India is rich in archaeological wealth and Saurashtra is no exception to it. The district of Jamnagar which forms the north-western part of the peninsula of Saurashtra, is very important because of its geographical position. It might have witnessed various influences first, because it lies almost on the way to the people who travelled from Sind to Gujarat during various phases of human history. The long coastal belt on the north and western sides of the district might have also played an important role in the development of different cultural influences in this area and its adjoining regions.

Irrespective of its important geographical position, the district does not seem to have attracted much attention from the archaeologists, until the present investigation was undertaken. However, it attracted attention of few scholars like, G.L. Jacob, D.C. Sircar, A.S. Altekar, James Burgess, H.D. Sankalia (Capt.), H. Bellwilder, R. Subrahmanya and K.V. Soundarraj, mainly due to few inscriptions and standing monuments that were discovered in this region. The real contribution of archaeological explorations and excavation in the district goes to P.R. Pandya, M.A. Dhankar, J.M. Nanavati, B.R. Ansari, M.G. Kate, R.G. Hekat, Priyabala Shah, S.J. Rao and S.M. Chowdary.

All these efforts made by earlier workers are preserved in the form of stray articles, research papers and monographs.
But a systematic survey of the district was long felt desideratum, in order to build chronological sequence of various cultures existing in Jamnagar and to establish their relations with neighbouring area. With this aim in mind the present study of the district was undertaken.

For the study of the district literary as well as archaeological sources were utilised. So far as literary evidences like Mahābhārata, Purāṇas, Buddhist and Jain literature are concerned they furnish very little information about the district. However, one gets some information about village Pindars and the town Duara in the above literature.

The archaeological sources including stone tools, bones, ceramics, architectural remains, sculptures, coins, inscriptions, terracotta objects and other minor antiquities obtained from the district up till now, have proved to be more reliable than literary sources.

Copper plates and stone inscriptions found from the district furnished very important information about the political divisions, names of the towns, villages and rivers etc. The six copper plates found from Ghumal provides the history of Salindhras and incidentally of Eastern Saurashtra or the Jamnagar district, which up to recently were known only from clay seal from Vals and from Dhinki and Morvi copper plates. Some of the inscriptions also supply valuable information about social and cultural traits and genealogy of kings. Similarly the inscribed coins
give us the names of kings who issued them and indicate their possible rule over the district.

After going through the available literature, it was felt that the area of Jamnagar district requires much careful well-planned survey for better understanding of various cultural facets of bygone past. And hence for finding out antiquarian remains ranging between Prehistoric and Historic period IV (13th century A.D.) an extensive village to village survey was carried out in all the ten talukas of the district.

For locating the prehistoric sites areas fulfilling the environmental conditions of prehistoric man's needs such as, water, shelter, food and availability of raw material for making his stone implements etc. were taken into consideration. Therefore river valleys, dunes, isolated hillocks were carefully examined. For finding such spots topographical sheets of the quarter inch map, were used to locate them.

Besides this, during village to village survey, local gentry elderly person or an educated man, particularly school teachers of villages were consulted and relevant information was collected from them regarding the history of village and the spot where antiquities were available. Many of the inhabitants of the areas know of Jumliimvy (old places) or Limbo (mounds) and gladly helped the investigator.

When shards, worked stone or other antiquities were located, search was made to locate the areas of concentration and define the limits of the site. Once these limits were
established the site was photographed and recorded on form.
(See Appendix) and collection of surface remains were made.
In almost all instances the surface scatter tends to decrease
in all directions from a central area of noticeably greater
artifacts density. The agricultural activities had developed
larger spread so to determine the exact size of the site was
extremely difficult.

A sample of artifacts was taken from each site. In four
surface collection a systematic, intensive sampling procedures
were employed. In all other cases a conscious effort was made
to gather objects from all parts of the site, and for the sample
to be as much representative as possible. To avoid sampling
error, it can only be said that collections were made in sufficient
quantity and over all portion of each site, so that mistake
of a gross nature, missing an entire occupational component for
example, are unlikely.

Information on local agriculture, owner of the site, if
any, source of water, landforms, the condition and size, an
estimate of its chronological portion and other pertinent facts
were noted on site form.

A separate form (see Appendix) was used for recording the
details of sculptures. The sculptures found during the field
survey were first photographed and then information regarding
its identification, condition of preservation, vehicle (vehicle)
ornamentation and other pertinent facts were noted down on the
form. Data so recorded constituted the primary source of information.

The study envisaged in this thesis deals with the material remains obtained from Jamnagar and other data inclusive of previous work done by others. The complete work is divided into following eight chapters:

Chapter I deals with geographical and geological set-up of the Jamnagar district. The objectives were thus fulfilled. First, a natural scene has been set, into which the archaeological data can be placed. Secondly, and of greater importance is specific aspect of environment and geography which played role in the interpretations of cultural remains in the last chapter of the thesis. However, old communication routes are also mentioned with respect to explain the influences of various cultures.

In Chapter II, political history of the district is discussed. The political history usually gives the framework in which the succession of archaeological material could be sequentially arranged and this enable one to construct the meaningful chronological sequence.

Chapter III deal with the chronology of various cultures of district. The prime objective here is to discuss a relative sequence of various cultures built from the available data from the district and its surrounding region.

Chapter IV forms the nucleus of the thesis and deals with archaeological explorations. All explored sites are discussed.
In chronological order. Details of geographical background, topography, measurements, the material finds from the sites are given. However, a tabulated form of ceramic assemblage of these sites given with the description of each site.

