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Asia Pacific: Perspectives is a peer-reviewed journal published twice a year in May and November. It welcomes submissions from all fields of the social sciences and the humanities. In keeping with the Jesuit traditions of the University of San Francisco, *Asia Pacific: Perspectives* commits itself to the highest standards of learning and scholarship.

Our task is to inform public opinion through a broad hospitality to divergent views and ideas that promote cross-cultural understanding, tolerance, and the dissemination of knowledge unreservedly. Papers adopting a comparative, interdisciplinary approach to issues of interrelatedness in the Pacific Rim region* will be especially welcome. Graduate students, as well as established scholars, are encouraged to submit their work.

* 'Pacific Rim region' as used here includes North America, Pacific Central and South America, Oceania, Australia, New Zealand, Southeast Asia, East Asia, South Asia (India, Pakistan, Nepal, Bhutan, and Sri Lanka), and the Russian Far East.

Complementary Role of the Rohri Hills and the Thar Desert in the Development of Indus Valley Civilization: New Research

by Qasid H. Mallah Ph.D.,
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Abstract

The archaeological research on the Indus Valley Civilization (3000 B.C-1500 B.C.) has contributed much to the understanding of this highly-complex civilization. However, the conventional view that the civilization flourished mainly on the banks of the Indus river has been increasingly challenged. This paper provides original data to show that geographical regions once considered inhospitable to the growth and extension of the Indus Valley civilization (namely the Rohri Hills and the Thar Desert), were in fact quite conducive to human settlement. To make our case we provide a significant set of empirical data collected during our archaeological fieldwork from the Thar, Rohri Hills and its adjacent areas to give a fuller vision of historical culture developments from the Palaeolithic to the Indus period.

Introduction

The archaeological research on the Indus Valley has contributed great wealth of information on the various aspects of Indus Civilization. Any forthcoming discovery is considered an addition to the field. This present paper contributes fresh data in which a complete sequence of cultural development from two distinctive geographical zones of the greater Indus Valley, Rohri Hills and Thar Desert have been discussed. Among these distinctive geographical zones, the Thar Desert was previously considered as a hindrance in the extension and expansion of the Indus Culture (Shaffer 1981 :65). On the contrary, most recently a significant empirical set of data has been collected from the Thar, Rohri Hills and its adjacent areas and has provided a full vision of historical culture developments from the Palaeolithic to the Indus period.

Environmental Setting

The Rohri Hills are a distinctive geographical feature and are mainly composed of limestone deposits with layers of chert nodules of generically brown, sometimes variegated color embedded into them. They are located in a sub tropical arid landscape of upper Sindh and cover an area of some 40 kilometers from North to South and 16 kilometers from east to west. The shifting sand dunes encroach and cover the hills in its southern extremes. Apparently these hills merge into the desert south of Kot Diji, after which they are scattered into desert up to the Thar town (Fig.1). The chert/flint nodules which are embedded within the limestone layers are also

scattered on the hill terraces. This was a major source of attraction to the early inhabitants and has been continuously exploited from the Palaeolithic to the Indus period.

The Thar Desert ,on the other hand, is the continuation of the Cholistan Desert. In the east it extends into the Rajasthan desert and its southern extremes submerge into Rann of Kutch. The color of the sand dunes is gray, grayish-white or yellowish-gray (Baqri et el 1992). The Thar Desert of Sindh comprises a total 43,276 square kilometers. This region in its Northern portions shows traces of prehistoric channels of Raini and Karo Naro submerging into the Nara/Hakra river. Ancient Hakra /Nara Nadi flows into a narrow strip of alluvial flood plain that extends five to ten kilometers in width, where Hakra/ Nara has made numerous flood spill channels into smaller valleys among sand dunes, thus creating many oxbow lakes and providing ample opportunity for prehistoric inhabitants. It is here that several archaeological sites have been documented.

On the western side of the hills and desert are the alluvial Indus Plains. The River Indus passes through the northern tip of the Rohri hills and flows west of it, whereas the Hakra skirts the western edge of the desert. These plains are very fertile with diverse resources. The region between Indus Plains and Hakra river comprises of the alluvial plains, hills and the desert environment and as such has furnished important evidences of archaeological sites.

Present Research

Except for some previous surveys conducted on Rohri Hills region by De Terra and Paterson (1939), Allchin (1976), Biagi and Cremaschi (1988); the rest of the area remained basically unexplored. In the early 1990's the Department of Archaeology at Shah Abdul Latif University, Khairpur in collaboration with the Italian mission of the University of Venice conducted surveys on the Rohri Hills (the survey is still in progress). In 2000 the Department of Archaeology at Shah Abdul Latif University independently launched another program of field research in the Thar desert area concentrating in the first season on the western fringes of the desert overlapping the Rohri Hills. Both these intensive surveys have for the first time furnished evidence of cultural continuity and a link between Palaeolithic developments of the region and civilization that followed. The survey conducted by Dr. Rafique Mughal in Cholistan along the dry bed of Hakra presented evidence of continuous sequence of development of the Indus Civilization between the 4th century and beginning of the 1st millennium. However, this region due to the combination of essential resources of the riverine plains, Rohri Hills and the desert had complemented each other and helped in the nourishment, growth and expansion of cultures through ages. This research has produced the richest results, ranging from Paleolithic to historic times. This cultural sequence is unmatched in any given region of the Indus Valley.

