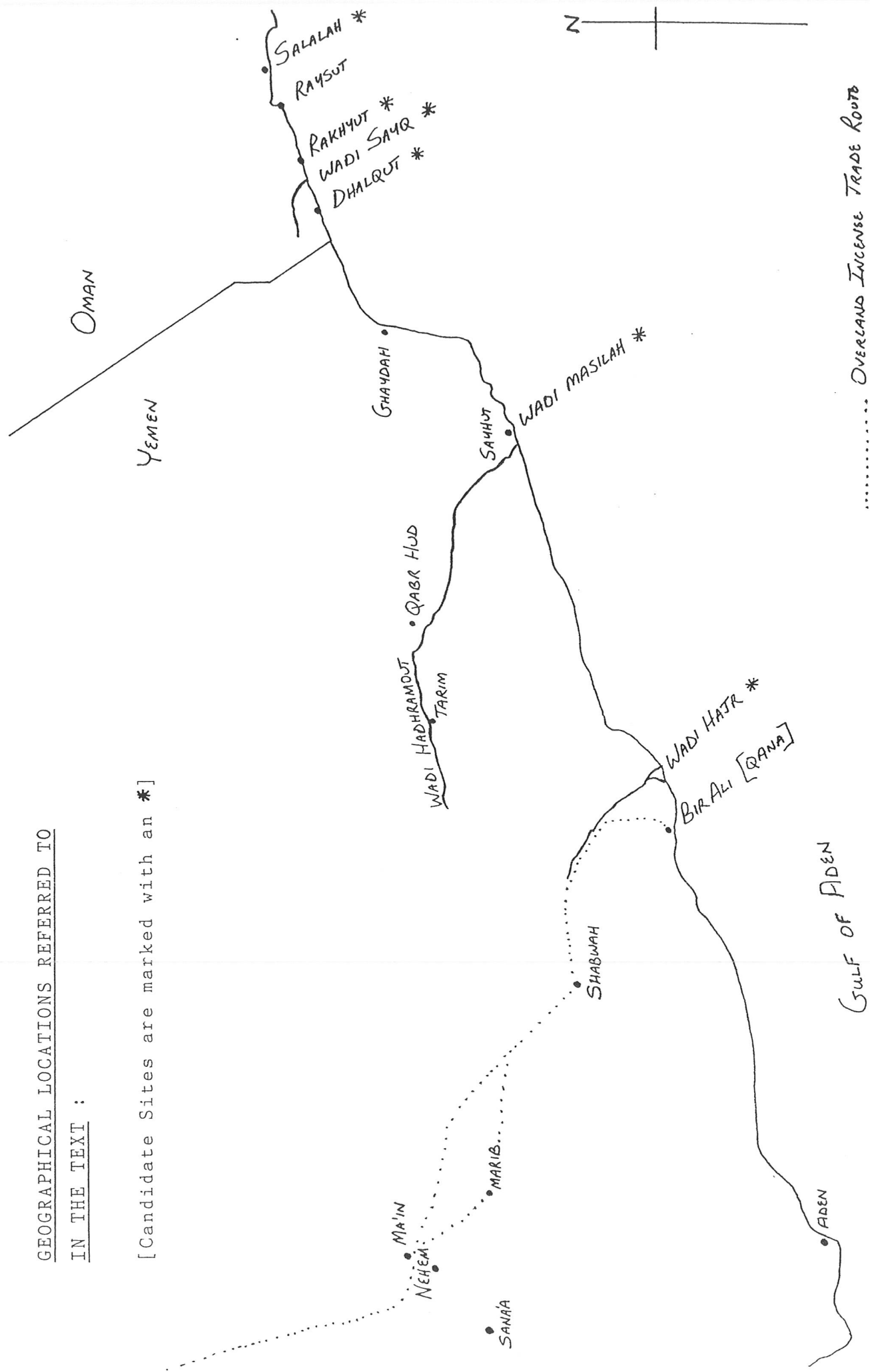
Second, a natural assumption would be that a frankincense-growing area would be very fertile and therefore also have the timber and edible vegetation necessary to Nephi's description of

Fig. 1.

GEOGRAPHICAL LOCATIONS REFERRED TO

IN THE TEXT :

[Candidate Sites are marked with an *]



Bountiful. Such is not the case. The different varieties of both frankincense and myrrh bushes grow under such a highly specific range of soil and climatic conditions that their growth is confined worldwide to the Hadhramout-Dhofar coast and small areas in Somalia and in Ethiopia. They are rarely found in association with other tree types and in fact are absent from the most fertile area on the entire Arabian peninsula coastline, the Qamar coast in Oman. It is incorrect, therefore, to propose either a specific location or a general region as a possible site for Bountiful on the basis of incense production.

A Salalah Bountiful?

Salalah, capital of the Dhofar province in Oman, has generally been considered the most suitable—usually the only—candidate for Bountiful by LDS writers.¹ The primary basis for this thought, first suggested by Hugh Nibley in 1950² on the data then available, has been the belief that frankincense growing was limited to Dhofar in Oman and that the trading routes (i.e., water sources) would therefore have resulted in the Lehites arriving there. It has been further assumed that the Salalah area was the only place which had the necessary timber for ship-building on the Arabian coast.

Continuing research and fieldwork in Oman has raised serious difficulties with the view that Bountiful could have been situated in the Salalah area. It can now be demonstrated that the Dhofar region was only the eastern end of a very much larger growing region than scholars had previously recognized. Further, recent studies have revealed that incense was rarely transported overland from Dhofar, and, as already noted, its production is not a reliable indicator of the presence of other trees.

Finally, this paper will establish that Salalah is not the only timber source and that more abundant and accessible timber can be found elsewhere.

¹ Lynn and Hope Hilton, Gerald Silver, *In Search of Lehi's Trail* (Salt Lake City: Deseret Book, 1976).

² Hugh Nibley, "Lehi in the Desert," *The Improvement Era* 53 (January-October 1950); and *Lehi in the Desert; The World of the Jaredites; There Were Jaredites*, vol. 5 in the *Collected Works of Hugh Nibley* (Salt Lake City: Deseret Book, 1988), 124-28; Eugene England, "Through the Arabian Desert to a Bountiful Land: Could Joseph Smith Have Known the Way?" in Noel Reynolds, ed., *Book of Mormon Authorship* (Provo: Religious Studies Center, 1982), 152.

The Incense-Growing Region

Until quite recently it was thought by scholars that Arabian incense production in ancient times was restricted to the Dhofar region and only there at certain altitudes, usually stated as above 2000 feet. However, Nigel Groom has established that the incense bushes also grew at lower altitudes and, more importantly, that they were grown over an extended stretch of coastline from Dhofar to the Wadi Hajr area in the Hadhramout. Groom also demonstrates that the information conveyed in the writings of Ptolemy and in the *Periplus*, the most frequently quoted accounts dealing with the early incense trade, contain some inaccuracies and also vagueness which has lead scholars to draw incorrect conclusions about the location of the incense-growing land. He cites the fact that Pliny's description of the incense land—usually applied only to Dhofar—fits equally as well the Hadhramout region of Yemen.³ For example, Pliny described the frankincense-growing region as follows:

Eight days' journey from Sabota [Shabwah] is a frankincense-producing district called Sariba—according to the Greeks the name means "secret." The region faces north-east, and is surrounded by impenetrable rocks, and on the right hand side bordered by a sea coast with inaccessible cliffs. The soil is reported to be of a milky white color with a tinge of red. . . . There are hills rising to a great height, with natural forests on them running right down to the level ground.⁴

Sariba, the frankincense-growing region, is here described as being eight days journey from Shabwah. Early writers however attest that an overland journey from Dhofar to Shabwah would have required up to thirty days travel. On the other hand, eight days travel fits a journey from the Hadhramout area to Shabwah perfectly.⁵

In another travel account, Pliny describes the port of Qana, the modern Bir Ali in the lower Hadhramout, as being "in the frankincense producing district."⁶ Groom summarizes as follows:

The belief that Arabian frankincense of classical times came only from Zufar [Dhofar] is incorrect. From Zufar the ancient frankincense growing region extended as far west as the Wadi Hagr area of Hadhramout where it has recently been

³ Nigel Groom, *Frankincense and Myrrh* (London: Longman, 1981), 109–11.

⁴ Pliny, *Natural History*, Rackham, trans. (London: Heinemann, 1952), 37–63.

⁵ Groom, *Frankincense and myrrh*, 111.

⁶ Ibid., 110.

found growing. The contention that it grew only at an elevation over 2000 feet is also incorrect, although the quality of gums from trees on the coastal plains may be inferior.⁷

Frankincense of one quality or another was in fact produced in those days along the coast and in the hinterland of the whole five hundred mile stretch lying between Qana in the west and modern Hadhbarah to the east. The contention of Van Beek and others, which has tended to be generally accepted, that the ancient frankincense region was in Zufar and Zufar alone would seem to be incorrect.⁸

Dhofar incense was usually shipped by sea westward to the port of Qana and only then overland northwards to Shabwah and beyond. According to the *Periplus*, which dates back to near the height of the incense trade, the shipment of the precious gum to Qana was made by boats and by rafts supported by inflated skins.⁹ It seems unlikely that very large or regular shipments of incense from the Dhofar area reached Shabwah by the difficult overland routes at any time.¹⁰

Pre-Islamic Prophets in Arabia

Of several prophetic figures from the period predating Islam, the traditions and Quranic references telling the story of the prophet Hud bear some striking resemblances to certain aspects of Lehi's religious experiences. This is especially true of the imagery from the account of Lehi's vision of the Tree of Life. Noting that the name-title "Hud" means "the Jew,"¹¹ William Hamblin has suggested the possibility that Lehi and Hud may be the same person. While Lehi was not of the tribe of Judah, he had come from Jerusalem and in the eyes of non-

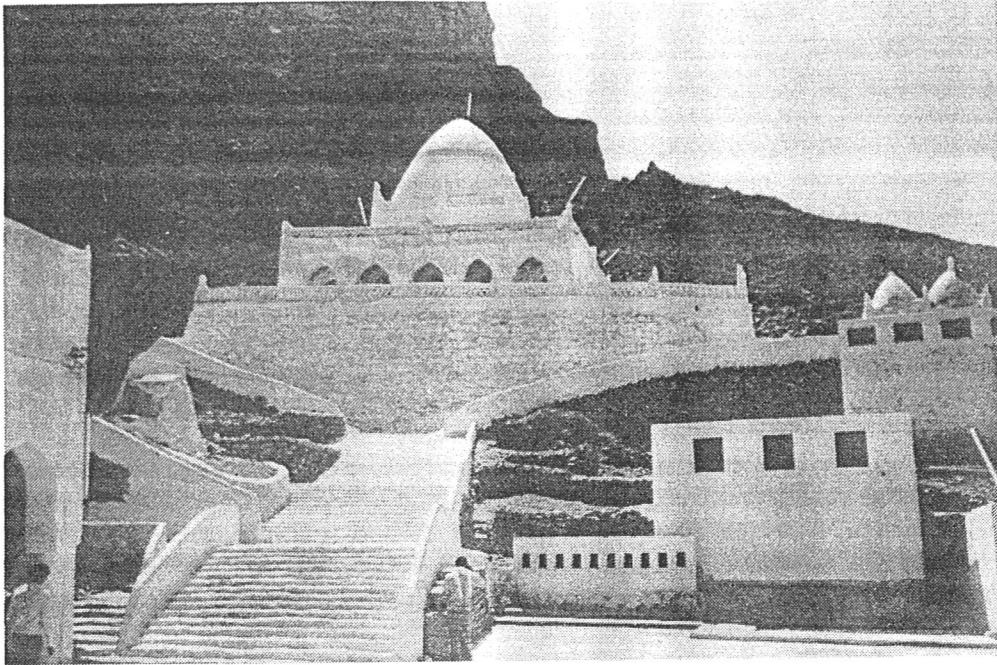
⁷ Ibid., 232. See the map on p. 99.

⁸ Ibid., 114.

⁹ *The Periplus of the Erythraean Sea*, Schoff, trans. (New Delhi: Oriental Book Reprint, 1947). See also Groom, *Frankincense and Myrrh*, which discusses the harvest cycles in detail 146-47.

¹⁰ Groom, *Frankincense and Myrrh*, 165-66. See also: F. Clements, *Oman the Reborn Land* (London: Longman, 1980), 27; Robert Stookey, *Yemen--The Politics of the Yemen Arab Republic* (Colorado: Westview Press, 1978), 10, and trade route map.

¹¹ Winnett and Read, *Ancient Records from North Arabia*, (Toronto: University of Toronto Press, 1970), 45.



The 'tomb' of the Prophet Hud at Qabr today, facing almost E



A view of Wadi Masilah taken near Qabr Hud showing vegetation.

GENERAL GEOGRAPHICAL NOTES :



General view of the coastline
near Mughsayl in Oman, looking
SW toward the Qamar mountains.



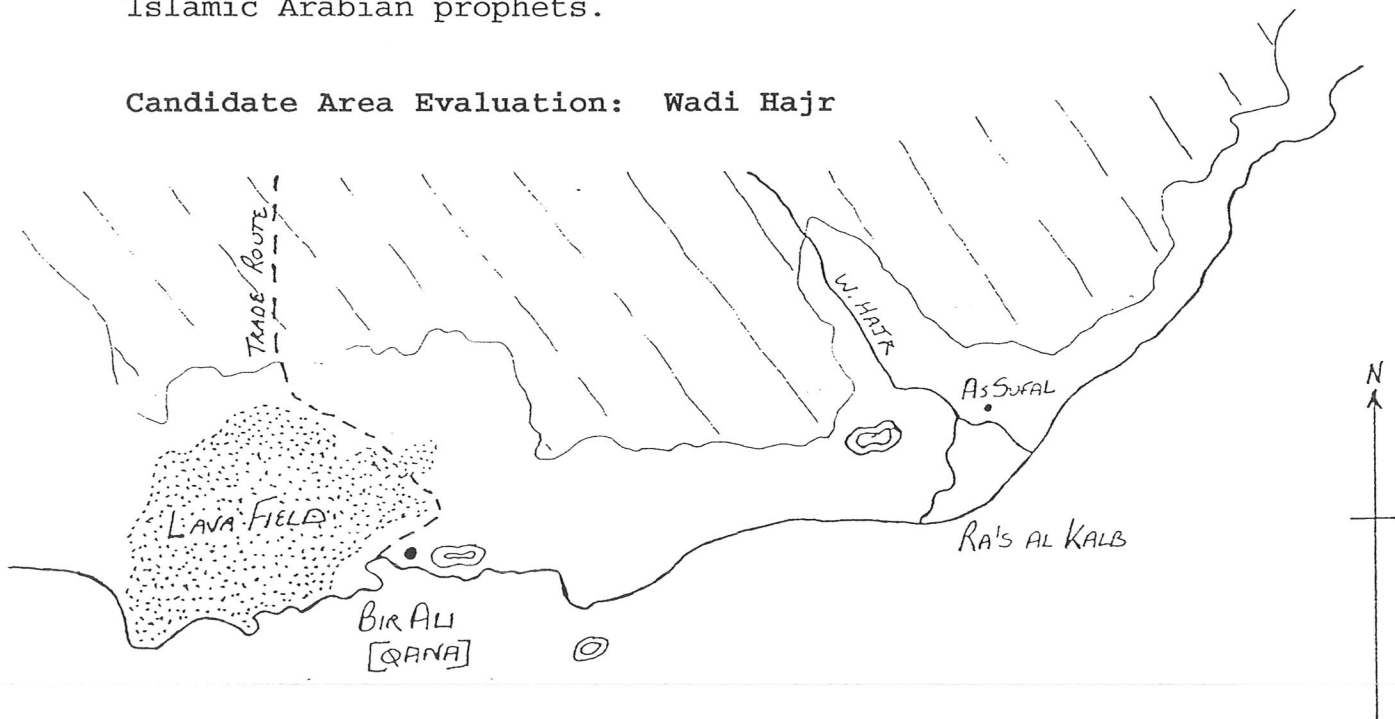
This view is representative of
almost the entire Arabian coastline
from Aden to Sayhut in Yemen.

Israelites could well have been considered Jewish. Hamblin suggests that over time, Lehi's personal name was possibly forgotten among local people to whom he preached and that he came to be remembered simply as "the Jew."¹²

Almost nothing is known of the "Ad tribe to which Hud, in some accounts, was sent; however a sister tribe, the Thamud, may date to as early as the eighth century B.C. Today, the legends of Hud are perpetuated by annual festivals held throughout the Hadhramout region and pilgrimages to Qabr Hud, some miles east of Tarim. Qabr Nabi Allah Hud in the Wadi Hadhramout itself is the center of a religious cult commemorating Hud since before Islam and attracts the largest numbers of pilgrims to any site in Yemen. A well-maintained town below the "tomb" of Hud remains empty all year except for the three days of the festival.¹³

Although the legends of Hud center in the Hadhramout region close to the path Lehi would have taken to Bountiful, no causal tie to Lehi or to a follower of his who remained behind can be shown. What is clear, however, is that all the aspects of Lehi's story and message fit very well into the general pattern of pre-Islamic Arabian prophets.

Candidate Area Evaluation: Wadi Hajr



¹² William Hamblin, "Pre-Islamic Arabian Prophets," in *Mormons and Muslims* (Provo: BYU Religious Studies Center, 1983), 85-104.