Chapter V deals with ceramic assemblage of the district. The pottery is studied from the point of view form, fabric and decoration and has been divided into two broad groups:

1. Chalcolithic pottery.
2. Historic pottery and the description of each representative form is given in detail.

Chapter VI describes the architecture, sculpture and iconography. For this purpose, the sculptures are described from the viewpoint of art as well as iconography. Mostly all these are recorded in photography and measurements, while the monuments are studied in detail from architectural features and sculptural point of view.

 Variety of antiquities obtained from the district are discussed in Chapter VII. The chapter deals with the detailed study of terracotta objects, chert objects, stone tools, coins and inscriptions and other minor antiquities found in the district.

Chapter VIII is the concluding chapter. It deals with the results of the work done so far with interrelation of various data. This almost gives a continuous story of human activity in the district.
The explorations conducted by present investigator brought totally 100 sites of varying in nature to light. They throw ample light on the variety of antiquities extending from Lower-palaeolithic to Historic period IV. The following period-wise classification of various sites will show the richness of the antiquarian remains and reveal the archaeological potentialities of the district and access its contribution to the various factors of human history.

<table>
<thead>
<tr>
<th>Period</th>
<th>Sites</th>
<th>Known Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower palaeolithic site</td>
<td>-2</td>
<td>-1</td>
</tr>
<tr>
<td>Middle palaeolithic site</td>
<td>-3</td>
<td>3</td>
</tr>
<tr>
<td>Mesolithic or Late stone age sites</td>
<td>-13</td>
<td>2</td>
</tr>
<tr>
<td>Chalcolithic sites</td>
<td>-51</td>
<td>25</td>
</tr>
<tr>
<td>Chalcolithic blade factory site</td>
<td>-2</td>
<td>11</td>
</tr>
<tr>
<td>Historic period - I sites</td>
<td>-17</td>
<td>3</td>
</tr>
<tr>
<td>Historic period - II sites</td>
<td>-40</td>
<td>10</td>
</tr>
<tr>
<td>Historic period - III sites</td>
<td>-33</td>
<td>5</td>
</tr>
<tr>
<td>Historic period - IV sites</td>
<td>-21</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 192 40

* The asterisk marks indicate number of known sites of the district, before the present investigations were undertaken.
REFERENCES

Jarnagar district lies between 21° 47′ and 20° 57′ north latitude and 69° 57′ and 70° 37′ east longitude in the peninsular region in north-west Gujarat known as Kathiawar, a colloquial name for Saurashtra. It is bounded by the Gulf of Kutch on north-west, Rajkot district on the south-east, east and north-east Junagadh district on the south and Arabian sea on the west.

The district takes its name from the city and capital of Jarnagar. It was named as Jarnagar, after the rulers who styled themselves as Jams. Okhamandal of Amreli district was added to Halar district in 1959 to form present Jarnagar district. However, Halar district originally included class I State of Navsari, class II State of Dhrol, taluka of Dhrada and part of Jalpa-Dewani Thana. Thus the present district comprises of old territories of Haler and Okhamandal.

The district measures about 129.70 sq.km. from north to south and about 160.37 from east to west. The area of the

* Okhamandal was formerly belonged to the Gaekwads of Baroda.

** Jam Raval named his conquered territory as 'Halar' and which was later on called as Haler by contraction.
For maintaining the administration of the district it has been divided into two sub-divisions (i.e. Jamnagar and Kambhalla). It has following ten taluks having 962/763 villages.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Taluka</th>
<th>Headquarters</th>
<th>No. of Villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jamnagar</td>
<td>Jamnagar</td>
<td>195/112^2</td>
</tr>
<tr>
<td>2</td>
<td>Dhrol</td>
<td>Dhrol</td>
<td>101/41^2</td>
</tr>
<tr>
<td>3</td>
<td>Jodiya</td>
<td>Jodiya</td>
<td>41/53^2</td>
</tr>
<tr>
<td>4</td>
<td>Kambhalla</td>
<td>Kambhalla</td>
<td>86/53^2</td>
</tr>
<tr>
<td>5</td>
<td>Okhmandal</td>
<td>Dwarka</td>
<td>42/79^2</td>
</tr>
<tr>
<td>6</td>
<td>Kalaved</td>
<td>Kalaved</td>
<td>163/98^5</td>
</tr>
<tr>
<td>7</td>
<td>Jamjodhpur</td>
<td>Jamjodhpur</td>
<td>70/70^3</td>
</tr>
<tr>
<td>8</td>
<td>Shanvad</td>
<td>Shanvad</td>
<td>70/85^3</td>
</tr>
<tr>
<td>9</td>
<td>Lulpur</td>
<td>Lulpur</td>
<td>75/72^6</td>
</tr>
<tr>
<td>10</td>
<td>Kalyanpur</td>
<td>Kalyanpur</td>
<td>70/69^6</td>
</tr>
</tbody>
</table>

**Climate:**

Over all climate of the district is pleasant with four phases - cold season from March to May; the south monsoon season from June to September; post-monsoon season during October and November; and winter season from December to February.

Records of climate are not available from all the taluks of the district. At present only two meteorological observatories exist in the district—one at Jamnagar and the other at Dwarka. Thus details of climate at these stations and their
average is taken as a whole.

The average rainfall in the district is 412.2 mm. (16.23"). About 95% of the rain is received during south-west monsoon, with July and August months receiving highest rainfall. The rainfall goes on decreasing from the south-east to north-west region. The average rainfall varies from year to year, owing to the irregular and erratic nature of monsoon.

