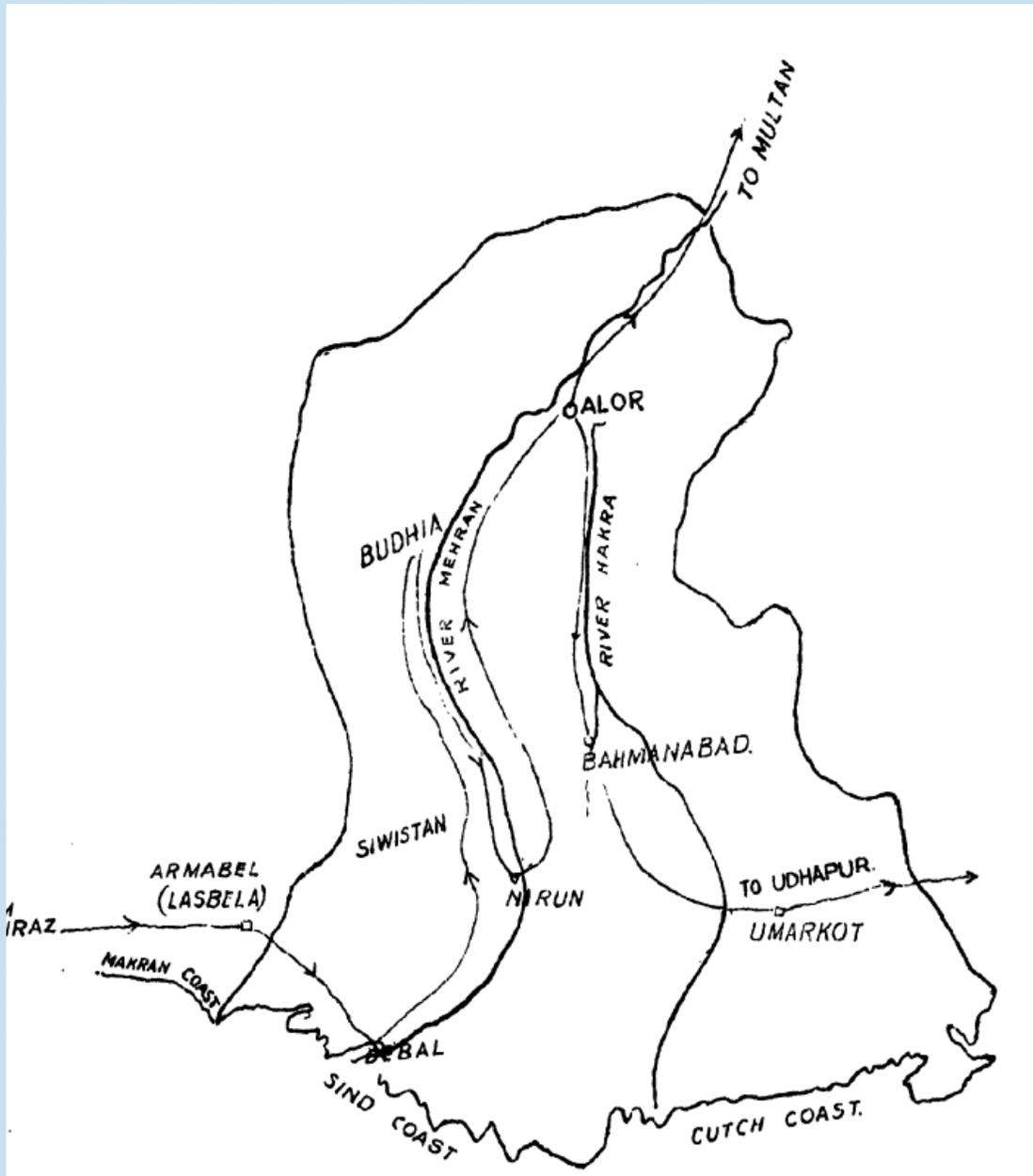


Historical Geography of Sindh

Prof. M. B. Pithawalla, F.G.S., M.R.A.S.



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Sani H. Panhwar

HISTORICAL GEOGRAPHY OF SINDH

BY

PROF. M. B. PITHAWALA. F.G.S., M.R.A.S.

RESEARCH CERTIFICATE, UNIVERSITY OF LONDON

REPRODUCED BY

SANI H. PANHWAR (2018)

FEW WORDS FROM COMPILER.

This book contains three different articles By: Prof. M, B. Pithawalla, F.G.S., M.R.A.S. completed between 1936 & 1939.

1. "A Geographical Analysis of the Lower Indus Basin (Sindh)" – Part I.
2. "Historical geography of Sindh. Part II." – Prehistoric and Early Historic Periods.
3. "Historical Geography of Sindh Part III" – Historic Period A.D. I.

I am reproducing this material hoping the younger generation will benefit from Prof. Pithawalla's work.

Sani H. Panhwar
November 17, 2018

**A GEOGRAPHICAL ANALYSIS OF THE
LOWER INDUS BASIN (SINDH).**

**BY PROF. MANECK B. PITHAWAI, A. B.A., B.Sc., L.C.P., F.G.S.,
Research Certificate, University of London.**

Received July 20, 1936.

(Communicated by Prof. D. N. Wadia, M.A., V.R.G.S.,)

CHAPTER I. – PHYSIOGRAPHY.

I. The Region as a Whole.

Boundaries. – The region, mainly characterized by the growth of the Indus delta, occupies the lower valley of the river. It covers 52,994 sq. miles including the Khairpur State. It is bounded on the west by the Kirthar Range (misnamed Hala), along with a chain of minor hill ranges as far as Cape Monze, and on the east delimited by the Rajputana Desert.

The Arabian Sea forms its southern boundary, while to the north it extends upto the foot of the Suleiman Range and the extreme apex of the delta—a narrow neck of the Indus Valley, between the mountains on the right and the sand-hills on the left. (See Plates 1 and 16.)

Two of these boundaries—the northern and the eastern—are only political and not physiographic, as they are to be extended into the neighboring States. It is expected that when the physiographic divisions of the rest of India are made, these boundaries will be definitely settled on physio-graphic lines.

Distinguishing Features. – The following are the outstanding features of the Lower Indus Basin: –

- (1) The area includes the old valley of the Indus, which has reached its base-level of erosion and in which aggradation is more or less complete. It is in continuation of the Khadar alluvium of the Indus in the upper region.
- (2) The rocks within the region are mainly Tertiary, thrown into anticlinal folds, which are being continually eroded by sub-aerial agencies.

(3) There is an extraordinarily large number of thermal springs, some of which show a temperature as high as 126° F. and evolve sulphuretted hydrogen gas. Although there are some extinct volcanic cones noticeable in Makran and Baluchistan, no volcanic eruption has taken place in the region within historic times. The surrounding mountains being young and highly folded, are still in unsettled equilibrium and so earthquakes are not uncommon.

(4) The vagaries of the Indus River and its tributaries in the upper region (the Punjab) have also affected this area to a considerable extent. Due to these hydrographical changes, as also to the fact that a whole river, called the Hakra, has dried up, a large portion of the alluvial plain has been converted into a desert, entrenched with old river beds, which remain dry during the greater part of the year, due to the scanty precipitation in Sindh. Drought and famine have been frequent in certain parts of it.

(5) Climatically, the region is said to be "between the two monsoons" –the S.W. from the Indian Ocean and the N.'E. or "retreating" monsoon, deflected towards it by the Himalayan mountains,—and escapes the influence of both. The average annual rainfall is only 6 inches.

(6) But what is lost by the region during the two seasons is, however, regained for it by the Indus, the main artery of Sindh, in the form of inundations, caused twice a year, by the spring and summer melting of the snows on the Himalayan heights and by rainfall during the monsoon season. Variations of diurnal and seasonal temperatures are also great.

(7) The growing and advancing delta is a characteristic feature, a large part of the existing deltaic lands being reclaimed during historic times. Small and large towns, which once stood on the numerous successive mouths of the Indus in highly prosperous olden times, are now completely thrown inland in a barren state and replaced by the present rock-bounded harbor of Karachi.

(8) Although there are no good mineral resources in the province of Sindh, its chief asset is its rich alluvial soil, which requires little tillage or manuring, for yielding crops of grain as well as fodder throughout the year.

(9) Parts of the sandy desert are overspread with natron-producing lakes called *Dhands*, which are characteristic of the Thar Desert. Salt and sand are continuously blown in from the Rann of Cutch by the agency of wind, and there are rich deposits of common salt (NaCl) and other salts found buried under sand-hills.

(10) Rain in the Thar Parkar area is not altogether absent; on the contrary in years of cyclonic storms, there is excessive precipitation. The result is that the so-called desert land is, for the time being, turned into grassland, giving rise to herd life and migration of population in intermittent seasons.

(11) Earthquakes and cyclones are not unknown: –

The Basin is very near the earthquake zone passing through the Northern Highlands.

In 962 A.D. the Indus River deserted Aror and even towns like Bahmanabad were destroyed.

1819 – Extensive changes took place in the Rann of Cutch,¹ affecting Sindh.

From 1845 to 1861 not less than 7 earthquake shocks were recorded.²

15th October 1896. – Shahbandar to Khanjuand through Thar Parkar.

14th January 1903. – Thar Parkar and Shahjanbad District. Fissures in Badin and Moghulbin Taluka; eruption of warm water and muds of 12 hours' duration. Geysers-like blow-holes left, 15-20 feet in diameter and 8-10 feet deep.

May 1905. – Dead fish washed off Clifton. A layer 5-15 feet thick and several miles long.

Cyclones also occur at times:

(e. g.) (1) 13th May 1902.

(2) *13th June 1902.* Wind velocity estimated to be 100 miles per hour. Tide rose 7' 2" on 16th June 1902.

(3) *1903 Tidal wave.* – Shahbandar Taluka. A tidal wave rose near the town of Sindree, situated where a branch of the Indus joins the Rann, which was permanently submerged on the occasion, a number of small cones, six or eight feet in height, burst up from the ground and continued, for many days, to emit bubbles of air and mud from their summits.

Scenery. – The scenery of Western Sindh is that of low undulating plains, the relief being mainly dependent upon

¹ Mew. Geol. Sur. Ind., 1926, Vol. XLVI, Pt. 2, 1926.

² Bease George, *The Sindh Directory*, Bombay Gazette Press, 1862.

- (1) the folded structure of the rocks,
- (2) the soft and jointed nature of the rocks, with consequent rapid weathering,
- (3) the erosion due to wind-currents combined with high aridity and scanty rainfall,
- (4) low dips of strata.

The windward sides of the hills are generally eroded and steeply scarped, while the leeward sides are smooth and gently sloping. There are, here and there, synclinal hills and anticlinal valleys. Detached hills with low dips are common in the plains; while massive wall-like cliffs and precipices are found in the mountainous parts. Along the coast-line and in the interior of Eastern Sindh there are transverse and longitudinal sand-hills, which are characteristic of the Thar Desert. Most of the streams in Sindh have their beds dry during the greater part of the year. The main artery of the Indus itself is as shifting as any other alluvial river, and as it is a highly aggrading stream in these parts, the main valley is nearly flat, having long before reached its base level of erosion. The hard rocks in it are covered over with river alluvium, which has been accumulating since the Pleistocene period.

Origin of the Indus Plain. – To understand the nature of this Indus basin, it is necessary to know its origin. Although the Indus has been considered to be an antecedent river, having existed long before the Himalayas come into being, the formation of the Indo-Gangetic depression is, without doubt, connected with the upheaval of these mountains during the Tertiary epoch. Resting upon the three or four primitive nuclei or fragments of an ancient land-mass, the land of Asia embraced the folded mountain belt from Asia Minor to the East Indies, across Persia, Tibet and China and grew, in the end, into the largest continent in the world.

The conception of the crust of the earth floating on the molten magma underneath is assumed by many geologists. In the gigantic process of building the continents by means of the drifting and fusing of ancient landmasses with the mountain chains, there are local depressions and isolations noticeable. Discussing the structure of the whole continent of Asia, Prof. J. W. Gregory asserts, " During the process of deformation of the earth, the great mass of Africa acted as the hinterland or back-land, which pressing northward against Southern Europe, crumpled it against the Northern forelands and that in Asia the direction was reversed, because the great mass which acted there as the driving hinterland, lay to the North and the great depression in the crust lay to the South. Accordingly, the dominant Asiatic movement was from north to south. We now know from the work of Mushketov, Klebelsberg, Wadia and others that the Asiatic direction was locally reversed opposite the mass of the Suleiman mountains and the

Pamir, which acted as a hinterland between the two forelands of Arabia and the Indian Peninsula."³

It is perhaps due to these opposing stresses working in the neighborhood of our region that a trough came into being, and it grew deeper and deeper on the southern flanks of the Himalayas, as they rose higher and higher and ultimately lay parallel with the range.

Similar events were happening in Africa and other parts of the world at the same time. The great meridional belt of ruptures which made the great Rift Valley of the Jordan, the Red Sea and the Nile basin, was due to the stresses between the northward movements to the west of it and the southward movements to the east of it.⁴

The Indo-Gangetic depression was supposed by some scientists to be "a trough-fault similar to the Great Rift Valley of Africa and probably coeval with the breaking up of Gondwanaland."⁵

From a number of geodetic observations of the amount of deflections of the plumb-line at and near the foot of the Himalayas at different distances, viz., Kurseong, Siliguri, Jalpaiguri (25 miles), Birond, Nimkar (112 miles), and Dehra Dun, Kalia (56 miles), Col. Sir S. G. Burrard, a former Surveyor-General of India, concluded that there was a rapid decrease in the deflections as one passed from the mountains to the plains, the reason being that "the attraction of the Himalayas was being counterbalanced by an attraction in the opposite direction and that an invisible chain of excessive density parallel with the Himalayas is underlying the plains of Northern India. Even the location of these hidden chain of rocks was suggested by Burrard to be some 150 miles distant from the foot of the mountains. Thus he deduced the theory that the Indus plain must be at first a "Sunken crack or fissure on its two sides."

But geologists, such as Fisher, Suess and Oldham, have not supported Burrard's hypothesis and suggested that the Indo-Gangetic depression is "a fore deep between the wave front of the Himalayan system of folding and the horst of Gondwanaland produced by the elevation of the mountain range with concomitant sinking, partly due to subsequent overspreading of the submontane tracts."⁶

The present view now generally accepted is that the Indo-Gangetic depression is "a broad basin, shallow on the outer side and sloping gently inwards towards the Himalayas, from which it is separated by a steep wall resulting from the series of reversed faults which separate the older geological systems from the younger."⁷

³ Gregory, J. W., *The Structure of Asia*, 1929, p. 13.

⁴ *Ibid.*, p. 31.

⁵ *Rec. Geol. Sur. Ind.*, 1915, Vol. XLIII, Pt. 2, 1915, p. 143.

⁶ *Ibid.*, pp. 146-147.

⁷ *Ibid.*, p. 167.

Geological History. – During the greater part of the vast cycle of geological time, Sindh lay submerged under the Tethys Sea. Its land history is, therefore, comparatively brief – and yet the history as written by nature on its rocks, is fascinating. For its birth, it has mainly depended upon the upheaval of the extra-Peninsular mountains, the Himalayas. How these stupendous mountains rose out of the ancient sea, and how they brought into being the two flanks, the Burmese Yomas in the east and Suleimans and the Kirthars in the west, is a marvelous story. Incidentally the Indo-Gangetic basin came into being, as has been stated above.

Even before this stage of Himalayan upheaval, the earth movements, which took place in Peninsular India during the Cretaceous age, caused a bulge in the surface of Sindh and there came on this surface the Cretaceous rocks in the Laki Range, the most ancient geological formation yet met with in this province. This was Sindh's first appearance on the earth.

This exposure of the Cretaceous in the Laki Range is due to a strike fault running throughout its length, caused by the stress of folding from west to east with an upthrown edge on the west. The Hippuritic limestone (equivalent probably to the Turonian) at the base of the Barrah hill, about 10 miles S.W. of Amri, is, therefore, the oldest rock exposed in Sindh. It is about this time that there was also the deposition of the *Cardita beaumonti* beds and the dark sandstones in the Cretaceous sea.

Then there was the memorable volcanic (fissure) eruption of the Deccan trap lavas in the Peninsula and Sindh had a small share of it in the form of a 40-90 feet thick bed of basaltic trap, on top of the Cretaceous rocks in some parts of the Laki Range. (See Plate 12.)

The land, thus formed like an island in the Tethys Sea, remained dry for a long time after the lava eruption, during which period there were laid over it quite extensive deposits of Ranikot beds by the streams, which flowed over it. Coincident with an upheaval in the Himalayan region the dry conditions persisted till the sea overspread the region again, and there were formed more Ranikot beds containing colored clays and some lignite, probably buried in a swamp or bay not far from the coast.

The land was again largely submerged in the Kirthar (*Eocene*) sea, which lay between the Aravallis and the western mountains, and large deposits of limestone with soft and shaly beds were laid down. These contain a rich fauna of corals, echinoderms and molluscs. Lateral compression caused an upheaval and folded the rocks into anticlines and synclines.

Another continental period followed and there were temporary land conditions, now noticeable in the various ferruginous beds, commonly known in Sindh as the Nari beds,

formed in a shallow sea and in valleys between the Kirthar limestone bridges, by the influence of rivers.

One more subsidence in the Miocene (Gaj) age gave birth to the well-known Gaj fossiliferous limestone, so well distributed in the Kohistan area and largely used as building material. These also contain fossil corals, echinoderms and molluscs.

The last phase was fluviatile, marked by the Manchar formation of *Siwalik* age. This was the age of mammals.

The Sindh gulf was then replaced by valley streams, which completed the work of filling in many a bay and lake, till ultimately the sea was completely withdrawn, leaving the central valley for the Indus River to flow into, so that by the middle of the Pleistocene period the outlines of the geography of Sindh had come into being. It only remained for the Indus to bring its alluvium and drop it into the valley with the detritus from the Himalayan heights. This gave a finishing touch to its physical features and shaped its topography. As the Indus delta went on growing southwards, and the level of the Indus plain was reduced gradually, the river changed its course now and then, swinging from east to west and west to east. Even today the process of lateral compression and mountain formation in the western highlands is not quite completed, the channels and mouths of the main artery of the land are not settled and the work of alluviation has not quite come to an end. (See Geological Map, Plate 2.)

Nature and Evolution of the Coast-line. – The coast of Sindh forms part of the plain of marine denudation with the sea hardly a few fathoms deep.

The sea face itself is determined by marine currents and not by any great deposit of sediment. The southwest corner of Sindh, with the projection of Cape Monze forming part of the Kirthar Range, is the result of the extra-Peninsular crustal movements, lateral compressions and foldings, followed by the erosion of the coast by the Arabian Sea. It consists of limestone and sandstone rocks and wherever the sea has encroached upon the land as a result of erosion, small inlets and bays are formed. On the whole, the coast-line is unbroken and has not undergone subsidence. On the other hand, there are numerous evidences of upheaval on every side (*e.g.*) the presence of oyster banks now several feet above sea-level and of coral beds far inland (*e.g.*) at Mangho Pir. Near Manora and Karachi the work of sea erosion is most active, resulting in the formation of the natural harbor of Keamari (see Plate 12) and an excellent beach stretching for miles from Clifton. The condition of the oyster rocks and the formation of the backwaters of China creek point to the havoc wrought on land by sea waves. At Clifton and Gizri there is an increase of foreshore due to aeolian deposits. Further eastwards the mouth of the Malir as also the numerous and changing mouths of the Indus show that the detritus brought by them rapidly change their size, nature and position. The coast-line in front of the Indus outlets is thus greatly changeable owing to the continuous growth of the

delta, sandbars, and deltaic lakes. A sandy but shifting beach of shoals, sand-hills, or *burkhans*, and mangrove swamps are prominent on the Sindh Coast. On the side of Cutch there are distinct signs of a slightly upheaved shore touching the Rann towards the east, the Koree being the largest creek on this side. The coast being low, the tide-waters penetrate far inland and have formed a large marshy flood plain.

Summary of Geological Formations occurring in Western Sindh.⁸

Groups	Subdivisions	Approximate Thickness (feet)	Probable Geological age	Remarks
9. Alluvium, etc.	..	?	Post-Tertiary	..
8. Manchar	Upper	5,000	Pliocene	Unfossiliferous representative of the fossiliferous Siwalik group
	Lower	3,000 to 5,000	Lower Pliocene and Middle Miocene	
7. Gaj	..	1,000 to 1,500	Miocene	Highly fossiliferous marine: no <i>Nummulites</i>
6. Nari	Upper	4,000 to 6,000	Lower Miocene	Unfossiliferous
	Lower	100 to 1,500	Upper Oligocene	Fossiliferous: Upper limestone with <i>Nummulites</i>
5. Kirthar	..	500 to 3,000	Upper Eocene	Nummulitic limestone
4. Laki	..	6,000	Middle Eocene	The lower beds unfossiliferous. Base not determined
3. Ranikot	..	2,000	Lower Eocene	Fossiliferous, <i>Nummulites</i> common
2. Trap		40 to 90	Lower Eocene or Upper Cretaceous	Representative of the Deccan and Malwa trap
1. Cretaceous.	(a) <i>Cardita beaumonti</i> beds	350 to 450	Upper Cretaceous or intermediate between Eocene and Cretaceous	..
	(b) Sandstones	700	Cretaceous	..
	(c) Limestones with <i>Hippurites</i>	320	..	Base not exposed

Physiographical Divisions of Sindh into Provinces and Sections.—The area can be divided and subdivided into natural physical units as under:—

Division	Province	Section
1. Extra-Peninsular Mountains	I. Western Highlands	(A) Kirthar Mountains
		(B) Kohistan Section
2. Indo-Gangetic Plain	II. Lower Indus Valley	(A) Western Valley Section
		(B) Eastern Valley Section
		(C) Deltaic Area
..	III. Desert Province	(A) The <i>Pat</i>
		(B) The <i>Thar</i>

⁸ Medicott and Blanford, *Manual of Geology of India*, Calcutta, 1879, Vol. II, pp. 473-475.

Method of Division. – The method employed is that adopted by the Association of American Geographers for the physiographic divisions of the United States of America. In preparing the map of the Lower Indus Basin its physiographic history has been considered, *viz.*, the original structure of the land-forms, the process of land erosion by subaerial agencies destroying this structure and the recent stage of erosion or deposition of material thus eroded. The outstanding characteristics of the divisions depend upon these factors and the value of each unit is based on its homogeneity. (See Sections, Plate 14.)

Need of Physiographic Divisions. – The boundaries of these units are fixed with regard to their utility from the points of view of water-supply, economic resources, including agricultural products, industrial possibilities, population problem, etc.

Sections Distinguished: Province (I). – (A) This consists of folded strata, containing hard and soft rocks of sedimentary origin, deeply ravined and fissured here and there. There is little soil and no vegetation, due to the scanty rainfall, in spite of the altitude reached, over 6,000 feet.

(B) These are lower ranges composed of monoclinical, folds with undulatory plains in between. There is considerable subaerial denudation because of more rainfall here than in the Kirthar mountain area, nearness to the sea and humidity of the air. The soil is cultivable in the valleys and supports more vegetation. One of the hill-ranges, *viz.*, the Laki, contains pre-Tertiary rocks and there is also a large number of thermal springs located chiefly between the latitudes 24° N. and 26° N.