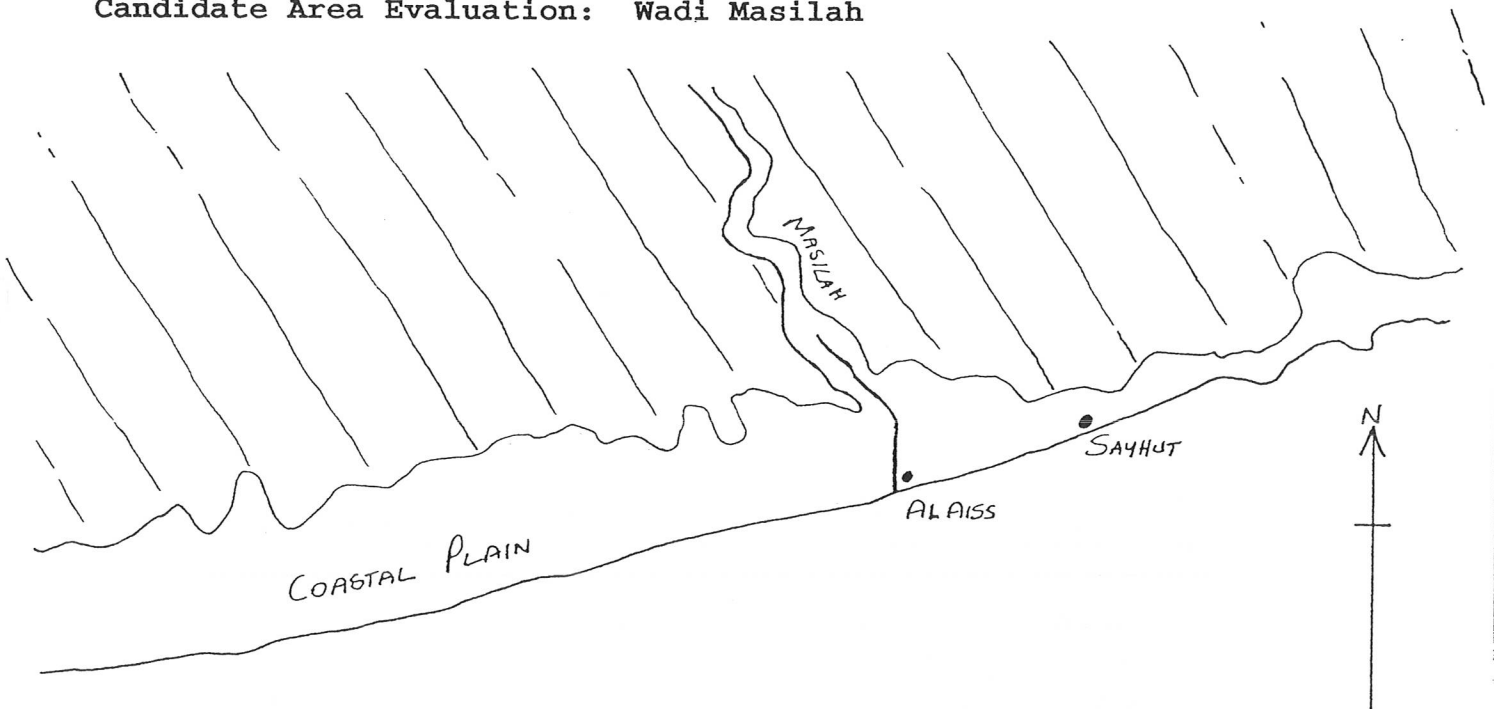
¹³ Van der Meulen and Von Wissman, *Hadramaut—Some of its Mysteries Unveiled*, (Leyden, E. J. Brill, 1964), 158-62; Ronald Lewcock, *Wadi Hadramaut and the Walled City of Shibam* (Paris: UNESCO, 1985), 17, 53, 55, 124-25.

Wadi Hajr incorporates one of only two perennial rivers entering the ocean on the eastern coast of Arabia, the other being Wadi Sayq in Oman. Hajr lies about 25 miles east of Bir Ali, the ancient port of Qana in Yemen to which incense and other goods were shipped—the major terminus of the "frankincense trail."

Low hills approach the coast within about 3 miles. Despite year-round surface water, the vegetation at the coast consists only of small trees and bushes in the immediate vicinity of the river, although some inland areas have areas of palm groves. The almost pure desert immediately resumes again on both sides. Some small areas of cultivated crops and the small village of As Sufāl are nearby.

It could be argued that at 14°5' north latitude, Wadi Hajr lies too far south of Nahom/Wadi Jauf to be described as "almost eastward," especially if it is assumed that the Nephites could determine directions with some degree of accuracy.

Candidate Area Evaluation: Wadi Masilah

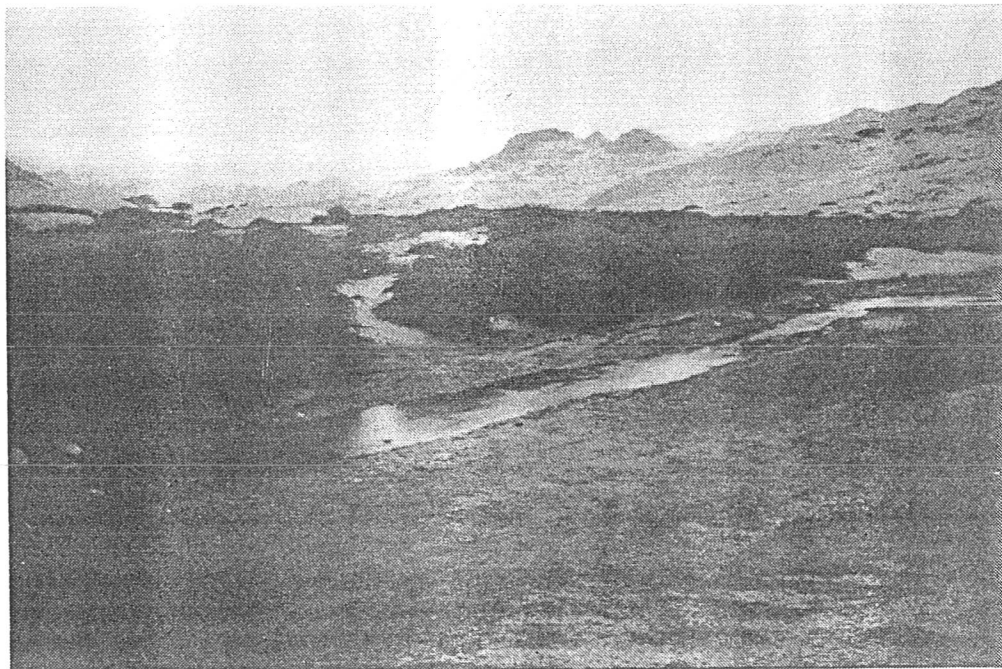


Wadi Masilah is the largest wadi system reaching the coast on the Arabian peninsula. A continuation of Wadi Hadhramout, Masilah cuts its way through hundreds of miles of desert plateau until it reaches the coast 12 miles west of Sayhut at 15°10' latitude. As it descends toward the coast of Yemen, the wadi is often less clearly defined than it is further inland.

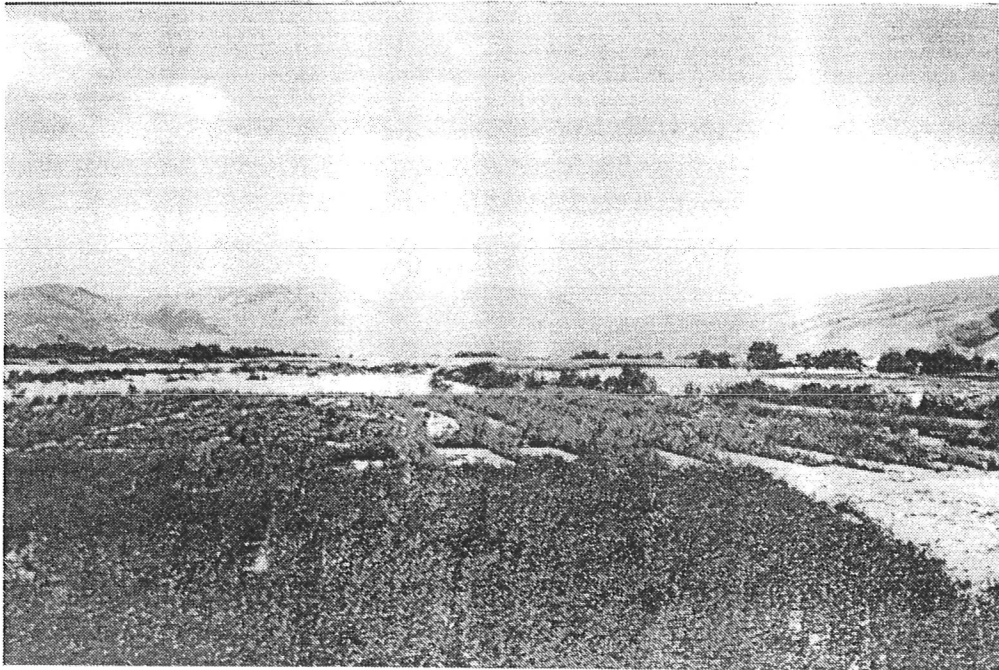
While it carries seasonal run-off through much of its course and has some small stretches of standing water inland, the coastal mouth consists of a broad, dry delta. Vegetation is



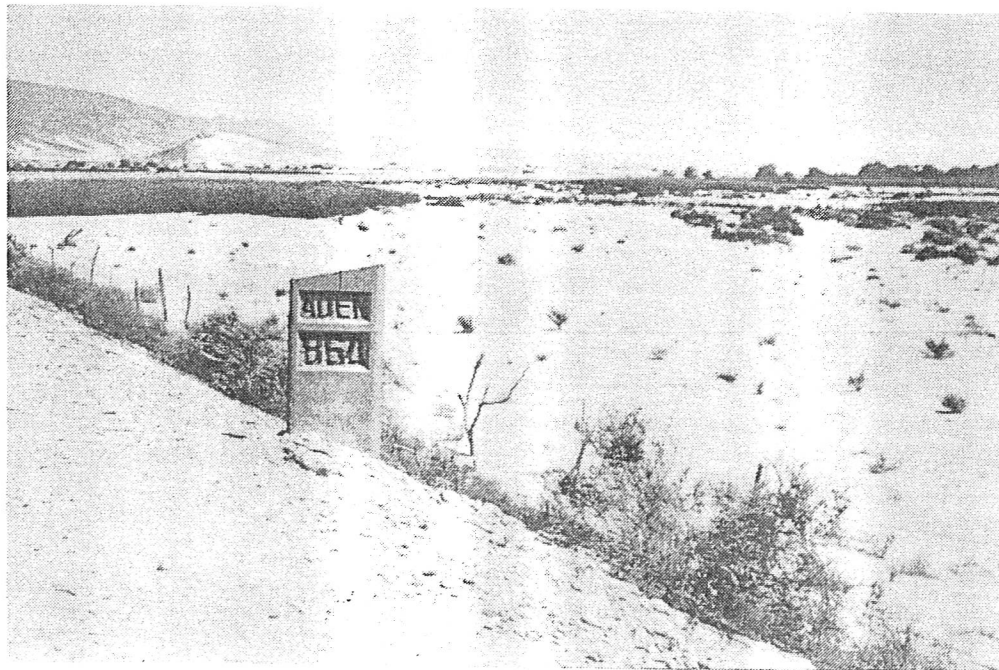
The river at Wadi Hajr looking S toward
the seacoast about 25 miles E of Bir Ali.



Wadi Hajr looking N inland from near the coast.



The mouth of Wadi Masilah looking inland.



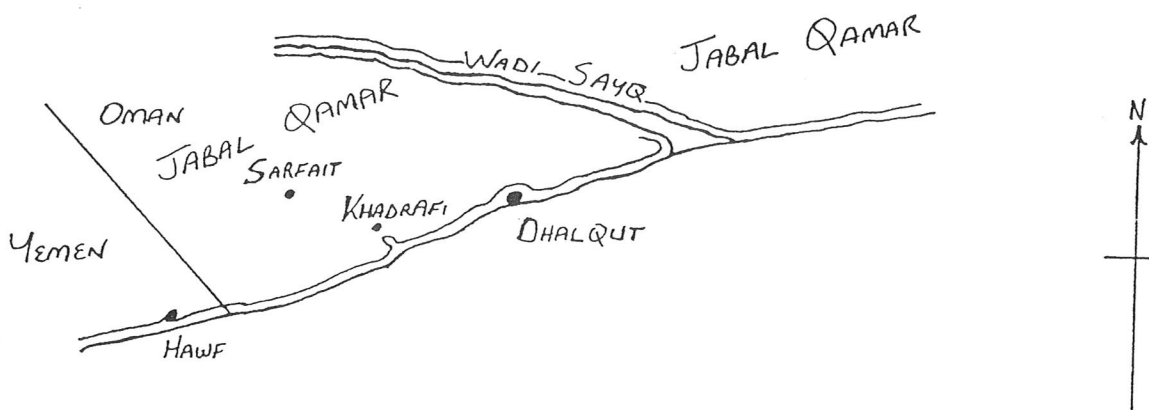
The coastal delta looking E to Sayhut.

minimal and some areas are cultivated today. The nearest mountains are some four miles from the coast.

While the Masilah valley appears to offer a natural pathway to the coast when viewed in maps, in reality travel through the wadi is very difficult.¹⁴ Furthermore, the coast offers little more than do dozens of other wadis in terms of vegetation (unimpressive), timber (none) and fresh water (minimal), supporting today only the small village of Al Aiss amidst an otherwise barren coastal plain.

Travel from the interior deserts through the Hadhramout/Masilah route would thus present a picture of fertility exactly opposite to that recorded by Nephi with the highly cultivated Hadhramout region giving way to the much less fertile Masilah, terminating at an unremarkable coast.

Candidate Area Evaluation: Dhalqut



Dhalqut, the most westerly coastal town in Oman, lies on a narrow coastal strip about two miles long facing the ocean at 16°42' north latitude. The hills behind the town rise steeply to an average of 3500 ft., making overland access difficult. The surrounding Sayq mountains experience high rainfall and feature widespread areas of trees and abundant vegetation in areas. The area supports a larger population than does Rakhyut although freshwater sources in and near Dhalqut are very scarce.

Another area resembling Dhalqut is Hawf, lying some 13 miles to the west, just inside the border with Yemen. Although it is not presently possible for outsiders to visit Hawf, verbal descriptions and mapping indicates that it shares the general characteristics of Dhalqut—a narrow coastal strip backed by very

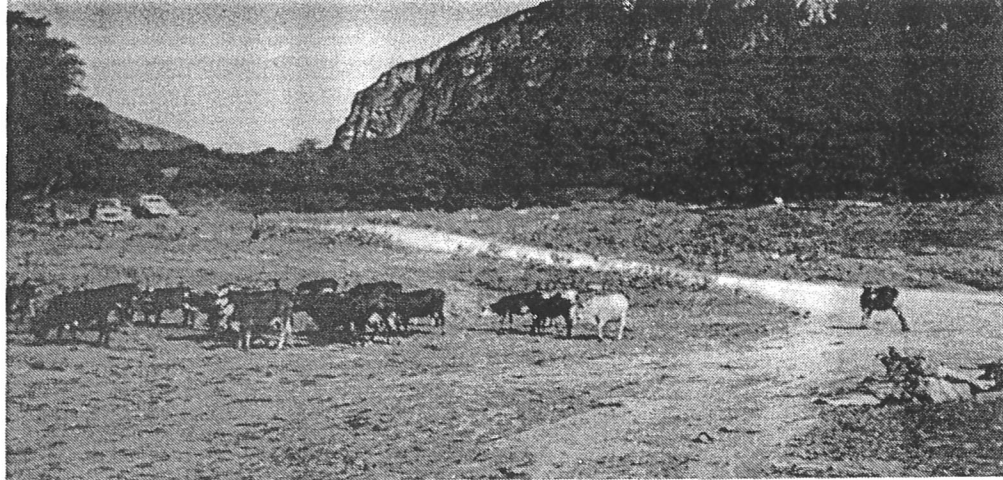
¹⁴ W. H. Ingrams, "Hadhramaut: A Journey to the Sei'ar Country and through the Wadi Maseila," *Geographical Journal* 88 (1936): 524-51 gives a firsthand account of travel through Wadi Masilah.



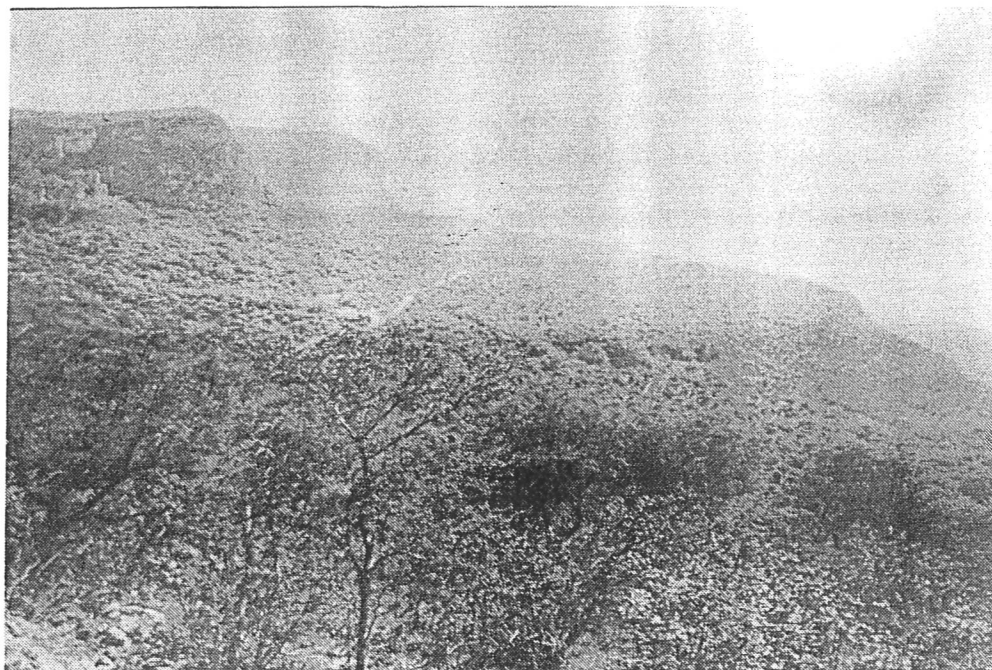
Dhalqut town looking SW.