From the middle of November temperature begins to drop rapidly. January is the coldest period of the year with mean daily maximum temperature at 26 C (79.6 F) and minimum at 11.6 C (52.9 F). In cold season, minimum temperature may drop to within 2 C of the freezing point in area excluding the western strip, where the minimum temperature is 4 to 5 C higher than the interior.

Temperature starts rising steadily from about the beginning of March till May, which is the hottest month with mean daily maximum temperature at 36.3 C (97.4 F) and the daily minimum at 25.1 C (77.1 F). Night temperature in June remains little higher than May. With the onset of monsoon by middle of June temperature decreases and the entire monsoon becomes pleasant. After the withdrawal of monsoon by about the middle of September, temperature rises a little. During November the temperature of both day and night starts falling.

Throughout the year the atmosphere remains humid. Relative humidity is about 80% during south monsoon and about 60 to 75% for rest of the year.
Strong winds blow from south-west or west during the monsoon period. Moderate winds blow in October from the direction between south-west and west-north. While easterly winds also begin to appear in October. But in November, December and January easterly or north-easterly winds are moderate in force. During hot season they strengthen and blow mainly from south-west or west.

Physical Features:

Jamnagar district forms part of the Saurashtra peninsula. It was originally an island quite unconnected with Gujarat and its present peninsular form is attributed to volcanic action. The physical features also suggest that it formed apart from what might once have been island or group of islands of volcanic origin.

The district has variegated topography, where the western extension of Saurashtra plateau merges into the coastal plains. The eastern half has undulating terrain dotted by Deccan hills and mounds. Prominent hills are the Bara, the Gob etc. The average elevation of plain area is 40 to 75 m. in the eastern portion which decreases westwards. The coastal plain in the north-western portion facing Gulf of Kach is fringed by a low lying tidal flat zone with variable width. Along the area adjoining shore cliff and undulating coastal plain there are several islands namely Chanka, Kora, Bhuladar, Ajar, Byet or Shankhodhar etc.

Jamnagar, Jodlya, Khambalia and Kalavarpur talukas are mostly level country. Jangodhpur, Lajpur and Kalaved talukas are partly
hilly and partly terrian. Shrol taluka is undulating and not relieved by any continuous mountain chain. Bhavnad taluka is exceedingly hilly and mountainous while Ohrmandal taluka is dull and undiversified verdless plain. The prevailing features are few isolated hills and hillocks cropping up unpicturesquely over the land.

To give some detailed idea about the hills, coastal plains and islands will not be out of place here. Thus physical features of the area can be studied under following three heads for the sake of convenience.

1. Hills
2. Coastal Plain
3. Islands

1. Hills:

The principal hill ranges of the district is the Bara hills, and isolated of Cop and other hills.

Barda Hill:

Barda is a concentric group of hills which indicate volcanic origin due to conical eruption. These hills project in the district making Bhavnad taluka extremely hilly. These hills are stretched for about 16 km. north-south, 11 km. east-west and covers an area of 191.30 sq.km. The northern part of which lies in Junagadh territory. The highest summit of Bara hill is 627.464 metres. Even though Barda hills appears to be part of central highlands of Saurashtra but they are actually isolated
from both the north-eastern and south-western series. These hills contain quartz bearing felsite. In the area round Ghumli and Morpur the rocks have weathered into huge spheroidal or boulder-like masses piled upon one another. Look like human work and develop the problem of differcation of human and natural workmanship.

Forest of the Baras hills are poor and there are many blanks in the forest area. The unsatisfactory growth of forests is due to indiscriminate grazing and cutting and unscientific management in the past. These, even upto last century were thickly forested, when Jam Ravalji used to hunt in Baras, but now there are no lions in the forest.

Cop and other hills:

The Cop hills are also quite isolated near Jemwadi village, and reach a height of 362.712 metres. Several other scattered hills can be seen in south of Lalpur joining with central highlands at Ghela, Tebda, Dhumadi, Koth, Virdi, Sansra etc. Few more scattered hills are seen in the southern part of Khamkhali near Keshod, Piparia, Thaker, Shordi, Khokri, Lalokha, Pot, Gundala etc. About 3 km. north-east of Chatia railway station is a round hillock rising to a height of 76.910 metres. Another hillock which reaches 92.050 metres is found near Shopalka railway station. The Chebar hills which are situated on the side of the Baras hills consists of dull coloured crypto-crystalline or minately granular felsite. North and south of Ghela Gan (which separates Okhamandal from the rest of Jamnagar), almost clinging the Arabian sea, two hillocks. The southern one is
south of Kharakhetar lake and is 32 metres high. The northern hillock stands south of Meripur village and a lake stands at the foot of the hill.

2. The Coastal Plain:

Of the 351 km. of coast line of Jamnagar district, 93 km. from Meda creek to Okha tidal station is washed by the Arabian sea in the west, while 250 km. is washed by the Gulf of Kutch in the north.

The Arabian sea coast rises sheer off the sea and is a faulted coast. The coast is generally flat fringed with a line of wind blown sand hills. The Gulf coast on the other hand is a built coast. Marshes, sand and mangroves are common features of the coast, alternating with rocky buttresses and islands in Gulf of Kutch. The whole of sea facing the Gulf of Kutch from Jamnagar westward including the islands off the coast is fringed with dead coral reefs. The existence of these coral reefs prove that this region has been rising during later times.

The long coast of Jamnagar has three intermediate ports, namely, Sadi, Sikka and Okha and six non-intermediate ports, namely, Jodiya, Salaya, Pindara, Lamba, Dwarks and Seyt.