The recent survey on the hills and adjoining regions has furnished evidences of 1444 sites/workshops or quarries. The sites range from the Paleolithic to the historic period but here only sites/workshops ranging from Paleolithic to Mature

Indus have been taken up. A glimpse of this spectacular progression of culture is presented below.

Period	Number of Sites	Workshops/Quarries (Upper Palaeolithic)
Paleolithic (Lower, Middle & Upper)	11	24
Mesolithic	20	
Neolithic	3	
Hakra	5	
Kot Dijian	6	
Mature Indus	15	1360
Total	60	1384

Paleolithic Period

The oldest known cultural assemblage in the Rohri hills was of the Paleolithic period. The remains of this period are found on the terraces of the hills (Fig. 2). The tool repertoire from the Lower Paleolithic includes mainly hand-axes, these hand axes are dark brown in color and are heavily patinated. The Middle Paleolithic Industry consisted of hand axes, scraper, bifacial tools, and picks. The tools of this period are lighter in color with little or no patina and the technology had improved. These tools are also lighter in weight and smaller in size than the Lower Palaeolithic. The Upper Palaeolithic material consisted of end scrapers and blade industry comprising of cores, flakes and blades (Fig. 3).

The chert used by them for making tools was collected from the terraces of the hills. Some caves are also present which may have been used as residing places but which have not been explored yet. This assemblage of the Lower, Middle, and Upper Palaeolithic is represented at 35 sites out of which 24 are workshops which belong to the Upper Palaeolithic (see table). None of the Paleolithic sites has been found in the desert so far. The number of Upper Paleolithic sites is higher and its technology seems to have given a base for the stone tool technology of the Pre-and Mature Indus period as the preparation of tool out of core had started during this period.

Mesolithic Period

This cultural phase followed the Paleolithic and a new feature was observed. There was a shift from the hills to the desert environs and the settlements of Mesolithic period concentrated in and around the lakes found in the desert. The sites appeared in clusters along the western edge of the Thar Desert to the south of Rohri hills, where these hills are scattered and are covered with dunes. A total of 20 settlements were mapped and many of them clustered together. The majority of these clusters are located nearby and/or around the lakes and in alluvial valleys. The occupation of clusters is at the slopes and/or in the depressions of the sand dunes, and these valleys are very suitable to watch for game. However, some clusters are also located on the top of sand dunes (see Fig.2). This situation depends upon the availability of resources in the vicinity. The artifact repertoire of the

Mesolithic period consisted of geometric microliths, trapeze, bladelets, cores, arrowheads and micro-burins (Fig. 4).

The concentration of the artifacts authenticates the temporal stability and the abundance of subsistence resources at one spot. During the survey some Neolithic tools were also gathered from Mesolithic site clusters.

Neolithic Period

This cultural phase seems to be transitional: a total of three Neolithic period settlements were found in the desert region (see Fig.2). Not a single site of this period has been found on the hills. From these sites the material includes retouched parallel-sided blades, flakes, and cores (Fig. 5).

During this period the microlithic tools were also in use. However, these items are morphologically larger in size as compared to the Mesolithic tools and are more precise. A few potsherds were also found, but due to heavy erosion they are unidentifiable. During explorations it was noticed that the Neolithic objects were littered in the vicinity of other sites belonging to the Mesolithic and Kot Dijian period settlements. Some of these sites are located approximately within 0.5 kilometers range. The location of sites indicated the exploitation of the alluvial valley and lake resources, which were suitable for food production. The combination of the Neolithic material with the succeeding periods indicated that the Neolithic people domesticated plants and animals and continued exploitation of the wild resources as well. The domestication, however, provided them with high food return and was a reliable subsistence resource throughout the year. Not surprisingly, the people established permanent villages.

Hakra Ware Period

This cultural phase was first identified by Dr. Rafique Mughal and it is the oldest known cultural assemblage that he discovered in Cholistan belonging to the 4th millennium B.C. He defined major characteristic of the Hakra ware period as: (1) pottery bits in the body wall of sherd; (2) appliqué pottery which Mughal described as "a thick coating of mud mixed with small pieces of pottery and applied to the external surface of vessel. He claimed that it is the most distinguishing feature of pottery grouped under this category; (3) incised pottery that contains triangular design, comb design, and wavy lines (Mughal 1997: 64). The pottery is similar in characteristics to the Hakra ware discovered in the Thar region (Figs. 6 and 7).