Province (II). (A), (B) and (C). – These include valley-plains, chiefly overlain with alluvium, both old and new, trenched with river-channels in some places and overridden by raised beds in others. A few isolated, low limestone hills are the only relieving feature in the plains which are otherwise quite level. The soil is rich in salts and in minerals, derived from the silt and debris, borne down by the river from the mountain heights.

The Western Valley Section (A) is distinguished from (B) the Eastern Valley Section, by the presence in it of (i) old alluvium and (ii) seasonal springs flowing down from the Kirthar mountain into the Western Nara and the Manchar lake.

(C) *Deltaic Area* – Largely uncultivable land consisting of mangrove swamps, burkhans, mud banks, shoals, sand-bars and flood plain. The chief characteristic of the region is the changing outlets of the Indus, which act as the inlets of the sea.

Province (III). The Desert Province. – This is "a regular sea of sands," of aggraded desert plains overlain with sand-hills. It is subdivided into (A) The Pat. This is the northern

section of the desert consisting of clay or silt covered with longitudinal 'bhits' or sandhills connected by transverse ridges. There are also numerous 'Dhands' or salt lakes.

(B) *The Thar.* This section is more full of high sandhills with a definite N.E.-S.W. orientation, though the rainfall in this area is somewhat greater.

The whole of this Desert Province is distinct from the extra-Peninsula, the Peninsula, or the Indus plain Provinces. But it possesses the characteristics of all the three, having rocks belonging to the extra-Peninsula, while their structure is that of the Peninsula and the stage of erosion is that of the Plains.

II. Province (I) : Western Highlands.

Correlation. – This province of the Western Highlands really forms part of the chains of extra-Peninsular mountains including the Suleiman and Hala ranges, and is capable of extension towards the north as well as the west. Its limits on these two sides is left undefined, until the work of designating the physiographic divisions of the surrounding lands and tracing their boundaries is completed.

Peculiarities of the Rocks. – The Tertiary rocks of Sindh are in general similar to the Tertiaries of Burma, Assam and other parts of India.

(A) *The Kirthar Mountains.*

General and Structural Features. – The Kirthar mountains have a high relief (4,000 to 5,000 feet above the sea-level) with transverse torrents running down the eastern flank into the Indus Valley. They are deeply ravined and fissured and mainly consist of folded strata, weak as well as strong.

They run north and south like a crescent turned towards the low lands and extend from the northwestern extremity of Sindh southeastwards to a little below the latitude 26° N. The maximum height is 6,877 feet above sea-level at *Kutta-jo-Kabar* (Dog's tomb); the southern end does not exceed 3,500 feet. It has a simple mountain structure of the regular anticlinal type, with the arches steepest towards the north and the west and gently dipping towards the south and the valley of the Indus.

The rocks exposed on the western flanks of the Range are Nummulitic limestones of the Kirthar (Eocene) series, while shales and soft sandstones are found between the ridges. The whole range presents an arched or dome-shaped whale-back appearance, while its geology is singularly simple: " Many of the chains are perfect geological diagrams and from the absence of vegetation and clearness of the atmosphere, the outcrops of

formations, such as the Nummulitic and Miocene limestones, may frequently be traced for many miles on the hill sides with absolute certainty from a distance."⁹

Possibilities of hill-stations. – There are two table-lands suitable for hill-stations on the Ridge, viz., (1) Dhar Yaro plateau, 6,000 feet high and exposed to high winds and having nearly a thousand acres of cultivable land. It has a mean summer temperature of 81° F. only and a rainfall of about 6 inches. Its ground is cut up by watercourses running down to the east into a deep and long ravine. The soil is yellowish red marl, washed from the heights, while the rock is red sand-stone inter-bedded with Nummulitic limestone. The well-known Kutta-jo-Kabar (Dog's tomb) is a junction of the eastern spur of Dhar Yaro with the main range of the Kirthar. It has other hills 300 to 700 feet high on its borders, so that the plateau is protected from all sides.¹⁰ (2) Danna Towers, a plateau 4,500 feet high, situated on the second middle ridge, 50 miles S.W. of Mehar. The ascent is irregular and steep.

The southern Kirthars run in the N.W.W. and S.S.E. direction with a gentle slope into Kohistan.

Passes and Drainage. – There are transverse lines of drainage in the Range, which serve the double purpose of pathways through the frontier from the valley to the Iran plateau (e.g.) the Mula, Mushkot and Bolan passes and of flood torrents down the slopes called "*nais*," depositing a large quantity of boulders, pebbles, etc., along the hill-slopes. There are, also, a number of minor notches in the mountain, such as, Gazi Luk, Bakhar, Pinri, Harbab, Kamalune, Shakloina, Zamin, Phusi, Peei, Rohel, Garre, Musefiri, Kutta and Daimang.

Nais. – Among the important mountain streams issuing from the ridges and falling into the Indus plain are: (1) the Gaj nai, flowing through the Kamalune Pass and (2) the Nari nai, joining the former at a later stage. Other hill-torrents, which are either lost in the sandy plain below or, being temporarily lost, flow through the Western Nara into the Manchar lake every flood season are, the Sain, Kenji, Mogio, Trappen, Sita, Mazarani, Sahar Radha, Burri, Sulari, Khurbi and Maki *Nais*. Some of these *Nais* are so powerful during the season (June to August) that they destroy fields and villages several miles away.

Near these streams, the hills are surfaced with gravel, while along their foot are heavier boulders, pebbles, etc. " These extensive gravel slopes are quite characteristic of climates like that of Sindh with a low rainfall, because in such tracts, rock detritus accumulates along the bases of hills more quickly than it can be carried away by the streams. The

⁹ *Ibid.*, p. 31.

¹⁰ *Proc. and Trans. Born. Geog. Soc.*, Vol. XVII, p. 310.

rainfall is sufficient to wash down the disintegrated fragments from the steeper slopes but not to carry them forward where the fall is more gradual."¹¹

Valley forms. – As the mountains are of recent origin and as the nature of rocks varies, there are different types of valleys produced. " There is here ample evidence of local disturbances in the alterations of levels, extensive valley plains, occupying rock-bound basins and compressions of rock masses." Where the rocks are hard limestones, there are narrow, and fissure-like gorges, steep V-shaped valley sides, and rapid streams. But wherever they are soft (*e.g.*) shales or sandstones, the valleys are " broad, open, smooth below and filled up with stream deposits or gullies."¹²

Instability of the land. – These mountains of comparatively recent growth are yet unsettled and the region falls within the seismic zone of the earth. Now and again, there are tremors and quakes, as results of fractures, fissures or subsidence of rocks. This instability may also be due to the growing delta of the Indus and the fault lines, recently discovered under the bed of the Arabian Sea in the neighborhood.

(B) *Kohistan Section.*

Delimitation. – This section covers all the lower ridges of hills and the undulating plains of rapidly weathering rocks, east and southeast of the Kirthar mountain, and extending as far as the sea coast in the south. "The Indus bed lies flat against the higher levels of its right bank and cannot make any further advance against their. The hills constituting the ridges are named after some prominent peak or pass. There is an abundance of hot water springs.

Topography. – Low, parallel or sub-parallel ridges with broad undulating plains between them are the prominent features, indicating a lateral compression of the rocks acting west and east. The topography of this section is determined by the folded sedimentary rocks of the Tertiary system, disturbed by a vertical dislocation in the Laki Range and modified by the denudation by subaerial agencies to a great extent. The marine limestones, covered by soft clays and conglomerates yield to the action of wind and rain, resulting in the characteristic undulating plains topography. There are a number of lateral ridges, hundreds of feet in height, pushing into the plains and becoming conspicuous by means of their numerous spurs and peaks lying in the midst of deep and wide valleys.

Chief Ranges: (1) *Laki Range.* – It extends north-south from Bhago-thoro to Thanu Bula Khan (height 2,202 feet).

¹¹ Quar. Jour. Geol. Soc., London, 1873, p. 496.

¹² Oldham, R. D., "Evolution of Indian Geography," Geog. Jour., 1894, Vol. III, No. 3.

(2) *The Kambhu.* – 15 miles long, in continuation of the Kirthar mountain but only 2,340 feet high.

(3) *The Badhra.* – Nearly 30 miles long, north to south a simple anticlinal roll of Nummulitic limestone with its axis continuing southwest and joining the Kirthar mountain in the south by a cross ridge (height 2,436 feet).

(4) *The Bhit.* – 20 miles long and 2,790 feet high. West of Badhra; it is almost flat-topped, "a great anticlinal saddle of Kirthar limestone".

(5) *The Bidur.* – The eastern watershed of the Habb.

(6) *The Dunbar.* – 15 miles long and 2,200 feet high, lies between the Bidur and the Kirthar Range.

Structure of the Hill Ranges.—Generally speaking, the anticlinals are steeper on the eastern side, and they " frequently consist of a double anticlinal fold with a small synclinal between. Faults and dislocations are of rare occurrence and those which occur are frequently parallel to the axes of the hill ranges."¹³

Importance of the Laki Range and its History. – This is the most interesting of all the Kohistan hill ranges. The Vira plain lies to the east of it, while a broad intervening valley opens out the road from Karachi to Sehvan. It is a steep anticlinal fold, faulted across with its upthrow towards the west and with prominent escarpments. A considerable number of the upper and lower Tertiary rocks is exposed in it, thus becoming a regular "Museum of field geology". It is the only locality in Sindh where there are Cretaceous rocks exposed. A fissure eruption, contemporaneous with the lava flows of the Deccan, has left its mark in a bed of basalt 40 to 90 feet thick but now highly decomposed. Between this volcanic rock and the Ranikot beds there is a break, there being a layer of fluviatile deposits of variegated shales and sandstones especially in the lower beds. The presence of oyster beds in certain places indicate local marine incursions in later geological times. Actually within the Ranikot beds there are layers of lignite, apparently showing marks of swampy areas, into which the vegetation grew and got subsequently buried. Nearby, there is a layer of ironstone and ferruginous limestone and also laterite. As the Eocene sea receded at one time and attacked the land afterwards, the Nummulitic lime-stones were gradually deposited. Once again on the land becoming dry, the river and rocks of ironstone, soft brown sandstones, etc., of the Nari group were formed. The Miocene times again saw the marine incursions for a while, until at last there was the dawn of the Siwalik age with its mammalian fauna.

¹³ Blanford, W. T., "*Geology of Western Sindh*," *Mein. Geol. Soc. Ind.*, Vol. XVII, Pt. 1, p. 28 .

Other Features. – The whole range, though simple in structure, is much folded and is itself composed of several parallel ridges with valleys of varying breadths lying between them.

East of the range, there are only a few broken hills lying in a gentle slope reaching the meanders of the Indus. There are a few passes, or notches, in it, *viz.*, Girran, Hoshian, Hala and Gagar. Thane Bula Khan, about 700 feet high, would make a good sanatorium. All the newer rocks belonging to the Nari, Gaj and Manchar series, *viz.*, sandstones, conglomerates, etc., being soft, lie denuded in valleys and plains, while the outcrops of compact and hard Miocene lime stones do not suffer from extensive weathering and are conspicuous in many a detached hill in the south and southwest.

Mol and Myher Plateaus. – The undulatory character of the Kohistan area is absent in two masses of rock, called (1) the Mol plateau and (2) the Myher plateau, both lying in the northwest of Kohistan and to the east of the Habb river. They are chiefly composed of soft Manchar rocks, which form a gentle synclinal or almost horizontal table-land.

But elsewhere the plateaux break up into the Gaj, anticlinals again predominating, as in the hills at Mangho Pir, Cape Monze, etc., in the north and northwest of Karachi.

Drainage. – (1) The Habb River. This is the only perennial stream in the region. Its headwaters are in the Pabb Range beyond the limits of our region, but its main stream forms a rough continuation of the axes of the Kirthar Range and the western boundary of Sindh. An old but dilapidated bond, called Murad Khan's Bund, lies across it.

(2) *The Baran.* – Next in importance is the Baran stream, rising near Tako Baran in the Kirthar Range. It traverses the valley west of the Laki Range, where it receives the waters of the Nais, and later on cutting through it runs eastwards right through Kohistan into the Indus River, a few miles from the Bolari Railway Station.

(3) *The Malir.* – This is a seasonal stream. It joins the Khadeji at a later stage but lies dry for the greater part of the year. After heavy rainfall only, it flows into the Gizri creek near Karachi. There is, however, an immense quantity of subterranean water underneath the sandy bed of the Malir, which supplies a number of wells and galleries along its right bank – the only source of water-supply of this locality. At some distance from the Dumlotte gorge upstream, there is the confluence of the Malir with the Khadeji, which has more or less a perennial flow of water with a small waterfall also.

Among other minor streams of a similar nature are: the Lyari flowing into the Keamari harbor, the Mohan or Rani rising from east of the Laki Range, the Saun, the Chorlo, the Nie Naegh and the Angyi, all flowing into the Indus or the Arabian Sea, if not lost in the sandy tracts along their courses.

Thermal Springs. – No faults have been traced in these localities but it is obvious that water percolating through the folded and fissured strata of the anticlines penetrates to a depth of thousands of feet and gets heated in the interior. Release of pressure and the original head bring the hot water, charged with sulphurous gases, up to the surface again in the form of hot springs.¹⁴ The most important are shown on the map, Plate 4.

The Mangho Pir spring is the hottest in Sindh its usual temperature being 126° F., with a discharge of about 180,000 gallons a day. Other springs have their temperature ranging from 80° F. to 120° F.

Sources of Water. – That there is abundant supply of water from surface as well as deep-seated springs even at points hundreds of feet above the sea-level, has been proved both at Dumlotte and other places in the Kohistan region, the natural dip of rocks being also favorable (*i.e.*) towards the Malir valley. "Many of these (springs) are used up in irrigation and a still greater number after flowing from one to ten miles disappear in the sand or flow off into cavities of the limestone formation, through which they pass to appear again, doubtless in places at a lower level when faults bring the water to the surface."¹⁵ There are good chances for artesian wells also in the Malir valley.

III. Province (II) : Lower Indus Valley.

The Province as a Whole. – This valley presents a typical example of aggradation by the Indus throughout the post-Tertiary times. On either side of the river, there are long stretches of land, 2 to 12 miles wide, which are well watered, richly silted and cultivable.

This province is the most precious part of Sindh and produces its main agricultural wealth. For this reason, a study of it is desirable from the points of view of: –

- (1) Ground contours,
- (2) Subsoil water-level contours (hydro-isobaths),
- (3) Soil indications.

(1) *Ground Contours.* – The accompanying map of ground contours (see Plate 5) shows that the fall of the country is only about 180 feet, (from 200 feet contour in the northwest to 20 feet in the southeast corner) for a distance of about 250 miles (*i.e.*) nearly 8.1 inches per mile only.

¹⁴ Oldham, R. D., *Mein. Geol. Sur. Ind.*, 1882, Vol. XIX, Pt. 2, "*Thermal Springs in India*". Fox, C. S., "*The Movement of Underground Waters-with remarks on Radio-active Waters and Mineral Springs*", *Trans. Min. and Geol. Inst. of Ind.*, Vol. XXX, Calcutta, 1936, p. 131.

¹⁵ Barnes, J. W. (*Bombay P.W.D.*), *Jour. Roy. Geog. Soc.*, 1867, p. 442.

The contours in the northern tracts run almost N.W.-S.E., those in the middle nearly E.-W. and across the river bed, while those in the south almost N.E.-S.W.

It is also easy to understand that the bed of the Indus is itself higher in level than the surrounding country.

The map shows breaks in the contours of areas too high for the Barrage to command.

There are practically no rocky outcrops or eminences in this valley. Such a plain is ideal for cutting canals in any direction.

(2) *Subsoil Water-level Contours.* – Two maps showing the hydro-isobaths of the two main seasons, October (after the rains) and April (before the rains), have been prepared. It is a characteristic of the province that the subsoil water-level rises at the time of every inundation. On the right bank, especially a high subsoil water-table exists, varying from 3 feet to 13 feet below the surface. On the left bank the conditions are slightly better.

Under the old inundation canals system, as the inundation ceased to flow at the end of September and the beginning of October, the subsoil water-level had enough time, nearly 8 months, to recover before the next season; but now under the perennial system of the Sukkur Barrage the drainage capacity of the soil has been greatly affected, and there is "a persistent upward trend in subsoil water-level" according to the general principle that the flow of water through subsoil is from areas in which the level is high to areas in which it is low. The average rise is 9 feet annually. As the whole area gets sufficiently saturated by irrigation water, the effect of additional rain-water during the season has little effect on the subsoil water-table.

October readings (see Plate 6).—These show that the water-level contour below the surface varies from 4 to 8 feet near the bed of the river to about 12 feet near the frontier on the right bank; while the level is considerably below the surface even in the neighborhood of the river banks on the left side, viz., 16 to 24 feet. In the Khairpur State, however, the level is very high, viz., 4 to 8 feet only, due to the passage of the large Rohri canal.

April readings (see Plate 7).—The contours on the right bank vary from 8 to 12 feet near the river bed to nearly 24 feet towards the N.W. frontier. On the left bank the levels vary from 12 to 16 feet near the Eastern Nara valley. In the Khairpur State it goes down to 8 to 12 feet only.

On comparing the April hydro-isobaths map with the October one we find that though there is an average drop of about 4 feet in April, the water-table is generally only about 8 feet below the ground level. This, situation is on the left bank, while in the Khairpur

State and also in some parts to the south there is a general tendency for the subsoil water to rise in October after the rains.

Outside the Barrage Zone, depth of the water-table varies from 60 feet in the Kohistan region to 300 feet in the Desert region.

Utility of these Maps. – The above information is a guide to the solution of the problem of seepage and water-logging in Sindh. Contour plans of subsoil water have been prepared by the Development and Research Division since 1930, and for the months of (1) April when the level is the lowest before the *Kharriff* season begins, and of (2) October when the effect of the monsoon irrigation on the land is clearly marked. Formerly, observations were taken of the rise and fall of water-level in existing wells in some parts of Sindh twice a year. The more systematic readings, obtained by the Public Works Department in recent years, have enabled them to keep track of rises and falls of the subsoil water-table and to suggest plans for the prevention of water-logging in certain localities. It has been noticed that the area suffering from water-logging in Sindh is only confined to the neighborhood of canals due to seepage Through sand-beds and banks, that it is very small compared to the whole area commanded by the Barrage and that this kind of seepage is getting reduced year by year due to the sides of the canals being gradually, though unevenly, sealed up by silt deposits. Such deposits have, however, been found to be fewer on the left bank area than on the right bank.

It is surmised that seepage and water-logging after the Lloyd Barrage are caused also by a buried ridge or up warp extending from Kohistan through Sukkur to the Suleiman mountains and indicated by gravity, data, which were obtained by the Survey of India (vide Geodetic Report, Vol. VIII, Chart 11). It might be proving to be an obstacle to the subsoil flow of water, thus causing a rise in the table.

(3) *Soil Indications.* – In a province, dominated by such a powerful aggrading river as the Indus, the soil is largely alluvial and sand is likely to predominate over silt or clay. The results obtained by the Research Division, however, show that the nature of the surface varies considerably from place to place and that there are layers of sand belts (containing sand and sandy silt), and clay belts (containing clay and dry silt) spread throughout the province. These belts, also, are of various thickness, up to 12 feet. Coarse sand underlies the whole area to a depth of 70 feet and the depth of soil itself is found in several boreholes to be varying from 30 feet to 200 feet and more (Vide Plate 8). These layers are also impregnated with salt and abound in calcareous shells of animals.

On the whole, the sand belts are wider in extent than the heavy soil belts on both sides of the river valley and they nearly run parallel to one another, enclosing within them the deposits of clay.

On the right bank, the main sand belt lies continuously under the area, while on the right bank area these sand belts are not continuous but broken and stretch for long distances from north to south, showing clearly the vagaries of the river and its various branches from time to time. Nearer the Eastern Nara and towards the south, clay belts predominate, showing how this stream, unlike the Indus river, deposited silt through its flood waters but did not leave its bed and cut through the clay belts later on.

These sands and clay belts indicate probably that the whole of the valley consisted originally of silt and clay, deposited by the flood waters from the Indus, which were ponded against the Kirthar Hills on one side and the sand-hills on the other and in a still condition and that " after the formation of this large expanse of clayey material, the river meandered through it cutting away the clay on its course and leaving sand in its place thus accounting for the sand-belts which exist at present."¹⁶

Commenting upon the result of the investigations, Mr. Hawes says that a survey of the soil strata before the construction of any canals would have been highly advantageous in the matter of their alignment along clay belts, which are impervious and which would have prevented seepage and water-logging considerably.

There are also patches of Kalar (salt) bands here and there. (See Plate 9.)

Special Drainage Features. – One important feature of the drainage of this portion of the province is that it is confined to a comparatively narrow tract and, therefore, large and permanent marshes exist on both sides of the Indus on account of flood waters: (1) The Western Nara tract including the Manchar lake and giving rise to forests near Shikarpur and Larkana and (2) the depression from Khairpur to Umarkot now occupied by the Eastern Nara channel.

In the immediate neighborhood of the river itself the ground is rather higher, because silt deposits are considerable and these also get covered up with wind-blown sands.

(A) Western Valley Section.

Boundaries. – This section chiefly comprising an old alluvial plain lies in the N.W. corner of the province. It is bounded on the north by the outskirts of the Suleiman mountain, while the barren hills of the Kirthar form its western boundary. In the south the section narrows down into the Kohistan with the Manchar lake as the prominent boundary landmark. The line of the most westerly meanders of the Indus forms the natural eastern margin.

¹⁶ Hawes, C. G., "A Note on the Subsoil Investigations in the Lloyd Barrage Canals Area," *Bonn. Eng. Congress*, Paper 136, pp. 8-10.

Special Features. – The topographical feature of the section is an un-even alluvial valley plain with but few outcrops of Tertiary limestone. It forms a wedge-like portion of low land between the Afghan Mountains and the Baluchistan Ranges and has a foundation of Tertiary strata, outcropping in a few anticlines. It is now nearly covered with old alluvium, which has mainly been deposited by the Indus waters. Though almost flat, the country is not without gentle slopes here and there. Tabular uplands and well-marked Bhabar slopes of gravel are common between mountain streams. In other parts, owing to silt deposits, a kind of gently rolling character of Bhangar (aggraded river parts) in the form of mounds is developed. The mountain torrents get soon dissipated on reaching the plains, leaving gravel, and sand-dunes, small and large, lie scattered here and there. With the slightest obstruction from without or diminution of water within its body, the river deposits material in the flood plain. These deposits are more within the continually changing beds of the Indus than on the banks, and so they rise like dykes above ground. The slope of the plain is less than a foot per mile in places. This circumstance coupled with the fact that the Kirthar rocks, near the flanks of the mountain, dip down towards the interior, has caused a depression in the midland area. The Western Nara, the Manchar lake and the Aral river lie within this broad and shallow belt of the land, which is like a loop of the Indus river itself. This secondary waterway is also fed by the other streams draining the mountain system of the Kirthar during the rainy season. There is plenty of fresh-water underground, so that the Manchar lake, into which the main drainage of the area lies, has come to be the biggest fresh-water lake in India.

Desiccation, however, is very great towards the northern part. Although most of the land has been brought under cultivation by means of irrigation canals, there is a portion of desert land still left in the northwest corner.