3. Islands:

Off the coast of Okhamandal there are several reefs and islands with good channels between them for coasting crafts. Following are the reported islands of Gulf of Kutch:
1. Chanka:

   The great Baral or Chanka reef surrounds four islands namely
   Chanka, Nora, Shaidar and Chusra. Chanka is the north-eastern
   most of the four islands on the reefs. It is also the smallest.

2. Nora:

   Nora is a large low mangrove island nearly 4 km west of
   Chanka. It extends 5 km from west to east.

3. Shaidar:

   Shaidar a mangrove island nearly 3 km across lies 5 km
   south-west of Nora and about half way between Nora and Chusra.

4. Chusra:

   Chusra (Chusda) is a small rocky islet and stands 4 km south-
   west of Shaidar. It makes the south extreme of Baral reefs.
5. **Ajar Island:**

A fifth island in this group is Ajar Island. The north end of this island almost touches Chusda Island. All these islands are raised very little above the sea and are mere banks of hard rocks on which sand gathered.

6. **Saiani Island:**

Saiani Island is north of Beyt Island. It has a sandy spit stretching 16 km to north-west. In the middle of the island are the ruins of Saiani Pir.

7. **Beyt or Shankhoddhar:**

Beyt is situated in the Gulf of Kutch about 5 km north of the main island of Okhmandal and east of the Okha port. It is said to be named Shankhoddhar as its shape resembles Shank, the conch shell. Beyt is now a port in the Okha group of ports in Saurashtra. It is non-intermediate coasting port.

8. **Brother Island:**

Brother Island is also known as Shan and lies four kilometres south-east of Beyt Island.

9. **Panera Island:**

The Panera Island stands in a five fathom patch southwest of Dhani Beyt. It is a mangrove island, almost an oval, stretching about 3 km east-west and a kilometre north-south.

10. **Gandhia Island:**

Gandhia is north-east of Panera island. It is also a mangrove island.
II. Kalumbhar Island:

Kalumbhar island is a mangrove island about 6 km east and west and little less north and south. The Salaya creek lies 6 km from the island. In the past the safer passage was Chanka and Hora, large vessels from Malabar and Arabian coast used to take shelter on the side of Chanka after the beginning of monsoon and discharge the cargo to smaller boats which used to take the goods to Kutch and Mandvi. None of these islands are in use now.

GEOLOGY

Sequence of the rocky types met with in the district is given below and are arranged in order of increasing antiquity.

- Alluvium sand dunes etc.
- Millolite series
- Dwarika beds (post-Pliocene)
- Gaj beds (upper Miocene)
- Lateritic rocks (lower-Eocene)
- Deccan trap (Cretaceous-Eocene)

Deccan Trap:

Deccan trap occupies almost whole of the eastern half of the district. The most prevalent rocks are the basaltic and doleritic and are spread in the form of horizontal sheets. Other varieties like felsites granophyses, rhyolites, obsidian, porirud, trachylyte etc. are found in parts of the district.
Trap Dykes:

A number of trap dykes are associated with trap flows in the district. They form low knolls elongated mounds or serrated ridges and vary in the width from few inches to about hundred feet. They are noticed near Ran, Piparia, Shambhali, Ramsur, Khirsara, Dhanuria, Ambaldi, Pachhtar, Bherdi, Kanorma, Bed, Kuvadia and Medi. The parallel dykes north of the Amch hills trend east-west and are traced with interruptions for a length of about 8 km. The dyke rocks are mostly compact and grayish green to black in colour and has a micro-crystalline ophitic texture.

Lateritic Rocks:

There is a narrow laterite belt occurring all along the periphery of traps and extending from Kota-Asota near the Gulf of Kutch to Lamba bordering the Arabian sea. In addition to this Lateritic belt, a few outliers of laterite are found above the trap rock to the south and south-west of Kota-Asota, between Ran and Gadhaka and in the vicinity of Shopalka. They also form several inliers surrounded by tertiary rocks, in the form of knolls and hillocks south of Bhatia near Shogat, between Shogat and Lamba and Gandhi (Kalyanpur taluka). The rocks are richly coloured and generally unstratified and consist of soft, variegated clay representing decomposed and lateritised volcanic rocks.

Caj beds Rocks:

The territory starts with 'Caj beds' and overlies trap as
laterites. The largest extension of it spread in Salyanpur taluka. Whereas in other places isolated patches are quite common. They comprise yellow lime stone, stand stones, grits, conglomerates fossils of the families of Millocrana, Textulariidae, Lagenidae, Colobigerinidae, Rotaliidae. Among Cenozoic species, Turbonilidae, Astraea and Lophostoma are noticed near Mandana and Ran. The other fossiliferous localities are near Mundra, Gurgadh and Gaga.14

**Dwarika Beds**

Dwarika beds are mostly developed near Dwarika, in low lying areas of Uthamandal taluka and Sayt Island. They consist of vareigated lime stone, earthy, marshy or clay beds with gypsum and iron stained bands. These rocks have been separated from the Gaj beds on account of their conspicuous absence of Gaj fossils and on account of wide differences in general appearance and mineral constitution as compared with Gaj beds.15

**Miliolite lime stone**

Occurs all along the coast as well as in small inland pockets. They constitute of lime stone, calcareous sand, consolidated shell material etc. The outcrop of miliolite the deccan trap, laterite and gaj beds indicate the country was submerged under sea.16

**Alluvium Soil and Sand Dunes**

Blown sand and sub-recent accumulation form an undulating
stretch of dunes along the northern boundary of the district near Pindara (Kalyanpur taluka), Ghodeshwar (Kambhali taluka), Kalumbhar Island to the north of Jamnagar and appear to continue in towards Balmabha (Jodiya taluka), Shogat and Gandhvi (Kalyanpur taluka). Sub-recent alluvial fans are not very extensively developed in the district. However, they cover the trap rocks along the northern bank of Jhijhora river and are noted as far as inland as Kerali from south of Amran to Dhudakot and expands further towards Balmabha and beyond in Jodiya taluka. Vast stretches of alluvial land are noticed along the Kav coast north of Chudeswah, along the Khe river, west of Godarwalia, north of Amba (Kambhali taluka) along the Made creek from west of Raval (Kalyanpur taluka) to north of Maini (Amagadh district) along the Phulpah river west of Bhadra and along the Chaspawara river south of Navasa.