Dhalqut viewed from the sea looking NW.



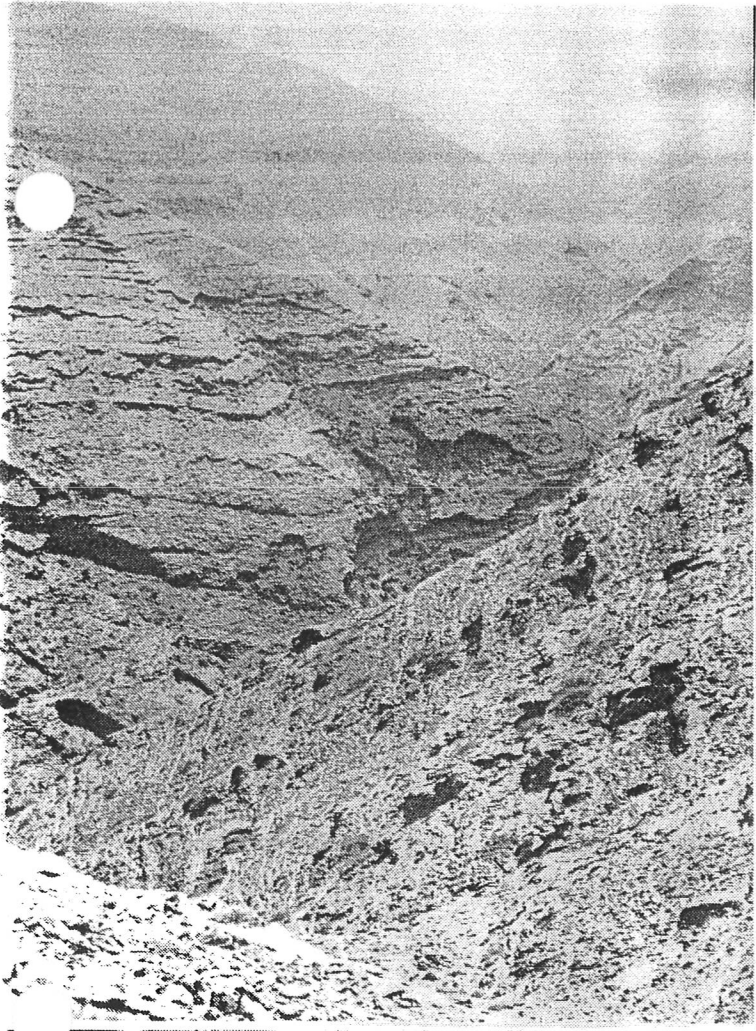
Typical inland country W of Dhalqut.



Coastal view looking E about 6 miles W of Dhalqut.

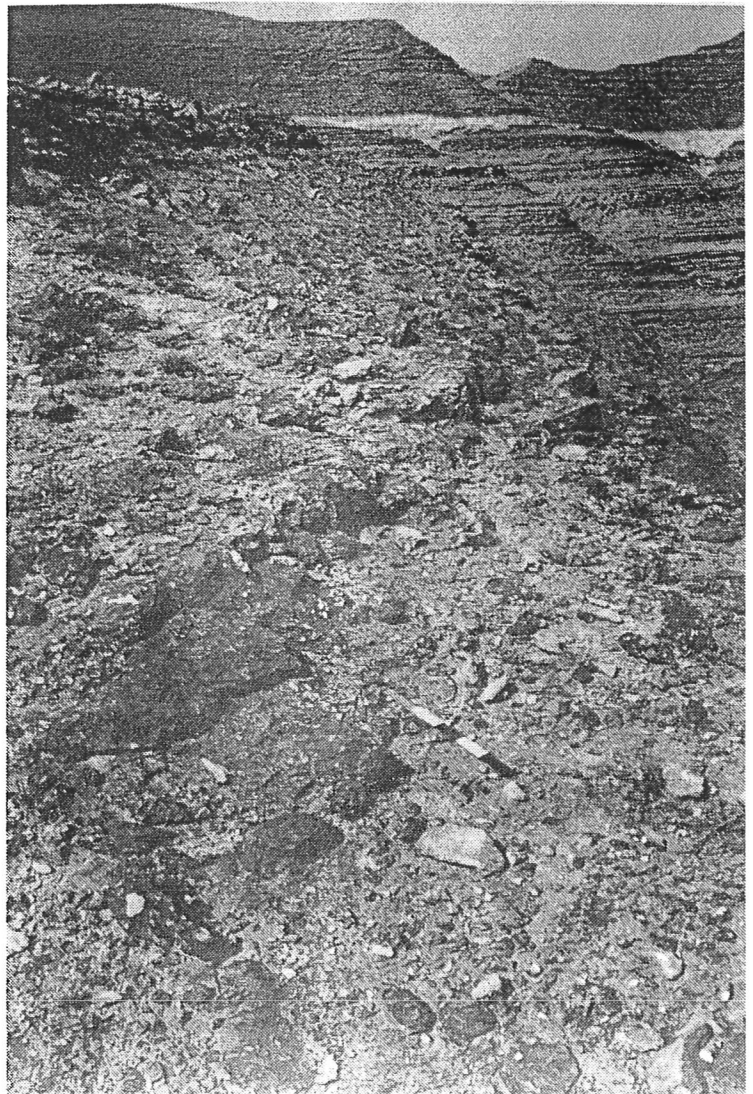


Coastal view of Yemen border looking W.



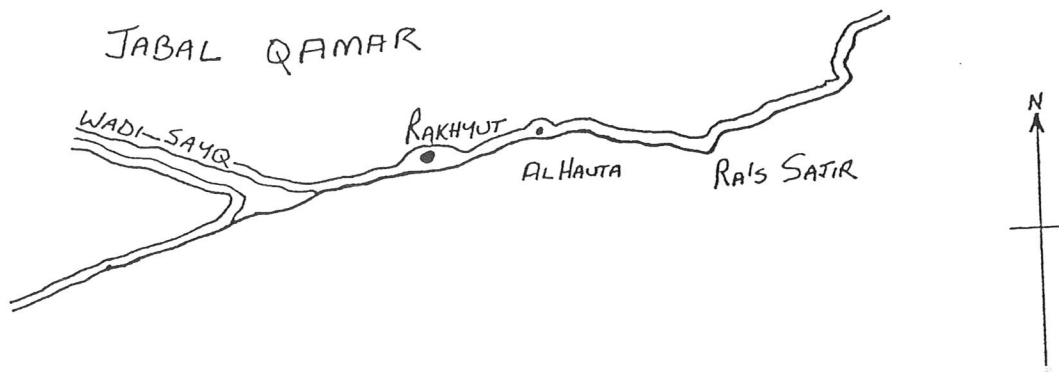
The general interior area about
10 miles inland of Wadi Sayq.

Chert and Quartzite
surface rocks.



high and fertile mountain country. The coastal area itself at Dhalqut is less impressive in terms of vegetation and the greater difficulty in overland access may present a major obstacle to its being a viable candidate for Bountiful.

Candidate Area Evaluation: Rakhyut



A roughly triangular bay measuring approximately 1 mile across and extending about 1.5 miles inland, Rakhyut, at $16^{\circ}45'$ north latitude, is the site of a village of about 300 people functioning primarily as an administrative center for a region based largely on dairy farming and fishing. There is a fairly settled bedouin population in the surrounding hills in addition to small farms.

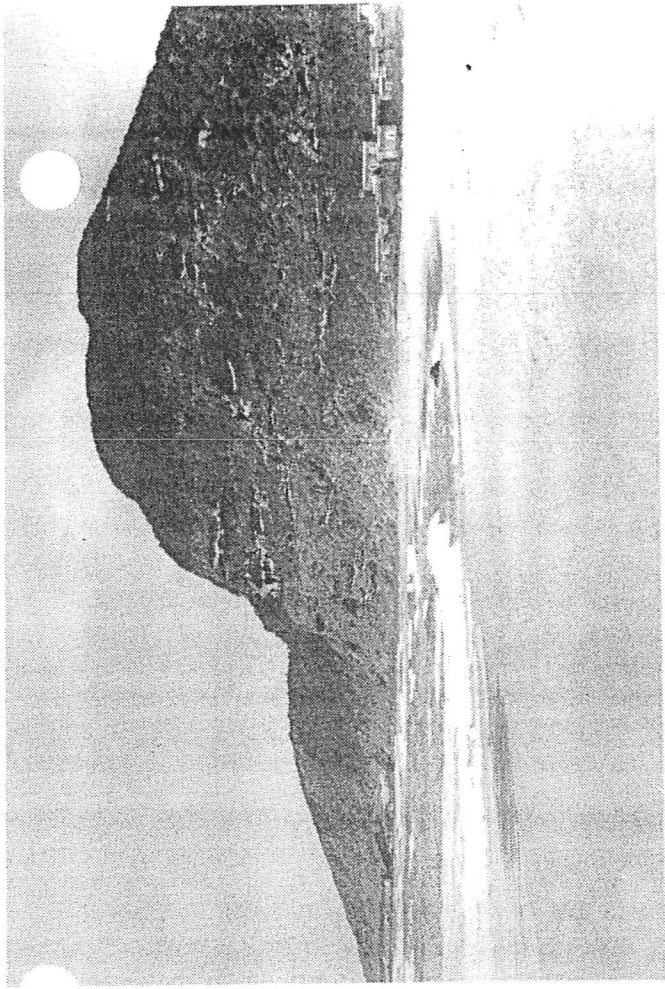
Rakhyut bay is surrounded by very steep hills making travel from the western plains difficult, although still possible.

Vegetation, including large trees, is quite abundant in the surrounding hills together with several freshwater springs; the bay itself has sparse vegetation and only small trees. There is a small stream and pond near the beach.

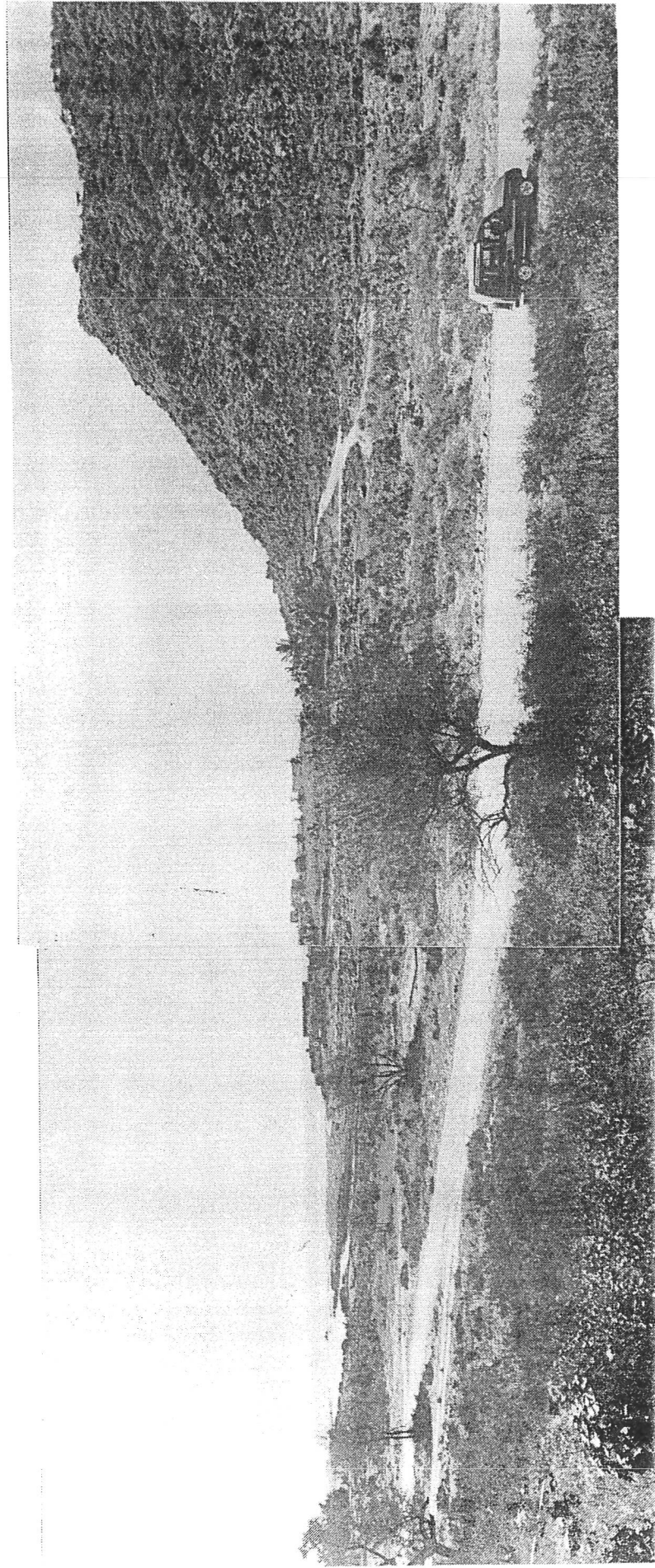
A wide and almost flat sand beach gives good access to the ocean.

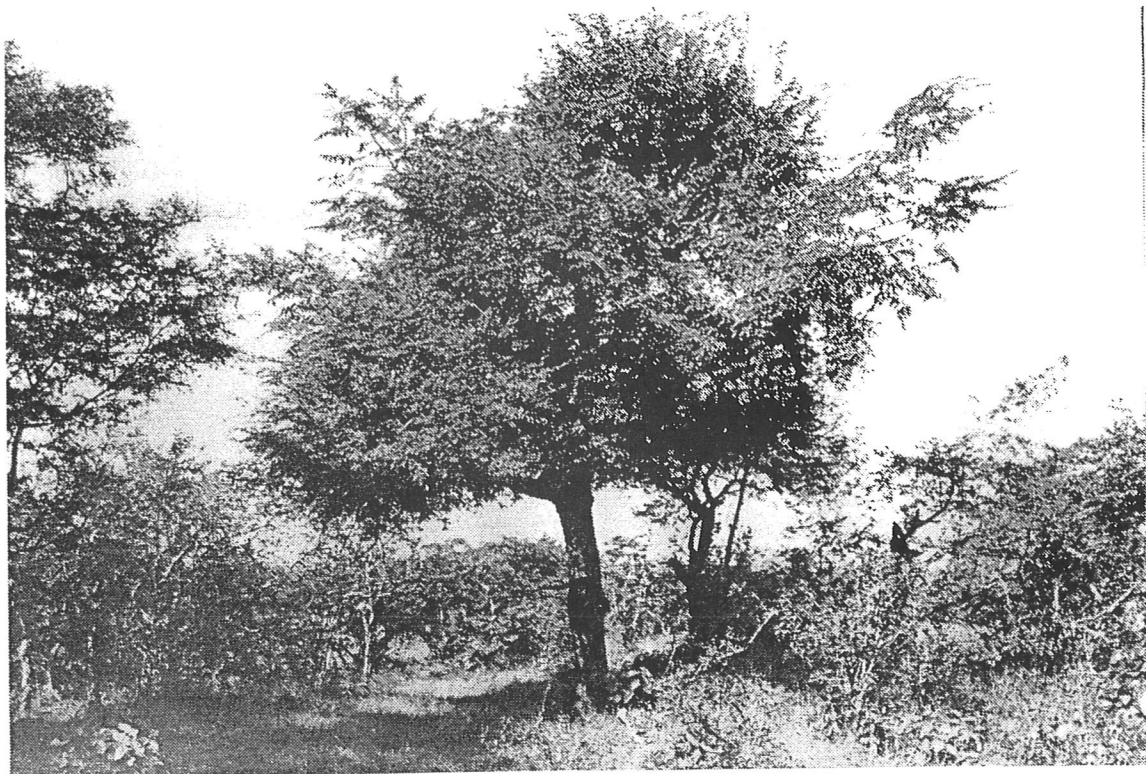
Although Rakhyut meets many of the requirements for Bountiful, timber and probably crops would have required considerable effort to obtain for anyone living on the coast. An isolated peak overlooks the village on the west side of the bay.

The coastline looking W.



Panoramic view of Rakhyut bay looking S toward the ocean.