Owing to little rainfall, this part of the country between Jacobabad and the Bolan pass, thirty miles across, has remained a rainless desert destitute of any irrigation and is called the Pat. It chiefly consists of indurated light colored clay, deposited by the Bolan and other mountain streams. The waters, charged with clay, are simply lost in the sands. Elsewhere, too, there are patches of salt and sand covering mounds, now much eroded by casual floods. Wherever there is any impervious clay covering the surface, *Dhands* or salt lakes are formed. Some of these are Dhand Saro, Dhand Daba and Dhand Changro.

A slope of gravel brought down by hill torrents, similar to the Bhabar at the foot of the Himalayas, extends along the edge of the Kirthar mountains forming a piedmont zone between the western mountains and the alluvium in the east.

Soils. – The soil within the area is very fertile. It is rich loamy alluvium, containing plastic clay, sand and salts. Old alluvium predominates in this section, and soil of the carbonate of saline and alkaline group is commonly found.

The silt, deposited by the river, is found to contain "particles of clay, slate, quartz sand, decayed vegetable matter, micaceous, talcose and chlorite schists, gneisses, etc."¹⁷ No doubt, these ingredients are derived from the rocks of the mountainous region, through which the drainage passes. Even seeds of grass are brought down by the waters from time to time.

Drainage. – (1) The Indus river is the very life of the land. Its vagaries and instability, however, are proverbial. The annual inundation period is its chief feature. Its aggrading character within the region of our study, has been responsible for most of the geomorphological changes, which have taken place. This subject has been fully dealt with in the second chapter.

(2) Among the numerous "Nais" or mountain torrents, which are only occasional and not perennial, but which rising in the Kirthars, supply a large quantity of surface water and subsoil water to the region, may be mentioned the following:—

(i) *The Gaj Nai.*—This is the most important and longest of all and discharges water as much as 150,000 cusecs till February each year. This *Nai* debouches into the Western Valley section, through a gorge and cuts through it in two narrow channels, one originating in Halawar near Kalat and the other in the Kirthar and has three exits in the northerly, southerly and easterly directions. Its floods are heavy and devastate large tracts of land.

(ii) *The Mazarani Nai.*—This is in the Warah Taluka and is provided with a bund, wherewith its waters are held up in the form of a lake 10,000 sq. yards in area, for the purpose of irrigation.

(iii) *The Khenji Nai.*—It is situated between the Upper Sindh Frontier and the Larkana District.

(iv) *The Dilan Nai.*—This is made up of three smaller *Nais* in the higher reaches and remains active during the greater part of the year, supplying water to nearly 5,000 acres of land.

(v) *The Nari Nai.*—This drains a large part of the hilly tract and is joined by the Letan *Nai*.

(vi) *The Sita Nai* and (vii) the *Salari Nai* are other minor water channels.

All these *Nais* flow ultimately into the Manchar lake.

¹⁷ Vyse, G. W., *Jour. Roy. Asiatic Soc.*, Vol. X, pp. 317-323.

(3) *The Western Nara.*—From the nature of its level banks, its many meanders and absence of mounds on the sides, one is inclined to consider this to be an old channel or at least a branch of the main river system, the Indus. It runs parallel to the mother stream for some distance. It was projected into a canal by Col. J. G. Fife, R.E., sometime Head of the Irrigation Department of Sindh. This stream also finally falls into the Manchar lake. It is navigable during the monsoon season, especially between May and September, and is even preferred to the Indus during this period, for this purpose. The Manchar lake at the southern end can be taken as a local expansion of the channel.

(4) *The Gharo Stream.*—This is also supposed to be a natural river of a similar kind, but is deeper and wider than the Western Nara.

(5) *The Aral.*—The most interesting of all water channels in Sindh is the Aral. It is only 17 miles long and leaves the Manchar lake at its extreme southeast point, flowing eastward at first and then northeastwards, till it reaches Sehvan. Here it joins the Dunstarwah. After rounding a little, the combined channel turns southwards, till it reaches the Indus near Bhagothoro Station. More water goes into the Manchar lake through this short watercourse than through the long and worn-out stream of the Western Nara. It cuts the Indus almost at right angles. During the off-season, as the pressure of water decreases, the Aral flows backwards and, reversing its action, becomes a drainage channel from the Manchar lake into the Indus.

(6) *The Manchar Lake.*—By far the most important of the numerous *Dhands* or lakes in the region is the Manchar lake. It is only 8 to 9 feet deep and is a mere alluvial depression. It is bounded on the south by the Kohistan high-ground and fed by the Nara, the hill torrents and the Aral described above. As the level of the river bed is higher than that of the level of the lake during the season, the lake acquires a wide expanse, after an inundation, towards the north and the northeast, covering over 200 sq. miles—the largest, fresh-water lake in India,—while during the off-season it remains restricted to about 14 sq. miles only by post-monsoon drying. This characteristic of a periodically changing level, filling and emptying alternately, gives the valley some 186 sq. miles of excellent cultivable land during the cold months. There is a scheme to drain the lake entirely in the cold season and thus provide, for Rabi cultivation, some 20,000 acres of arable land. (See Plate 4.)

(B) Eastern Valley Section.

This section of comparatively recent alluvium, covered over with sand-hills and *Dhands* in parts, extends along the left bank of the Indus from the Khairpur State in the north to the delta proper and the Rann of Cutch in the south. It is bounded on the east by the meanders of the Eastern Nara, beyond which is the extensive desert region of the Thar. The drainage is very deficient in this section.

Topography.—Almost the whole of the section is overlain with recent alluvium, extending for many miles between the Indus and the East Nara.

In the northern parts, the levels are higher, more than 400 feet, in some places. There is a gradual fall in level, as we go southwards, till near the margin of the delta proper, the elevation is less than 50 feet. There is a similar gradient from the Indus river course eastwards towards the Nara river.

Large masses of land are covered with silt deposited by the river and sand blown in by the winds from the south and the southwest.

The whole surface is furrowed and cross-furrowed by the beds of ancient river channels, which have left their fertile meanders in many places.

Relief.—Apart from a few outcrops of limestone rising above the ground level, the area is flat. In the northern extremity of the plain, it just touches a range of hills, running north and south and rising to the maximum height of 413 feet above sea-level. Near Hyderabad in the middle and along the latitude 25° 21' N., there is a similar flat-topped range of Tertiary hills 14 miles in length, but only 252 feet in height. These dip gently in the easterly direction and are scarped mostly on the side of the river. Still further south, near Thatta, are the isolated outcrops of the Makli Hills. They are of the same geological (Eocene) age, the rocks dipping gently towards the west and southwest. These few outcrops of hard rock embedded in the alluvium consist mainly of Nummulitic limestone of the Kirthar series, interbedded with green clays and gypsum.

Some idea of the accumulation of fluvial and xolian deposits and the consequent elevation of the surface in this region can be obtained from the observations on the levels of the large hollows found between sand-hills and filled with flood waters from the Eastern Nara. These levels, in places 300 feet high, must have been "at least as high as the general surface of the Indus plain at no distant date."¹⁸

Soil and Climate.—The soil, mainly composed of recent alluvium, varies in composition from place to place and is rich enough to yield various kinds of crops. It is hard, sun-baked clay when devoid of water. A large part of the belt of land between the Indus and the Nara—the Doab, 70-80 miles wide—is very fertile, being covered with subaerial stream deposits. The types of soils found in the Western Valley section, *viz.*, Wariasi, Kachi and Chiki, are also found in this portion of the basin.

The full vigor of the hot and rainless season is experienced in the north, and the line beyond which the S.W. monsoon rarely reaches, is the latitude of 25° 20' N. The rainfall

¹⁸ Oldham, R. D., *Geology of India*, 1893, p. 452.

varies from year to year and place to place but the average is about six inches. The climate is dry, on the whole, and typical of Sindh.

Drainage. – The area lies between the two watercourses, viz., the Indus on the one side and the East Nara on the other, the quantity of water in the latter depending upon the floods in the former and in a depression in the Bhawalpur State further north. There are no mountain torrents or other perennial streams, as in the Western Valley section.

The Eastern Nara is an old bed of an eroding river, which is lost. It runs almost parallel to the Indus showing the slope of the ground away from the main stream. Though it is called Nara, it is very wide and about 8 to 10 feet deep. Between the towns of Chundawah and Nawakot, the Nara or as it is there locally called the Hakra, skirts the Thar Desert. At Nawakot the river flows in two channels, the larger one running in a southeasterly direction to Wang-jo-got, where it joins the Puran, and the other continuing to skirt the Thar for about 30 miles, after which it joins the Puran below Wango Bazar. From the latter place, the waters of the Nara pass by means of the channel to the Puran to Lakhpat where after completing a course of about 300 miles from the head, they enter the sea near the Koree Creek. "Numerous *dhands* occupy the valley amounting in the aggregate to nearly four hundred, some of them being as much as three miles in length by one in breadth."¹⁹ Enormous crocodiles live within the stream throughout the year.

It is a well-known fact that the Eastern Nara has lost its source of water owing to the divergence of the Indus and other rivers, especially the Sutlej, in the Punjab. The result is that a large portion of what was once fertile and well-inhabited land lies barren today.

Among the other old water channels of the Indus river now converted into irrigation canals are the Fuleli, the Gujah, the Gungro, the Pinjari and the Gunjree, all ultimately flowing into the numerous delta creeks in the south.

Dhoroës. – But one remarkable feature of the drainage in this section is the numerous *Dhoroës*, or dry water channels, found at short intervals. They are about 100-200 yards in width and from 2 to 10 miles long. They are without any apparent continuation at either end, and seem to merge into the sand-hills in the neighborhood. They remain dry throughout the year, and so their beds are cultivated by lift irrigation. How these channels were formed is a problem, but from their nature they seem to have some connection with the main drainage-system of the country in the past. Lower down in the section, a few of these *Dhoroës* are continuous and reach as far as the sea.

(C) *Deltaic Area.*

¹⁹ Hughes, A. W., *Gazetteer of the Province of Sindh*, 1876, pp. 585-586.

Limits of the Area. – The deltaic area is limited by the coastal strip as far as Cape Monze in the northwest and by the numerous spurs of the Kohistan. Tatta marks the apex, which is also the limit of the tide waters ascending up the river for about 60 miles. Towards the S.E., the delta extends as far as the Rann of Kutch. The shore line, scalloped with the numerous outlets of the river and in length about 125 miles, forms the base of the triangle.

Outstanding Features. – The deltaic area is of recent growth and is still growing. The Khadar (low-land plain) of the Indus imperceptibly merges into it. Unlike the Ganges delta, it is uncultivable, uninhabitable and unstable. Within its limits the Khadar alluvium cannot be distinguished from the Bhangar. On the other hand, the Ganges delta is not so well-defined as this one; it is of the normal type and the river channel is bordered by high banks with grounds sloping away to swampy areas.

The changes in the Indus delta are caused by the changing character of the mouths of the river itself as well as the stormy nature of the sea during the monsoon season. It is largely "furrowed by ancient river channels some continuous throughout the deltaic region and for many miles above it, but very many others in a more or less obliterated condition and traceable but for short distances."²⁰ This is especially the case here, because towards the north of the delta, the surface is largely composed of loose micaceous sand, which facilitates shifting of water channels. These changes are believed to have taken place during the last 900 years.²¹

At tide time the coastal strip is submerged up to an extent of 3 or 4 miles, so low and flat is its topography. When the river is at its greatest height in the monsoon, the delta up to about 20 miles from the coast is flooded.²² Extensive mangrove swamps come into prominence in creeks, when the tide waters are withdrawn. The whole area presents a strange conglomeration of mud banks, sand dunes or *burkhans*, and swamps or lagoons. These help in the process of altering the river-courses within the delta. Wherever old creeks have dried up, considerable masses of common salt have been left over and buried under the muds. Sand has covered the low rugged limestone hills of Thatta and Gurrah like a crust. Westward of the Gurrah Creek up to Karachi and Cape Monze, the shore is rocky but low and covered with sand.²³

History and Development of the Delta. – A very large part of Sindh can be taken as ancient delta country. From some of the old maps of Sindh we find that the delta has grown considerably even during historic times, that the Indus has swung several miles on either side except at certain fixed points, in its course through the land, and at one time

²⁰ Haig, Maj, *Indus Delta Country*, 1894, p. 2.

²¹ MacMurdo, Capt., *Jour. Roy. Asiatic Soc.*, Vol. I, p. 25.

²² Blanford, W. T., "*Geology of Western Sindh*," Mem. Geol. Sur. Ind., Vol. XVII, Pt. 1, p. 24.

²³ Oldham, R. D., *Geology of India*, 1893, pp. 452-453.

flowed due south into the Gulf of Cambay, that its flood waters flowed into the Eastern Nara, and that its mouths are changing both in number and position. In the oldest map of Ptolemy there are shown seven branches flowing out into the Arabian Sea at points quite different from those found in later maps. The oldest head of this growing delta can be easily placed at Hyderabad. Later on, Thatta became the apex and now as it is considerably advanced, it has shifted several miles southwards. Towards the east, the delta receives but little water from the Indus.

The history of the delta has been recorded in the various mouths of the Indus, ancient and modern. The Koree mouth seems to be the oldest, it being the opening of the Eastern Nara or the Puran at one time and the Fuleli at another. Up to the beginning of the 18th century there were eleven mouths noticeable with the Baghiar and the Sita as its two navigable arms. The earthquake of 1819 produced some changes. The Koree Creek became widened considerably due to subsidence. Shahbunder on the Begana or Mol which was a prominent port, was closed down, the Bhagia was deserted and Kukaiwari and Khedewari Creeks came into prominence about the year 1837. In 1867 Kukaiwari was blocked up with sand and the Hajamro, formerly known as the Sian, became the chief river port. Before Karachi and Kotri were opened up for traffic by rail, the Piti and the Juna Creeks served all the merchant ships and ships of war. Gizri was also a port till recently. (See Plates 14.)

The growth of the delta is marked more towards the southwest. Many of the ports which stood on either side of the river in the past suffered on account of the shoals and sand banks thrown up near them by the sea, which during the monsoon season becomes heavy and tumultuous.

The present head of the Indus delta lies at the bifurcation of the Ochito and the Haidari and the principal creeks at the present day are thirteen in number.

The mineral character of the muds near the Keamari harbor is the same as that of the Indus silt. These muds are, therefore, drawn in by the S. W. monsoon current as a result of the oblique action of sea-waves.²⁴

Comparison with the Nile Delta. – The growth of the Indus delta is, however, not so rapid as that of the Nile, the reason being that the Mediterranean Sea is calmer than the Arabian Sea. The shore lines are being vigorously worn down by the waves which have a disastrous effect on the Indus delta. The discharge of solid matter in the case of the Indus is 2171 million cubic yards per year, against 240 million cubic yards per year in that of the Nile.²⁵

²⁴ *Jour. Roy. Geog. Soc.*, 1867, Vol. XXXVII, p. 77.

²⁵ Haig, Maj, *The Indus Delta Country*, 1894, p. 7.

Soil and Vegetation. – Low and swampy shore lines overflowed by tides mark the outer boundary of the area. Above this line, sand-hills predominate, while still higher up the soil is argillaceous, mixed with clay and sand, which gets hardened on exposure to the sun. It is also impregnated with common salt.

In the marshy area, good pastures of tall grasses are available, while tamarisk and mangrove grow in the interior. There are also a few fertile fresh-watered patches between the river branches and above the swampy plains, in which red rice is grown.

IV. Province (III): Desert Province.

Limits and General Description. – This province forms a part of the Rajputana Desert. It is called the Thar-Parkar. It lies within the desert belt of the tropics, between the latitudes 24° N. and 28° N. Its western limit is fixed along the course of the East Nara or Dhoro Puran, as far as the latitude 26° N. From here it extends northeast along the edge of the sand-hills as far as the Bhawalpur State. The eastern boundary of the region is only political, a large portion of the Rajputana Desert in the neighborhood being of the same origin and category.

The province is distinct from the alluvial plain on its west, as it is on higher ground and almost wholly spread over with sand and *Dhands*. It slopes a little from east to west, but rises in level as we go from north to south. It is barren even when parts of it lie within a few miles of the river.

Not a True Desert. – This province cannot be called a typical desert, however, as it is neither entirely barren, nor rainless. It is also not quite uninhabitable. On the other hand, the presence of many furrows of ancient river beds especially towards the north and of ruins of towns and villages along them and the course of the Nara river shows that this region was far more prosperous in bygone days than it is today. Cattle, camels and sheep still live on its present scanty water and vegetation. To some extent parts of this desert are being gradually brought under cultivation, so that there are now found zones of gradation all around, especially in the Pat area.

Origin of the Desert Province. – The desert conditions are due to several circumstances:
(1) Considerable Sub-aerial Denudation. – Whatever solid rocks existed within the area, they have suffered destruction through "the process of desquamation" producing characteristic topographical features "of sand blasted, treeless landscapes, one sees for miles around under a clear, cloudless sky."²⁶

The diurnal as well as seasonal variation of temperature is considerable and there is no organic or chemical agency to turn this debris into soil or humus.

²⁶ Wadia, D. N., *Geology of India*, 1926, p. 255.

(2) *Aeolian Deposits.* — There are enormous deposits of wind-blown sand, transported from the shallow Rann of Kutch and the coastal area in the south of the Thar. Sand-drifting takes place on a gigantic scale during the S.W. monsoon season. Rounded grains of quartz, felspar, mica and hornblende, found among sand, show the disintegrated parent igneous rocks from the Himalayas and the Aravallis, having been transported here in past ages. The presence of calcareous grains point towards the decomposition of sea shells on the coast lines.

(3) *Vagaries of Rivers.* — The whole region, entrenched with old river beds, suggests that in the past it must have been favoured with more water and better drainage.

(4) The presence of salts like chloride of sodium (common salt) in the soil, renders the land barren.

(A) *The Pat Section.*

The force of the S.W. monsoon is not felt here so much as in the Thar Desert section described below.²⁷ The longitudinal 'bhits' or sand-hills are haphazard and transverse ridges lie across them invariably. The hills are not so high as they are in the south, not many of them, being over 300 feet, but they are large and generally N.-S. On the whole, the area is less rugged and more flat.

The soil is loose and sandy, presenting a dry and arid appearance and lies on fine clays and silts impervious to water. As a result of this, there is no leakage of water from the streams and canals running through the alluvium. Any rainwater, that falls into the hollows between the sand-hills, is held up and *Dhands* or lakes charged with *reh* or 'Kalar ' are formed.

Some parts of the Pat, especially in the Nawabshah, Sukkur and Khairpur State districts, have been brought under cultivation and the sand-hills more or less eliminated up to the contour line of 200 feet. Owing to these parts being higher than the main water channels, irrigation is maintained by 'lift ' and not by 'flow' method.

The greatest peculiarity of the Pat Section is that even with very little rainfall (average 3 inches) or flood waters, the hills are covered with a surprising amount of vegetation, shrubs, etc., for cattle to live upon and the valleys are filled with rank grass or cultivation.

²⁷ Oldham, R. D., *Geology of India*, 1893, p. 455.

Dhands.—Salt water or natron-producing *Dhands* are a characteristic of this region²⁸ and an evidence of the former sea communicating the interior. Within the deep hollows, between sand-hills, called Kochurs, water charged with salts percolates through the sand, forming the salt lakes. They are elliptical, low lying and flat and oval-shaped basins, not deeper than 10 inches or so with their long axis parallel to the main 'bhits' and, therefore, to the wind direction. They serve as "huge flat-bottomed evaporating pans" and are without any outlets. Both the 'bhits' (ridges) and 'talis' (valleys) are frequently covered with vegetation, as there is some rainfall (at times 5-10 inches or so) in the locality. Although much of the rainwater is soon evaporated due to the heated mass of sand and soil, some of it percolates to the impervious soil below, and is held up for sometime or ejected in the form of salt springs (*Sim*).

The factors, controlling the salinity and desiccation of the *Dhands* are (i) withdrawal of flood waters, (ii) approach of summer, (iii) blowing of loose sand, (iv) salt-charged soil.

Another peculiarity of the *Dhands* is that, after a huge inundation of the area, they lose their aloofness from one another and are joined together for the time being. Later on, when the flood waters subside, they regain their individuality and aridity and grow in salinity.

There are many such *Dhands* in Sindh. In the Khairpur State alone there are some 129.

The following are a few typical *Dhands*:—

Haleji, Jhampir, Dhore, Kinjhar and Sonahri.

The following analysis of the salts is typical of the salt-lakes in Sindh²⁹:—

Name of Dhand: Bagarwaro (Khairpur State) CO₂-18.48, C1-5.3, SO₄-19.3, Na₂CO₃, -33.4, NaHCO₃-17.6, NaCl-8.8, Na₂SO₄-28-6, Carbonate-bicarbonate index-1.8.

Some of these salts are produced by the interaction of acids on the soils and sands of the locality.

(B) *The Thar*.

This section is a wide expanse of several thousand miles, entirely covered with sand except for some elevated parts. It consists of "a tract of sand-hills, resembling the waves of a troubled sea," generally higher in the western than in the eastern parts. There are salt encrustations often about an inch deep.

²⁸ Cotter, G., *Mem. Geol. Sur. Ind.*, 1923, Vol. XLVII, Pt. 2, pp. 215-269.

²⁹ *Ibid.*, p. 276.

The direction of the sand-hills, some of which exceed 500 feet in height, is parallel to the prevailing wind (*i.e.*) N.E.-S.W. or E.N.E.-W.S.W. further up. Near Khipro, as the force of the wind currents diminishes northwards, the direction of the 'bhits' or hills also changes to N. E. by S., and further northwards to N.N.E.-S.S.W., until finally they strike N.-S., as the zone of gradation is approached. (See Plates 1 and 16.)

These longitudinal hills are mostly restricted to the sea side and western borders of the Thar, as the wind current is stronger locally. The 'bhits' are unconnected and lie in parallel ridges. Between them, the original alluvial soil lies exposed.

Wherever the quantity of sand is great, there are formed plateaus (*dr-ain*) of deep sand continually changing shape with the direction of the wind, until they grow into "a sea of sand with beautiful irregular curves of hills and hollows".

Paucity of Water. – During the monsoon, the southern parts of the desert are flooded by sea-water and also by fresh-water received from swollen channel after rainfall. But in the dry season and near the Nara water is generally found at from one to two fathoms from the surface; it is a little brackish, but on account of scarcity, people drink it. "It is obtained by digging temporary wells, at the bottom of which a wooden foundation of the shape of a wheel is placed, and the sides are then built up with wicker work of green branches and brushwood, to prevent the soil falling in; the water thus filtering through the sand is sweet, so long as the wells are regularly worked."³⁰

As we go further inland, the conditions change. "In the interior the depth of the well varies corresponding to their distance from the Rann; where of any considerable depth, they are built up with burnt bricks, stone not being procurable and wicker work too insecure; 30 miles inland the wells are 60 yards deep." In Chhachhro, however, the water-table goes down to 300 feet and more. Surface water is rare in this region, although Tarais or tanks are constructed in some parts for collecting rain water.

Rock Exposures. – From a few outcrops of Malani rhyolite, Cuddapah trap and crystalline complex in the Rajputana Desert, one may expect a wide extent of solid geology buried under sand in this section." It is quite probable that a large extent of fossiliferous rocks, connecting these isolated inliers, is buried under the desert sands."³¹

The only prominent outcrops within the arid district of Nagar Parkar that have escaped complete denudation or burial are those of the Kalanjhar (Kalingar) Hills rising to 1,169 feet above the sea-level. But these isolated hills differ materially from every other rock occurrence in Sindh. They belong to the Dharwar and other pre-Cambrian systems and

³⁰ Raikes, Capt. Stanley Napier, "Memoir on the Thar Parkar Districts," *Sel. Rec. Bom. Govt.*, New Series, Bombay, 1859, No. LIV, p. 2.