This ware is represented in this paper at five settlements; all of these sites consist of surface scatter (Fig.8). The morphological analysis of many pottery sherds shows similar manufacturing characteristics and properties as have been observed from the Cholistan sites. The concentration of Hakra ware sites was found in the valleys and near ancient river courses in the Thar region.

Kot Dijian

After initial excavation of the Kot Dijian site, the distinctive cultural period was recognized as the "Kot Dijian Period." The concentrated distribution of Kot Dijian sites has been reported from the Cholistan region, where a total of 40 sites have been recorded (Mughal 1980). In the recent survey six sites have been recorded in and around Thar (see Fig. 8). Most of these settlements are permanent settlements and situated on the banks of the then existing river channels. The settlements are found as surface scatter and mound sites. This was an era of technical complexity in which new geometrically sophisticated designs occurred on the pottery. Pottery itself was manufactured on the wheel and its body wall was thin and delicate with short rim-vessels with black bands around the neck that became a very common tradition in the Kot Dijian culture. The material from the Kot Dijian sites in Thar included pottery with short trim, black band around the neck, ledged rim sherds with black horizontal and wavy lines, fish scales and buff ware. Other material included terracotta cakes, terracotta bangles, terracotta beads, lithics, copper pieces and Shell objects indicating long distance connections (Figs. 9 and 10).

Mature Indus Period

This phase of cultural development is best represented at the various cities and towns of Indus Civilization. The major settlements relating to this phase are Mohenjo Daro, Chanhu Daro, Harappa, Kali Bangan, Lothal, Lakhueen-Jo-Daro, including others. All these settlements (and others as well) have revealed important evidence that reflects the development and cultural change of a complex urban civilization. The material repertoire recovered from the sites in Rohri Hills and Thar include a large number of stone tools, marine shell, various types of the semi-precious stones, copper/bronze, white disc beads, Terracotta cake, terracotta beads, terracotta bangles, banded chert weights, etc (Figs. 11, 12 and 13).

The most significant aspect of this period was the increase in the number of settlements and the profusion of industrial areas. During this urban phase maximum activity was noticed in the Rohri hills, where a total of 1360 workshops/quarries are recorded—mainly on the western fringes of the Rohri hills between Rohri town and Adam Sultan. These quarry sites are seen as patches which Bridget Allchin (1976) mentioned as a place where craftsman may have sat and worked. This view has been completely changed by recent research as these are actually quarries which were excavated by the Mature Indus people for chert/flint nodules (Fig. 14 and 15).

Moreover, the available evidence suggests that the Indus people favored one variety of banded chert which was used for making weights. This variety of banded chert was found only on the northern tip of the Rohri hills where, again, a large number of workshops/ quarries were found (Fig. 16). The Thar furnished evidence of a total of 15 sites of this period including settlements on mounds, surface scatter and workshops. At one site a different variety of chert nodules was noted which when heated changed its color. Here kilns were also found, where chert was heated for making tools. In

this site raw material was found in and around the kilns. Kilns were made of limestone blocks where reddish soil and ash was present. This type of chert which changed color after heating was not found in any other part of the hills (Fig. 17 and 18).

The discovery of a huge quantity of chert from the sites of the Indus civilization suggest the chert was multifunctional and was commonly utilized for cutting, drilling, scraping, plough activities, and for weights. It was because of the workability of the chert and its requirement in the Indus settlements that more than 1,000 flint-processing workshops/quarries/sites were found on the Rohri Hills and Thar Desert. A very significant thing was noted, namely that there was a negligible amount of finished tools. Due to the presence of more than 1,000 workshop and quarries with very few finished tools, we have clear evidence that this region played a dominant role in internal and international interaction trade networks. The survey is still continuing, and it is expected that a large number of sites will be found on the eastern edge of the Hakra river. The towns of the Mature Indus period in the plains of Indus near the hills and Thar desert, viz: Kot Diji, Pir Sarhiyo, Lakhueen-Jo-Daro, perhaps played an important role in the interaction networks. The primary examination of all these sites indicates continuous occupation from the Kot Dijian period to the Mature Indus period.

Conclusion

The present research conducted in the Rohri Hills, Thar Desert and the bordering areas of the Indus and Hakra Plains has brought to light a unique sequence in which for the first time, a complete cultural progression starting from Paleolithic to recent historical times is found. This sequence is reconstructed on the basis of artifacts associated with each period and potential subsistence resource niches available within the given region.

The evidence shows that different types of chert, especially plain chert, and banded chert were commonly used. Before the Mesolithic period chert tools were manufactured in larger size and were heavy in nature. Also the sites were only found on the Hills. But during the Mesolithic period a shift of the settlements was seen from the hills to the desert environment. The Mesolithic sites indicate a movement towards lakes and valleys in the desert. The tool production was revolutionized into micro-tools. The heavy retouching regardless of size, shows the comfort level of the craftsman's skill and experience with chert. The analysis of the material provided evidence that as soon as the people of this region became sedentary, the chert became a commercial commodity that consequently established trade networks with neighboring communities. Along this line, the craftsmen experience of working on the chert was improved and intensified in the Mature Indus period. Now the Rohri hills were exploited to the extent they took on the shape of a commercial industry. New techniques were applied, including heating technology, pressure flaking, and excavating quarry pits for chert nodules. At this time chert technology was specialized into cores, flakes, blades and weights and was traded within Indus Valley and beyond.