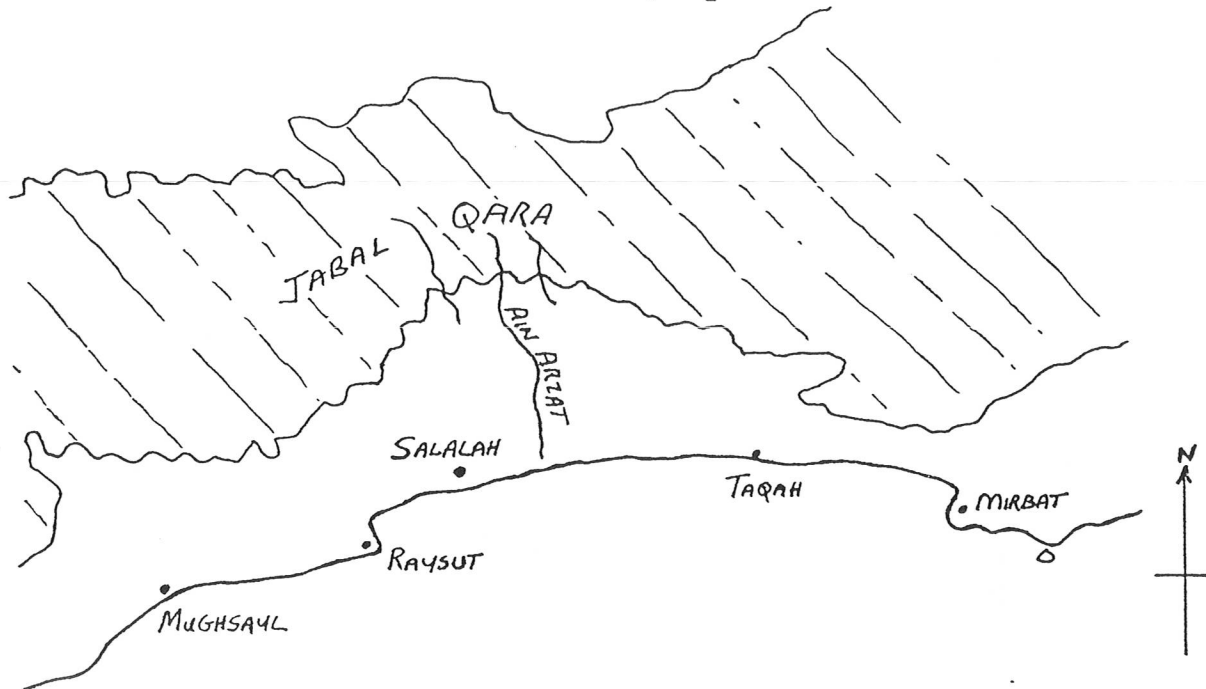


Tree in the hill country overlooking Rakhyut.



Bedouin camp in the hills near Rakhyut.

Candidate Area Evaluation: Salalah/Raysut



The stony coastal plains upon which Salalah, at 17° north latitude, is situated lie in a crescent shape between the Qara hills and the sea. Ranging from five to twelve miles in width, the plains stretch some forty miles from Mirbat in the east to just west of Raysut, site of a modern deep-water port. There is no appreciable vegetation anywhere on the low-level coastal plain except where intensive irrigation is practiced close to the town of Salalah itself. The several small valleys in the Qara hills and some areas of the hills themselves (averaging 2500 to 3000 feet in height) support extensive areas of vegetation, however, including scattered large trees and the frankincense bushes which gave rise to the transportation of incense from this area in ancient times. The bulk of the harvest was ordinarily sent by sea to Bir Ali (Qana) in Yemen rather than by overland routes. Today the hinterland supports a considerable number of Bedouin whose economy is based on simple grazing rather than agriculture.

In common with the other candidate areas, the heaviest rainfall occurs in the June/September monsoonal period. Perennial freshwater sources are found in a number of locations in the hills, a prime example being Ain Arzat, a small valley where large trees begin to appear about three miles from the coast.

Access to the coast from the west would have been possible over the Qara ranges at a number of places, the landscape being mostly quite gentle in its descent to sea level.

The seacoast itself consists mostly of sand beaches with small areas with steep cliffs near Taqa and again at Raysut bay which includes a barren promontory about 200 feet high. There is no evidence to suggest that the coastline was appreciably



Vegetation on the Qara hills N of Salalah.

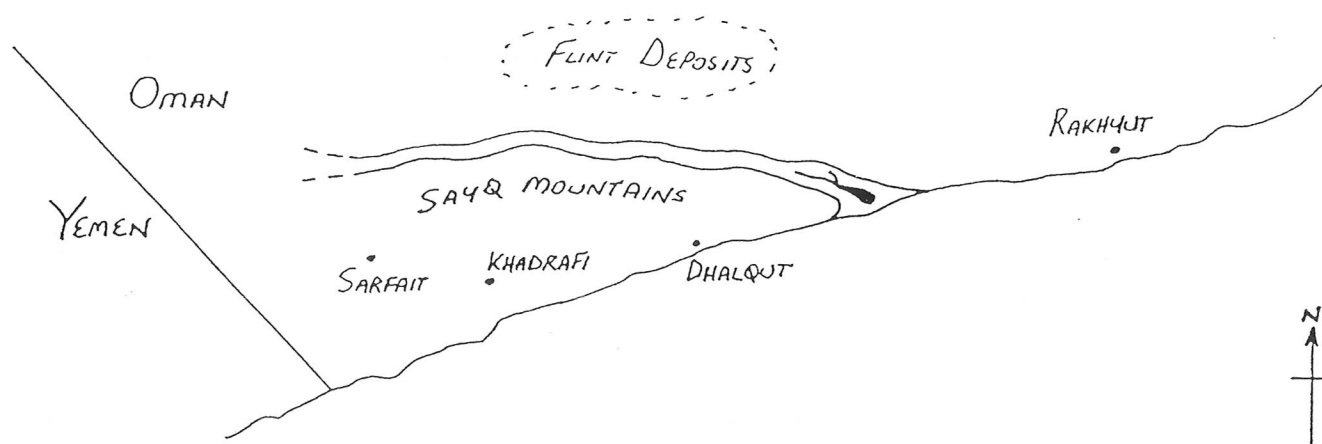


Salalah plains looking S to the seacoast.

different two or three millennia ago; indeed the ruins of Sumhurum and al-Baleed, city ports dating to the first millennium B.C., on the present shore indicate clearly that it was much as it appears today.

While the Qara hills inland from Salalah and Raysut do represent a marked increase in fertility from the barren wastes more typical of southern Oman, the various scriptural requirements for Bountiful are not met in any one area. Nephi would have had a journey of several miles from his seaside encampment to the "mount" where he prayed often, for example. The abundance of "fruit" so evident in his account would not have been readily available unless we assume intensive irrigation. Even if a moister climate in Dhofar is postulated for Nephi's day to account for the fertility he described—a notion for which no evidence exists—it remains very difficult to harmonize all the aspects described with the Salalah/Raysut region.

Candidate Area Evaluation: Wadi Sayq



Wadi Sayq ("Water-course Valley"), the final candidate area, reaches the ocean at 16°44' latitude on the Qamar coast in Oman, about six miles west of Rakhyut. The valley has its beginnings some sixteen miles inland amid rolling desert country averaging about 4000 feet altitude north of Sarfait. The wadi soon becomes a well-defined and narrow (typically about 100 feet across) pathway through very steep limestone mountains, descending gradually to sea level as the coast is approached. For most of its length Wadi Sayq travels almost east, turning ESE about a mile before reaching the ocean.

While most of the wadi is easily negotiated, there is an area of very rugged terrain where the wadi changes direction about one mile from the coastal delta. Possibly the consequence

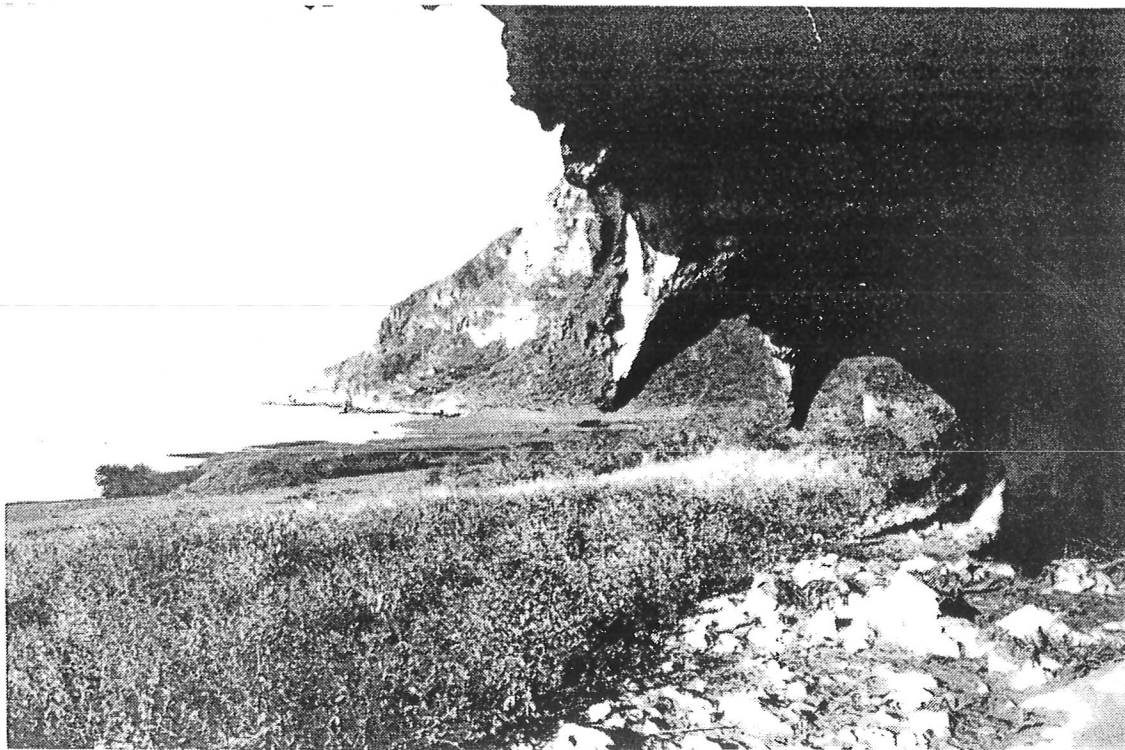
WADI SAYQ - GENERAL VIEWS



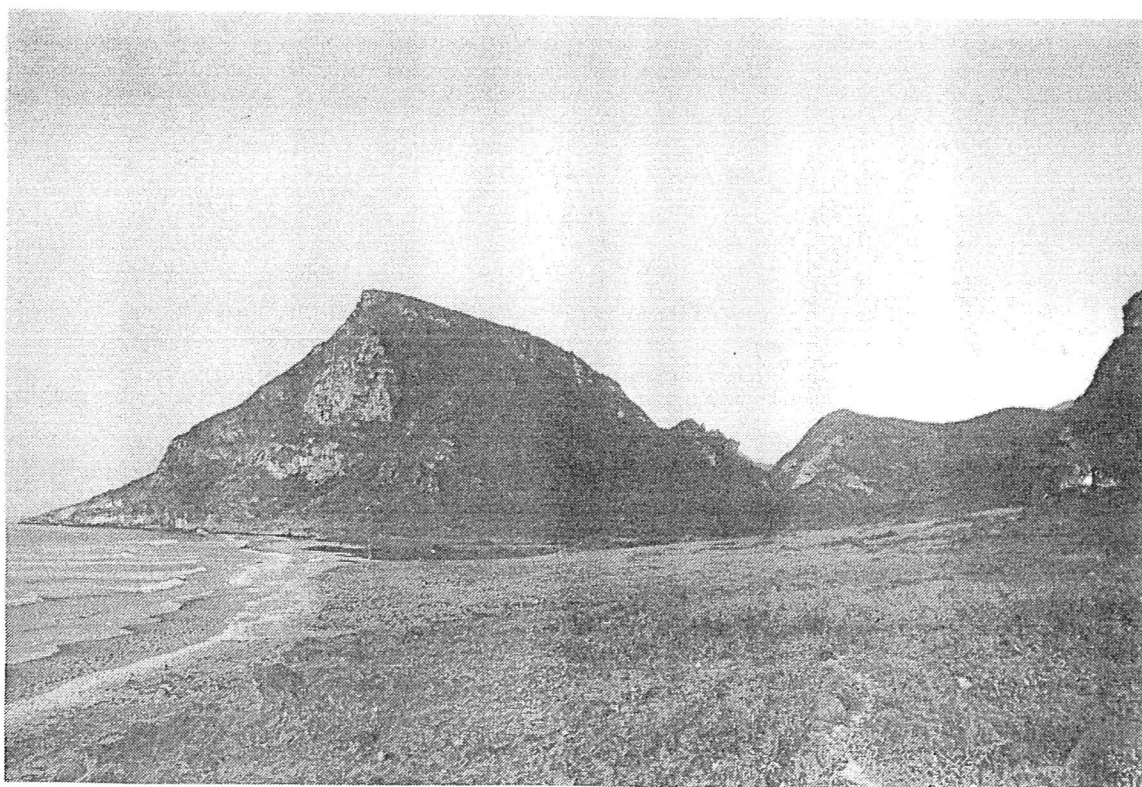
Wadi Sayq is the center of a fertile coastal region unique in Arabia. This view is of the coast between Rakhyut and Wadi Sayq.



Large trees approach the beach in this view in the wadi looking E

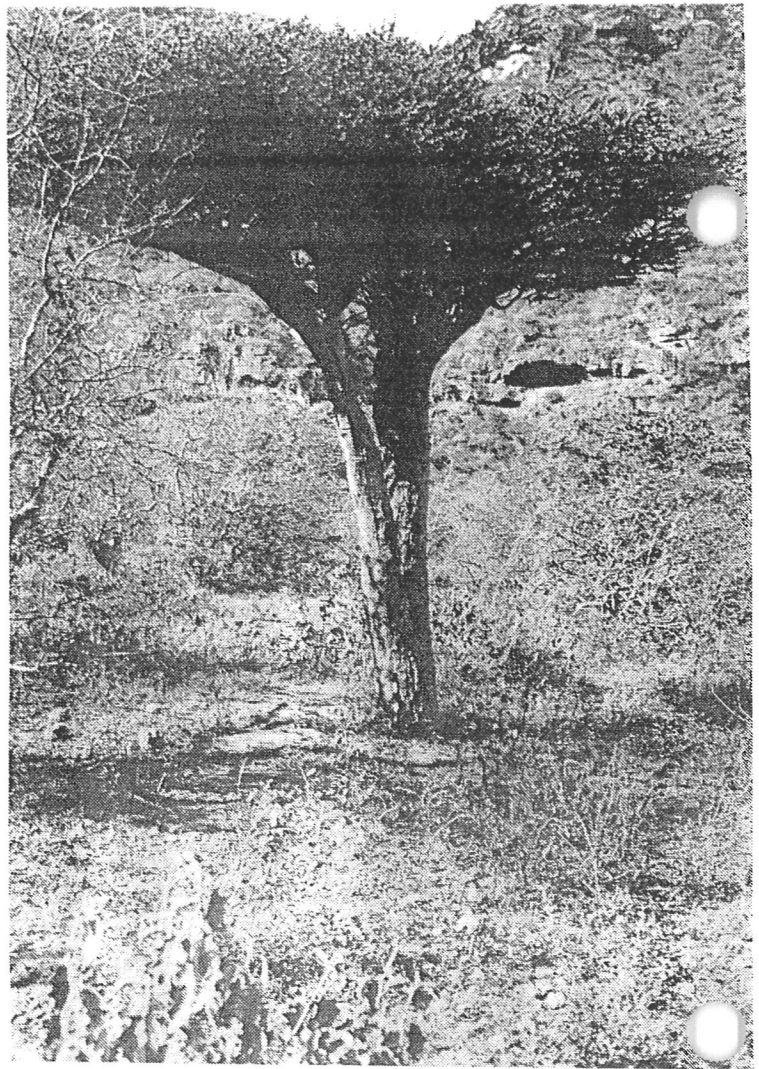


The mound as viewed from the rock-face
looking almost due S.

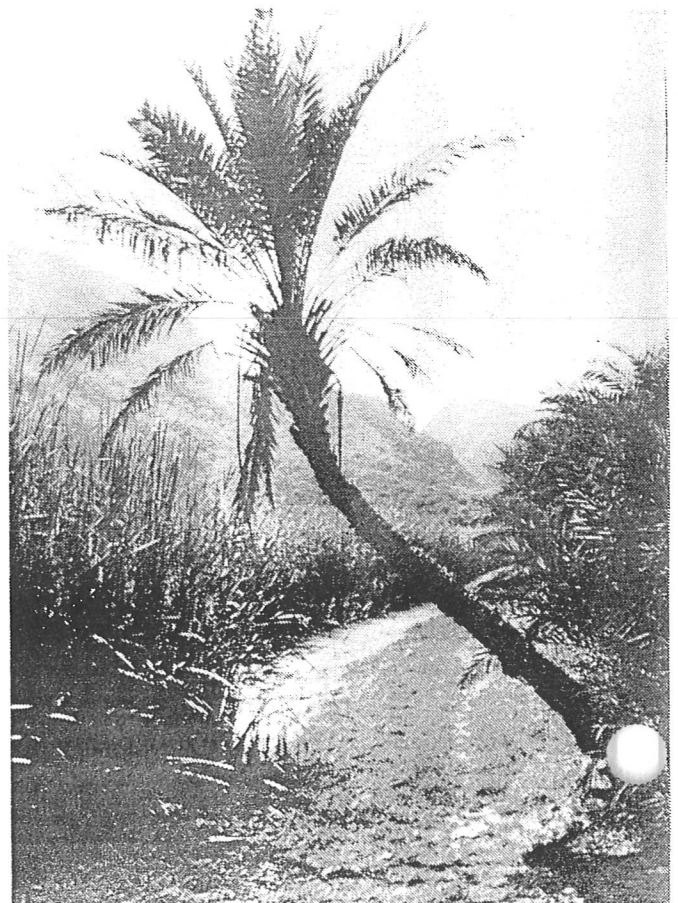


The relative positions of the beach, mound
and rockface looking SW along the coast.

Boscia Arabica Pestalozzi



Palm trees are numerous in the wadi and include the species *Commiphora Abessinica*.