³¹ Wadia, D. N., *Geology of India*, 1926, p. 172.

are, therefore, associated with the neighbouring Aravalli range, with syenite as the main rock-component. Evidently they form the extreme end of the once stupendous mountain system of Rajputana, which is now so greatly degraded and denuded.

The Parkar District.—This part of the desert, situated in the southeast corner, differs from the rest in the matter of rainfall, which though variable, ranges from 4 inches in Sanghar to about 15 inches in Nagar Parkar.

While at one time there is practically no rain (*e.g.*) 4 centimeters at Khipro in 1899, at another there is heavy and torrential rainfall (*e.g.*) 41 inches at Mithi in 1913. There are a couple of perennial and some seasonal springs in the region and the soil is a medium sort,—a mixture of stiff clay and fine sand and is cultivable for good Rabi crops, *e.g.*, Bajri and wheat.³² Another difference is that the sand-hills of the Thar are replaced by ranges of hills composed of solid rock, mentioned above.

V. *Economic Resources of the Lower Indus Basin:*

(I) *Western Highlands.*

(A) *Kirthar Mountains.*

(1) *Building stones* of great durability in the Kirthar Range, as well as in the Kohistan, especially in the Ranikot beds, at Jhirak, which yield light, yellowish or brown and fine-grained limestone, of an excellent character. The blocks are large, as the joints are far apart. Good ferruginous sandstone of the Nan series is also available near Jungshahi.

(2) *Alum* is obtainable from pyritous shales found in the Gaj beds near some Nais. The manufacturing process consists in " a rude lixiviation of pyritous shales in the Gaj, Ranikot and Nari groups on the flanks of the mountains, the necessary potash required being obtained from the ashes of certain plants."³³

(3) *Quicklime* is prepared on a large scale from local limestone quarries in the mountains.

(B) *The Kohistan.*

(1) *Lignite.*—A layer of lignite, a brown coal among the Ranikot beds (shales and sandstones) in the Laki Range has been already referred to. Two seams were found at Linyan, 27 miles N.N.W. of Kotri and 15 miles from the present course of the Indus. One of these was proved to be lenticular, though of good thickness.

³² Director of Agriculture, *Statistical Atlas of the Bombay Presidency*, 1925, 3rd Ed., pp. 169-170.

³³ Vredenburg, E., *Rec. Geol. Sur. Ind.*, Vol. XXXIII, Pt. 1, pp. 433-434.

Although the coal deposits were found to be meager at the time, it seems that sufficient prospecting has not been done in recent years.

(2) *Petroleum.* – There was also an experimental boring for petroleum made at Sukkur in 1893-95 but it did not prove successful.³⁴ An experimental well was dug by the Burmah Shell Co., near Khairpur Mirs in 1922-23. But the results are unknown. Oil indication has also been noticed at Drigh Road, within a few miles of Karachi.

(3) *Iron Ore.* – Brown hematite is found embedded in limestone and sandstone. At Tatta smelting of iron was practiced to a considerable extent in the past century.

(4) *Road Metal.* – Limestone is generally used as road metal, but there is plenty of trap in the Laki Hills, though it is somewhat decomposed. A bed of trap 40 feet thick is found interstratified in sandstone above Hippuritic limestone on the hill called Bor, south of Barraah, 13 miles N. of Ranikot. Another band of trap is on Cardita beaumonti beds, stretching 22 miles from Ranikot to Jakhmari 17 miles south of Sehvan. It is 40 to 90 feet thick. The decomposed basalt contains nodules of quartz, chalcedony and calcite.³⁵

(5) *Gypsum.* – Gypsum is found also on top of Gaj Hills in the Kohistan area.

(6) *Clays.* – Colored sands and clays, white, red, and brown occur in the Laki Hills near Bhagothoro.

(II) Economic Resources of the Lower Indus Valley.

(A) Western Valley Section.

(1) *Agricultural produce.* – This is the mainstay of the region. Two crops are reaped as follows: –

Juari	Kharif (Summer) Crop	Wheat	Rabi (Winter) Crop
Bajri		Tobacco	
Rice		Barley	
Cotton		Oil Seeds	

With the steady and systematic water-supply from the Lloyd Barrage great improvements are being made in these crops and fresh cultures introduced. Cotton has come out to be the best in India.

³⁴ *Rec. Geol. Sur. Ind.*, 1895, Vol. XXVIII, Pt. 2.

³⁵ *Mem. Geol. Sur. Ind.*, Vol. XVII, Pt. 1, pp. 34, 36.

(2) *Forests.* – Along the banks of the great river there is a luxuriant growth of riverain forests, some of which have extended inland along the bunds and canals. Occasionally a whole forest disappears due to erosion of banks by flood waters. Babul (*Acacia arabica*), Kandi (*Prosopis spicigera*), Bahan (*Populus euphratica*), Tali (**Dalbergia Sissoo**) and tamarisk (*Tamarix gallica*) grow plentifully.

(B) *Eastern Valley Section.*

(1) *Salt beds.* – Capt. Baker drew the attention of Sir Charles Napier in a letter to him on 18th July 1844 regarding the existence of very extensive salt beds near Allah Bund, in connection with the lower part of the Puran. From Raoma to Wanga Bazaar large beds of salt, 5 to 6 feet deep, were discovered by Mr. Hodges.³⁶ (See next Section.)

Within this area there are valuable salt deposits. About a mile east of Goonee and extending 20 miles by 15 miles, terminating at Kotri between latitudes 23°-24° N. and about the longitude 69° E., there exists a bed, 3 feet thick nearly 929,280,000 cubic yards, equivalent to 1,484,151,430 tons, if the specific gravity of it is 2.130. This bed was discovered by Lt. Burke, R.E., Executive Engineer, P. W. D., Sindh Division, in 1847, while travelling from Sindh to Kutch. In a letter, dated 7th March 1847, to Major Peat, Superintending Engineer, Sindh, he described the bed as follows: –

"For the first few yards, it appears as a ridgy layer with bunches and is but a few inches in thickness; but the thickness rapidly increases, and the structure is so hard and crystalline that it required some little time and labor to detach the smallest fragment with the only available tool I had with me, viz., a strong hunting knife. The hoofs of a horse made no impression on its surface. This was a sandy color, owing to the presence of a very slight film of drift dust or sand, which has been absorbed by the deliquescent quality of the salt. Crystallized knobs or bunches, of the same exterior color as the general bed, occasionally rose about the surface and a few of these, having been recently detached, showed the dazzling and highly crystallized interior structure of the mass; less homogeneous and compact but perhaps clearer and more brilliant than that of Chesire, or of the Punjab."³⁷

Lt. Burke also secured the opinion of Surgeon A. H. Leith of the Bombay Medical Establishment, as regards the quality and utility of this mineral: –

"It is just the same as the salt obtained by evaporating sea-water, – the salt that is called Bay Salt: it is not so pure as rock salt, because it contains a little sulphate of soda, very little and of no consequence and also some muriate of magnesia,

³⁶ *Sel. Rec. Bom. Govt.*, New Series, Bombay, 1855, Pt. 2, No. XVII, p. 705.

³⁷ *Monograph on Common Salt*, (Federation of Indian Chambers of Commerce and Industry), 1930, pp. 219-220.

which later renders it a little bitter, but it can readily be removed by washing the salt in fresh-water: but as it is, I have no doubt, it would find a ready market, for it is very much cleaner than what is made in the Government salt pans about Bombay."³⁸

No more is heard in recent years about this precious deposit, which in the opinion of its discoverer: " Would supply a population of one hundred millions for one thousand six hundred and sixty-two years, at an annual allowance of 20 lbs. per head."

(2) *Fuller's Earth.*—There are intercalations of this clay in limestone on the slopes of the Ganjo Hills, near Hyderabad, and also in the hills near Sukkur-Rohri, Jerruck and Tatta. It is a pale greenish clay used for washing cloth, etc., and is also eaten by pregnant women as a soother.³⁹

(3) *Gypsum.*—Gypsum is found on top of Gaj Hills in the region, in places 3 to 4 feet thick. Dr. Buist, in 1852, referred to these deposits as a mineral for making Plaster of Paris and using the same for casting lattices and open-work screens for ventilation on tops of doors.

(4) *Pottery Clays.*—The pottery works of Hala, Hyderabad, Tatta and Jerruch as well as the encaustic tile manufacture of Bulri and Saidpur make use of these clays.

(5) *Flint.*—Cores of flint occur embedded in Nummulitic limestones of the hills near Sukkur and Rohri.

(6) *Agricultural Produce.*—Large crops of Wheat, Juari, Bajri, Cotton, etc., are obtained.

(7) *Medicinal and other plants.*—Plants yielding drugs, chemicals such as soda, gums (myrrh), dye-stuff and tanning ingredients, grow in abundance.

(C) *Deltaic Area.*

Salt Deposits, Fisheries, etc.—(1) Within some of the creeks there are salt deposits of (*e.g.*) Surganda salt beds, 7 miles on both sides of the Sir Creek. Captain Baker, Superintendent of Canals and Forests, in a letter, dated 18th July 1844, to Sir Charles Napier, also referred to other extensive salt deposits near the Allah Bund in the southeast. " I take this opportunity of bringing to the notice of H. E. the Governor of Sindh that there are pools and valleys, connected with the lower part of the Puran, abounding in pure salt; many of the pools near the Allah Bund contain superficial

³⁸ *Sel. Rec. Bom. Govt.*, New Series, Bombay, 1855, No. XVII, pp. 706-707 (footnote).

³⁹ *Mem. Geol. Sur. Ind.*, Vol. XVII, Pt. 1, p. 195.

deposits of this substance; but Mr. Hodges, Assistant Surveyor, who surveyed from Raoma to Wunga Bazaar, met with large beds of salt to a considerable extent, and five or six feet deep. Should Government consider the subject worthy of attention as a source of revenue, it would appear from Mr. Hodges' description that the salt may be obtained in almost any quantity, and of the purest kind.⁴⁰ For several reasons, among which may be mentioned, the opposition of the Bombay, Cheshire and Liverpool merchants in their own interests, these salt deposits were not utilized at all.

Another salt deposit of a similar character was noticed "in the delta of a classic stream— between the Gora and Koree mouths," by Lt. Burke in 1848. He thought that to be "a vast and practically inexhaustible deposit."⁴¹ A sample of it was carried to Calcutta in 1855 as ballast in a cargo boat. Later on, a company was also formed. The following⁴² is the analysis of the salts given for comparison:—

Salt	NaCl ₂	MgCl ₂	MgSO ₄	CaSO ₄
The above deposit	99.7352	0.2647	0.00	Trace
Cheshire	98.2500	0.7500	0.00	1.55
Lynimngton	93.7000	1.1000	3.5000	1.50

It is to be remembered that the younger Tertiary rocks also are impregnated with saline material due to the original (connate) sea water in the sedimentaries.

(2) *Saltpetre* can be extracted from soil, impregnated with nitrogenous matter. It commanded some trade with the East India Co., in the latter part of the 18th century.

(3) *Sea-salt*: About 88% of the Sindh salt is obtained from sea-water, while only 12% from the Saran and Dilyar deposits on the edge of the great desert in the Desert Section.⁴³

(4) *Pearl fishery*, as a source of revenue, was known to the Ameers of Sindh and the industry was also developed in the early British days: Mr. John Macleod, Collector of Customs at Kurrachee, in a memorandum submitted to Government on 31st December 1847 says: "In the salt water inlets along the entire sea coast of Sindh, a thin-shelled variety of the oyster exists, producing a seed pearl. It is most frequently found on mud banks left dry at low tides. The pearl is of very little value compared with that produced by the Ceylon and Persian Gulf Fisheries, the price of the latter ranging from Rs. 1,000 to Rs. 15,000 a tola while the former seldom realizes more than Rs. 15 a tola. From the supposition that it possesses invigorating powers, it is used here chiefly as a medicine.

⁴⁰ *Sel. Rec. Bom. Govt.*, New Series, Bombay, 1855, No. XVII, p. 703 (footnote).

⁴¹ Andrew, Sir W. P., *The Indus and Its Province*, 1857, p. 196.

⁴² *Ibid.*, p. 200.

⁴³ Mirchandani, B. D., "English Factory in Sindh," *Jour. Hist. Soc. Sindh.*, Vol. I, Pt. 4, p. 7.

The larger grains are occasionally made use of as personal ornaments: the smaller ones to intermix with the valuable Bahrein pearls, in which manner they are kept in bags by the Bombay merchants, as a means of preserving their lustre.¹⁴⁴

Side by side with this, there is good scope for a sea *fishery* also on the Sindh coast.

(III) Economic Aspects of the Desert Province.

The natron-producing lakes already mentioned are the principal centres of industry. The mineral is an impure sesqui-carbonate of soda mixed with common salt, of which thousands of camel loads are exported from the *Dhands*. Cheroti or gypsum is also extracted from Ghulam Nabi-jo-Got, while Khara Chanio or soda and trona (*chaniho*) are also met with. Soda salts can be prepared from the ashes of the halophytes or natron-producing plants, growing in the region, by the process of lixiviation. There are also a few salt lakes in the southern portion of the Thar Parkar District besides Saran, Darwari and Gaganwari beds, in which a good amount of salt is available.⁴⁵

Wherever rain water is lost more by evaporation than actual run-off, subsoil and internal lake brine yield salt, which is merely arrested on its way to the sea. Brine-impregnated subsoil also yields common salt.⁴⁶

⁴⁴ *Sel. Rec. Bom. Govt.*, New Series, Bombay, 1855, No. XVII, p. 701.

⁴⁵ Letter No. 323/1357, dated 20-1-1931, from Director, Geological Survey of India.

⁴⁶ Holland, T. H., *Sketch of the Mineral Resources of India*, 1908, p. 55.

CHAPTER II.

THE INDUS - ITS HISTORY, REGIMEN AND PHYSICS.

THE history of the Indus River goes far back into the mists of time. A large part of the Siwalik deposits of the Outer Himalayas led the geologists, E. H. Pascoe and G. E. Pilgrim, to believe that there must have existed an old river in this region, called the Indobrahm by the former⁴⁷ and the Siwalik river by the latter,⁴⁸ before the Himalayas came into being. (See Plate 12.)

I. Geological History.

Geologists have also generally recognized that in Asia there is a general trend of East-West river valleys (e.g.) the Sangpo, the Hwang-Ho, the Yangtze Kiang and the Si Kiang.⁴⁹ The rivers of northern India in their early stages show the same tendency. There is, therefore, no doubt that there flowed, in the Indo-Gangetic depression, a single river, at first flowing in the S.E.—N.W. from Assam to Kohat along the foot of the Himalayas; but, later on, its drainage was altered and broken up, with the rising of that mass of Central Asia like a tremendous block. These mountains also gradually pushed the Tethys Sea further and further back.

The following are some of the indications concerning the history of the drainage of this region, arising out of a study of the Siwalik Boulder Conglomerate.⁵⁰

The Parent River. — " The peculiar character and distribution of the Pleistocene boulder Beds of the Siwalik series are capable of explanation only on the supposition that they were laid down in a rock basin, formed in the valley of a large river by upheaval and the consequent formation of a dam across its course. Since in Jammu and Kangra these boulder beds attain the enormous thickness of 5,000 feet and disappear quite suddenly to the N.W. of this area, while to the S.E. they gradually diminish in thickness and are feebly represented as far as Bhutan, it follows that such a dam must have been situated N.W. of Jammu and that the river flowed along the foot of the Himalayas from S.E. to N.W. In Eocene times, when the sea covered the whole of the Western Himalayas, such a river must have risen on a watershed connecting the Rajmahal Hills to those of Shillong and the upper valley of the Brahmaputra, and continuing into China. A tributary of this river, draining the Eastern Himalayas, may, at a later period, have

⁴⁷ *Quar. Jour. Geol. Soc.*, London, 1919, Vol. LXXV, p. 138.

⁴⁸ *Jour. Asia. Soc. Beng.*, New Series, 1919, Vol. XV, p. 81.

⁴⁹ Chhibber, H. L., *Physiography of Burma*, 1933, p. 38.

⁵⁰ Pilgrim, G. E., *Jour. and Proc. Asia. Soc. Beng.*, New Series, 1919, Vol. XV, No. 1, pp. 81-98.

become the main river of northern India. The author considers that the complicated drainage system and breadth of the Mahanadi so disproportionate to its length, as well as the entire absence of any fluviatile deposits older than sub-recent, such as we find on the Irrawaddi, point to Pliocene submergence of much of its former valley and to a much wider extension of the Indian peninsula, over what is now the Bay of Bengal, from the Eocene onward, than is the case today. Therefore, powerful rivers flowed south rising on the same watershed which is mentioned above. These may have cut back through it so that when a final uplift, on a more colossal scale than any that had preceded it, actually reversed the flow of the river in the basin of which the boulder conglomerates were deposited, the water flowed into the channels of the southerly flowing rivers which were ready to receive it. The V-shape of many of the Himalayan rivers along a certain portion of their course (the point of the V facing N.W.) is significant as evidence that the northern arms of the V's represent tributaries flowing in the normal direction which they would take to join a great northwesterly flowing river. The Gangetic alluvium, thick though it is, has all been deposited later than this period in the valley of rivers with a normal gradient, as the result of annual floods depression continuing simultaneously with the addition of flood material and sediments."⁵¹

Discoveries of the John Murray Expedition.—This theory of the Siwalik river bed may probably gain some support by the observation of the John Murray Expedition of 1933-34, in exploration of the continent of Lemuria or Gondwanaland, which is supposed by geographers to have once existed in the area now occupied by the Indian Ocean and other connecting waters. Not much light has been thrown by the explorers on the matter of such a vast continent, but *the existence of certain submarine ridges and gullies* has led them to believe that there was an extension of the mountains of the Kirthar and the Aravallis systems along with *a huge river valley, which have now gone down into the northern parts of the Indian Ocean.*

Subsidence of the End Portion of the Indus Valley.—Lt.-Col. R. B. Seymour-Sewell, the leader of the Expedition, describes in a statement to the press:

"Between Ras al Hadd and the Indian Ocean in the neighborhood of Karachi, the echo-sounder clearly revealed the presence of a submarine ridge that runs westward towards the entrance, to the Gulf of Oman, more or less parallel to the hill ranges of Baluchistan and Makran. To the south of this ridge and separated from it by a level plain with a fairly constant depth of 1,850 fathoms lies a second ridge that runs towards the southwest, and immediately to the southeast of this is a deep gully, bounded in its turn by the edge of a plateau that slopes gradually downwards towards the southeast.

⁵¹ *Ibid.*, p. 99.

"The bottom of this gully lies 2,000 fathoms below the surface of the sea and its general character reminds one strongly of a river bed. It seems to me that we have here either the now submerged bed of the Indus where it flowed into the Arabian Sea along a line to the northward of its present course or perhaps the mouth of the great Indobrahm River, the existence of which was postulated by Pascoe and Pilgrim."⁵² (See Plate 15.)

It is, therefore, probable that the Indus had its connections with the ancient drainage of the Indo-Gangetic plain in the pre-Himalayan epoch.

Breaking up of the River: Indobrahm. – When the process of the upheaval of the Himalayas finally ceased in the north towards the end of the Pliocene period, this great river must have broken up into two systems, viz., the Indus with its tributaries on one side and the Ganges on the other.

The Process of Severance. – How this severance of the Siwalik river into the Indus system and the Gangetic system took place, is an interesting history. D. N. Wadia⁵³ states: –

"The most important post-Siwalik event was the dismemberment of the channel of the great Siwalik river, which hitherto had flowed in the northwest direction, from its head waters near Assam, through the whole length of India to Potwar, and thence to the head of the receding Sindh Gulf. The differential earth-movements which elevated the Potwar basin into a plateau, converted the northwest section of the channel into a separate independent drainage basin, with the Sutlej as its most easterly tributary. Hitherto the combined river had travelled to its confluence with the Indus along a track which was a northwestwards prolongation of the present course of the Jumna, thence via the present bed of the Soan, to the Indus in the vicinity of Makhad. After these elevatory movements and the separation of its N.W. section, the remaining upper portion of the main channel, according to the views of Pilgrim and Pascoe, was subjected to a process of reversal of flow, its waters being forced back by the Potwar disturbance to seek an outlet into the Bay of Bengal along the aggraded, more or less leveled sub-montane plains. In this process of reversal Sir E. H. Pascoe attributes the vigorous young affluents belonging to an opposing drainage course cutting back, beheading and capturing piece by piece, the main channel and ultimately deflecting its waters to the new channel with a reverse direction of flow. This severed upper part of the old Siwalik river became the modern Ganges, having in course of time captured the transversely running Jumna and converted it into its chief affluent. The transverse Himalayan rivers which are really the oldest watercourses of North India, older in many cases than

⁵² *Daily Mail*, April 11, 1934, pp. 13-14; *Nature*, 1934-35; *Times of India*, March 1, 1935.

⁵³ Wadia, D. N., "*The Tertiary Geosyncline of Northwest Punjab*," *Quar. Jour. Geol. Min. and Metal. Soc. Ind.*, Calcutta, 1932, Vol. IV, No. 3, pp. 92-93.

the mountains they traverse, continued to discharge their waters into this new river irrespective of its ultimate destination, whether it was the Arabian Sea or the Bay of Bengal. During the Upper Pleistocene epoch some interchange took place between the easterly affluents of the Indus and the westerly tributaries of the Jumna, by minor shiftings of the watershed, now to one side now to the other. There are both physical and historic grounds for the belief that the Jumna, during early historic times, discharged into the Indus system through the now neglected bed of the Saraswati River of Hindu traditions, its present course being of comparatively late acquisition." (See Plate 12.)

The present dry beds of the lower parts of the Ambala streams, and also those of the Gagger, the Hakra and the famished condition of the Eastern Nara and other Dhoroes in Eastern Sindh, with a large number of ruined towns and villages now buried under sand along their channels, indicate that there must have passed through these desert tracts a large river making them fertile and prosperous.

This diversion of drainage from the Indus to the Ganges must also have been gradual. A certain species of dolphin lived on fresh-water food in the original river. Then when a depression between Rajmahal and Assam took place, and the drainage partially escaped into it, this fauna must have also passed into it. R. D. Oldham holds very strong views regarding the original westward flow of the Jumna-Gangetic system. He says, "The diversion of the drainage from the Indian Ocean to the Bay of Bengal must have been a gradual process, whose final stage, the permanent diversion of the Jumna into the Ganges, may even have taken place within the historic period. Before this, the waters of the Jumna must have flowed alternately into the Ganges and the Indus, or that dry river channel which can still be traced through the desert. In its latest stage, it probably, like the Casiquiari in South America at the present day, divided its waters between the eastern and western drainage, but now no further change can take place, for the river has cut its channel deep below the general level of the plain, and must perforce remain a tributary of the Ganges."⁵⁴ Thus the Indus system became quite independent from the eastern drainage system, and remaining partly antecedent (*i.e.*) pre-Himalayan and partly consequent, it has cut its own course through the mountains after the first uplift in the Pliocene age.