It seems appropriate to argue here that Rohri hills chert resources were the main attraction and the Thar Desert's rich source niches were supplementary resources. The combination of both, along with the rich riverine resources has played a very important role in the development of cultures through time in this region, unmatched in any other area of South Asia. The survey is still ongoing, and it is expected that a large number of sites will be found to the south and on both sides of the Hakra river. The new data may change the present interpretations and fill in existing gaps in the knowledge. However, it would not be out of place to mention the difficulty in exploring this terrain due to the sand desert environment and high velocity winds covering and exposing sites.

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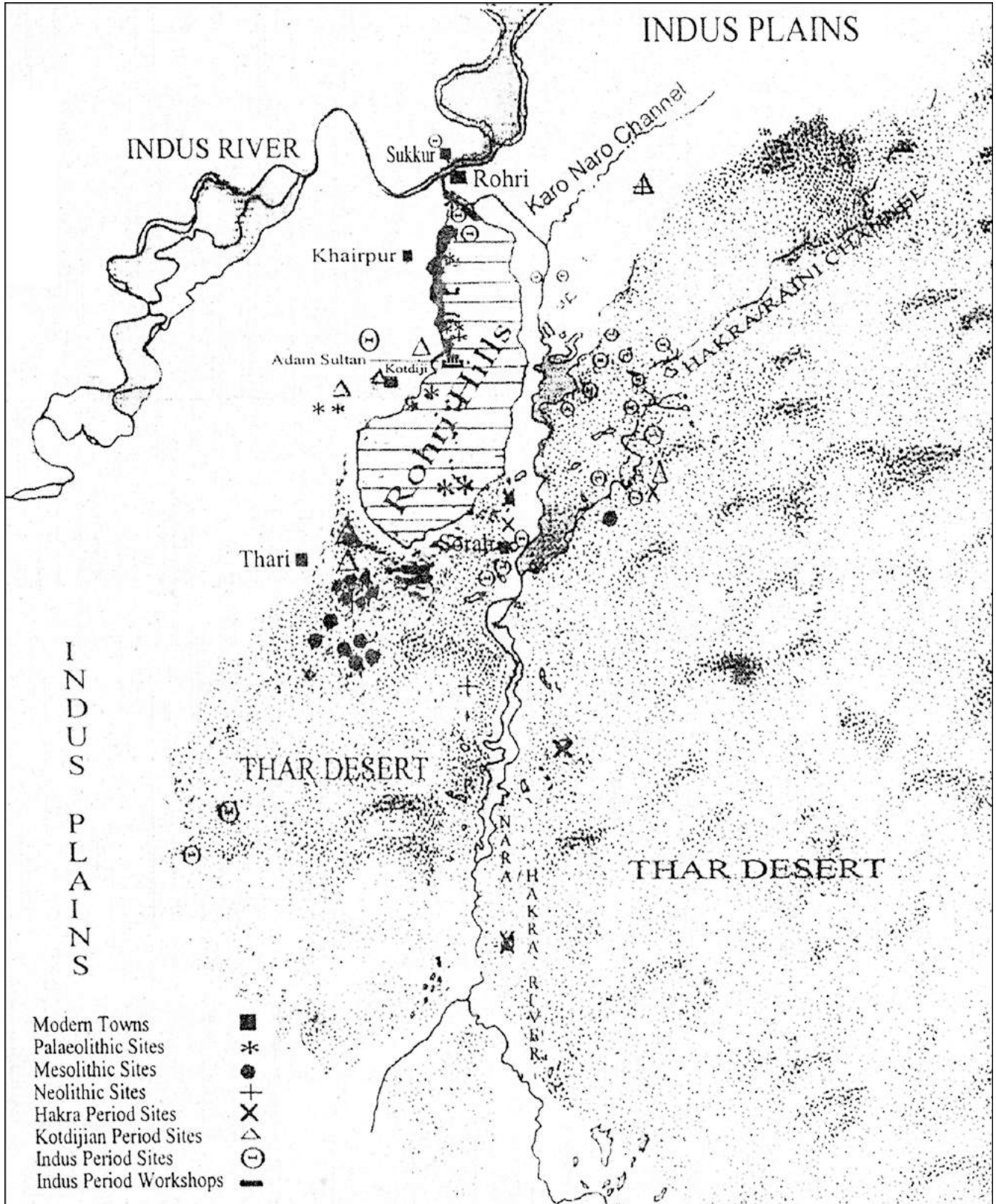