Government Authority



State of Queensland

90MG511:JH:MB

A Sieve Analysis of Sand
from the beach at Wadi
Sayq

I, the undersigned, Director of the Government Chemical
Laboratory in the State of Queensland, do hereby certify that I received
on the 18th , day of January 19 91, from you
one sample for wet sieve analysis

and declare the result of the Examination of the same, to be as follows:

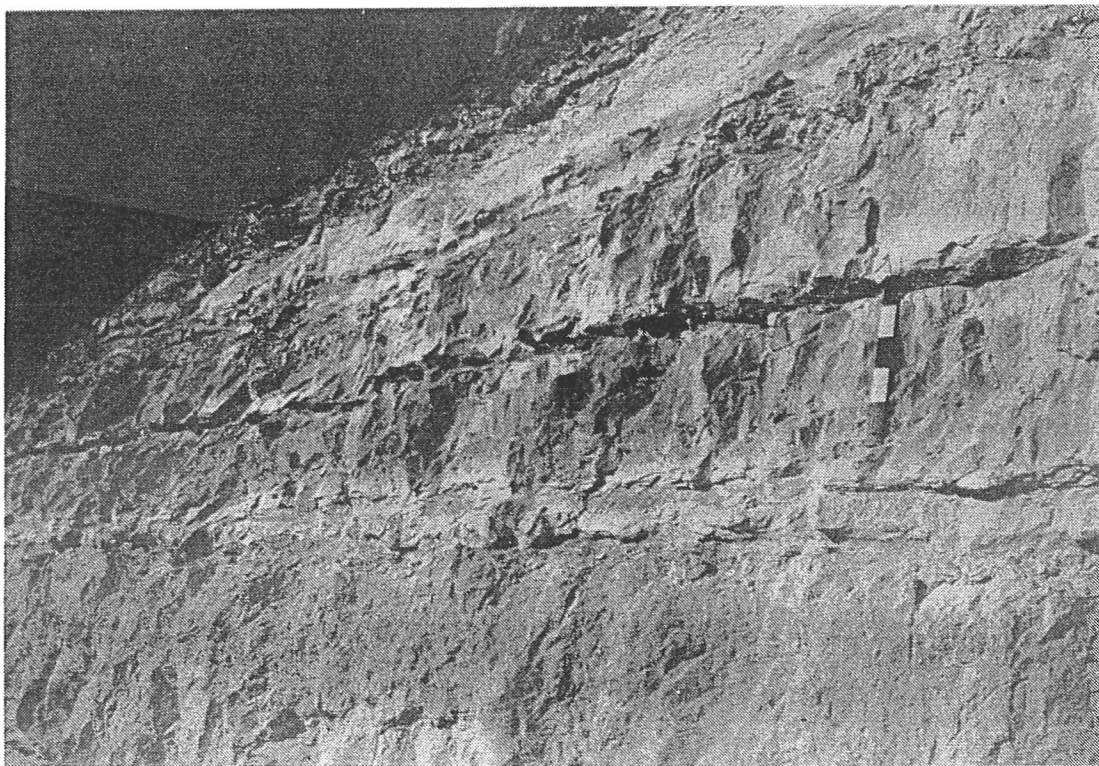
SIEVE ANALYSIS

% Retained on 1000 micron	1
% Retained on 500 micron	3
% Retained on 250 micron	71
% Retained on 125 micron	25
% Retained on 63 micron	<1
% Passing 63 micron	<1


.....
for D W CONNELL
DIRECTOR

At Government Chemical Laboratory,
Brisbane,

5th February 19 91



Seams of flint-related deposits about 10 miles inland
of Wadi Sayq.



GOVERNMENT CHEMICAL LABORATORY

ORIGINAL

Kessels Road, Coopers Plains, Queensland. 4108

WATER ANALYSIS REPORT

An Analysis of the Water
entering Wadi Sayq from
the surrounding ranges.

Client Reference: File Reference:

Laboratory Reference: ..MC90WS4550.. Batch Number: ...535-2..

Date Sampled:08/10/90..... Date Rcd. in Lab.: 14/01/91.....

Submitting Authority: Reason for Analysis:

Type:

Sample Point: Sample Source: ..SPRING WATER.....

Scheme/Survey/Job: Sampler:

Owner/Address:

Other Details:

Conductivity ($\mu\text{S}/\text{cm}$ at 25°C)	920	Ionic Strength	0.0143	Free CO_2 : Calc (mg/L)	10
Temp (Standard Units)	7.75 at 22.0 °C	Total Dissolved Ions (mg/L)	710	Aggressive CO_2 : Calc. (mg/L)	0
Total Hardness as CaCO_3 (mg/L)	370	Silica (mg/L)	16	pHs	7.0 Saturation Index 0.8
Temporary Hardness as CaCO_3 (mg/L)	285	Total Dissolved Solids: Calc (mg/L)	550	Mole Ratio: $\text{Log}(\text{Cl}^-/\text{CO}_3^{--})$	2.1
Alkalinity as CaCO_3 (mg/L)	285	Total Suspended Solids: NFR (mg/L)		Sodium Adsorption Ratio	1.4
Residual Alkalinity (meq/L)	0.0	Colour (Hazen)		Turbidity (NTU)	
				Figure of Merit (Ratio)	2.8

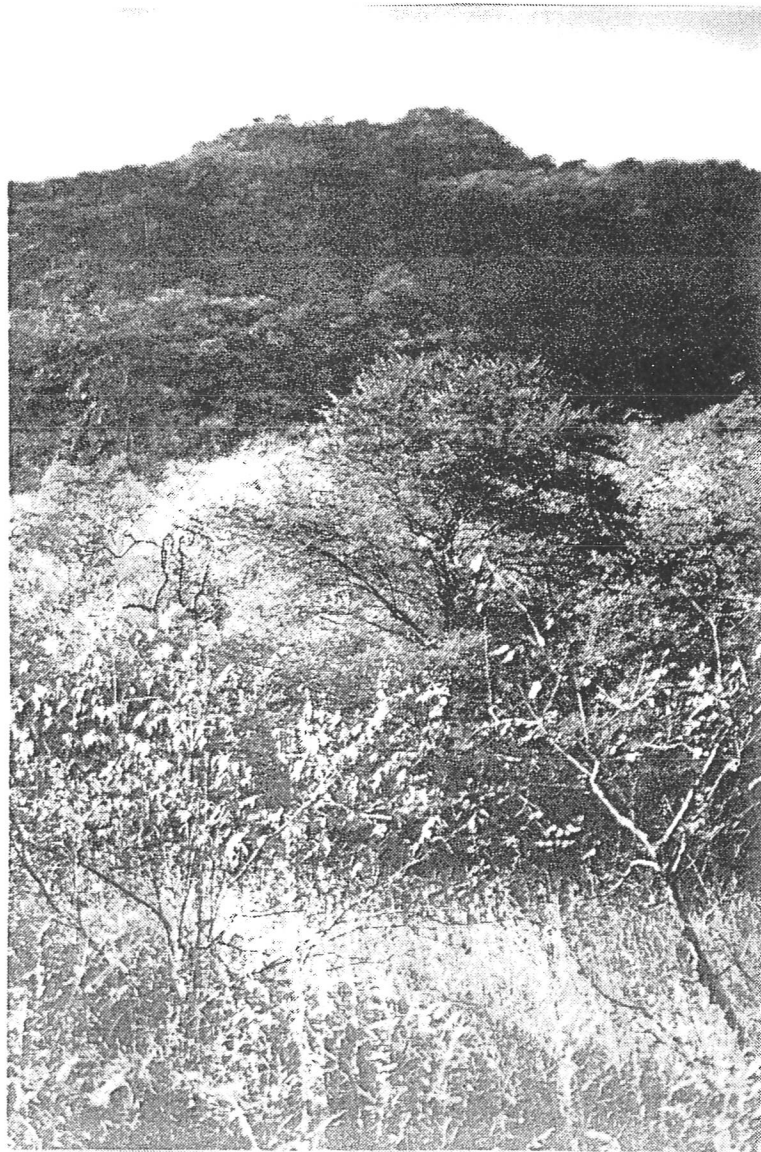
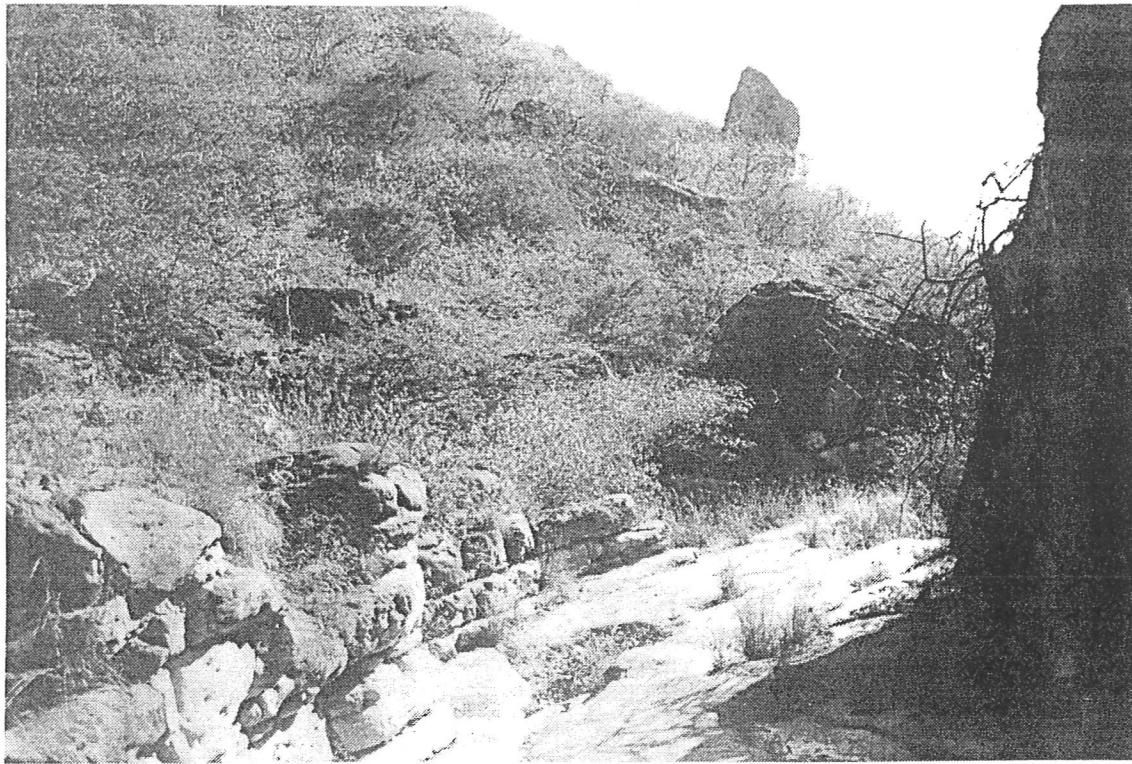
Cations		meq/L	mg/L	Anions		meq/L	mg/L	Additional Results		mg/L
Sodium	Na ⁺	2.65	61	Bicarbonate	HCO ₃ ⁻	5.65	345	Iron	Fe	<0.01
Potassium	K ⁺	0.10	4.1	Carbonate	CO ₃ ⁻⁻	0.05	1.4	Manganese	Mn	<0.01
Calcium	Ca ⁺⁺	5.24	105	Hydroxide	OH ⁻	0.00	0.0	Zinc	Zn	0.04
Magnesium	Mg ⁺⁺	2.06	25.0	Chloride	Cl ⁻	3.10	110	Aluminium	Al	<0.05
Hydrogen	H ⁺	0.00	0.0	Fluoride	F ⁻	0.02	0.4	Boron	B	0.18
				Nitrate	NO ₃ ⁻	0.19	12.0	Copper	Cu	0.04
				Sulphate	SO ₄ ⁻⁻	0.96	46.0			
Total Cations		10.05		Total Anions		9.97				

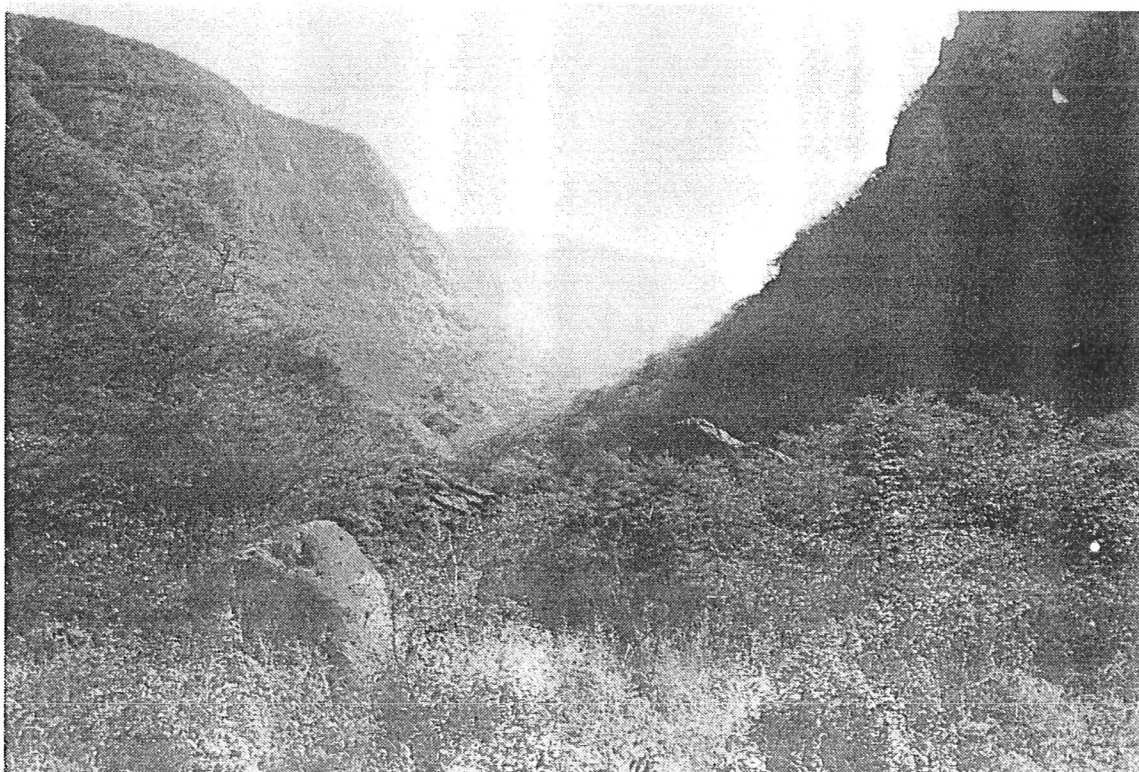
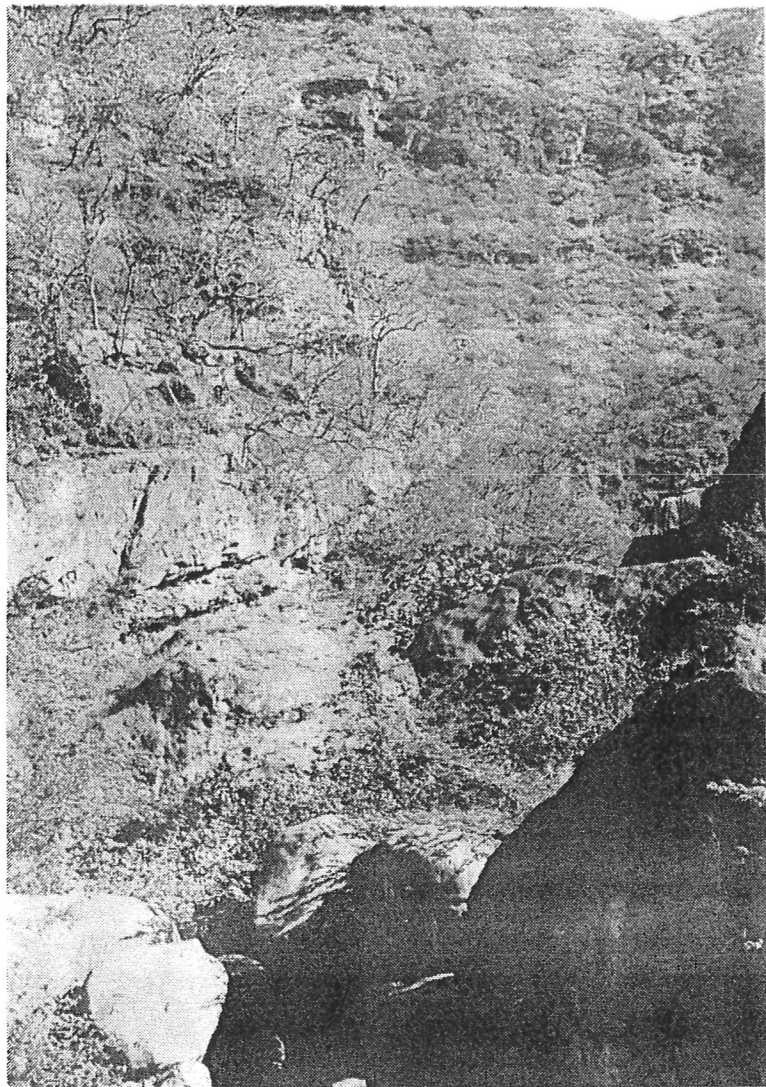
Remarks:

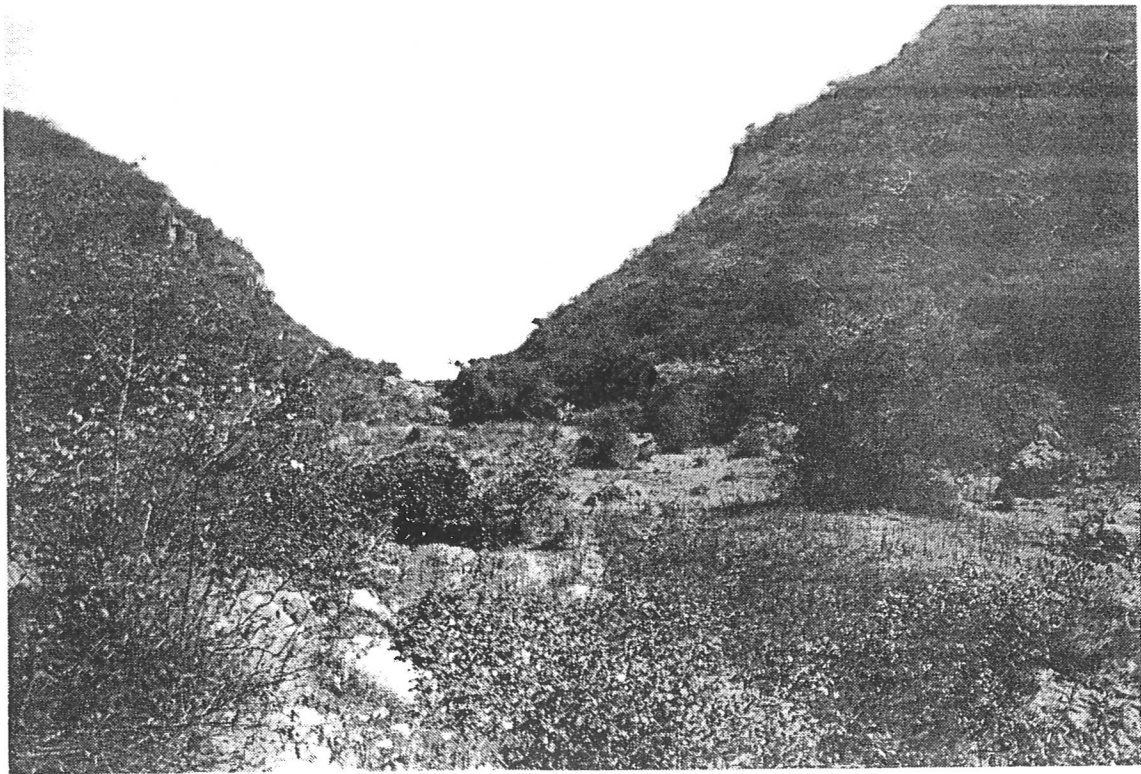
Analyst: D. LEE Date 05/02/91 Signed [Signature] for Director D. W. CONNELL

Notes: This analysis is of the sample as received and no responsibility is taken for sampling by this Laboratory. The remarks take no account of microbiological, radioactive, or other undetermined chemical constituents. Blank or — indicates "not determined".
Total Dissolved Ions = Total Cations + Total Anions. Total Dissolved Solids: Calc. = Silica + Total Cations + Total Anions — ($\text{HCO}_3 \times 0.5083$); i.e. Bicarbonate is expressed as Carbonate. Hardness is $(\text{Ca}^{++} + \text{Mg}^{++})$ as CaCO_3 .
Residual Alkalinity = $\text{meq}(\text{HCO}_3 + \text{CO}_3^{--}) - \text{meq}(\text{Ca}^{++} + \text{Mg}^{++})$. Sodium Adsorption Ratio = $\text{meq Na}^+ / \sqrt{\text{meq}(\text{Ca}^{++} + \text{Mg}^{++})/2}$. Figure of Merit (Ratio) = $\text{meq}(\text{Ca}^{++} + \text{Mg}^{++}) / \text{meq Na}^+$. Saturation Index (Langelier) = $\text{pH} - \text{pH}_s$.
There may be slight discrepancies between analysed and calculated data because results have been rounded-off.

The following sequence of photographs illustrate the changing vegetation and geography of the wadi at regular intervals while travelling from about three miles inland toward the coast.







of the annual monsoonal flooding over the centuries, the huge boulders, uneven valley floor and even the vegetation itself hinders movement at this one point, but does not prevent it. The surrounding mountains generally prevent access to the coastal bay from the north and south. Since access is feasible only by travelling through the valley from the uninhabited interior plateau or by sea, the valley today has no settled population despite its exceptional fertility.

Flora inside the wadi changes from pure desert to scrubland as the coast is approached, climaxing in a remarkable concentration of lush vegetation and large trees in the final two miles of the wadi. In the coastal bay, the vegetation supports a high insect and bird population and is watered by streams contributing to a large body of fresh water extending right to the sand beach overlooking the ocean. The volume of fresh water entering the sea beneath the beach is such that the outflow creates a highly visible and year-round coloration of the ocean which extends some 500 feet from the shore. This mingling of fresh and sea water enhances the already noteworthy abundance of sealife along the coast.

Some ten miles NW of the coast at Wadi Sayq, flint related strata and surface rocks cover the rugged terrain over several miles. While no surveys have yet established the extent of these rock deposits, they have not been observed elsewhere or in the vicinity of any other candidate area and may explain the implied presence of flint in 1 Nephi 17:11.

The sand beach at Wadi Sayq provides ready access to the ocean.

Evidence of Past Human Occupation in Wadi Sayq

In a prominent position overlooking the sea on the east side of the wadi is situated the only firm evidence of human involvement in Wadi Sayq located to date. The central feature is a circular, flat-topped structure built of local uncut stones and measuring approximately twelve feet in height and some forty-five feet in diameter. Over time, wind-blown sand and earth has permitted the growth of vegetation and small bushes which have obscured and partially disrupted the surface of the structure. The basic symmetry of the mound remains obvious when viewed from all angles however. It appears highly likely that the mound was originally stepped or layered on at least the north and south sides.

Radiating out from the mound are several alignments of larger-than-usual rocks partially buried in the earth. The most visible and best preserved of these is a double line of stones about one foot wide and almost touching each other, stretching about 90 feet in a southerly direction toward the beach, its



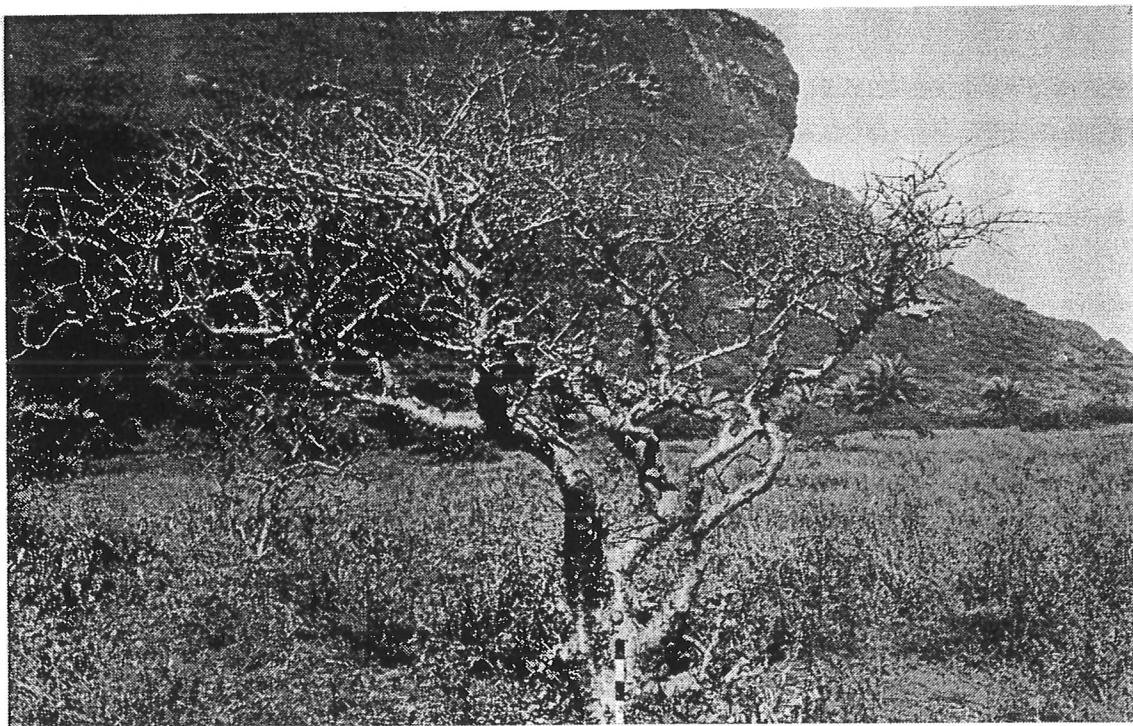
This view looking SW illustrates how close the fresh-water lake in Wadi Sayq approaches the ocean. Taken about midway on the beach.



A view looking SW along the beach, showing clearly the free-standing mountain overlooking the W side of the wadi.

TIMBER TREES PRESENT IN WADI SAYQ TODAY

Following are the most common species identified to this point which potentially offer timber for the construction of a sea-going vessel:



Phoenix dactylifera



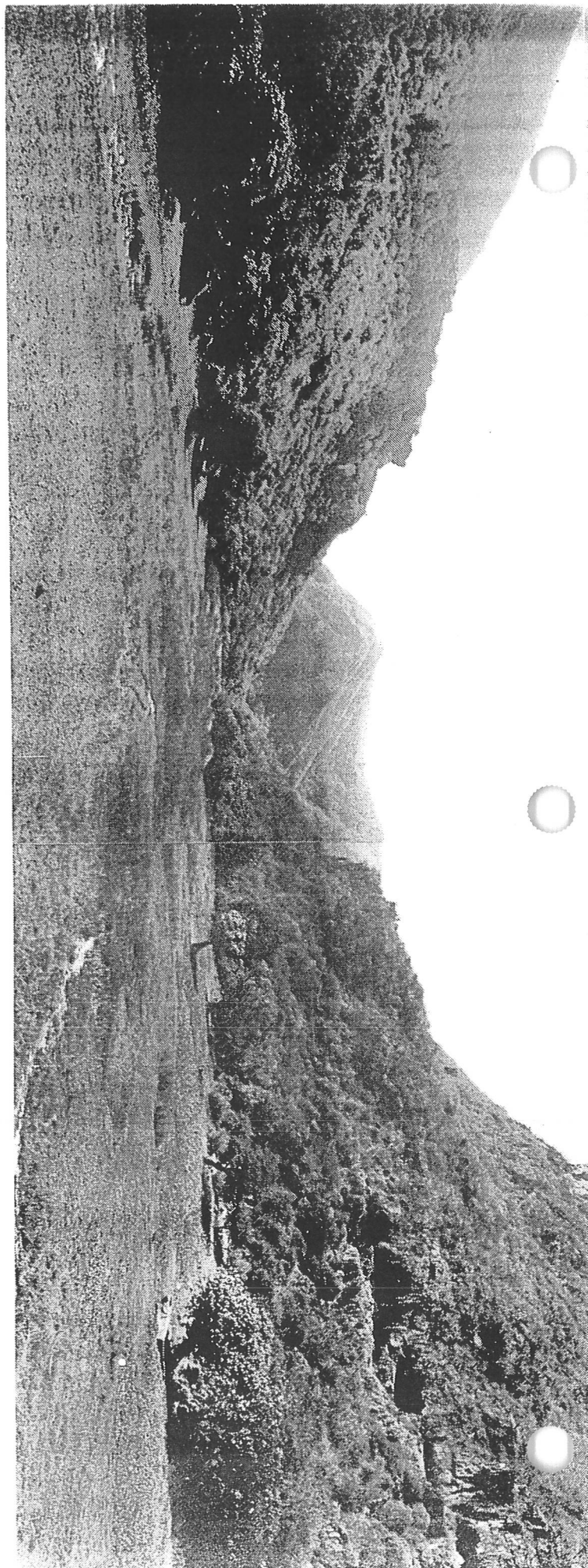
Wadi Sayq viewed from
nearby hills looking SW.

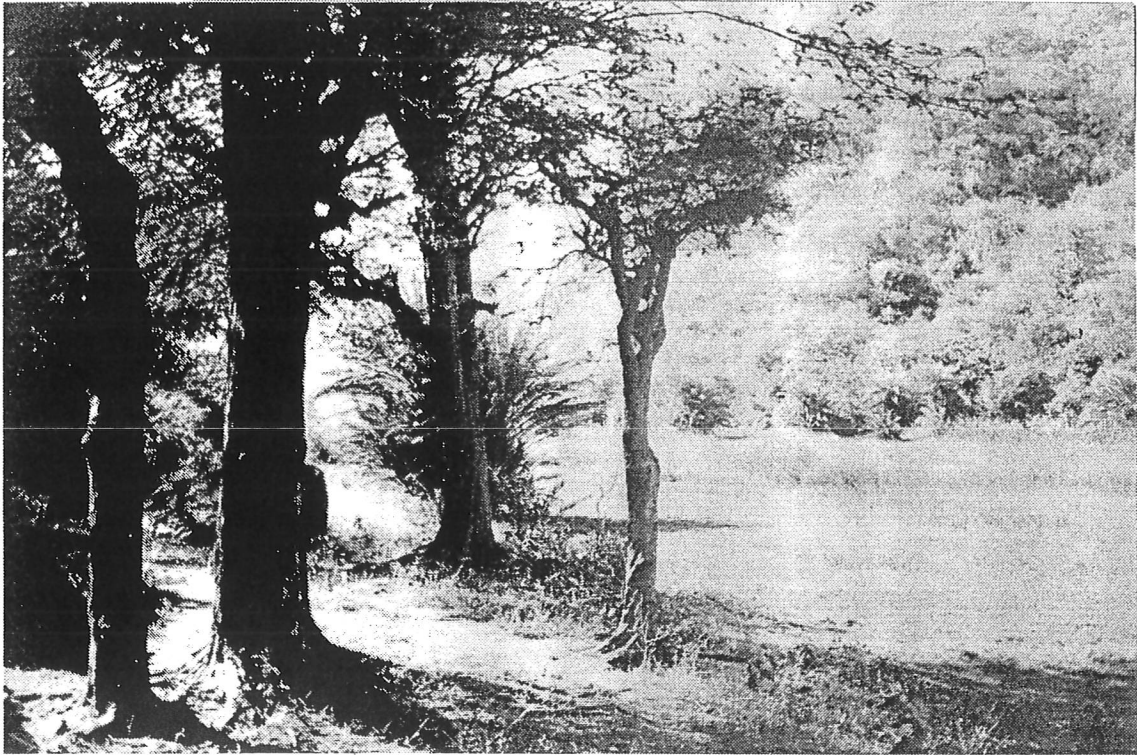
Note the circular mound
clearly visible on the
east bank of the wadi.

A general view of Wadi
Sayq looking inland from
the beach.

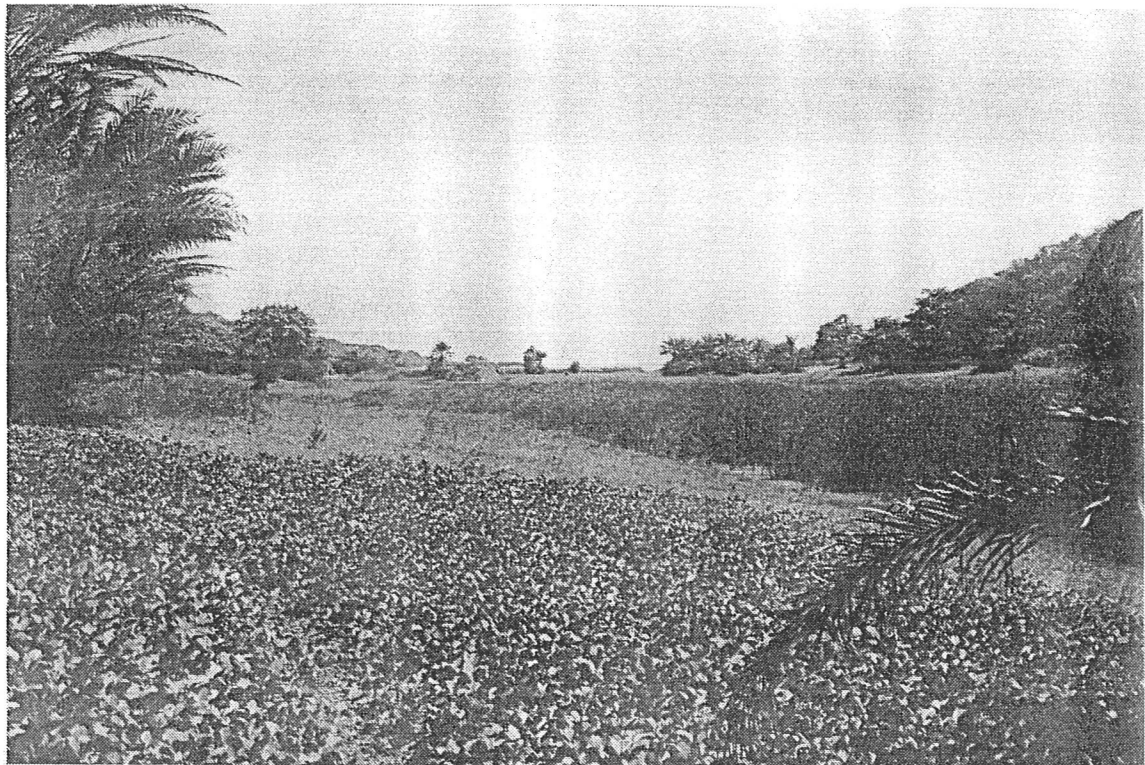


A panoramic view of Wadi Sayq
looking inland from the center
of the coastal delta.