The Indus in Sindh. – The Indus in Sindh is the lower part of the Indo-brahm, ultimately falling into the Arabian Sea, while the Indus of the Himalayas is an old tributary of it, discharging into it at Attock. As it is now in an exceedingly aggraded stage, its present channel through Sindh is not the same as was in past geological and early historic times. It might have flowed through the now desert region straight into the Koree Creek, owing to its greater volume of water than at present. The rather eastward

⁵⁴ "Evolution of Indian Geography," *Geog. Jour.*, 1894, Vol. III, No. 3, p. 178.

position of the submerged Indus gorge in the Arabian Sea and the physical features of Cutch also point to this course of the river in the Pleistocene period.

II. Recent History of the Indus.

The source of the Indus was discovered in 1907 by Hedin in a sacred spring, called the Singikabad, near the Manasarover lake on the north side of the Trans-Himalayan Range, N.N.E. of Kailas and 16,946 feet above the sea-level. This position of the source, in a lacustrine region (lat. 32° 20' N., long. 80° E. in the heart of the snowy peaks), suggests the birth of the river to be antecedent to that of the Himalayas. Had it been a consequent stream, after the upheaval in later ages, it would have flowed directly south. As it is, it takes its original course still towards the N.W. for a considerable distance. While it thus emerges from the glaciers of the great group of Kailas Mountain peaks, it secures the waters of three affluents: (1) the northern tributary pointing the road from Ladakh to the Jhalung gold-fields; (2) the southern Ghar forming a link in the great Janglam, connecting Ladakh with Lhasa and China; and (3) the Shyok and the Shigar together with innumerable glacier-fed streams. So far the Indus has travelled through 530 miles of its bed between the grand chains of Ladakh to the north and the Zaskar Range, which is the main snowy range of the Himalayas to the south. Except for a short distance in the S.W., it pursues its usual course in the N.W. direction. The combined stream then reaches the Rakaposhi Peak. Here the Indus again turns to the S.W. for the last time and piercing the mountains transversely, between the Gilgit and the Hunza, drops suddenly from 15,000 feet to 4,000 feet level.

Soon it touches the Gilgit stream, emerging as it does from perhaps the grandest gorge in the world. Thus, nearly 500 miles of surpassing mountain scenery are passed in north Kashmir. Only a few miles below this, the Indus crosses the mountains of Kohistan and Hazara, receiving its tributes from either side, until finally it advances into the Punjab plains below Darband in the latitude 30° 10' N., after flowing for nearly 850 miles from its source.

Uptil now, the Indus has received the drainage of the Himalayan mountains only. Soon at Attock the Kabul brings down the waters from the Hindu Kush and then the Kuram, the Tochi, the Zhob and the Gomal give their share too. Although still some 2,000 feet above the sea-level, the Indus becomes here a navigable river, having left all rapids and deep wild gorges behind. Nearly 450 miles further south, the accumulated waters of the Panjnad (five rivers) of the Punjab rush into the Indus River.

Lower Reaches. – As the numerous tributaries of the river in this plain stage flow through drier and drier areas, they become smaller and smaller and their currents become slower and slower. Perforce they have to abandon old aggraded channels and cut new ones through their own deposits of mud, sand and gravel. While in their upper reaches they have deeply fixed channels, in this lower plain stage even in the Punjab

they have varying sand-banks and stifled watercourses. Thus, on both the banks of the present Indus bed, numerous ancient channels of this kind have been discovered from long stretches of coarse gravel or sand-banks.

Entry into Sindh.—The single stream, thus strengthened at one point and starved at another, and still called "Darya" or sea, by the local inhabitants, now enters the province of Sindh. Instead of increasing in volume it dwindles down to less and less with its basin narrowed down and its affluents growing insignificant. It receives no tribute from any other perennial stream in the long stretch of over 300 miles in Sindh, as there is little rainfall on the Western Highlands and the surface drainage is so poor. Its entry into the province is now heralded with a rush through the gap or gorge between Bukkur and Rohri in the limestone rocks. Here the topography is quite peculiar:

"The Indus in its course through Sindh," says R. D. Oldham, "flows between banks that are raised above the general level of the country which slopes away on either side. This is a feature common to all rivers which are raising the level of their alluvial plains by the deposit of silt but at Bukkur, the Indus exhibits a feature which is exceedingly rare if not without a parallel, in the case of any other river, for, here it flows at the higher level through a gap in a range of hills surrounded on either side by alluvium at a lower level than that of the river where it passes through the gap."⁵⁵

After this rush of waters through the gorge, a comparatively calm flow in the S.W. direction with the two arms, the Eastern and Western Naras, is now assured. The overflow lake of Manchar, with its safety valve, the Aral River on the right, and the various old channels of the Puran, Dhoro Naro, Gungro, Fuleli and Pinyari into which it rushes during the season on the left bank, help to complete the picture of the Indus in its Lower Basin. By this time the stream has changed its direction of flow to southeast, till it reaches Kotri. Another curve round the rocky Kohistan defile in the S.S.W. direction and through a more or less defined channel, fed by a single hill torrent, the Baran, brings it down to Tatta, below which it is split up into several branches, small and large, forming the delta.

The Deltaic Stage.—At Tatta, the river can be said to have entered the delta proper, though in recent geological times the mouth of the Indus could be placed somewhere near Hyderabad. All that land below this old capital of Sindh is a reclaimed area from the sea. Tide waters reach Tatta sometimes even now, though the sea is about 60 miles away. Devoid of any hard rocks like the Sindh Tertiaries, and largely covered with alluvium, sand-hills and bars, mangrove swamps, etc., this area is quite uninhabitable. The coast-line also presents a chain of tidal creeks and scalloped inlets, which get quickly silted up.

⁵⁵ *Jour. Asia. Soc. Beng.*, 1886, Vol. LV, Pt. 2, p. 324.

So great is the force of the inundation that it is not possible to have any ports on the actual coast, but they are situated well inland, about 20 to 30 miles distant from the sea, on one of the side branches.

Now advancing southwards and now southwestwards in the track of the S.W. monsoon, the river finally merges into the waters of the Arabian

Sea, though not without a second turbulent period of giratory streams and violent swells near the coast. Its famished condition in Sindh coupled with the fact that the river has, long since, reached its highest stage of aggradation, is responsible, without doubt, for its present state of alluviation.

Outlets and Effluxes. – The present outlets of the Indus on the left bank are (1) the Fuleli on the east of Hyderabad and further down called the Guni, the Pharan and the Kori and (2) the Pinjari, east of Jerruck, and, later on, called the Gungra and the Sir.

The present effluxes are the Ochito and the Haidari. The following are the 13 mouths or creeks discernible in modern times:—Sir, Pakhar, Kajhar, Kharak, Kahr, Kalandri, Turshian, Hajamro, Sisa, Dubbo, Pitiani, Khudi and Pitai.

Thus, the whole river, as it exists to-day, has a long and chequered career of about 1,800 miles, through varying topography and valley stages. (See Plate 13.)

III. The Regimen of the Indus.

The periodic floods of the river are the most important phenomenon of the Indus regimen. They are looked upon by the people, from times immemorial, as events of great moment to the province.

Upon these annual swellings and inundations, the prosperity of their fields depends. Had these inundations been regular, uniform and universal in the whole Basin, the stability of the fields would have been assured. But the vagaries of the Indus are great. Once it takes to a bank, the left or the right, it sticks to it for some time. Then it changes its direction. At times it also changes its bed and effluxes, and brings different fields successively under its sway. Also the inundation is not always general but partial. The whole area is not submerged but only portions are flooded at a time. The result is an irregular distribution of waters in the region year by year.

In a single year, again, the quantity of water also fluctuates. In the cold season the river dwindles down into an exceedingly shallow stream, the Bukkur gauge reading as low as –2.40 feet at times.⁵⁶ By March and April the snows on the Himalayan heights begin

⁵⁶ Indus River Commission Records, 1902-1930.

to smelt and the stream is refreshed to some extent. After a temporary fall for about two months, again the river becomes fuller and fuller, till the inundation reaches its climax usually in August, when most of the snows have melted away and the lower ranges of the mountains have also received their share of the monsoon precipitation. More than the silt brought down by the current, the waters of the river are themselves valuable, so that when a second and more powerful monsoon wave comes on during the season, not only the soil gets enriched with silt but the parched land and dust of the desert also are enlivened.

These flood waters inundate the neighboring alluvial plains and fill all the canals, distant and near.

Thus like all great rivers, especially fed by snows as well as rains, the Indus has great variations of flow from year to year and month to month. At times the waters do not rise till the beginning of April and the great flood does not come on till September. In some years the Bukkur gauge does not show a reading higher than 12.7, while in other years, there is an extraordinary rise of 19 feet above the lowest water-level of the year. The meteorological conditions also exercise some influence over the river regimen. Both the snowfall and the rainfall being variable here, there is no knowing when the Indus would have a normal flood and when an abnormal one. There is, again, a wide margin between bad and good floods in Sindh. The causes of this condition are to be traced backwards to the geographical position and climatic conditions of the Upper Indus region. The snow-feeding of the Indus has already been referred to. The Sutlej is another great snow-fed river rising in the Greater Himalayas and contributing its waters to the Indus. Other Punjab tributaries of the Indus are partly snow-fed but largely rain-fed.

Some of the tributaries of the Indus rise beyond the Siwalik hills of the Himalayas, which are fed regularly by the S.W. and N.E. monsoon currents. These drain the whole area within the monsoon zone and so the showers over even a portion of the Upper Indus Basin are bound to give it an impetus. At times and during cyclonic storms there is exceptional rainfall even in the Lower Basin.

For this alteration of high and low floods, we take the Bukkur gauge as the basis for discussion. It is a point on the river course conveniently fixed in a gorge and the whole flood of the river passes through it. Lower than this, the flood level rises above the general level of the country and so the plains are flooded and the bunds destroyed sometimes. The whole runoff of the rainfall within the catchment area and the melting of the snows are secured at this gauge.

Another suitable gauge for the sake of comparison is the Kotri gauge. This is also a fixed point in the river course beside the Laki Range, and the readings are quite accurate and reliable.

Research done by the Indus River Commission. – The observations of discharges, silt deposit and transportation of sediment, etc., taken by the Indian River Commission, from January 1901 onwards, at these two and other stations are of great scientific value. They give valuable information regarding the flow and action of the Indus waters from year to year and day to day.

Gauge Readings. – A reference to the graphs of these gauge readings at Bukkur (Sukkur) and Kotrin from year to year will show the seasonal rise and fall of water-level. (See Plates 10 and 11.) From the extreme shallowness of the river during the months of December and January, the river takes a turn about the middle of March when the snows begin to melt on the mountains. In April the gauge level reads over + 15 feet at Bukkur, a difference of 16 feet over the winter gauge reading, and over + 20 feet at Kotri gauge—a difference of 15 feet. Then with a short pause in May and some part of June, whenever the monsoon season is delayed, the river rises steadily until it has the maximum flood level in August. Later on, the level falls rapidly until at the end of the year the gauge again reads low after some fluctuations in winter. Thus the gauge readings are affected every year at three different times (1) at the beginning of summer when the snows melt, (2) in the summer rainy season and (3) in the winter rainy season, the predominant factors being the snowfall on the Himalayas and the rains in the Punjab and Sindh. (See Graphs, Plate 13.)

The following is a summary table of the annual rise of water-level at Bukkur (Sukkur) and Kotri for a period of 29 years and their averages⁵⁷: Annual Rise of Water-level in feet (Sukkur and Kotri Gauges).

Year	Sukkur			Kotri		
	Max.	Min.	Rise	Max.	Min.	Rise
1902	13.50	1.00	12.50	15.90	3.70	12.20
1903	17.10	1.50	15.60	19.70	5.40	14.30
1904	15.80	1.20	14.60	18.70	5.30	13.40
1905	16.70	0.50	16.20	19.10	5.80	13.30
1906	16.60	-0.60	17.20	20.90	5.50	15.40
1907	13.70	-2.00	15.70	19.40	5.00	14.40
1908	16.10	-2.40	18.50	22.90	4.70	18.20
1909	14.40	0.50	13.90	20.80	4.90	15.90
1910	14.50	0.50	14.00	22.30	5.60	16.70
1911	14.00	1.60	12.40	20.70	4.70	16.00
1912	15.50	1.20	14.30	21.70	4.60	19.10
1913	15.00	0.70	14.30	20.90	5.00	15.90
1914	17.40	1.50	15.90	23.80	7.40	16.40
1915	12.70	-1.00	13.70	19.80	5.70	14.10

⁵⁷ *Ibid.*

Year	Sukkur			Kotri		
	Max.	Min. Rise		Max.	Min.	Rise
1916	13.60	-0.70	14.30	22.10	4.40	17.70
1917	15.80	-0.30	15.10	23.00	4.90	18.10
1918	11.80	-0.20	12.00	19.50	5.80	13.70
1919	14.70	0.80	13.90	22.40	6.30	16.10
1920	15.00	-0.50	15.50	21.40	3.90	17.50
1921	16.80	0.00	16.80	22.10	6.10	16.10
1922	15.50	1.20	14.30	20.40	6.70	13.70
1923	14.10	0.40	13.70	21.90	5.90	16.00
1924	16.60	-1.50	18.10	23.60	6.00	17.60
1925	15.70	-2.10	17.80	22.10	5.00	17.10
1926	15.30	-2.10	17.40	22.70	5.00	17.20
1927	15.30	-2.10	17.40	21.50	4.84	16.66
1928	14.20	-2.00	16.20	19.30	5.52	13.78
1929	17.70	-1.30	19.00	24.10	7.00	17.10
1930	16.90	-0.30	17.20	23.10	6.40	16.70
<i>Mean Max</i>	15.24			20.88		
<i>Highest rise</i>	17.70	(1929)		24.10	(1929)	
<i>Lowest rise</i>	11.80	(1918)		18.70	(1904)	

Out of 29 years, 11 were those of low floods as can be seen from the maximum rise of water-level at the Sukkur gauge year by year, the average maximum reading there being 15.24 feet. At the Kotri gauge the readings fell below the normal for 10 years, the average maximum reading being 20.88 feet. The year 1929 was an year of exceptionally heavy inundation, following one of very low floods. (See Graphs, Plate 13.)

The River Discharge. – The following is another interesting summary table⁵⁸ of the discharge observations of the Indus at Bukkur (Sukkur) and at Kotri compared with the annual rainfall in the localities for 20 years.

⁵⁸ *Ibid.*

Discharge Observations of the Indus at Sukkur.

Year	Min Max.		Width of water surface ft .	Mean vel. per sec.	Cubic ft. discharge per sec.	Wind direction	Wind vel. ft. per sec.	Rainfall
	(For the year)							
1911	0.6 (Jan. 4)	14.0 (Jan. 22)	2,615	2.77	39,907	N	Slight	0.8
			3,407	9.30	582,742	S	Slight	
1912	1.6 (Mar. 30)	15.5 (Aug. 10)	3,332	2.23	35,311	4.73
			3,437	8.44	715,138	..	Calm	
1913	1.2 (Feb. 22)	14.7 (Aug 16)	3,345	1.64	23,759		..	3.19
			3,411	7.99	616,991	E	9	
1914	0.7 (Feb. 11)	17.3 (Aug. 5)	3,359	1.43	23,719	..	Calm	3.38
			3,434	8.96	885,165	..	Calm	
1915	1.6 (Feb. 13)	12.4 (Aug. 25)	2,841	2.29	41,703	N	3	1.44
			3,405	8.24	430,445	E	3	
1916	-1.0 (Mar. 18)	13.6 (Aug. 16)	3,337	1.87	25,559	N	6	1.31
			3,410	10.61	735,348	..	Calm	
1917	-0.7 (Apr. 4)	15.8 (Aug. 18)	3,332	2.42	17,568		..	7.46
			3,419	9.04	740,279	S	3	
1918	-0.3 (Mar. 9)	11.8 (Jun. 19)	3,315	2.53	28,083	..	Calm	0.76
			3,404	9.22	513,105	SE	8	
1919	-0.1 (Jan. 25)	14.7 (Aug. 16)	3,391	1.44	23,705	..	Calm	2.84
			3,465	6.69	506,352	SE	5	
1920	1.0 (Jan. 24)	15.0 (Aug. 14)	3,394	1.95	31,572	..	2	1.37
			3,463	7.64	612,379	E	2	
1921	-0.5 (Mar. 22)	16.8 (Aug. 10)	3,354	1.77	24,092	NW	6	1.81
			3,469	6.92	535,746	SE	2	
1922	-0.4 (Feb. 12)	15.4 (July 1)	3,380	2.48	36,796	NE	9.57	81
			3,465	8.68	540,793	NE	7.33	
						NE	4.50	
							4.27	
1923	1.2 (Jan. 29)	14.1 (Aug. 30)	3,383	1.88	38,447	..	Calm	2.72
			3,466	6.91	620,915	NE	3.80	
						NE	5.27	
1924	0.4 (Feb. 10)	16.5 (Aug. 13)	3,281	1.85	31,565	NW	6.17	48
			3,468	6.02	683,581	NW	5.27	
						NW	5.00	
							4.93	
1925	-1.5 (Apr. 2)	15.7 (Aug. 9)	2,164	2.23	30,330	NE	8.72	2.93
			3,450	7.95	625,727	S	7.60	
1926	-2.1 (Mar. 11)	15.3 (Aug. 22)	1,912	2.33	27,777	SE	11.70	5.09
			3,464	8.19	607,226	SW	4.70	
1927	-2.1 (Mar. 24)	15.3 (Aug. 19)	3,373	1.05	25,534	NW	13.30	0.61
			3,462	8.32	624,683	SW	8.50	
1928	-2.0 (Feb. 12)	14.2 (Aug. 1)	3,005	1.14	28,342	NE	17.83	1.58
			3,443	8.08	476,774	S	7.60	
1929	-1.3 (Mar. 8)	17.4 (Sept. 7)	2,941	1.77	31,218	..	Calm	11.1
			3,434	8.08	677,132	E	4.35	
1930	-0.3 (Jan. 22)	16.9 (July 24)	3,315	1.15	34,627	SE	4.30	0.88
			3,433	7.10	642,130	E	4.30	

Discharge Observations of the Indus at Kotri.

Year	Min Max.		Width of water surface ft	Mean vel. per sec.	Cubic ft. discharge per sec.	Wind direction	Wind vel. ft. per sec.	Rainfall (at Hyderabad.)
	(For the year)							
1911	5.7 (14 Jan.)	20.6 (4 July)	2,772	1.71	36,667	N	10	3.79
			3,075	6.60	395,504	W	9	
1912	4.7 (9 Apr.)	21.7 (17 Aug.)	2,218	1.93	27,563	..	Calm	5.39
			3,110	7.65	445,943	..	Calm	
1913	4.7 (1 Mar.)	20.8 (19 Aug.)	2,668	2.16	24,198	..	Calm	21.13
			3,105	6.58	444,435	..	Calm	
1914	5.0 (21 Feb.)	23.8 (11 Aug.)	2,583	1.81	25,543	N	15	4.09
			2,919	8.16	612,218	..	Calm	
1915	7.4 (13 Feb.)	19.6 (31 Aug.)	2,715	1.88	31,358	..	Calm	1.01
			2,96	7.70	343,226	..	Calm	
1916	5.7 (1 Apr.)	22.1 (24 Aug.)	2,580	1.76	24,291	NE	9	14.41
			3,047	5.24	369,212	..	Calm	
1917	4.5 (10 Apr.)	22.8 (8 Sep.)	2,656	2.03	17,353	SW	18 to 22	9.81
			3,143	7.51	609,331	S	5 to 7	
1918	5.1 (19 Mar.)	17.0 (7 Sep.)	2,677	1.11	21,688	SW	3	1.74
			2,836	7.42	306,044	NE	7	
1919	5.8 (11 Feb.)	22.3 (20 Aug.)	2,596	1.64	24,439	SW	6	7.76
			3,137	7.16	667,577	NE	4	
1920	6.4 (20 Mar.)	21.4 (13 Aug.)	2,640	1.64	31,442	SE	10	1.70
			2,954	7.04	495,360	SW	10	
1921	4.0 (29 Mar.)	22.1 (28 Aug.)	2,680	1.03	18,067	..	Calm	13.78
			3,110	7.25	520,119	NW	15	
1922	6.1 (13 Feb.)	20.4 (10 Aug.)	2,576	2.16	35,706	NE	6	2.66
			3,047	6.93	389,849	NW	21.5	
1923	6.7 (3 Feb.)	21.99 (6 Sep.)	2,710	1.78	37,488	NE	4.4	5.21
			3,081	6.88	483,559	NW	16.5	
1924	5.90 (14 Feb.)	23.63 (20 Aug.)	2,649	1.61	30,020	NE	7	12.07
			3,145	6.80	532,383	NW	23	
1925	5.96 (7 Apr.)	22.03 (21 Aug.)	2,666	1.51	30,171	NW	7	1.02
			3,059	7.22	442,903	NW	21.2	
1926	5.00 (22 Mar.)	22.70 (6 Sep.)	2,64	1.16	23,710	..	Calm	12.11
			3,100	6.30	411,302	SE	10.2	
1927	4.84 (27 Mar.)	21.50 (25 Aug.)	2,449	1.13	24,016	NW	12	13.55
			3,050	4.83	406,626	SW	10	
1928	5.52 (15 Feb.)	19.30 (7 Aug.)	2,444	1.41	26,736	..	Calm	2.14
			2,740	7.17	306,311	NW	15.2	
1929	6.92 (18 Mar.)	24.10 (13 Sep.)	2,516	1.45	29,286	NW	12.3	23.13
			3,178	6.48	506,082	W	10.4	
1930	6.30 (6 Mar.)	22.88 (30 July)	2,324	1.34	34,005	..	Calm	2.77
			3,159	6.72	425,192	W	18	

Factors of Discharge. – It is clear from the above observations that the discharge varies greatly from year to year and that, at neither of the two places does it correspond with its rainfall for a particular year, proving thereby that snow-melting and rainfall in the upper regions are big factors of the total quantity of water entering. The additions from rainfall in Sindh are quite negligible. For example, the maximum rainfall of 11 -10

inches at Sukkur for 1929 did not show the maximum discharge at the gauge, but on the contrary 108,033 cusecs less than that of the maximum which was in 1914, when the rainfall was only 3.38 inches. Again, while in 1924, the rainfall was the least, viz., 48 inches, the discharge was 683,581 cusecs, that is, 253,136 cusecs more than that of the minimum which was in 1915, when the rainfall was 1.44 inches. So also at Kotri, the maximum discharge was 532,383 cusecs in 1924, when the rainfall was only 12.07 inches, that is, 26,301 cusecs less than in 1929, when the rainfall was the heaviest, viz., 23.13 inches. Only sometimes the Baran below Kotri adds a good discharge to the Indus.

In this respect, the Indus differs greatly from the Nile River which is mainly rain-fed. Ordinary meteorological conditions do not affect our river so greatly as the Nile, where it is possible to predict high or low floods to a certain extent. (This comparison is given later.

A diminution of measurable discharge at Kotri compared with that of Sukkur is noticed from the data given above and the reasons are: —

- (1) Loss by evaporation.
- (2) Draw-off by canals.
- (3) Loss by percolation.

Supplies of Water Available for Irrigation in Sindh.⁵⁹

Average daily discharge in each month in cusecs.