Recent deposits are found in the immediate vicinity of surface waters and the sites of former lakes and Postpliocene time. Vestiges of ancient rivers terraces marked by presence of Agate and Jasperoid conglomerates in the area are noticed near Latipar (Dhrol taluka) and Virpar¹⁷ (Jamnagar taluka)

Minerals:

Number of minerals are found in the district, which includes Bauxite, Bentonite, Calcite, Fuller’s earth, Gypsum and various

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¹⁷ For details see mineral section, Gazetteer of India, Gujarat State, Jamnagar district, and Adye, E.H. "Memoir on the Economic Geology of Jamnagar State, 1914".
construction material. These materials are used for different purposes in the district, while the Bauxite is exported to U.K., G.D.R., Japan and Australia.

Soils:

As the geographical formation of Saurashtra is of volcanic origin the soils are derived from trap rock. Following four types of soils are found in the district:

1. Alluvial Soil
2. Black or Medium Black Soil
3. Light brown Soil
4. Alkaline Soil

1. Alluvial Soil:

The alluvial soil is also called Ghad, Bhatha or Katha. This soil is found on the river banks near Jamnagar, Kalyanpur, and Jodiya talukas. Though occupying small areas it is the richest soil of the district.

2. Black or Medium Black Soil:

This type of soil is found in Shrol, Kalavad, Janjodhpur and Shavnad talukas and eastern part of Jamnagar taluka. It is generally 9 to 36 inches deep. Black soil is rich in minerals and organic matter and therefore more fertile, while the light black soil is less fertile and needs plenty of water and good manure for good harvest.
3. **Light Brown Soil:**

   This type of soil is also called Dhard. It is found in the western part of the district viz., Shambhali, Kalyanpur, and Lulpur talukas.

4. **Alkaline Soil:**

   The soil is known as Quar and is found in the coastal areas of the district.

**Fauna:**

Fauna of the Jamnagar district can be studied into two categories:

1. **Domestic Animals**
2. **Wild Fauna**

1. **Domestic Animals:**

   Number of animals are domesticated for various reasons, which includes bullocks, cows, buffalos, sheep, goats, horses, camels, mules, pigs and poultry. While in the wild fauna following types of species are found.19

2. **Wild Fauna:**

<table>
<thead>
<tr>
<th>Local name</th>
<th>Genus Species</th>
<th>English name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singh</td>
<td><em>Panthera leo</em></td>
<td>Lion</td>
</tr>
<tr>
<td>Dipdo</td>
<td><em>Panthera pardus</em></td>
<td>Panther</td>
</tr>
</tbody>
</table>

---

19 According to Watson J.H., in "Statistical Account of Jamnagar State", 1879, p.8, 'the lion used to live in the Bara and "Loch hills". However, at present there are no lions in the district.'
<table>
<thead>
<tr>
<th>Local name</th>
<th>Genus species</th>
<th>English name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khalili</td>
<td>Numenius arquata lineatus</td>
<td>Eastern Curlew</td>
</tr>
<tr>
<td>Kunj</td>
<td>Grus grus liffordi</td>
<td>Eastern common crane</td>
</tr>
<tr>
<td>Legge</td>
<td>Charadrius dubius jordonianus</td>
<td>Jordan little ringed Plover</td>
</tr>
<tr>
<td>Location</td>
<td>Scientific Name</td>
<td>Common Name</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Nani-Betal</td>
<td>Pluvialis squatarola atratafrons wagler</td>
<td>Grey plover</td>
</tr>
<tr>
<td>Batena Titodi</td>
<td>Squatarola squatarola Squatarola</td>
<td>Grey plover</td>
</tr>
<tr>
<td>Omelina</td>
<td>Gelochelidon nilotica nilotica</td>
<td>Brown head bull</td>
</tr>
<tr>
<td>Chondi</td>
<td>Lasius brunni Caphalus smyrnensis</td>
<td>White breasted kingfisher</td>
</tr>
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<td>Kabut</td>
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<td>Inland Birds:</td>
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<td>Mor and Dhel</td>
<td>Doves cristatus</td>
<td>Peacock</td>
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<td>Raj Gidh</td>
<td>Sarcopteryx calyx</td>
<td>King beaked vulture</td>
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<td>Gidh</td>
<td>Pseudogyps bengalensis</td>
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<td>Brahminy cheol</td>
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<td>Nilus migrans gourinde goykev</td>
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<td>Sunagar</td>
<td>Micrastus fasciatus fasciatus viellot</td>
<td>Bonelli's Eagle</td>
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<td>Shikara</td>
<td>Tetraodous derru-mier</td>
<td>Shikara</td>
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<td>Talia Tetar</td>
<td>Francolinus francolinus</td>
<td>Black Partridge</td>
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<tr>
<td>Khadayar</td>
<td>Francolinus piondiceri-omus interpositus</td>
<td>Common Grey Partridge</td>
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**Reptiles:**
The reptiles are represented by Crocodiles, Lizards, Tortoises and Snakes. Crocodiles are small specimens not exceeding six feet and live in old river pools.