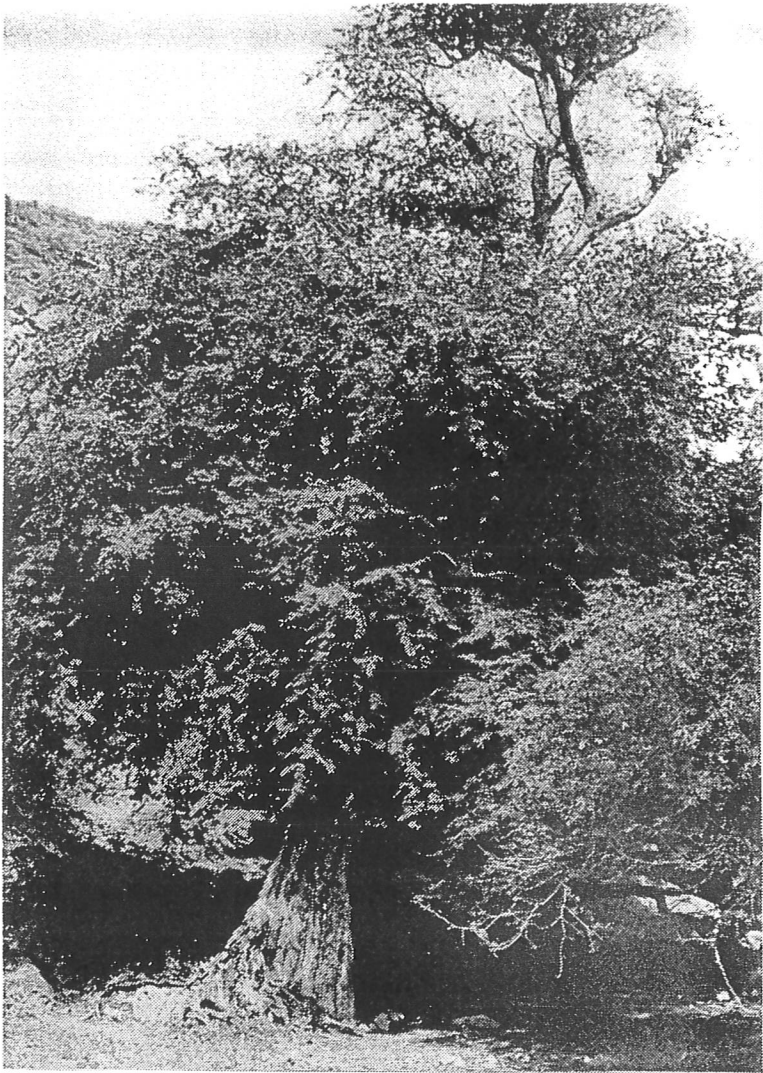




A view showing trees and other vegetation in the wadi delta.

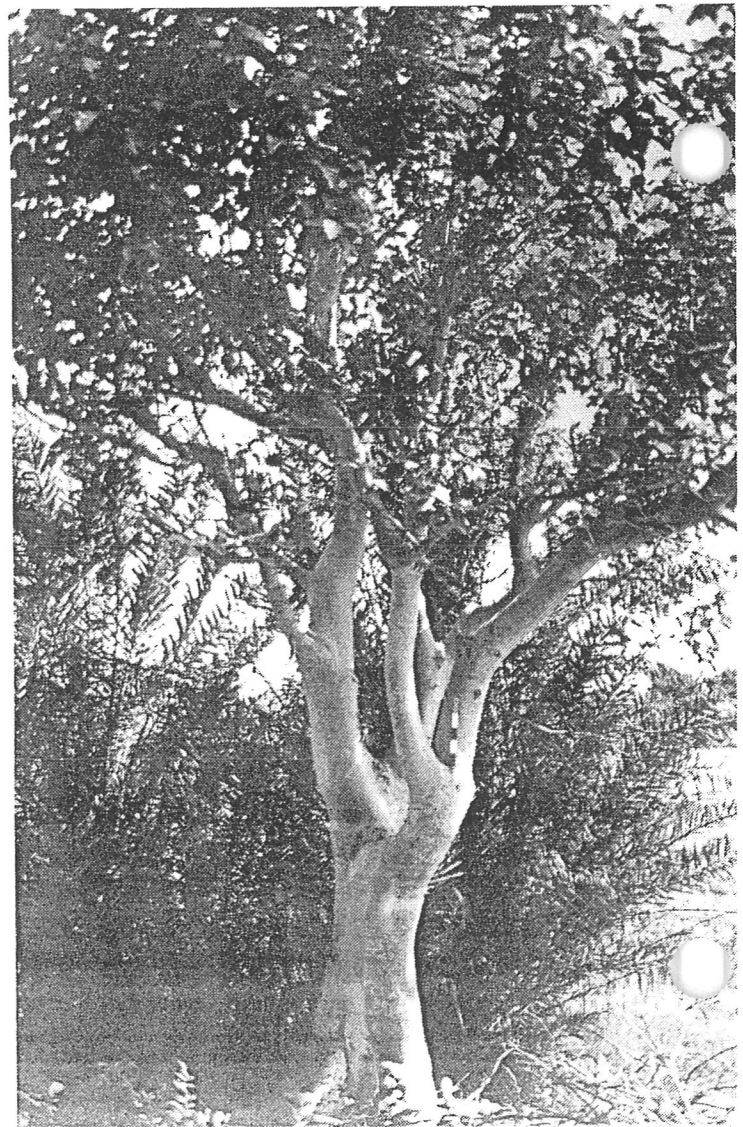


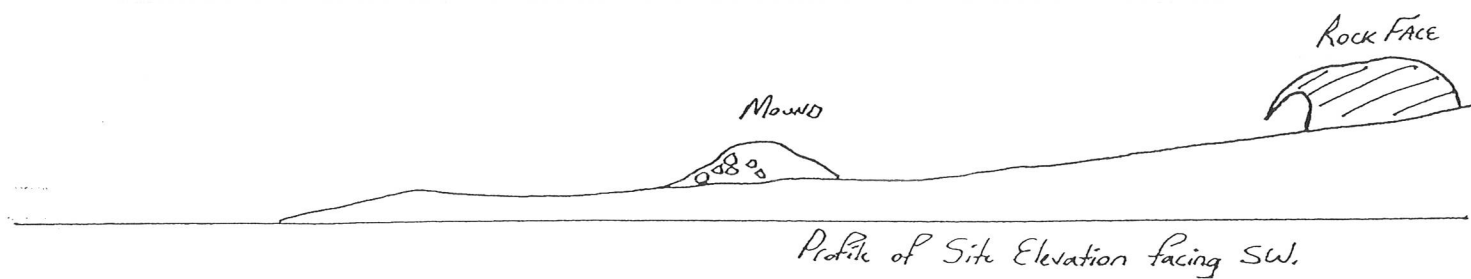
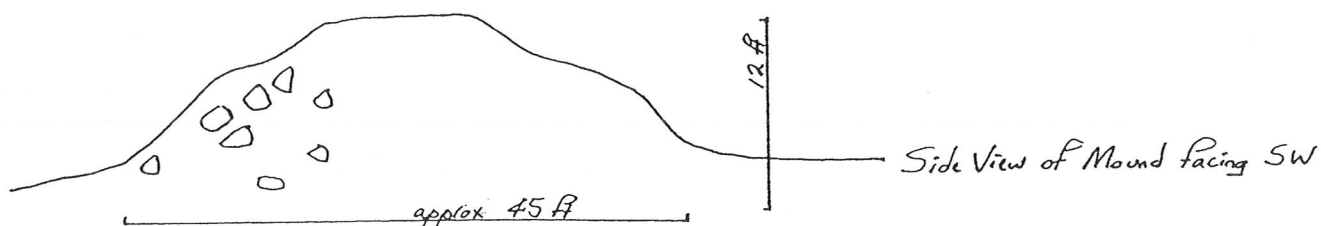
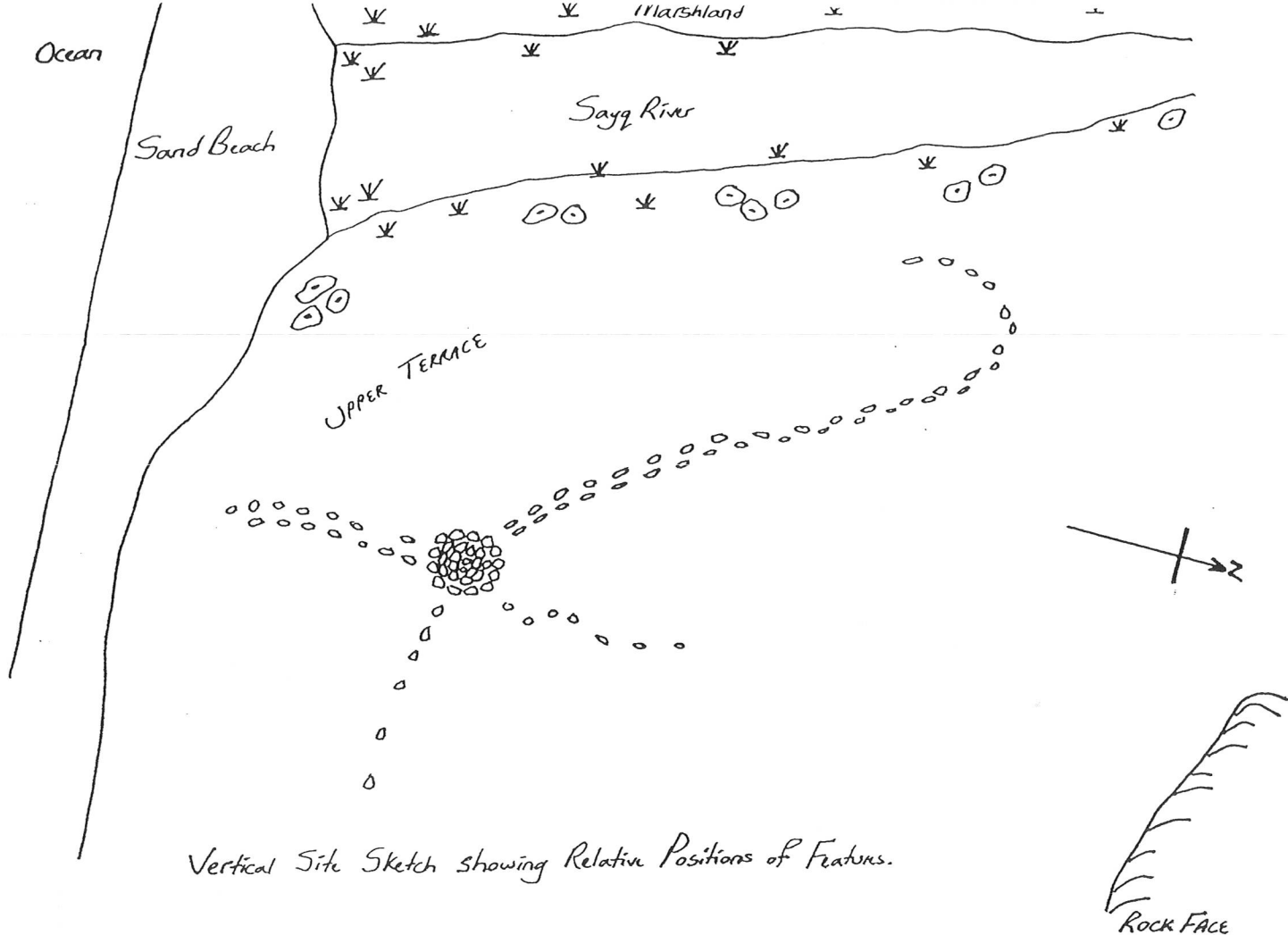
Looking toward the beach, this view shows the large area of marsh-land in the center of the coastal delta.

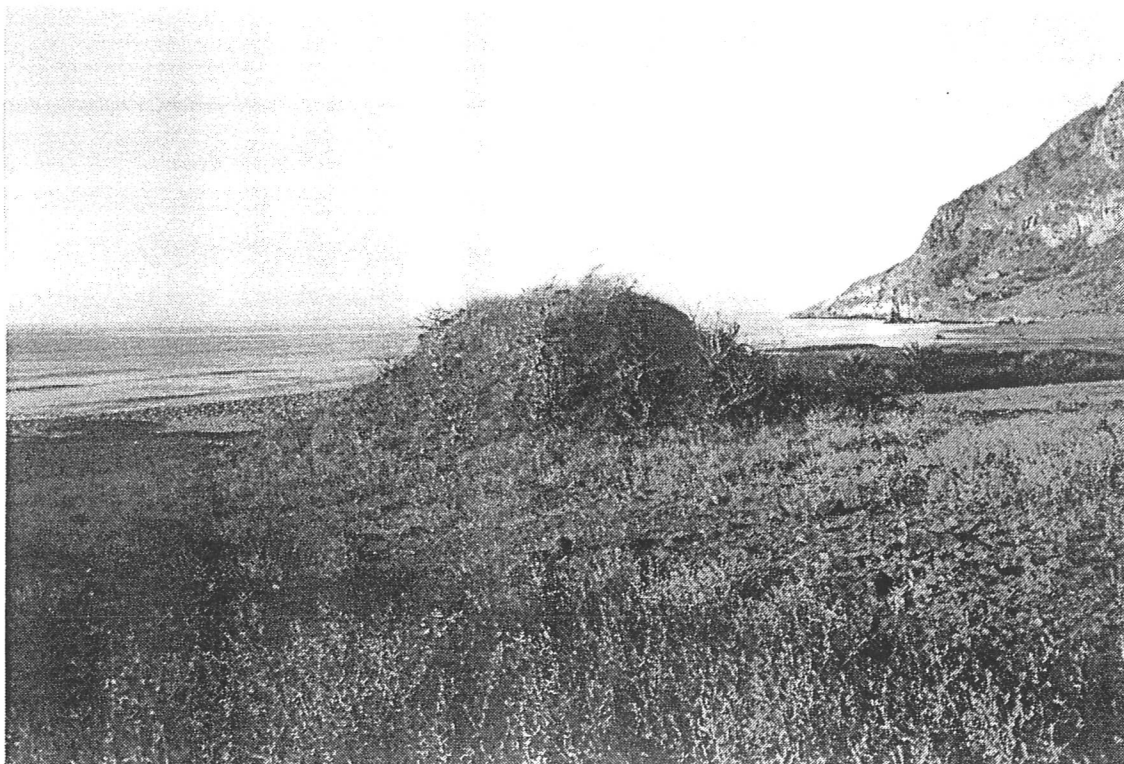


Tamarindus indica

Ficus sycomorus







The circular mound structure, looking S.

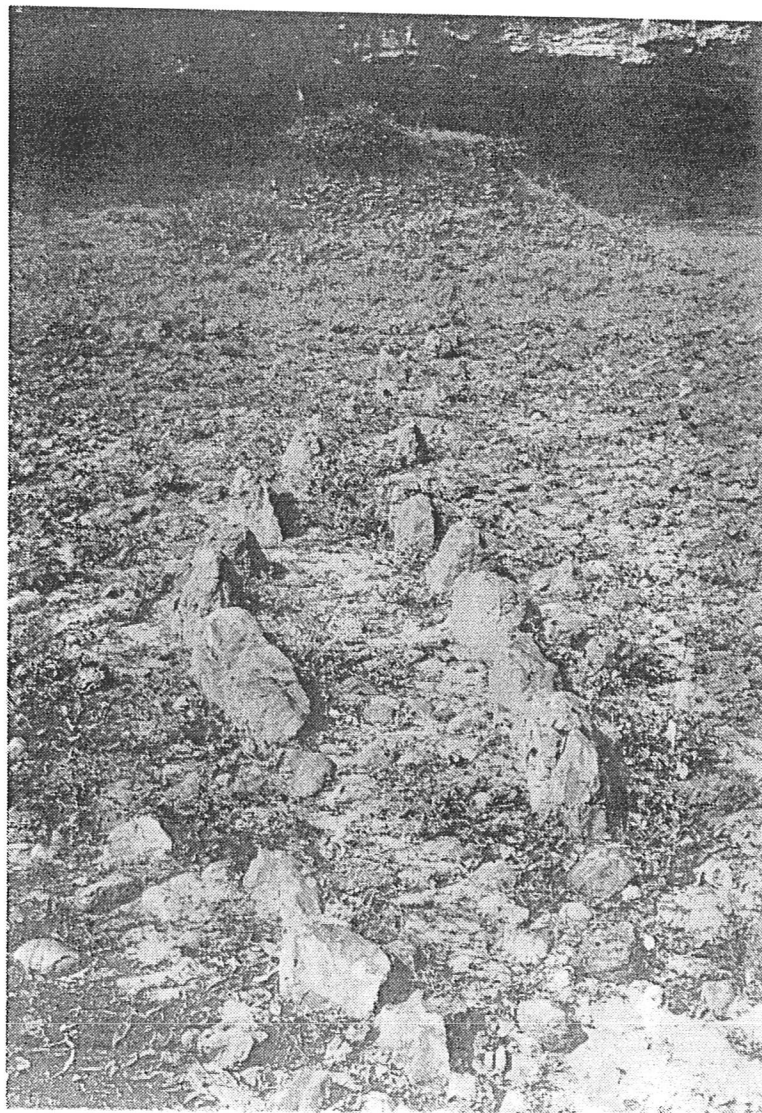


Looking due W. The scale in the center of the photograph is 1 ft. in length in 3 inch colored segments.



The best preserved alignment
looking S from the mound top.

View looking almost N
toward the stone mound.