Figure 1. Map Showing Palaeolithic to Indus Period Sites

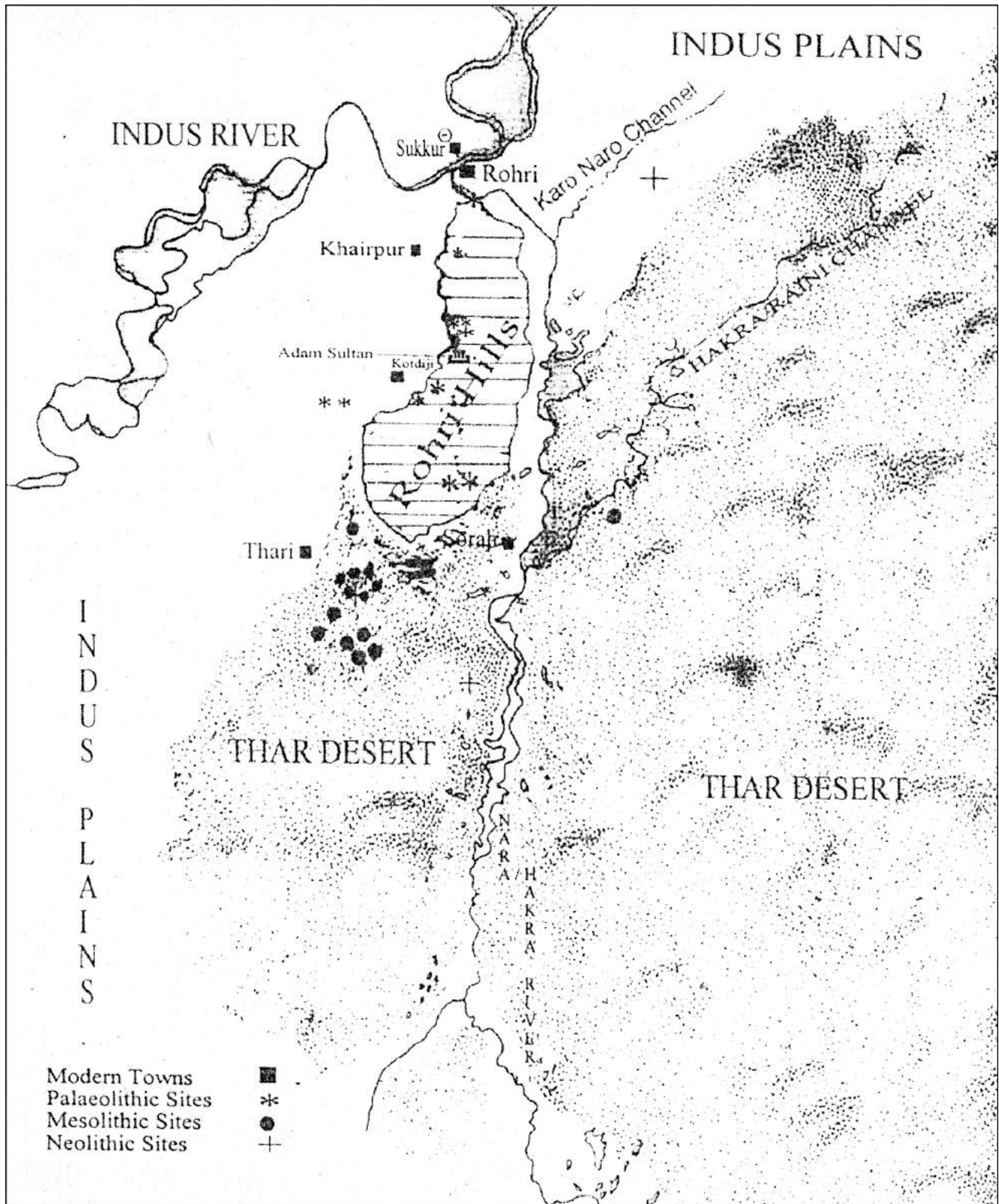


Figure 2. Map Showing Stone Age Sites

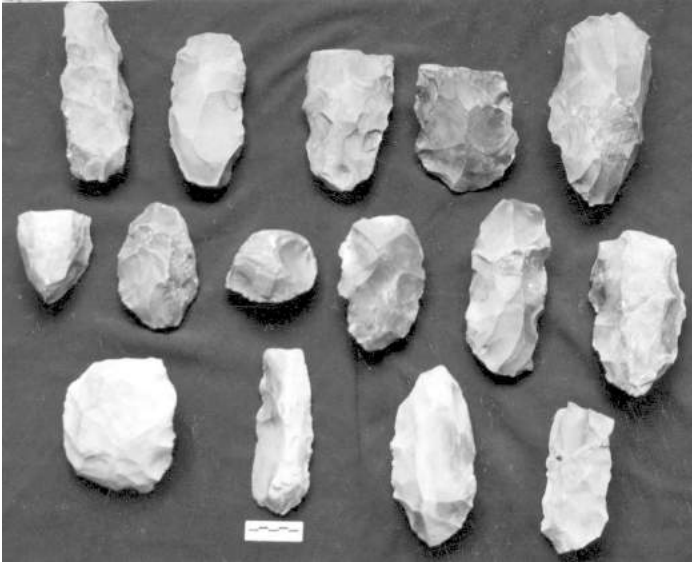


Figure 3. **Tools of Lower, Middle, and Upper Paleolithic Period**



Figure 5. **Tools of the Neolithic Period**



Figure 4. **Tools of the Mesolithic Period**