**Fishes:**
Jamnagar district has a long coastal line and nearly 13 types of species of fish are found. The important fishing ports are Jodiyia, Sikka and Okha etc.

**FLORA**
The vegetative cover of the district is tenuous and xerophytic. Acacia, Saparos, Zizyphus, Tamarind, and banyan are normally encountered, pippal, nargosa and mango trees are few and far between. A serious depletion of forests had taken place in the past as a result of clearance for agriculture and overgrazing. This had a direct effect on the fauna also.

The flora of the district can be divided into following categories for the sake of convenience:

1. Cultivated crops
2. Wild vegetation

**Cultivated Crops:**
Following are the principal crops of the district:

**Cereals:**
1. Jowar (Indian Millet) is an important cereal grown in the district. It is mainly cultivated in Kalyanpur and some extent in Jamnagar taluka.
(ii) Bajri (Spiked Millet) is another cereal grown in various types of soil ranging from sandy loam of Kalyangpur to medium black soil of Kalavad, Jamjodhpur, and Jodiya talukas.

(iii) Wheat is a rabi crop grown all over the district but more extensively in Dhol and Jodiya talukas.

(iv) Paddy or Rice is not grown very extensively in the district. Its cultivation is confined to areas comprising Jammagar, Kalyangpur and Kalavad talukas.

Pulses:

Pulses are not grown alone as a single crop but are mixed with Jowar and Bajari. The important pulses crop are Gram (chana) green gram (mas) and Methi.

Oilseeds:

Oil seeds grown in the district are Ground-nut, Sesanum, Caster etc.

Sugar cane and cotton:

It is grown all over the district in very small quantities.

Fruit and vegetables:

Fruit cultivation of the district is negligible. However, Mangoes, Papaya, Bananas and Chikoo are grown. Among vegetables, Patatos, Brinjal, Tomato, Carrot, Sweet Potato, Methi and Tandalyo are grown.
(2) **Wild Vegetation:**

The forest area in the district is scattered and is in limited extent. It is found in the southern part of Jamnagar and Bhavnag talukas, the eastern part of Lalpur taluka, and near sea coast in Jamnagar taluka. Under this following three categories of forests are covered:

(1) Mangrove Forest
(11) Open Scrub Forest
(iii) Grass Lands

(1) **Mangrove Forest:**

The type of forest is distributed all along the coastal line of Jamnagar district and occupies an area of 155.40 sq.km. Following species of trees are noted in this category:

(1) Avicennia officinalis (Char)
(2) Rhizophora mucronata (Karod)
(3) Coriope condoliens (Kumri)
(4) Acacia senegal (Gorad)
(5) Acacia arabica (Desi baval)

(11) **Open Scrub Forest:**

This forest fall under the category of 'Dry Deciduous Thorny Scrub Forest'. The forest area is situated in Aleph, Dalasa, Sardar, and Okhamandal regions of the district. Following species are growing in these areas:
(1) **Forest:**
1. *Acacia arabica* (Baval)
2. *Acacia senegal* (Gorad)
3. *Capparis decidua* (Karda)
4. *Diospyros melanoxylon* (Timru)
5. *Butea frondosa* (Khakhra)
6. *Azadirachta indica* (Nim)
7. *Morinda tinctoria* (Bal)

(ii) **Scrubs:**
1. *Halarrhena antidysenterica* (Kodo)
2. *Calcia surculata* (Aval)
3. *Tecoma undulata* (Regatroydo)

(iii) **Grass lands:**

The forest department in the district maintains grasslands which are termed as Vidis. Following are the main grass types grown:
1. *Eremopogon Forsolatus* (Saniar)
2. *Andropogon intermedius* (Dharafada)
3. *Andropogon Ischeemum* (Zinzro)
4. *Anthisteria inerbis* (Ratadu)
5. *Apluda aristata* (Shengoru)
6. *Symbopogon schoranthus* (Rosha)
HYDROLOGY

Abundant ground water is available for domestic use and irrigation purpose in alluvial and millilitre lime stone areas. However, the peripheral strip near sea and than has got a saline water condition. The coarse sand stone, grit, Conglomerate of Gaj formation yields enough potable water. While weathered and fractured trap provide some potable water. Deccan traps and Gaj lime yields very little water.

Besides, whole of the district is drained by small rivers, but none of them is a perennial river. Most of the rivers are small and flow lazily through the low lying lands.

The rivers are not perennial because of low rainfall and small catchment area. Even during the height of the best monsoon full flow is achieved for only a few days, or even hours, immediately following rains. At these times water flow can be violent also.

The prominent seasonal rivers of the district are:

1. Rangmati river,
2. Agi river,
3. Ghoo river,
4. Fuljar river,
5. Puparel river,
6. Und river,
7. Magmati river,
8. Phuljar river,
9. Sosal river,
10. Sihan river,
11. Semi river,
12. Jhijhora river,
13. Vena river,
14. Vertu river,
15. Khari river.

None of them has any large tributaries and most of them are dry channels till the advent of the monsoon.

1. River Jamnati:

This river rises in the central highlands near the village of Vad panchasara, where the hills are 149.657 metres high. It flows through the villages of Verval Moti, Savariya and Chanda of the Jamnagar taluka and then enters Ranjit Sagar lake 10 km north-east of Chela from where it takes off again to flow through the Jamnagar city and is also joined by Narmati river.