Name of Gauging Station	May 1932	June 1932	July 1932	August 1932	September 1932	October 1932
1. Mithankote below the junction of the Chenab with the Indus	81,547	..	..	..	..	61,289
2. Sukkur	61,134	176,133	276,446	483,622	180,587	53,636
Difference	-20,413	..	..	..	..	-7,653

Name of Gauging

Name of Gauging Station	November 1932	December 1932	January 1933	February 1933	March 1933	April 1933
1. Mithankote below the junction of the Chenab with the Indus	35,177	28,107	25,382	23,903	30,641	60,562
2. Sukkur	28,973	21,528	21,104	16,809	23,010	53,251
Difference	-6,204	-6,579	-4,278	-7,094	-7,631	-7,311

In the above figures for Sukkur, no allowance has been made for 'Lag,' and withdrawals *en-route* from Mithankote to Sukkur. The difference gives an idea of the quantity of water available for irrigation in Sindh.

⁵⁹ Annual Report of the Supplies of Water Available for Irrigation in Sindh, 1932-33.

Differentiation of Waters. – The average daily discharge at Sukkur-Bukkur alone in each month is as under⁶⁰

	1927	1928	1929	1930	Average
January		30,933	35,948	39,283	35,388
February		34,766	36,553	44,759	38,692
March		49,956	34,841	61,398	48,731
April		92,977	57,926	158,668	103,190
May		175,269	89,426	199,467	153,720
June	137,348	305,698	190,544	248,532	220,530
July	318,738	358,132	254,929	523,693	363,873
August	469,388	333,818	494,736	434,599	433,135
September	210,473	260,662	354,768	209,607	256,377
October	65,463	68,746	85,210	72,388	72,951
November	41,505	43,962	50,696	47,388	45,637
December	32,679	45,683	39,082	35,591	39,258

The maximum discharge is in July or August in alternate years, but the minimum may be in December, January or February-March. The average figures show a gradual rise from January to August and a quick fall from August to December.

How much of the flood waters is due to snows and how much due to rainfall, it is difficult to decide at present, the records being not complete. But for the sake of comparison, the following table of Discharge Observations at Punjnad, a station above the confluence of the five rivers entering the Indus has been given. Even these figures include the waters of the Sutlej, which is, as has been stated above, also a partially snow-fed river. It is, therefore, impossible to eliminate altogether the Punjab rivers' share.

Discharge Observations of the Indus at Punjnad (Daka).

Year	Gauge		Width of surface	Mean vel. per sec.	Discharge per sec.	Wind direction	Wind velocity
	Minimum	Maximum					
1929	0.82 (16 Jan.)	13.80 (28 Aug.)	1,179	0.43	6,166	E	Slight
			1,996	6.04	157,882	..	Calm
1930	1.82 (10 Jan.)	11.21 (23 Jan.)	1,335	0.41	5,360	NE	7.83
			1,928	4.22	101,121	S	12.3

It is to be noted that while the waters derived from the melting of the snows come down gradually, those of the monsoon rains descend suddenly and cause anxiety about breaches of blinds and destruction of the countryside by floods.

⁶⁰ Indus River Commission Records, 1927-1933.

Silt Deposits.
Quantity of Water and Total Volume of Silt passed down the
*Indus since 1902.*⁶¹

Year	Sukkur			Kotri		
	Discharge in mill. cub. ft.	Silt in mill. cub. ft.	Average silt in mill. Cub. ft.	Discharge in mill. cub. ft.	Silt in mill. cub. ft.	Average silt in grains p' cub. ft.
1902	3,644,438	6,705	1,223	3,199,392	6,409	1,327
1902	5,079,992	10,411	1,365	4,271,974	9,980	1,554
1904	4,425,321	7,868	1,182	3,675,802	7,810	1,413
1905	5,267,580	9,906	1,256	4,590,679	9,485	1,386
1906	4,891,018	11,909	1,619	4,577,213	10,877	1,580
1907	4,304,634	7,348	1,135	3,979,757	7,515	1,256
1908	5,937,154	11,833	1,325	4,991,419	9,042	1,205
1909	5,764,731	13,108	1,512	4,595,008	9,359	1,355
1910	6,043,421	14,868	1,636	4,885,747	9,226	1,256
1911	6,192,202	14,652	1,574	5,321,376	11,869	1,483
1912	5,523,416	12,952	1,560	3,769,027	6,839	1,207
1913	4,560,365	8,288	1,209	3,688,071	6,691	1,206
1914	6,898,522	13,364	1,287	5,628,614	12,321	1,456
1915	5,608,483	10,452	1,240	4,709,750	10,790	1,523
1916	5,105,462	9,443	1,233	3,383,942	6,892	1,354
1917	5,495,731	12,869	1,557	4,999,969	12,074	1,606
1918	5,032,370	9,476	1,252	4,114,614	9,871	1,595
1919	4,767,032	7,388	1,030	4,835,256	9,970	1,370
1920	4,607,021	8,412	1,217	3,835,295	7,934	1,378
1921	4,275,002	7,810	1,216	4,079,895	8,073	1,317
1922	5,621,545	10,184	1,227	5,005,065	11,540	1,546
1923	5,124,903	10,036	1,308	4,745,340	9,951	1,399
1924	5,523,549	9,699	1,169	4,825,926	9,244	1,277
1925	4,658,859	8,404	1,179	3,904,341	8,051	1,378
1926	4,548,160	7,904	1,301	3,693,549	6,431	1,165
1927	3,928,704	6,445	1,091	3,184,593	5,054	1,060
1928	4,755,962	8,517	1,192	3,830,114	7,383	1,289
1929	4,553,355	8,691	1,276	3,831,745	6,432	1,130
1930	5,188,910	9,210	1,180	4,362,013	8,440	1,293
TOTAL	147,327,842	288,182	37,545	124,516,486	255,550	39,364
MEAN	5,080,270	9,937	1,295	4,293,672	8,299	1,357

Observations. – It will be seen that while, on an average, the waters at Kotri are more silt-laden than those at Sukkur, the total volume of silt carried down below Kotri is smaller than that carried down below Sukkur. The difference represents the deposit of silt on river-side banks and fields irrigated by all canals. The silt thus lost between Sukkur and Kotri during the 29 years amounts to about thirty-five thousand million cubic feet, which is equivalent to about 1,300 square mile-feet. The volume of silt passing below Kotri in 30 years is about 9,100 square mile-feet. An analysis of the silt carried shows almost equal parts of sand and silt. The following are other observations made by the Commission⁶² on silt deposits: –

⁶¹ *Ibid.*, 1902-1930.

⁶² *Ibid.*, 1906-1910.

"The minimum amount of suspended matter is carried near the surface and the maximum amount near the bed of the river. Any variations from the general rule are probably due to disturbances, such as upward currents, eddies, etc. Strong winds also are an external cause affecting the result as they blow sand into the river. Generally the amount of silt varies with the stage of the river; the higher the gauge reading, the greater is the silt in suspension. The noticeable features are the large increase in the quantity of silt when the river rises suddenly and the large decrease thereof when it falls quickly. The quantity of silt carried by the Indus increases with fair regularity from May 1 when the river commences to rise, up to the middle or end of September, when the river begins to fall; thereafter the amount of silt in suspension diminishes approximately, as the discharge decreases."

Variations in the Silt Deposits.

	Maximum quantity of silt recorded		
	Max. quantity in grains per c. ft.	Date	Remarks
Sukkur	3,000	10 Aug. 1907	River raising
Kotri	3,170	22 Jan. 1906	River raising
Dera Gazi Khan	940	17 Jan. 1908	River raising
		19 Jan. 1910	River raising

Maximum quantity of silt recorded

	Maximum quantity of silt recorded		
	Max. quantity in grains per c. ft.	Date	Remarks
Sukkur	50	1 Dec.1906	River falling
Kotri	110	16 Jan. 1908	River falling
Dera Gazi Khan	20	28 Feb. 1908	River falling

The maximum quantity is when the river rises and the minimum when it falls. Also the silt is less at Sukkur than at Kotri.

Sir John Ottley, Inspector-General of Irrigation, has drawn the following conclusions:—

- (1) The quantity of silt increases according to the depth below the surface.
- (2) There is more silt in a rising flood than in a falling one.
- (3) The maximum amount of silt is carried when the flood has reached of $\frac{2}{3}$ its height.

The observations on the Indus have been corroborated by the Commission.

Effects of Silting. – This variation in the discharge of waters between high and low flood seasons and the amount of silt carried during the year produce great effects on the Indus channel. They change its momentum, which in its turn causes bar crossings, spills leading to cut-offs and the consequent instability of the river regimen. The silt deposited being very fine, the bed and sides of the channel yield to flood attacks. The result is that the gradient, depth, velocity and the course also change, the bed level rises, the meanders increase and the course of the river is lengthened. Old land is cut away first on one bank and then on the other and new, land is formed on the opposite bank and so the tortuousness grows, though there is a limit to this between the higher and lower level and the low riverain tracts.

At the same time the great advance of the rich silt deposits of the river during its passage through Sindh is that the soil is periodically renewed in its upper layers. The silt covering the fields makes excellent soil, requiring little tilling and manuring, and crops are grown regularly every season. After the harvest time, as the waters rise again next season, the soil gets renewed and becomes fresh for cultivation once more.

Need of a Barrage in Sindh justified. – A river with such irregularities of discharge of water, uncertainties of flood seasons, regimen and silt deposits, and hydrographical changes would never make the irrigation system in the region a steady success. Irrigation could only be done by inundation canals, during the flood season and by lifting water from wells, etc., during the winter season. There was a great wastage of water in the monsoon season and a barrage across the river at a most convenient point, where the bed of the river was more or less fixed, was an absolute necessity. But even the safety of such a barrage would be in danger, if the physics of the river is not well understood.

IV. *Changes in the Course of the River.*

Such a complicated channel of waters with such varying velocities, silt deposits, etc., as the Indus must, therefore, have its bed, in the valley of Sindh changed at different times. Any appreciable stretch of land covered over with coarse gravel, called the Khaddar, on a level higher than the surrounding country is a sure indication of an abandoned river course. The following are some of the evidences of old beds of the Indus: –

(1) The submerged ridges and gully in the Arabian Sea, discovered by the John Murray Expedition of 1933-34, point to a course of the river, in recent geological times, not wholly identical with that in existence at present.

(2) There being very few solid rocks in the lower part of the valley itself, there are no landmarks such as deserted gorges left by the river. But the old gorge at Aror, 4 miles

east of Rohri, is a distinct proof of at least a portion of the Indus having flowed eastwards, beside the ruined city of the ancient Hindu kingdom of Sindh. This shows that even through solid rocks the Indus can break through on occasions.

(3) Among other less durable landmarks may be mentioned the ruined cities of Mohen-jo-Daro, Bahmanabad, Debal, Patala, etc., some of which are even hard to trace in the alluvium, under which they have been buried. But it is certain that such cities could never have existed without a constant source of water-supply as from a large river in the absence of sufficient rainfall. Old abandoned water channels, such as *Dhoroës*, have been traced near them even at this late date.

Westerling Tendency. – That there is a distinct westerling tendency of the Indus in Sindh at present is shown by the numerous *Dhoroës* found in the Eastern Valley section. According to Parker's observation, in the Northern Hemisphere rivers flowing to the north attack the east bank and those running to the south the west bank (i.e.) the right bank.⁶³ The same effect may also be due to the rotation of the earth but here the assumption that the water of the river does not acquire the same rotatory motion as does the land, is unwarranted. Besides it is not in all times that the Indus has westered.

(4) This present westerling tendency, however, has been clearly marked in the now starved stream of the Fuleli and the flow of the Indus on the west of Hyderabad from about the year 1758 A.D.⁶⁴

Except Bukkur-Sukkur and Kotri, there are but few other points in the course of the Indus in Sindh, which may be considered to be fixed. Beyond Sehvan, the river can no longer wester now, due to the higher levels of Kohistan. But there is, so to say, not an inch of ground in other parts, which at one time or another has not been watered by the river. Old beds and forsaken channels are common features of the region.

(5) The S.S.W. trend of the Indus delta is another important evidence to show the shifting nature of the river, even in its deltaic stage. An examination of the maps prepared by Carless, Wood, Mac Murdo, Haig and others⁶⁵ distinctly shows that the delta has been growing more towards the S.S.-W. direction and more and more outlets of the river open out here in a network of so many tidal creeks of varying shape and situation. Many collateral branches of the Indus have appeared at one time and disappeared at another.

Causes of the Changing Hydrography. – (1) We have already stated that the Indus in its Lower Valley stage is an aggrading river and silting is a very common every-day occurrence. Such a river with its actual bed on a level several feet higher than the

⁶³ Parker, P. A. M., *Control of Water*, 1913, p. 666.

⁶⁴ Haig, M. R., *The Indus Delta Country*, London, 1894, p. 118.

⁶⁵ *Sel. Rec. Bona. Govt.*, New Series, 1855, No. XVII, Pt. 2, pp.

surrounding country is bound to wander about and seek fresh channels every season. A reference to the charts of the river channel prepared year by year and published in the Indus Commission Records will clearly show the varying nature of the river bed within its own banks. In no two seasons is the river channel in some reaches marked the same. (See Plate 14.)

(2) The friable nature of the soil is another cause. Large masses of it are displaced and dragged away by the stream in the flood season. More than the fine silt and clay, the shifting (blown) sands and sandy clays help it greatly to fluctuate. At times a whole channel is silted up and a fresh one formed.

(3) The periodic floods and inundations with the consequent breaches of bunds also are another cause.

(4) The fall of the country to the south is only a few inches per mile. This makes the region virtually flat and the river could not be confined to one definite bed in it without marginal '*bunds*'.

(5) It is also argued that seismic disturbances play some part in changing the beds of a river. The Aror and Bahmanabad catastrophes are ascribed to an earthquake by historians of Sindh. But geologically it is open to doubt whether earthquake shocks are capable of diverting the entire course of a river, though locally they affect it to some extent.

(6) The continuous growth of the delta may have something to do with a change in the hydrography of Sindh. Thatta, miles from the shore line and till recently the apex of the delta, was left in the background about 150 years ago. The Ren was dried up in 1757 A.D. The branch of the Indus, north of Tatta to Gharo, was closed in about 1826 A.D. The whole distance of about 150 miles from Gizri to Gharo is all scalloped with inlets of the sea, which once before were outlets of the great river. The principal

channel of egress about the year 1809 was the Bagar, in 1831 it was the Satar, while to-day it is the Haidari.

(7) Lastly, a change in the hydrography of the Punjab⁶⁶ must affect the river in the lower levels. There is no doubt that some of the Punjab rivers (e.g.) the Ravi, the Bias and the Sutlej have changed their courses even in historic times. The Indus, draining all of them even before it reaches Sindh, is constantly disturbed by them. Multan, Uchh, Harappa and other old towns have been thrown, within recent times, out of the influence of the Punjab rivers. The drying up of the Saraswati-Hakra-Gagger river system has definitely affected the natural drainage in Sindh.

⁶⁶ Khan, I. J., Unpublished thesis for Ph.D., 1929, University of London.

Thus the Indus⁶⁷ has been in constant danger of leaving its bed sometime, except, of course, at present the fixed points mentioned above (e.g.) Sukkur-Bukkur and Kotri. Even today with the approach of the monsoon season, the river causes some anxiety to the Public Works Department, when it shows signs of pressing towards one bank or the other. This is especially to be watched in the region a little above the Bukkur gorge.

Such an event has already taken place in the past at Aror about the year 962 A.D. and a very good physiographical explanation of it has been given by R. D. Oldham.

"In former times the Indus wandered over the plains which surrounded the Khairpur Hills raising the level of the soil on either bank till it broke away in the low ground on one side or the other and so by degrees raising the level of every part; ' during the latest phase of this process previous to the origin of the existing conditions, it flowed east of its present course and having raised the level of the ground there wandered away westwards; by this time the surface of the alluvium had been raised till it was level with a gap in the Khairpur Hills at Rohri and as the alluvium south of the ridge would probably be at a considerably lower level than on the north side, the waters of the Indus having once found an outlet through this gap, would soon establish a permanent course for themselves. If then we assume that the other river (the Hakra) instead of depositing silt and raising the level of its alluvium was an eroding stream, we may suppose that it gradually worked westwards till it reached the present situation of the Eastern Nara and excavated that channel; the flood waters from the Indus would smooth off the slope between them, and had the process continued, there can be little doubt that the Indus would soon have broken away into this low-lying channel, had not the other river (the Hakra), owing to a change of course in its upper reaches dried up before this happened."⁶⁸

An Indirect Advantage. – Every evil has a blessing in disguise and one great advantage of the vagaries of the Indus and its offsets is the vast area of cultivable land, which can be irrigated along channels which were old river courses but now converted into irrigation canals. This circumstance places Sindh in a unique position among the dry regions of Asia. Its potentiality from the point of agriculture is very great indeed.

V. Physical Laws Governing the Indus.

That there are certain physical laws whereby such an alluvial river as the Indus frequently breaks through its banks and changes its bed cannot be denied. In this respect this river resembles other alluvial rivers such as the Mississippi, the Amazon, the

⁶⁷ Medicott and Blanford, *A Manual of the Geology of India*, 1879, p. 418.

⁶⁸ *Jour. Asia. Soc. Beng.*, 1886, Vol. LV, Pt. 2, p. 325.

Hoang-ho, the Ganges and the Irrawaddi in their lower reaches. An authority on this subject says:

"A main river of the class under notice might be expected to run in a more or less straight course, were it not that it is under compulsion to coordinate its velocity to what the materials of its bed and banks can best stand up to. But on account of the caving and other kinds of erosion made possible by the relative incoherence of the soil, the thread of the main stream lengthens itself by bending until its velocity tends to approach that at which caving and erosion will cease. If only the discharge of a river were constant throughout the year and in successive years, a time would doubtless arrive when bed, banks and current would have so far adjusted their difference as to arrive at stability of regimen. But such a state of things is rendered impossible by the periodic changes of discharge volume which are the consequence of rainfall or in India chiefly of the melting of Himalayan snows. The result of this instability of conditions is that permanency of regimen is never attained and so in the process of time the river is found occupying, in turn, each and every part of an area bounded by a certain pair of lines beyond which it never ordinarily wanders."⁶⁹

Molloy's Theory of the Indus. – Mr. Molloy in his pioneer work on this subject has evolved a theory whereby he explains how the river happens to shift its bed, how to some extent this might be foretold, and how its effects may even be counteracted.

The following resume of Molloy's theory of the Physics of the Indus has been given by F. J. E. Spring, Chief Engineer, Indian State Railways:

"The extent of mischievous erosion at any given place depends on the quality of the soil of that place and on the velocity of the current. The quality of the soil is pretty much the same everywhere on the length of the Indus under consideration, that is, no where can it stand up against velocities greater than between about six and ten feet per second. But the velocity varies very greatly and local slopes varying from 1 in 2,500 to 1 in 8,000 are found not only in the low water but also in the high water season. It is

important to understand when and where steep surface slopes may be looked for, so as to be able to anticipate and perhaps to prevent their occurrence, if it should prove worthwhile to do so. That is, if there should be urban or irrigational interests worth the expenditure needed to prevent such occurrences. The incessant and often violent alterations in the surface slope are exceedingly perplexing; but they may almost always be traced to the action of the mid-stream bars or crossings."⁷⁰ (See Diagrams, Plate 13.)

⁶⁹ Spring, F. J. E., "River-Training and Control," Technical Paper 153, Simla, 1903, pp. 7-8.

⁷⁰ Molloy, R. A., "Memorandum of the Physics of the River Indus and their influence on the design of its Training Works," Technical Paper No. 118, Technical Section, Office of the Director of Railway Construction, India, 1901, Prefatory Note, p. 4.

Thus the instability of the river bed depends upon the inequalities in the range of rise and fall of the river, variations of discharge, disturbance of momentum and action of mid-stream bars or crossings.

Oldham's Theory. – R. D. Oldham, formerly of the Geological Survey of India, after his investigations of the river at Dera Ghazi Khan in 1902 propounded another theory,⁷¹ based on the four principles of M. Dausse,⁷² a French engineer:

"The Revenue Survey maps show that the Indus is alternately concentrated into a single channel and splits up into several smaller ones, that is, it presents the alternation of reach and fan. (A comparison of maps of different dates would permit of an estimate being made of the rate at which they gradually encroach on each other.)

"If in one of the 'fans,' there is or arises a solid obstacle not readily eroded by the current of the stream, it will have no effect, so long as one of the minor channels of the fan does not impinge on it. When this takes place, the current will be unable to remove the obstacle and the channel will be deepened by scour against its face, the current increases in velocity owing to the increased depth of channel and erosion be set up, which will cut backwards into the fan. Now the gradient of this channel of erosion is markedly less than that of the surface of the 'fan' and consequently as it cuts its way back, there will be a stretch of very steep gradient and excessive erosion at its head, the gradual deepening of the channel as it cuts back into the fan will attract more and more of the water of the stream, till it may be that the whole volume is concentrated in a single channel, thus establishing a 'reach' in the middle of what should be a 'fan'. The gradient of this 'reach' will be less than the average gradient of the stream, the slope of the fan is greater than this average and consequently there will be violent erosion taking place near the head of the reach which will rapidly cut its way up-stream into the fan." (See Diagrams, Plate 13.)

Conditions in the Lower Indus Basin. – The conditions in Sindh, especially in Upper Sindh, are similar to those depicted by Oldham for the district of Dera Ghazi Khan. The

⁷¹ Oldham, R.D., "Memorandum on the Indus and the Dera Ghazi Khan District," Jour. Geol. Soc., 1902, Vol. XLIV, p. vi.

⁷² Dausse's Principals

(1) Every stream tends to a condition of equilibrium in which the velocity developed is just sufficient to enable the stream to transport its solid burden.

(2) A stream or a river flowing over an alluvial plain of its own making and consequently in a state of approximate equilibrium between velocity and load, does not flow in a channel of uniform section or gradient. (Every such river or stream is alternately collected into a single deep and well defined channel and spread out into a thin shallow sheet or split up into several channels.)

(3) The gradient of such a stream is not uniform. (The reaches where the stream is collected into a single deep channel will acquire a lesser gradient than where the stream is spread out over one of the intervening fans.)

(4) Both reach and fan work gradually upstream the reach encroaching by erosion on the fan above and being itself encroached on by deposition at its lower end.

—(Memorandum on the Indus, by R. D. Oldham. 1902, Appendix V, pp. v & vi.)

formation of 'reach' and 'fan' in turn, the increase and decrease of velocity of current, and the erosion of the bed and banks are generally in agreement with this theory. But there are a few local peculiarities in the flow of the Indus: –

(1) The Indus in Sindh is running on ground higher than the land which is falling on either side, so much is the aggradation taking place.

(2) The cold weather discharge is the lowest in Sindh.

(3) The nearer the river approaches the sea, the more are its meanders and the larger the round bends, as the following table⁷³ shows: –

	Successive 100 miles length	A	B	Percentage of Meanders
		Length measured direct	Length measured round bends	
1st	100 miles beginning at the sea	72	100	39
2nd	100 miles beginning at the sea	75	100	33
3rd	100 miles beginning at the sea	72	100	39
4th	100 miles beginning at the sea	69	100	45
5th	100 miles beginning at the sea	82	100	22
6th	100 miles beginning at the sea	82	100	22
7th	100 miles beginning at the sea	93	100	7
8th	100 miles beginning at the sea	98	100	2
9th	100 miles beginning at the sea	97	100	3

(4) The floods are heavier and so the changing conditions during the flood and the time when the river falls cause frequent cut-offs, scours, erosion of bed and banks, etc.