Figure 6. **Hakra Period Ware from Thar**



Figure 7. Hakra Period Ware from Thar

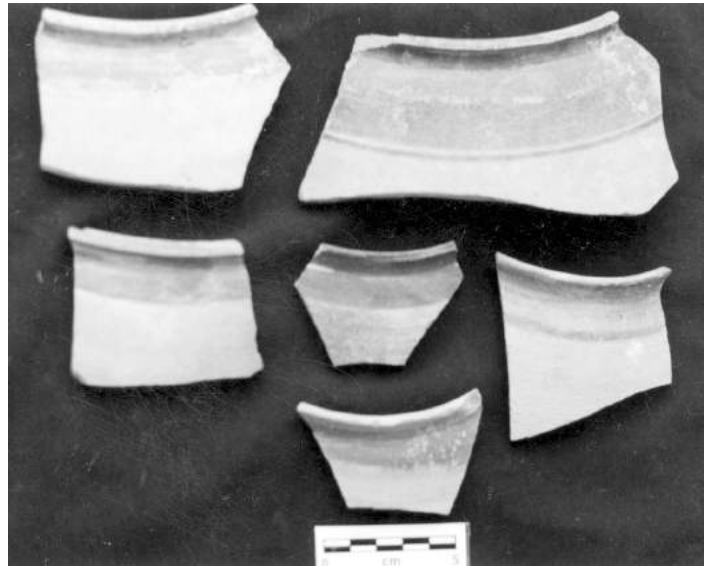


Figure 10. Kot Dijian Period Pottery



Figure 9. Kot Dijian Period Pottery



Figure 11. Cores and Crested Blades of Mature Indus Period

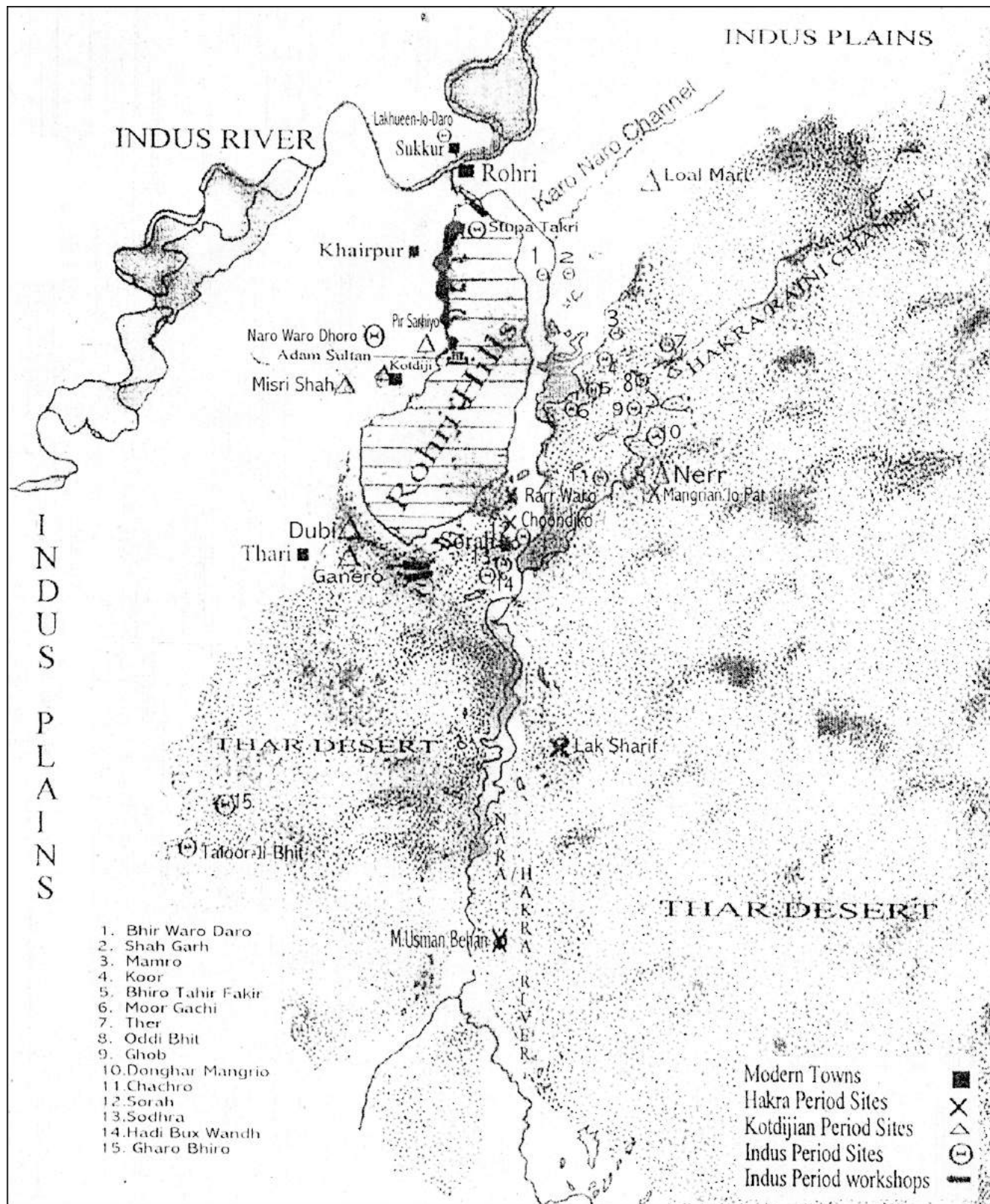