2. River Aqi:

River Aqi rises in the Rajkot in the Central hills near Lodhida. It enters the district of Jamnagar at Khakadvela. The river Sari meets Aqi near the district boundary, but leaves the Aqi near village Modpar of Jamnagar taluka. The river again forms the boundary for nearly 13 km of its course. It then flows through the villages of Dithad and Morana of Jodiya taluka and loses itself in the sand 10 km from the coast.
3. **River Ghan:**

This river rises from the central highlands near Devalia, west of Khambhalia. Beyond Paripur it becomes a seasonal river and passes through the village of Visotri Kaban till it reaches Salaya along with other channels form a lake near Nanthal village, 11 km west-north-west of Khambhalia. It merges with sand of the coast of the Gulf of Kutch.

4. **River Puliar:**

Rising in the outliers of the central highlands north-east of the village of Devalia Nana in Khambhilya Taluka. It passes the villages of Babargar, Laurel and Rajvad. Five kilometres north of Rajvad it is joined by another small stream which takes off from the Lekesar hills. Following to the east it passes through the village Madpar of Jamnagar taluka. From Madpar village it becomes a perennial river and flows north of Lakhia and Jhakar of the same taluka. Its length is 35 km.

5. **River Bhuparal:**

Rising in the Khan Khotda hills, an offshoot of the central highlands. The river flows for a distance of 37 km and empties into the Mita Bora creek of gulf.

6. **River Und:**

Like "ji it also rises from Rajkot district at a height of 107.383 metres near the village Bedia. On its left have Sangalia Nana Khijadia and Khokhri. While on the right
hand side is Kalavad taluka. The river Moti Phuljar also joins it at Khokhri by a kilometre north of Hampur, it also receives the waters of Gal which joins from the south-east. Flowing for a distance of 10 km in north-north-easterly direction it receives again the waters of Suli. Further north, another channel joins it before it empties into Gulf of Kachchh.

7. River Nagamati:

Nagamati rises in the Jalia-fewani hills near the village of Badvidad. It flows through the rocky land for a distance of 18 km. River Rangamati and river Nagamati empties into the Ranjit Sagar lake, which is roughly 7 km in circumference. The two villages Naranfar and Nighuma of Jamnagar taluka forms the two banks of the lake. The combined waters then flows for about 13 km before it empties into the Gulf of Kutch, 3 km of Rozi Mata.

8. River Phuljar:

This river rises in the central highlands, where the land is about 113 metres above the sea level about 2 km south of Madi village of Jamnagar taluka. The total length of the river is 35 km.²⁶

9. River Soaji:

This river also rises in the central highlands about three kilometres west of Lalol village where the hills rises to 192, 167, 211 and 219 metres and several channels
pours the water in Sosai. It passes through Khabda Nana and leaves Arikhana and Maripur villages of Lalpur taluka. It receives the waters of Chander which joins it at Lothiya.

10. **River Sihan:**

Rising in the Lakasar hills, an offshoot of the central highlands, it flows through Kakabhai Sihan and Sukhpur of Khambhalia taluka. After a course of 27 km it empties in the Amba creek.

11. **River Dami:**

Taking its origin near Dhamalpur village at a height of about 152 metres. It flows north and enters the district north of Gunda village. It empties into Jhijhora creek of the gulf.

12. **River Jhijhora:**

Rising in Morvi territory it flows for about 11 km outside the district boundary and enters Jamnagar district south of Kerali. After a course of 24 km it joins the Sui going past the villages of Kerali, Virpards, and Rajpur. The combined waters of two rivers flow for 6 km before it empties into the gulf of Navlakhi.

13. **River Venu:**

The Venu is a tributary of Shadar. It rises near Kothe Virdi in the slopes of central highlands and flows south-east past the village of Melan, situated on its right bank about 19 km from its source. The river Fuljar rising near Loloi
joins the Venu at Kotra. The entire course of the Venu within the district boundary is about 27 km. After a flow of 23 km the district boundary the Venu joins the Bhadar north of Kundhach and 2 km west of Talgama in Rajkot district.

14. River Verna:
Rising near Virdi where the hills are about 195.072 metres, it flows west and is joined by several channels which flows from Devallie in the north. North of Kornoar it takes a southward bend. The Verani rising east of Babarike at a height of 164.592 metres takes a north-westernly bend at Verani to join the Venu 3 km north-west of Rangpura. Several channels from the south also join at this stage. It then flows the district boundary for 2 km from Sabaliyara and again for a short distance from Jhalsa westwards. It then leaves the district to flow through Junagadh. It again enters the district and flows along its boundary past the village of Naval where it sharply turns north-west and after a distance of 4 km it takes a bend south-west and flows for 5 km and enters the sandy coast track for 6 km and forms the district boundary once again for 3 km of its final course before it enters the Ruda creek at Mirani on the Arabian Sea coast.

15. River Khari:
Rising 3 km east of Mandana, it flows south-west for 16 km after which it takes sharp turn towards the north-west and enters the Okha Ran and Kakar bet.
Lakes:

There are several lakes and tanks in the district. The more important one is Khara-Khetar, which is an inlet of the Arabian coast. It is situated about 26 km south-west of Dwarka. North of village Hetasthal and 10 km west north-west of Shamshalla is another lake. There are two more beautiful lakes near Kodpar village of Bhavnad taluka known as Ranasar and Talala. Besides the city of Jamnagar is fed by the Ranjitsagar lake built by damming the Nagamati and Sargasmati rivers. In the north-west part of the district, south-west of Zinzuda village there is a tank of considerable size with embankment on its northern side.