Low and overtopping banks, ox-bow lakes and the ultimate cutting out of the narrow neck of land with the consequent shortening of the length of the stream, excess of velocity of the current – all cause flooding of the fields and erosion of banks.

(5) There are a few fixed points in the whole course of the river through Sindh. At Sukkur there is a narrow gorge in the limestone rocks producing rapids during the time of inundation, at Kotri where hard clay beds rest against gently dipping Kirthar rocks and at Jheruck, where masses of hardened banks protect the stream. At all other points the banks in the immediate neighborhood of the stream are continuously undermined on the concave sides and aggraded on the convex sides of its wanderings. Thus old banks are destroyed in one season and new ones are made in the next. At times two sets

⁷³ Spring, F. J. E., *River-Training and Control*, 1903, p. 11.

of banks are clearly noticeable, viz., temporary destroyable banks a couple of miles apart and permanent ones as much as 15 miles apart.

River-training. – Unlike the system of river-training in the Punjab, there are no elaborate works such as the old-spur system or the modern practice of guide banks undertaken in Sindh, to confine the current of the river to a particular direction through a bridge or over a weir. The flood menace being the chief danger here, the Zamindars in the past used to protect their land by "Bannas" or small bunds round their fields. During the British period, however, elaborate river embankments have been constructed. To protect the country from devastation by flood or the river from eroding breeches in their banks or in the canals such embankments or dykes have proved very useful.

These bands' are frequently strengthened or reinforced with loops after breeches made in them by the river Indus. Even in the Eastern Nara Valley, expensive embankments have been built to retain the increased supply of water within the valley.

Some of the important bunds⁷⁴ are as follows: –

Right Bank	Length in miles	Left Bank	Length in miles
Kashmor Bund	73.00	Naich Bund	34.00
Sukkur Begari Band	46.50	Kasimpur Bands	10.50
Ghar Canals	45.80	N. Sukkur	28.25
Nara Canal	77.00	Naolakhi (Bhorti) Bands	8.92
Manjhand	5.75	Fuleli Canals	35.01
Karachi Canals	56.00	Karachi Canals	98.00
Total miles	304.05	Total miles	214.68

Safety of the Sukkur Barrage. – As the site chosen for the Sukkur Barrage is the safest, the river having never left the bed just below the Bukkur gorge, where it is located, there are no chances of the river bed to change and of the Barrage works to suffer. There are, however, chances for the river channel to break through the banks on the upstream side (*i.e.*) 15 to 20 miles north of Sukkur. Here the river is trying to erode the bank and to cause a breach in the protective bund. During the flood season of 1935 some water did actually flow down the depression along the Eastern Nara (beyond Aror) and was probably absorbed by the desert sand. The usual precaution against such breaches, *viz.*, looping the bund, is taken. On the whole, the safety of the Barrage is now assured. (See Plate 14.)

⁷⁴ Aitkin, E. H., *Gazetteer of the Province of Sindh*, 1907, Vol. A, p. 10.

VI. Navigability.

A discussion of the navigability of the river Indus has its greatest value probably from the point of view of commercial intercourse.

History of Indus Navigation. – A study of the latest archaeological discoveries in Sindh tends to show that there was a possible intercourse by sea between the people of the Indus Valley (Mohen-jo-Daro) and those of Sumer (Mesopotamia) by sea. Their influence had reached far inland, in India even upto the banks of the Ravi and as far as Harappa at least. No doubt, the Indo-Sumerians utilised the waterway of the Indus to their great advantage and proved its navigability even in their earliest civilization.

The credit of directing the first geographical survey of the Indus is given to the Iranian sovereign Darius the Great, who employed his Greek engineer, Skylax for the purpose. The wealth of geographical information, gathered by the Iranians, was then utilized by Alexander the Great, who ordered his navy down the Indus river under the command of Nearchus. Himself a great lover of martial fame, he created new cities such as Patala on the banks of the rivers and on its delta. Thus the first naval power established on the Indus was his, and though his influence in the East died out soon after his death, a way for all European trade was opened by him. "The march of Alexander the Great from the Beas to the ocean with the voyage of Nearchus marks the coming line of European trade with India,"⁷⁵ and indeed, the intercourse between the East and the West was flourishing for long. "The Indus trade route was a sheer necessity, because Mahomed wrested Egypt from the Byzantine power and closed the overland route of Suez to the Greeks," and the Indus became "a new channel by which the productions of the East might be transmitted to the great emporium of the West." Again, "The rich and easily stowed products of India were carried up the great river as far as it was navigable, thence transported to the Oxus, down whose stream they proceeded as far as the Caspian Sea. There they entered the Volga and sailing up it, were carried by land to the Tanais (the Don) which conducted them into the Euxine Sea, where ships from Constantinople waited their arrival."⁷⁶

This movement of Indo-European commerce continued in later times. Unfortunately the dark ages of Medixval Sindh in succeeding centuries have left no historical records to show the utility of the Indus as a navigable river. Now and again, as the Indus Valley came to be ruled by a multitude of fighting chiefs particularly after the downfall of the Moghuls, the Indus was disused as a highway of commerce.⁷⁷

But the Sindhis were a good sea-faring race. Long before the advent of the British in Sindh in the thirties of the last century, the natives used their crafts. There was no

⁷⁵ Andrews, W. P., *The Indus and its Provinces*, 1857, p. 8.

⁷⁶ *Ibid.*, p. 2. (From Robertson's *America*, Bk. I.)

⁷⁷ *Ibid.* p. 94.

dearth of native boats of various kinds used by them, such as the Dundies, Jumptis, Zorucks, etc.

British Surveys of the Indus. – Lord Ellenborough was among the earliest Englishmen to discover the navigability of the Indus and to press the East India Co. to utilize it for strategic purposes. He ordered an expedition under Lt. (afterwards Sir) Alexander Burnes, who thus became the first British navigator of the Indus in 1831. With the excuse of sending a present of English horses and a heavy carriage to Ranjit Singh from His Majesty George IV the British Government took an opportunity to explore the river route to the Punjab. Burnes undertook to collect data regarding " the depth of the stream, its facilities for steam navigation, the supply of fuel on its banks, and the condition of the princes and people who possess the country on it."⁷⁸

In this project Burnes succeeded well and preparing a Memoir on the Indus together with a Map, presented the same to Lord Ellenborough. The expedition utilized the Pittee mouth of the Indus for their starting point and sailing in boats from Thatta on 12th April reached Hyderabad after six days' journey; thence via Sehvan to Khairpur and Sukkur, where they halted for about a month, they reached Lahore ultimately on the 18th July. Thus the value of the Indus as a waterway was definitely proved by the British.

A scientific survey of the Indus from many points of view was soon undertaken by the British and we have to-day the following excellent reports and memoirs,⁷⁹ giving us an idea of the conditions of the Indus which were then prevalent: –

- (1) "*Memoir on the River Indus*" by J. F. Heddle (May 1836).
- (2) "*Memoir on the Delta of the Indus,*" by Lieutenant T. G. Carless (September 1837).
- (3) "*Report upon Portions of the River Indus, surveyed in the years 1836 and 1837*" by Lieutenant T. G. Carless.
- (4) "*Report on the River Indus*" by Lieutenant J. Wood completed in October 1838.

They give detailed information on the following important points relevant to our subject: descriptions of the collateral branches and sections of the Indus, observations on the periodical swell and the nature of the various mouths, navigation, boats of the Indus, soundings, tonnage, etc. On the navigability of the river, Heddle observes:

⁷⁸ Burnes, Lt. A., *Travels in Bokhara*, III, pp. 3-5.

⁷⁹ *Sel. Rec. Born. Govt.*, New Series, 1855, No. XVII, Pt. 2, pp. 401-588.

"The Indus steamer in which I embarked, reached the main stream of the river Indus, not by that embouchure by which the principal body of the water is discharged, but by the collateral branch, called Hujamree, which in maintaining the intercourse between the upper part of the Indus and the sea, answers the same useful purpose to navigation, in relation to that river that is served by the Hooghly in reference to the Ganges."⁸⁰

On the navigable character of the whole river, Lt. Wood⁸¹ has given valuable information. According to his observations the facilities afforded by the river vary with the state of the bed of the river and with the locality. Within the delta, navigability is difficult on account of the instability of the numerous channels, though there is a good depth of water in them; the passage between the delta and Sehvan is the best. Between Sehvan and Roree or Bukkur, the depths are irregular again and higher up the river is well suited to navigation. This is restricted to some months of the year; during the rainy months the passage is actually hazardous.

A number of cross-river soundings taken by Wood revealed a variety of depths from half a fathom to six fathoms higher up.⁸²

On the whole, the depth of water in the channels throughout Sindh and even higher up was sufficient for the whole year for navigation by country crafts. The average depth of the river, when full, was about 24 feet, and in the off-season about 9 feet. The greatest depth is recorded between Kalabagh and Attock, *viz.*, 186 feet. The average width of the river is 680 yards. The fall of the river per mile is as follows⁸³:—

Distance by the River.

	541 miles	313 miles	871 miles	Unknown	
Mouth	6 inches per mile	8 inches per mile	20 inches per mile	?	Source

Prevailing Winds in the River Valley.— The prevailing winds in the valley are:—

- (1) Southerly (monsoon) for six months, from April to September.

⁸⁰ *Ibid.*, p. 403.

⁸¹ *Ibid.*, pp. 547-548.

⁸² *Ibid.*, pp. 583-585.

⁸³ *Ibid.*, pp. 545-546.

- (2) Northerly for the remaining six month, from October to March.

These help or hinder navigation to a great extent, as the season may be. The southerly winds are very strong and reach the interior of the Punjab but grow less and less strong as they go upwards; while the northerly winds are not so steady, but at times violent and very cold. There are occasional gales received also from the south in the hot season and marked by cloudy, rainy weather.

Besides these, there are local light breezes along the banks of the river, varying from place to place.

Difficulties of Navigation. – The uneven depths of the river and some of its branches within the delta, the low or high nature of the banks and their instability, the pressure influences of the tide and monsoon winds, sudden rises and depressions in the channel due to rains or desiccation and, above all, the loose and friable nature of the soil and the sand banks or mud-banks – all affect the navigability of the river to some extent.

Among other difficulties are those of finding the entrance through one collateral branch or the other, of the shallow depth of water in the cold season, and the absence of suitable ports accessible to vessels of burden. While the river is broad and sufficiently deep from Hyderabad northwards, the channel from the seaboard to Hyderabad is not so suitable.

Present Conditions of Navigation on the River. – The Indus has not been surveyed from the view-point of navigation in recent years. The railways, built by the N. W. R. authorities, have displaced the only available waterway in the past, though it can be developed for native crafts side by side.

The conditions of the Indus, at present, cannot be very different from those depicted above; there is, however, no doubt that more and more silting has been taking place, making navigation more and more difficult, though not impossible, even for the high-sterned flat native boats which pass in and out of the river every year. During the winter season, however, the position is now different. The Barrage has actually created a high level of water in front of the gates – there is a difference of as much as 10 feet between the levels upstream and downstream and very little water actually passes under the gates.

VII. Other Characteristics of the River Indus.

(1) *Difference between the Left and Right Banks.* – The Indus has a comparatively shallow bed and undefined banks during the greater part of the year. In the season, when the level rises, silt deposits are laid layer by layer and the banks become higher and higher. Comparatively less silt is carried into the canals on the left bank than on the right.

It is also noteworthy that while on the left bank there are several old abandoned and tortuous channels with well-defined banks, there are no such channels noticeable on the right bank. This in the opinion of C. W. Tremenheere, who surveyed the area in 1867, is due to the enormous accumulation of deposits on the left bank and the westering tendency of the main stream.

(2) *Floods.* – The river is well known for extraordinary floods. These are caused by several agencies: –

- (i) Excess of snow falling on the Himalayas.
- (ii) Blocking of the stream in the uplands by glaciers, such as that of the Shyok or the Gilgit.⁸⁴
- (iii) Cyclonic rains.
- (iv) Breaking down of the dykes, embankments or 'kinds' erected along the courses of the river and the canals.

Such extraordinary floods were recorded in the years 1841 and 1858 in the past and in 1928 recently.

"From the report of the Natives, it appears that a very high inundation sometimes occurs in Sindh, which invariably causes great alterations in the lower part of the Indus; it is said to happen once in about half a century. About eighteen years ago (1819?) one of these floods came down the river, rose to several feet above its usual height during the swell, and the strength of the current was much greater than in ordinary seasons; while villages were swept away from the banks, and in many parts of the country the crops were completely destroyed. On this occasion, the river altered so much about the part, where the Setta was thrown off, that a larger body of water than usual was forced into that stream, and it increased in size considerably. The change became greater every successive year, until at last the main river turned into the Setta and abandoned the Buggaur altogether."⁸⁵

(3) *Silt carried off Keamari.* – The force of the S.W. monsoon wind is very great on the coast, so much so that the silt, brought down by the river and dropped off its mouths, is carried far and wide. The mineral character of the muds off Keamari examined by Tremenheere⁸⁶ appeared to him to be akin to that of the silt carried by the Indus as has been already noticed. They contained quartz and mica in a finely divided state and appeared to have been brought near the harbor by the influence of the S.W. monsoon current on the sea waters.

⁸⁴ Drew, *Jammu and Kashmir Territories*, London, 1875.

⁸⁵ *Sel. Rec. Born. Govt.*, New Series, Vol. 2, No. XVII.

⁸⁶ *Jour. Roy. Geog. Soc.*, 1867, Vol. XXXVII, pp. 70-77.

(4) *Nature of River Banks.* – The banks gradually grow steeper as we move upwards reaching a height of about 15 feet but in the lower part of the Delta there are low banks. In places they stand steep and wall-like.

(5) *Best Bridged River.* – Owing to its peculiarities, irregularities and exceptional length across the various types of rock formations, and through alluvium, old and new, the River Indus has come to be exceptionally and peculiarly bridged (*e.g.*) between Leh and Kotri, it possesses all sorts of bridges including boat-bridges.

The position and construction of the Landsdowne Bridge of Sukkur is a triumph of Indian bridge-building. There being little space between the Bukkur island and Sukkur, a cantilever bridge was the only possibility. The Barrage with as many as 66 spans is a marvel of civil engineering. Another important bridge is at Kotri, crossing the mud banks of the river, and at the old port or Bunder of the Indus Flotilla, called Gidu.

A scheme of waterworks for Karachi with a canal from the Indus at a convenient point in Lower Sindh is being prepared by the Karachi Municipality.

VIII. Comparison with the Nile.

In his discussion about the variation of the Nile flood, Captain H. G. Lyons⁸⁷ suggested certain meteorological conditions extending over large areas in Asia and Africa and affecting the rainfall and floods of the Nile. The variations of atmospheric pressure and of the maximum and minimum sunspots have something to do with it, though the observations of these conditions do not guarantee any production of high or low flood pulses.

His conclusions are: –

"(1) Generally speaking, the curve of Nile floods varies inversely as the mean barometric pressure of the summer months; high pressure accompany low floods, and low pressure accompany high floods.

(2) These pressure variations show a great similarity over wide areas, but seem to be to some extent dependent upon the position of the Azores high pressure 'action centre'.

(3) Taking the monthly means of atmospheric pressure, this relation is even more clearly shown above or below the normal, in months of the rainy season of Abyssinia, coinciding closely with deficiency or excess of rainfall.

⁸⁷ Lyons, Capt., *Physiography of the River Nile and its Basin, Cairo*, 1906, pp. 350 ff., 368, 387

(4) Taking the 37 years (1869-4905), in 6 years out of 7 a very fairly accurate prediction of the flood from month to month could have been made, and there seems a reasonable probability that further and more detailed study of the conditions above described may increase the reliability.

(5) The effect of excessive subequatorial rainfall in April and May in the neighborhood of Zanzibar seems to have a distinctly prejudicial effect on Abyssinian rains."

In the same way, it is possible that whenever there is a diversion of S.W. monsoon currents from the west and northwest India to either Abyssinia or Burma, there is likelihood of general or local scarcity of rainfall in the region. At the same time a weakness of the wind currents in one area may also be felt in areas in similar latitudes, as the tropical rainfall of all these localities is "caused primarily by the transfer northward of the equatorial rain-belt followed by the northward extension of the southeast trade winds."

But as we have noticed above, mere meteorological conditions over the Indo-Gangetic plain do not affect the Indus floods in a particular year, snow-melting making a lot of difference in the discharge. There are other material differences also to be noticed between these two great rivers: —

	The Indus.		The Nile.
1	An antecedent river flowing across the Himalayas and a consequent channel through a synclorium, from north to south.	1	A consequent river now flowing through a rift valley near the source, from south to north.
2	Sources of water-supply un-steady: (i) Glaciers (snow-melting in summer months), (ii) Numerous affluents, (iii) Seasonal (monsoon) rains (S.W. and N.E.).	2	Constant water-supply. Equatorial rains (March and September) only. No snows. Seasonal rainfall (monsoon) on Abyssinian highlands (July-August).
3	Variable channels.	3	Comparatively constant channels.
4	Considerable fall-11,000 feet at Gilgit.	4	Less fall from heights.
5	Light, friable, shifting soils and fine sand banks, shallow and shifting torrents.	5	Rocky parts in upper region. Argillaceous soil, deep bed, uniform flow and rapids and cataracts, in lower region.
6	A Barrage at Sukkur.	6	A Dam at Assuan.
7	No lake regulation and hence disastrous floods in season.	7	Lake Victoria serving as a reservoir. No irregular floods.
8	No tributary in Sindh (Lower Valley).	8	Tributaries of the Blue Nile and the Atbara in Egypt.
9	Navigation—Only in flood seasons, though difficult due to sand banks; small native boats sail, flat bottomed and light, drawing 3 feet of water merely.	9	Navigable in all seasons and times—Large boats meant for sea voyages and shore-going craft used.
10	Colour of water—muddy but capable of filtration.	10	Blue to red due to Fe ₂ O ₃ in suspension.
11	Ever changing and growing delta and mouths of the river.	11	Better delta.
12	No great or old towns, ports; not yet a well cultivated valley.	12	Large old towns exist. Richly cultivated valley.
13	Present average advance of delta 4 yards per year.	13	4 1/3 yards per year.
14	Climate—Extremes of heat and cold. Scanty rainfall.	14	Hot and cold seasons. Good seasonal rainfall.
15	One of the best bridged rivers in the world.	15	Not well bridged.

IX. Summary of Statistics.

Total length of the River course from source to mouth

Total length of the River course from source to mouth	1,800 miles
Length of the River in Sindh (with windings)	580 miles.
Drainage area of basin	372,700 sq. miles
Total area of Lower Indus Basin (Sindh)	52,994 sq. miles
Discharge (average of 29 years) at Sukkur	5,080,270 mln c. ft.
Discharge (average of 29 years) at Kotri	4,293,672 mln. c. ft
Discharge (Minimum)	17,568 cusecs
Discharge (Maximum)	885,165 cusecs
Highest rise of water level (1929) at Sukkur	17.70 feet
Highest rise of water level (1929) at Kotri	24.10 feet.
Silt carried (average for 29 years) at Sukkur	9,937 mln. c. ft.
Silt carried (average for 29 years) at Kotri	8,299 mln. c. ft
Average inclination of the plain	9" per mile.
Maximum mean velocity per second	10.61 feet.
Silt carried	1,000,000 tons a day
Depth of the stream in the delta	1 to 4½ fathoms
Depth of the stream in higher up	1 to 6 fathoms
Total length of irrigation canals, branches, tributaries	6,211 miles.
Length of the longest canal (Rohri) in the Indus System	208 miles
Total command under all canals	71 million acres

Summary.

Chapter I deals with the physiography of the Lower Indus Basin (Sindh) and includes the physiographic regions, classified according to the principles of physiographic division, which have proved fruitful of results in the hands of American geographers, especially with regard to the problems of water-supply, economic resources, industrial possibilities, population, etc. This has also been embodied in a map of the region on the scale of 1:1,000,000 and the descriptive materials for the same have been drawn from existing geological literature and geological and other survey maps and atlases of Sindh, aided by personal observations in the field.

The main divisions into provinces are (I) Western Highlands, subdivided into (A) the Kirthars and (B) the Kohistan areas; (II) Lower Indus Valley, subdivided into (A) Western Valley section, (B) Eastern Valley section, and (C) the Deltaic Area; and (III) the Desert Province, subdivided into (A) the Pat and (B) the Thar. They are all differentiated from one another from the points of view of structure and erosion of rocks, redeposition of material by sub-aerial agencies, etc.

A brief history of the geology of Sindh, including the growth of the delta and the evolution of the coast-line has been given and the origin of the Indus Basin discussed. The general geology and surface topography of all the regions, showing ground contour lines, sand and clay belts, Kalar lands and sand-hills are sufficiently dealt with and illustrated; the subsoil water-level contours and their fluctuations in the wet and dry seasons are made to indicate areas suffering from water-logging. Rivers, hill torrents or Nais, saline lakes or Dhands are also described and the drainage capacity of each division has been particularly considered.

Lastly, a review of the economic resources of the province of Sindh has been taken, division by division, and their future development indicated.

The history of the principal water-course of the land, viz., the Indus River, both geological and recent, and the nature of its regimen form the subject of Chapter II. The Indus owes its origin probably to the ancient river designated the Indobrahm, which flowed by the foot of the Himalayas from Assam to the Potwar plains and down to Sindh, in the Siwalik age. This has been also suggested by the John Murray Expedition, which explored the Indian Ocean and other waters in 1933. The Indus, being snow-fed as well as rain-fed, has a unique discharge of water, the graph showing two distinct peaks, one early in the hot season when the snows melt and the other in the monsoon season when it rains in Northern India. The silt-carrying capacity of the Indus is also gauged. So much has been the irregularity of discharge

from season to season and from year to year, irrespective of the meagre rainfall in Sindh, that the need of the Lloyd Barrage at Sukkur is justified. That there is a distinct change in the hydrography of the region has been next pointed out and this discussion leads to the consideration of the theories of river regimen of Molloy, Dausse and R. D. Oldham, which are applicable to the Lower Indus Valley in general.

River-training, especially the protection of the countryside from destructive floods by means of 'bunds', are essential in this region, as floods are a proverbial menace to the inhabitants of Sindh from the earliest times, witness Mohenjo Daro. The task of protecting the safety of the Barrage is indeed great. That the river is also navigable to a certain extent is shewn from the records of ancient and modern times. Thus the Indus has been proved to be most serviceable to Sindh from several vital points, though it differs in certain particulars from the Nile river and its regimen.

The paper is illustrated with appropriate maps, sketch maps, graphs, charts, etc., put together for the first time for this pioneer regional study of an Indian province.