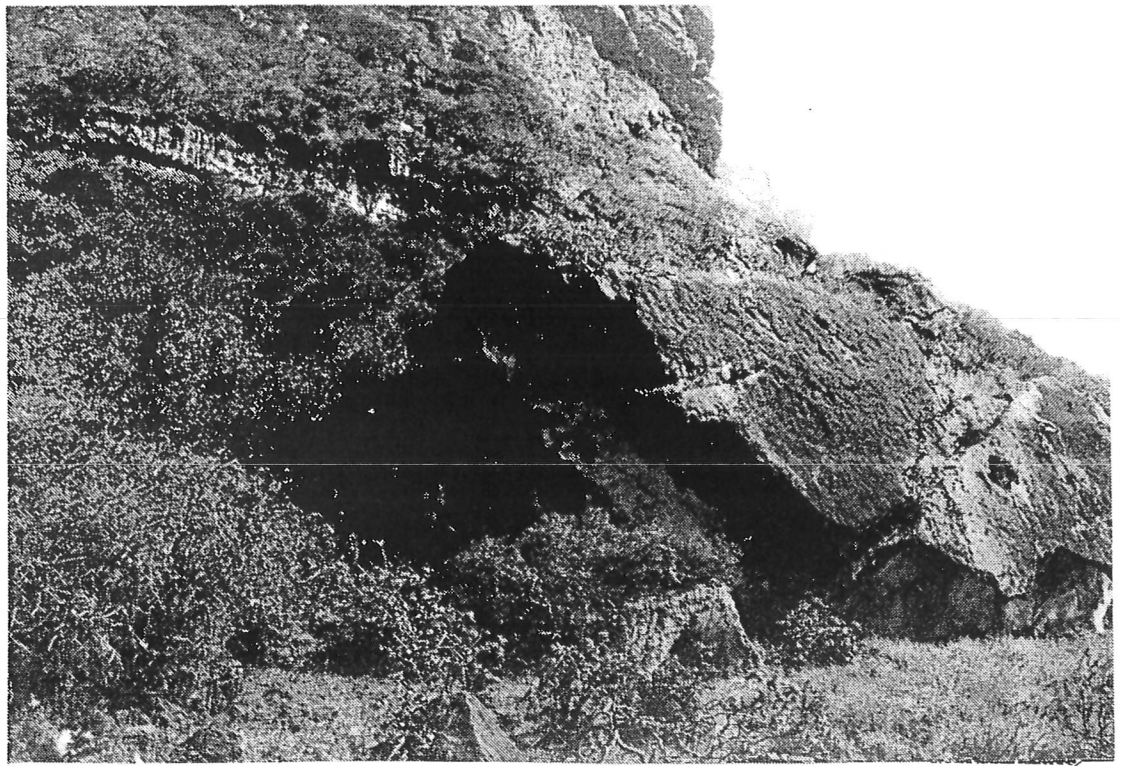




View from the mound top looking SW. This clearly shows
the longest alignment of stones curving to the W
largely obscured by vegetation.



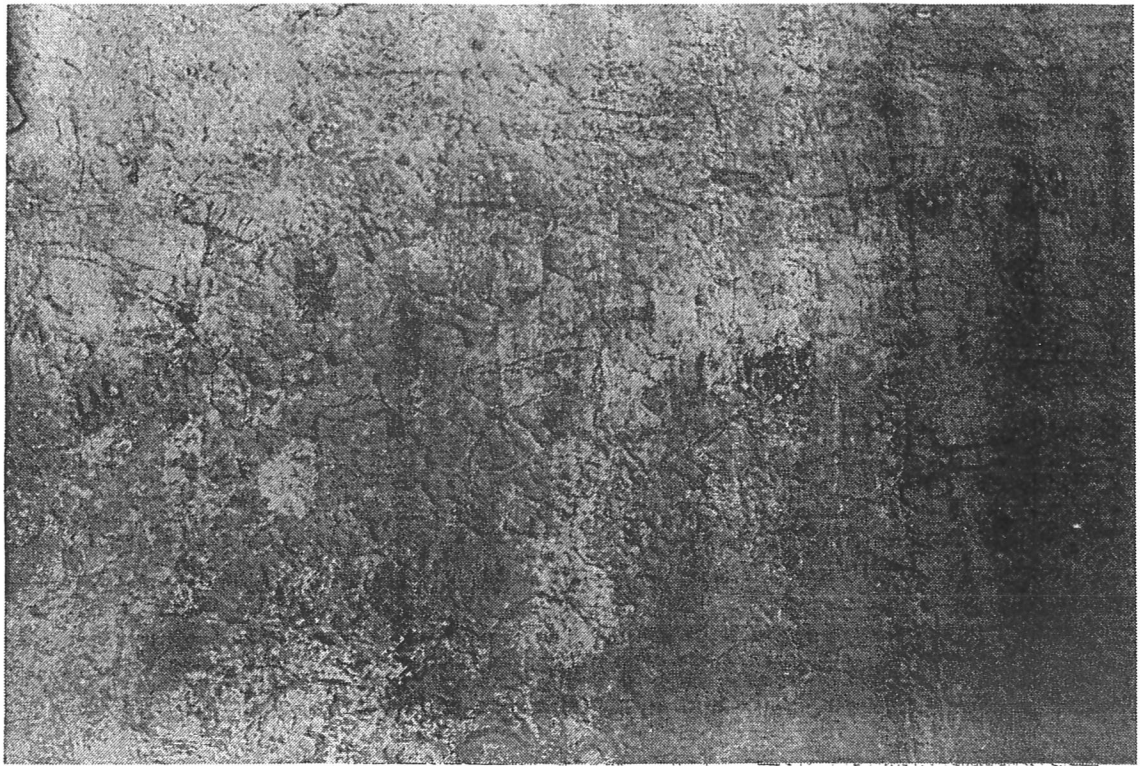
A view from the nearby hills showing the
various alignments surrounding the mound.



The Rock-Face, looking NE



General view of the Rock-Face



Graffiti



The central area showing graffiti



Figures in the central area



The two scripts in the central area

shape apparently distorted over the years by ground displacements. A second double line of stones stretches over 400 feet in a NW direction, curving toward the west. Traces of what appear to be at least three other shorter alignments extending roughly east, north, and northeast are also visible and require further investigation.

A further aspect of the site is found on a large rock-face on the southern side of a giant boulder over ninety feet long which overlooks the mound from higher ground. The well-protected limestone face bears several groups of crude graffiti (of camels, human figures, and a sailing vessel) drawn in black and occasionally red colors. Most of the drawings appear similar in style and content to graffiti common throughout other parts of Dhofar and are probably quite recent. In the center of the rock-face is what appears to be an older collection of figures and two groups of script, all in red pigment. The top section consists of five short lines of assorted names in Arabic above a smaller, more faded group of symbols which so far are unidentified. These rock inscriptions may not have any relevance to the other features described, but their close proximity to the mound site and the lack of any other known graffiti in or near the wadi makes them of interest.

The purpose and age of the mound and the stone alignments is not known. While there are some similarities with burial sites from other parts of Arabia, substantial anomalies remain, particularly with respect to the style and size of the circular mound. While the site is suggestive of some kind of ceremonial complex, all that can be stated with certainty at this point is that the structures are very old and appear to have no counterpart in Arabian archaeology. This of course is all the more intriguing given the total lack of settlement in the wadi or in the nearby mountain country today and the great difficulty in gaining access to the valley. We can discount the possibility that the occasional bedouin bringing camels and cows into Wadi Sayq for grazing would have invested the considerable energy and time that building such a structure would require.

The question of who built these features and their purposes (together with what may represent a long wall of stones buried in dense undergrowth on the west side of the wadi) will remain unknown until the site is investigated more fully.

Conclusion

Until now, attempts by scholars to propose a location for the Arabian Bountiful have suffered from a lack of complete and reliable data about the eastern coast of the peninsula. Even now the general region remains little known by outsiders. The program of exploration undertaken by the authors from 1984 to 1990 has attempted, in a systematic manner, to develop a body of

objective data about the entire coastline and to identify and evaluate possible locations for Bountiful from a scriptural perspective.

With the coastal examination now complete, only six locations approached the minimal requirements for Bountiful (defined as an accessible coastal location with freshwater sources) to any degree. Of these six candidate areas, wide variation resulted with respect to the twelve criteria defined in the Book of Mormon. [There can be absolute certainty in one thing, of course—one of these six sites is the original Bountiful. There can be no other possibilities.]

Nephi's Paradigm Applied to the Candidate Areas:

Of the six candidates, those on the Qamar coast—Rakhyut, Wadi Sayq, and Dhalqut—come the closest to being "nearly eastward" of Nahom, or more accurately of Wadi Jauf, the place where the Lehtes resumed their travel. These three coastal locations are actually about a half degree latitude north of Nahom/Jauf, which indicates that Nephi's statement of direction (1 Nephi 17:1) was objectively accurate. A half degree deviation over a journey of some 600 miles is indeed very close to east. The fact that the Lehtes both understood and could determine the cardinal directions with considerable accuracy can give us increased confidence that 1 Nephi 16:13, 33—describing the direction of travel from Jerusalem—is also quite precise. This apparent ability to determine directional coordinates in the Old World has interesting implications for the New World setting which occupies most of the Nephtie chronology.

Coastal Access is possible at all of the sites with varying degrees of difficulty, as noted in the evaluations of each place. However, only the three locations on the Qamar coast can be described as being part of a larger area fertile enough to be also referred to as Bountiful. The two wadis in Yemen are encompassed by hundreds of miles of unrelenting barrenness and the Salalah/Raysut area has vegetation located only back in the Qara hills miles from the coast.

Only Wadi Sayq has such a degree of fertility that an arriving traveller would find uncultivated "fruit" already available as described by Nephi, the prime factor giving rise to the descriptive name given the place. The fruit referred to—notable for its abundance and not necessarily its variety—was probably the date palm. Sayq is the most fertile coastal location on the entire eastern coast of Arabia and also incorporates the largest freshwater source along that coast. Only Wadi Hajr in Yemen comes close to matching the volume of water entering the ocean year-round. The rare coastal process in the bay of Wadi-Sayq—the intermingling of fresh and sea water—may hold the key to understanding how Lehi's group was able to derive adequate protein from their environment without diverting substantial time and energies from shipbuilding to hunting while at Bountiful. Fish not proscribed under Mosaic Law would have been as readily available as they are now and could well have formed the basis of their diet. In comparison with the

other five candidates the fertility of Wadi Sayq makes it difficult to conceive of Bountiful being anywhere else on that basis alone.

Only the three candidates on the Qamar coast meet what is probably the most obvious criteria of all: the presence of *accessible timber*. Timber and vegetation approach the coast closer at Wadi Sayq (and in greater abundance) than elsewhere. Salalah, with its woodlands miles inland is a distant possibility from this perspective; Wadis Hajr and Masilah do not qualify at all.

Of all the areas, Rakhyut and Wadi Sayq are alone in having a coastal "mountain" upon which Nephi could conceivably have retired often to pray. Dhalqut has the flat-topped Sayq range without any isolated peaks behind it and Salalah, Wadi Hajr, and Wadi Masilah have mountains only a considerable distance from the seashore where the Lehites made their camp.

Cliffs are found at several points along the Salalah/Raysut coastline and the western extremities of Rakhyut, Sayq and at Dhalqut, but not at all near the Wadis Hajr and Masilah.

Wadi Sayq is the only candidate area known to have *flint-related deposits* in the vicinity; these are situated inland away from the coast as Nephi's account suggests. The one unknown factor is the availability of *metal-ore*, an aspect requiring further research as none can presently be demonstrated to exist anywhere in the proximity of the six candidate areas.

Nephi, whose family may have been metal-workers,¹⁵ was apparently familiar with gold, silver and copper, for he mentions their abundance in the New World (1 Nephi 18:25). However he only says that "ore" was smelted at Bountiful. While a comprehensive survey of metal and mineral deposits in southern Oman and in the Hadhramout region of Yemen has yet to be made, the only metal so far recorded is copper in varying degrees of purity.¹⁶ It seems likely that the metal Nephi used was a copper-based alloy. The method by which archaeologists have concluded metal was smelted in Oman from about 2500 B.C., utilizing a skin bellows, seems to parallel the procedure Nephi recorded. Excavated sites in Oman indicate that a pear-shaped furnace about 2 feet high was used, aided by bellows allowing a temperature of 1150° C to be reached. Small pieces of sulphidic ore mixed with charcoal were introduced into the furnace and the

¹⁵ John Tvedtnes, "Was Lehi a Caravaneer?", F.A.R.M.S. Report TVE-84.

¹⁶ G. Goettler, N. Firth, and C. Huston, "A Preliminary Discussion of Ancient Mining in the Sultanate of Oman," *Journal of Oman Studies* 2 (1976): 43-56.

A summary of the candidate areas following evaluation against the scriptural profile for Bountiful yields the following result:

	HAJR	MASILAH	DHALQUT	SAYQ	RAKHYUT	SALALAH/RAYSUT
Eastward of Nahom	No	Yes	Yes	Yes	Yes	Yes
Coastal Access Possible	Yes	Yes	Difficult	Yes	Difficult	Yes
Part of a Fertile Area	No	No	Yes	Yes	Yes	No
Coastal Location	Yes	Yes	Yes	Yes	Yes	Yes
Very Fertile	No	No	No	Yes	No	Only inland
Timber Sources	No	No	Yes	Yes	Yes	Only inland
Freshwater Source	Yes	Yes	Minimal	Yes	Yes	Only inland
Prominent Mountain	No	No	No	Yes	Yes	No
Cliffs near Sea	No	No	Yes	Yes	Yes	Yes
Metal Ore	*****Unknown in all areas pending further research*****					
Flint Deposits	?	?	?	Yes	?	?
Minimal Population	No	No	No	Yes	No	No
Suitable Tides/Currents	Yes	Yes	Yes	Yes	Yes	Yes

process repeated until a fairly pure copper resulted and could be poured into a hole in the ground to cool. It is likely Nephi used the same or a similar method.



Wadi Sayq also has the singular characteristic of leading the traveller directly from the interior deserts to the ocean in an almost easterly direction, the very steep mountains on both sides of the wadi effectively isolating an arrival from the surrounding area. Although there is physical evidence indicating human presence for at least one period in the past, the valley today is uninhabited due to the great difficulty of access—possible only from the interior plateau or by sea. Of all the areas, Sayq is therefore the least likely to have had a *resident population* at the time of Lehi—a complete inversion of that which logic would lead us to expect about a place of such plenty.

In addition to the surrounding mountains, the three-to-four month monsoonal period with its high rainfall each year would discourage settlement and may have been an impelling factor in Lehi moving his group on once their ship was complete. Herein also lies the most likely reason for Nephi having to fashion his own tools and why a specific revelation was required to locate ore. The implications of there being little or—more likely—no outside assistance available to the group may provide us a new window through which to evaluate the type of vessel possibly built and the likely period spent at Bountiful.

The valley's seclusion may also have been significant in another sense—keeping the Lehites uncontaminated from the polytheistic beliefs then common throughout Arabia and insulating them from the diversions and enticements of the commercial opportunities then to be found in the Salalah area.

There is no data indicating any significant variations in the *wind and ocean current conditions* at any of the candidate areas along the Arabian coast. For thousands of years, mariners have utilized annual monsoon conditions permitting travel west across the Indian Ocean in the region.¹⁷

The cyclical "El Niño" effect—an expansion of the normally narrow and unreliable eastward-moving Equatorial Counter Current is then the most plausible explanation to account for Lehi's sea voyage across the Pacific after passing through or near to the Indonesian islands.¹⁸

For the first time since publication of the Book of Mormon in 1830, it is now possible to demonstrate that there *does* exist in Arabia a location which conforms to the scriptural profile of Bountiful in every respect, except for the presence of a known source of ore. All previously nominated locales have serious flaws.

The well-watered and uniquely fertile Wadi Sayq emerges as the only location anywhere on the Arabian coastline which fits the picture which Nephi gives us of his departure point to the New World. The highly specific criteria recorded in scripture—coupled with the essentially unchanging physical nature of the Arabian coast—makes it possible to propose this present-day site with more confidence and a much higher degree of certainty than would usually be justified.

This study concludes therefore that the "place" Bountiful is the present-day Wadi Sayq, with the surrounding coastal area from Rakhyut in the east to west of Dhalqut as the more general "land of Bountiful" referred to.

The presence in the Wadi Sayq of traces evidencing human activity at a very early period now presents us with a unique challenge of great potential significance. To date, scholarly opinions as to the probable origins and purposes of the structures in the wadi agree on only one point: the site is markedly different from others in Arabia in several respects. Until a complete examination and dating of the remains in their context is carried out, nothing beyond speculation can result from any attempt to determine the past of the place from them and whether they could have any relevance to the sojourn of Lehi in this place.

¹⁷ John Sorenson, "Transoceanic Crossing in the Book of Mormon," in Monte S. Nyman and Charles S. Tate, eds., *First Nephi, The Doctrinal Foundation* (Provo: BYU Religious Studies Center, 1988), 251-70; see also F.A.R.M.S. SOR-88 and Update April 1986.

For a firsthand account of a modern sea voyage from Oman to China, see Tim Severin, *The Sindbad Voyage* (London: Arrow Books, 1982).

¹⁸ David L. Clark, "Lehi and El Niño: A Method of Migration," *BYU Studies* 30 (Summer 1990): 57-65.

That such a precise parallel to the place described by Nephi exists at all is remarkable in itself. The easily demonstrated fact that information about Wadi Sayq was not available to anyone in 1830 is compelling evidence that the book of First Nephi is based on reality and argues strongly for its authenticity. That such a singular place as Wadi Sayq has remained unknown to scholarship for 160 years after publication of the Nephite record is a reminder that perhaps many of the greatest evidences which will enlighten its message and sustain its historicity still await us.