Communication:

Available archaeological and literary evidences bear out the fact that people of Jamnagar district had been in contacts with other parts of the world right from Proto-historic period upto modern times. Hence to give a short reference of ancient routes of communication will not be out of place here.

Prof. Sankalia23 portulates the possibility of African hand-axe-makers coming to India through Gujarat. In this connection, the opinion of geologists like Blandford and Medlicott may be quoted according to which Africa and Saurashtra were certainly connected with land bridges, at least in certain epochs of the Pliocene period when the sea level was considerably lower than the present.29 But we have no means to ascertain if this was the situation during the Pleistocene period also. In that case, the
migrants might have taken the land-route passing through Arabia and southern Iran, as Clark and Piggott have suggested.30

There is a well-established route coming from the Punjab, Sind and Kutch reaching up to Jamnagar in Chalcolithic period. This is well established and has been proved by several excavated and explored sites in Rajasthan, Kutch and Saurashtra.

There was a well-established ancient line of communication between Saurashtra and Gangetic plain during Mahabharata period. Ancient literature mentions the list of countries through which Arjuna passed on his way back to Hastinapur from Dwarick.

From the beginning of Christian era or even before the invaders entered India through various passes in north-west frontier provinces. By about 2nd century B.C. and onwards Bactrians, Greeks, Sakas, Parthians and the Kushana were struggling to establish themselves in north-western India, which were linked with famous 'Silk Route' linking east-west world and 'via'.31 These routes were really very difficult and full of troubles but still Sakas had penetrated deep so far as Nagra, evidenced by a coin of 'Aziz-I' from Nagra.32 The Jamnagar district must have

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The countries mentioned are Kuru, Jangala, Panchala, Matsya, Saraswati, Haru-Shanva, Sauvira and Abhira. This could correspond to South Punjab, U.P. and Jaipur, Bikaner and Jodhpur in Rajasthan. What Sauvira and Abhira stand for, it is difficult to say, but it appears that lower Sind would be included in them.
felt the invasion first because it lay almost on the road of invaders. Hence, it is evident that Jamnagar had well established line of communication with Eastern world. The excavation at Dwarka and explorations by the present investigator have provided ample evidences of contacts with Western world and Rajasthan in the form of Roman antiquities like Roman amphorae, Red Polished Ware and Black-on-red ware resembling the Mohenjodaro pottery from Rangshai.33

The chief trade routes in the province followed the coast from Gogha south-west of Somnath and thence north-west of Dwarka. The chief land routes were those joining the Peninsula with the main Jhunjhunu-Wada Patdi to Vadhan and by Virangan to Vadhan. The route by Cholka and Valabhi were in common use. These seems also to have a route joining Valabhi with Junagadh and Vothali.34

Later on, during Mohammadan times, especially under the Imperial viceroy (1573-1700 A.D.) the communication increased to a great extent. Hence it can be summed up that Jamnagar was never isolated from rest of the world. It witnessed intercourse from abroad and surrounding area.

People:

The present days inhabitants of the district are predominantly agriculturists. Recent investments in cash crops of ground nut and cotton have somewhat changed the older subsistence economy based on food grains and vegetables. These endeavours have proved to be very much profitable, thus small scale agriculturists have made considerable investment in creating new fam
land. This is done by taking refuse soil or sometimes an old habitational sites, from the vicinity of the village, combining it with borrowed soil from the better endowed field and dumping it on the barren land.

The district has a predominant Hindu population. The census of 1961 shows that as many as 6,97,169 or 84.16 per cent of the total population of the district were Hindu. Muslim numbered 1,01,234 (12.22%), Jain 27,707 (3.35%). Besides there are few aboriginal tribes. Among them Vaghers are believed to be the earliest inhabitants of Okhamandal and seems to have come from Sind and emigrated from Central Asia, as is evident from their physiognomy, other castes which are comparatively in small number are Babaris, Charans, Shirs, Bhios etc.

Layout of towns and villages:

The general layout of large sized villages and towns in the district appears essentially the same, particularly with regard to the functional distribution. Mostly all the villages and towns are situated on the bank of some rivers or located on some elevated ground. Towns and large sized villages which were in the past principality or seat of some estate had their Darbhargadh either in the centre or on one side of the village around which the various castes are distributed in order of their social superiority.

Mostly the houses are single storey and the use of stone in wall material is quite significant in rural area of the
district due to existence of stone quarries which make this type of material easily and cheaply available for construction of village houses. But the houses of unburnt bricks and mud walls are not altogether absent. As regards roofing material, doshi and valayati or Mangalore tiles, grass, leaves, reed, bamboo, stone, cement, and iron sheets are used. The flooring in the majority of village houses is beaten earth covered with cow-dung emulsion, which is believed to possess certain antiseptic properties are used. Besides stone and cement is also fairly used nowadays.

In urban areas also stone is the principal material used for the construction of walls. The use of tiles as roofing material was found to be comparatively much less in urban areas than the villages as the former structures have terraces of pucca flooring as roof, which is not usually found in the countryside.

**Purpose:**

Two objects have been thus fulfilled in the above description of the natural environment of Jammagar. First, a natural scene has been set into which the archaeological data can be placed. Secondly, and of great importance, is specific aspects of environment and geography which will play a role in the interpretation of cultural remains in the last chapter.

Notice of the old communication routes is mentioned with respect to explain the various influences of the outer world on the district, which played a significant role on the history of the district.
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7. Gazetteer; op.cit, p.6.
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12. Fedden, op.cit, p.97.
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17. Ibid.
18. Ibid.
19. Ibid.
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34. Ansari, op.cit, p. 10.
35. Refer Gazetteer of Jumagar for detailed discussion on different tribes.