Figure 8. Map Showing Hakra to Indus Period Sites

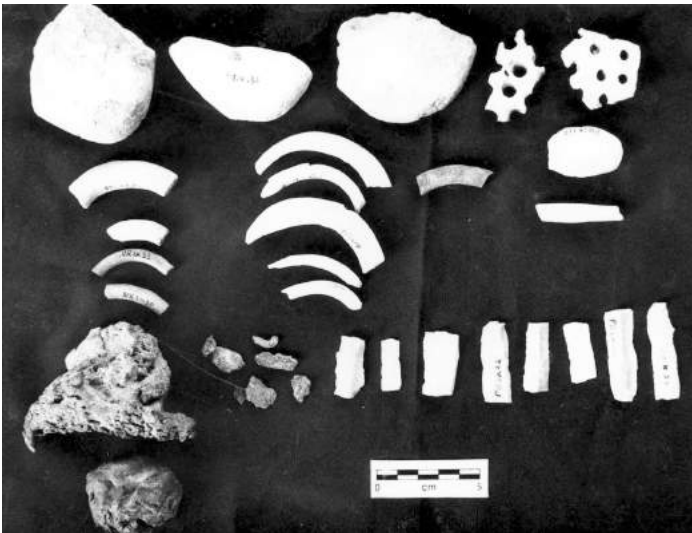


Figure 12. **Objects of Mature Indus Period**

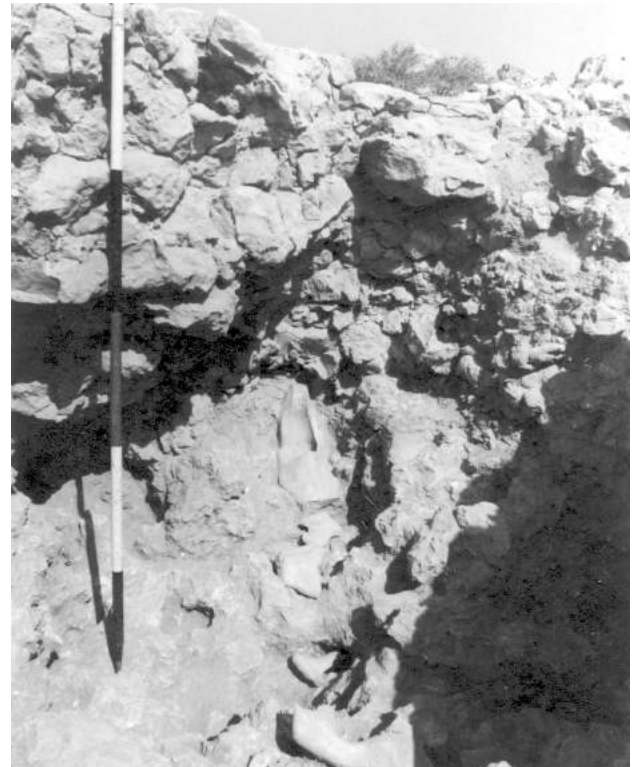


Figure 14. **Chert Nodules Extracted by Mature Indus Peoples**

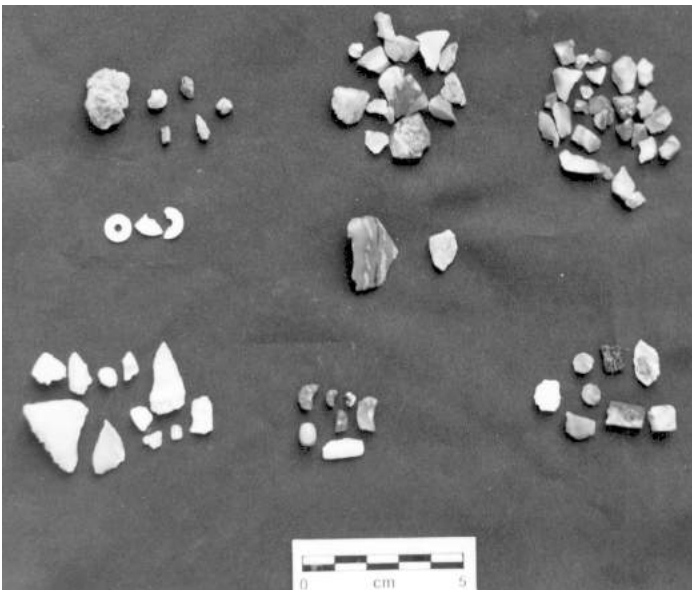


Figure 13. **Semi-Precious Stone and Steatite Disc Beads**



Figure 15. **Chert Nodules Extracted by Mature Indus Peoples**

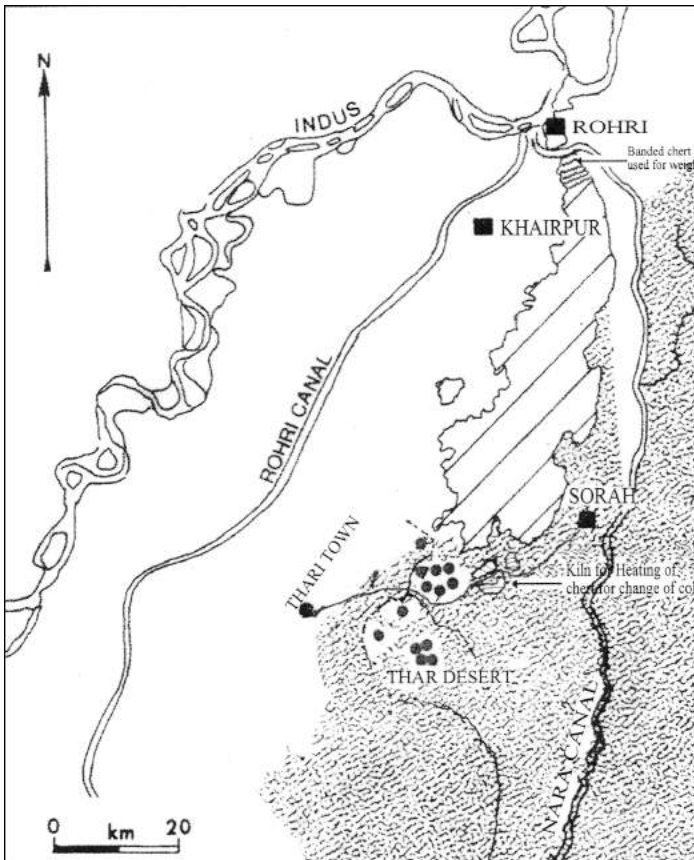


Figure 16. Map Showing Resources from the Rohri Hills

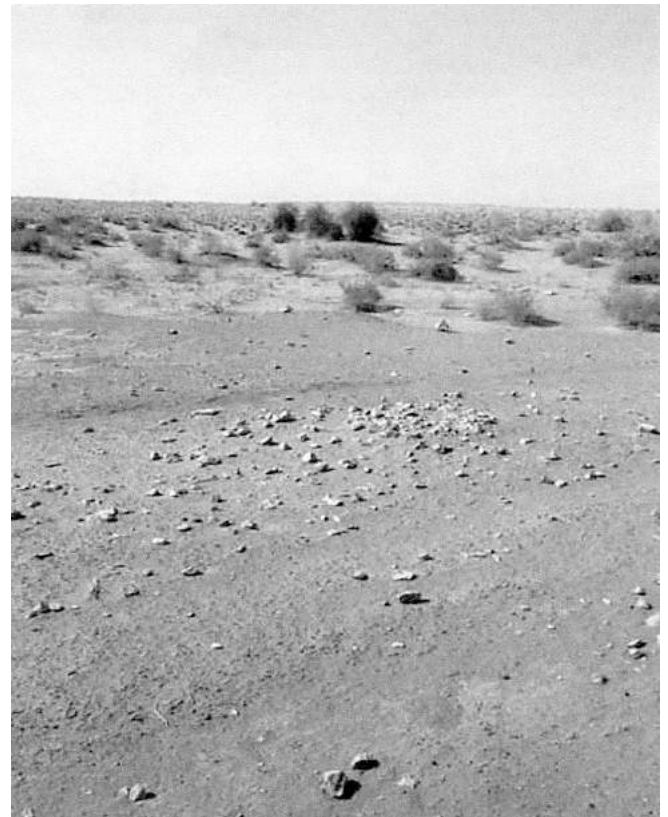


Figure 17. Kiln for Heating Chert at Khandharki



Figure 18. Close-up View of Kiln for Heating Chert at Khandharki