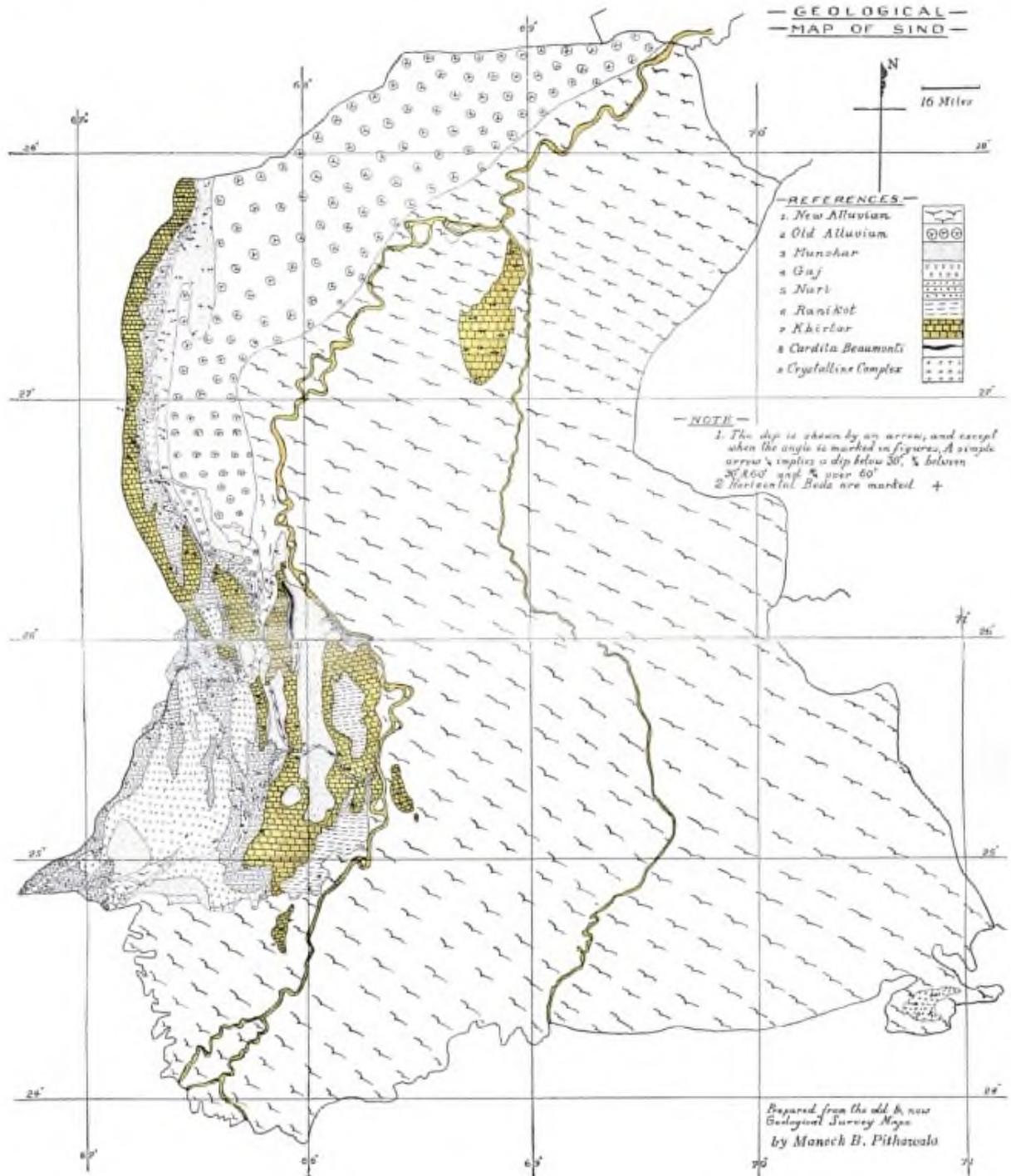
I am indebted to Prof. E. G. R. Taylor, Dr. A. M. Mathews (both of the London University) and to Prof. D. N. Wadia, of the Geological Survey of India, for their guidance and helpful suggestions.

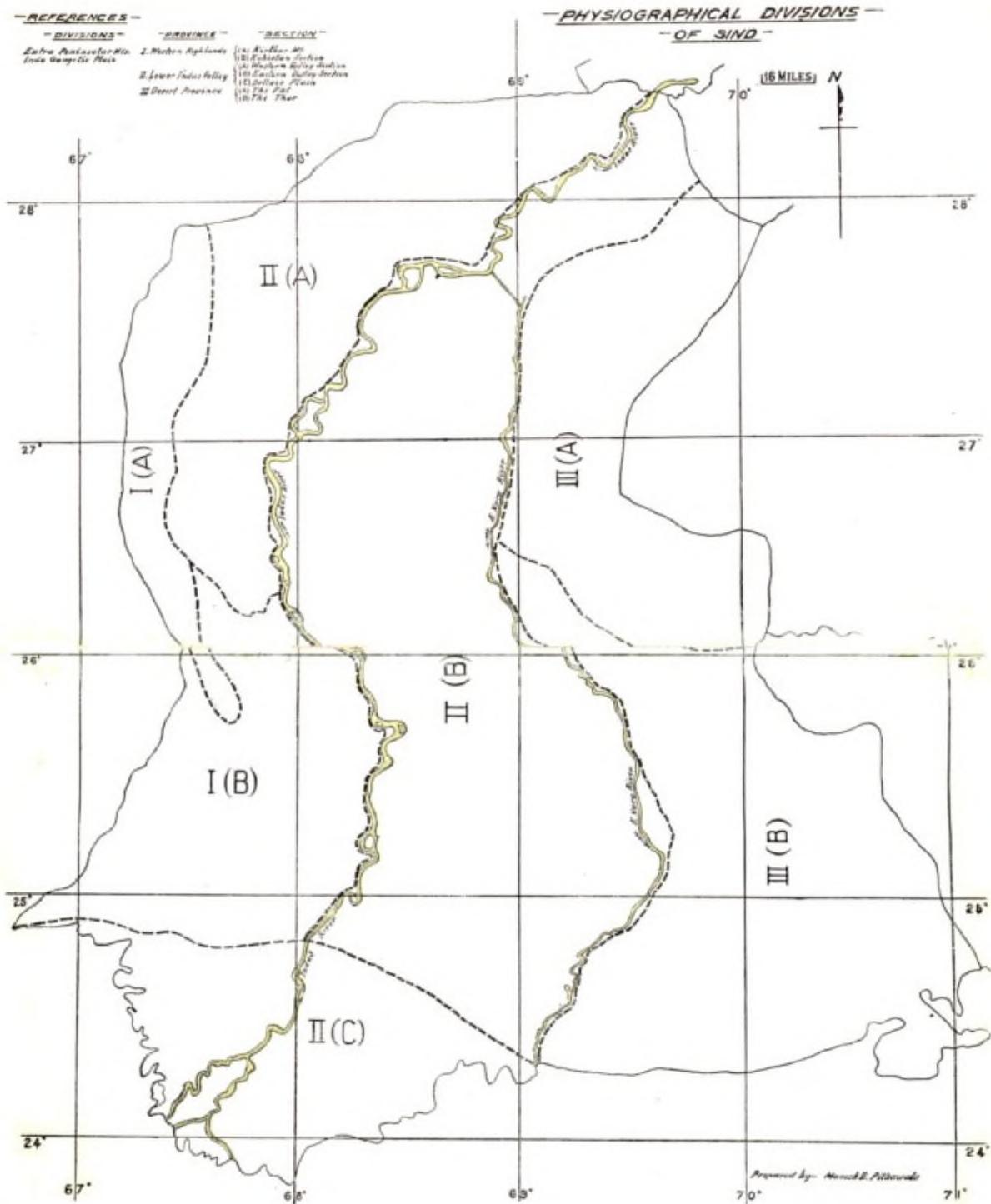
DESCRIPTION OF PLATES.

1. Physical Map of Sindh, showing natural relief, etc. (Scale: 1" = 16 miles.)
2. Geological Map of Sindh. (Scale: 1" = 16 miles.)
3. Map of Sindh showing Physiographic Divisions. (Scale: 1" = 16 miles.)
4. Map of Sindh, showing — (Scale: 1" = 16 miles.)
 - (1) Thermal Springs.
 - (2) Hill Ranges and Water-Channels.
 - (3) Manchar — Aral Drainage system.
 - (4) The Indus and the Canal system.
5. Map showing ground contours. (Scale: 1" = 16 miles.)
6. Map showing hydro-isobaths. October 1933. (Scale: 1" = 16 miles.)
7. Map showing hydro-isobaths, April 1934. (Scale: 1" = 16 miles.)
8. Map showing sand and clay belts. (Scale: 1" = 16 miles.)
9. Map showing Kalar areas. (Scale: 1" = 16 miles.)
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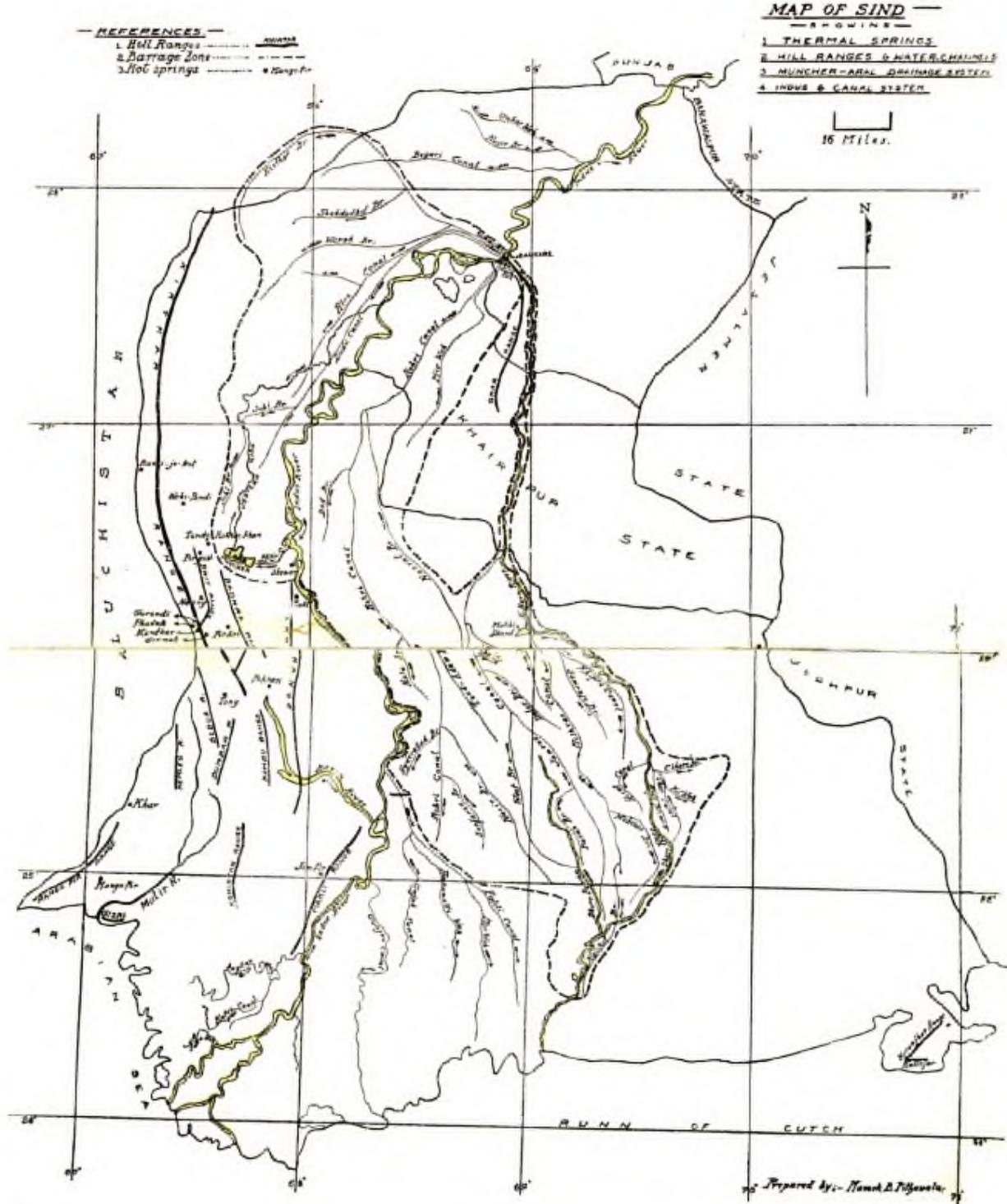
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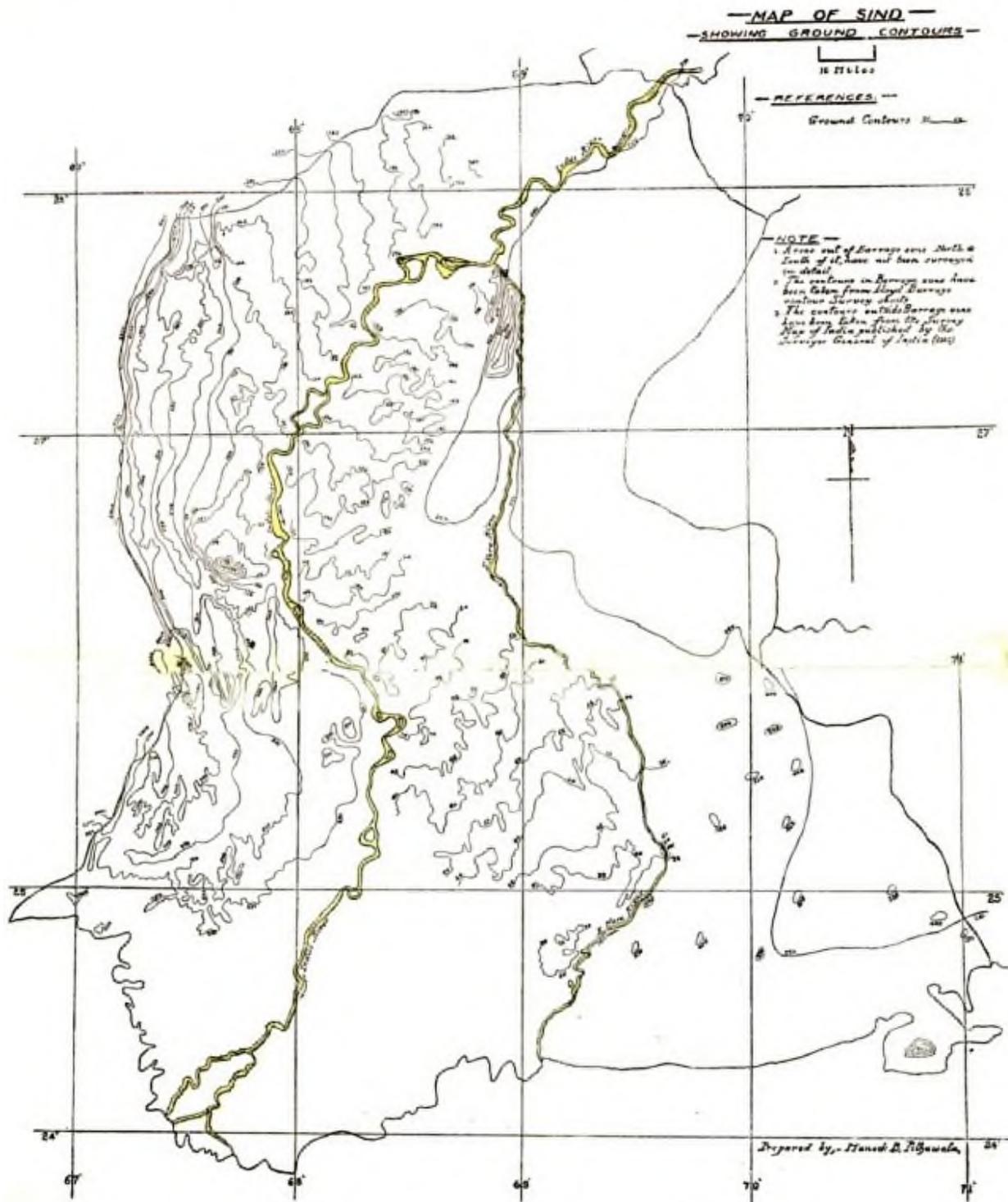




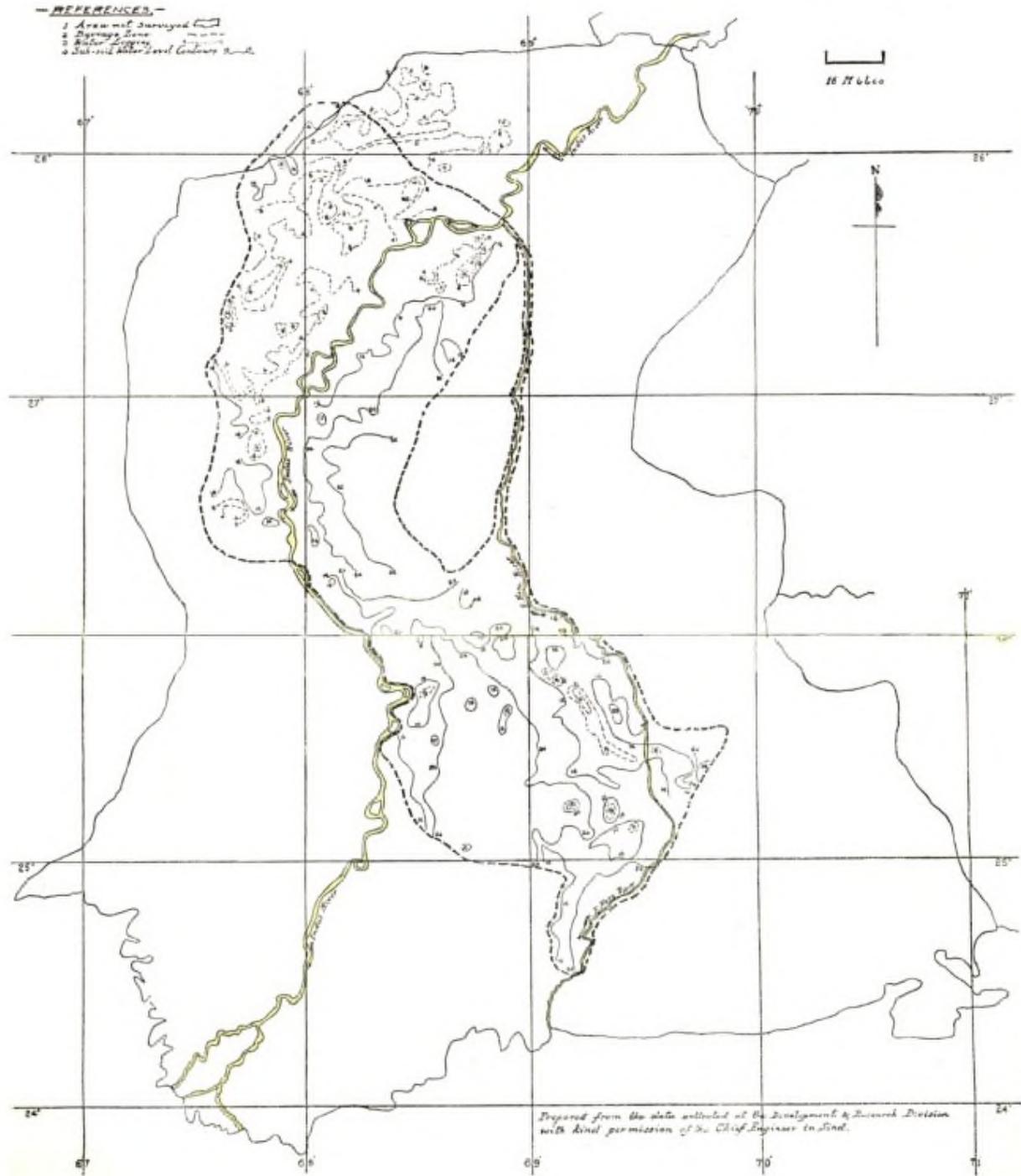


(PLATE 4)

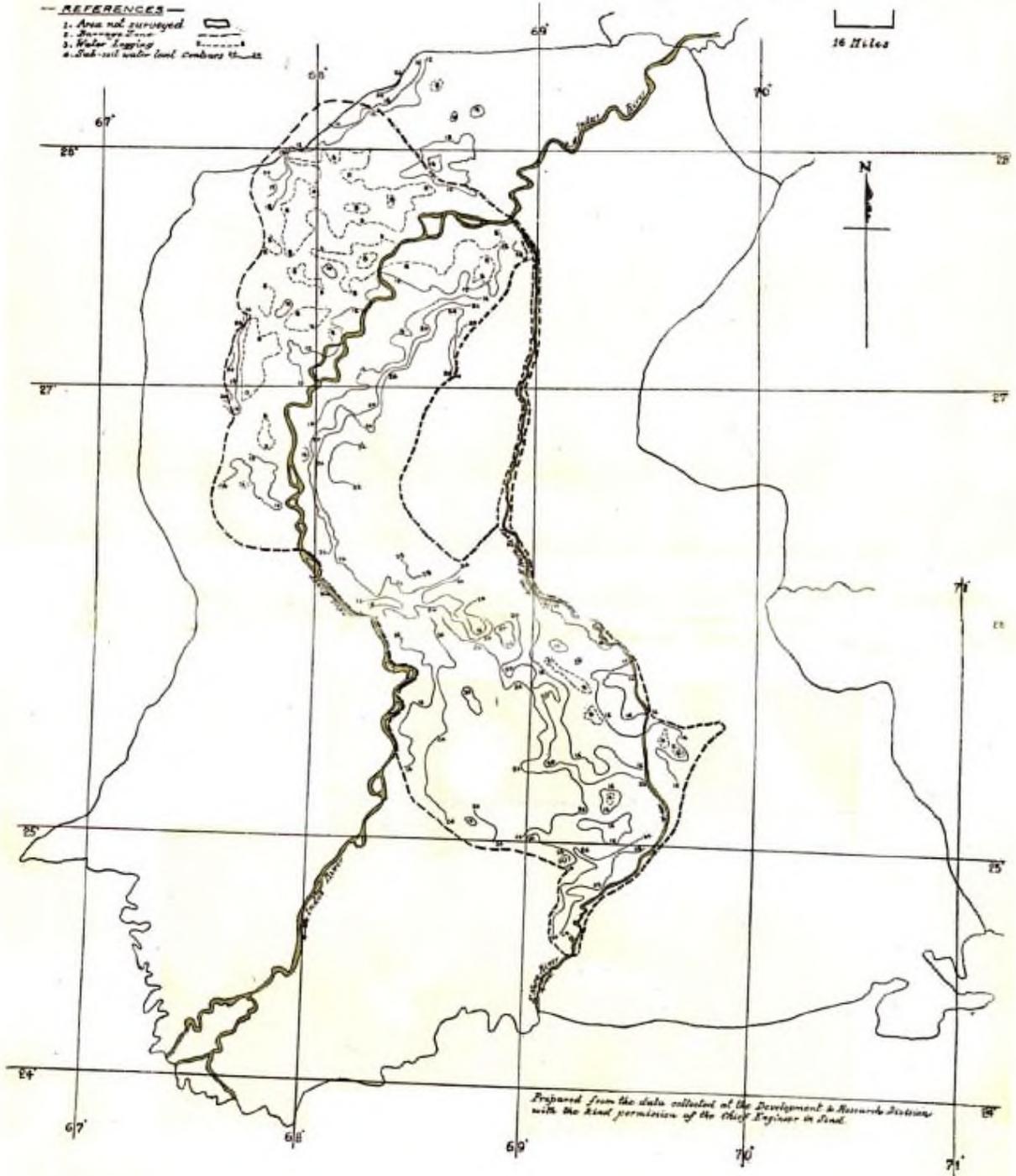


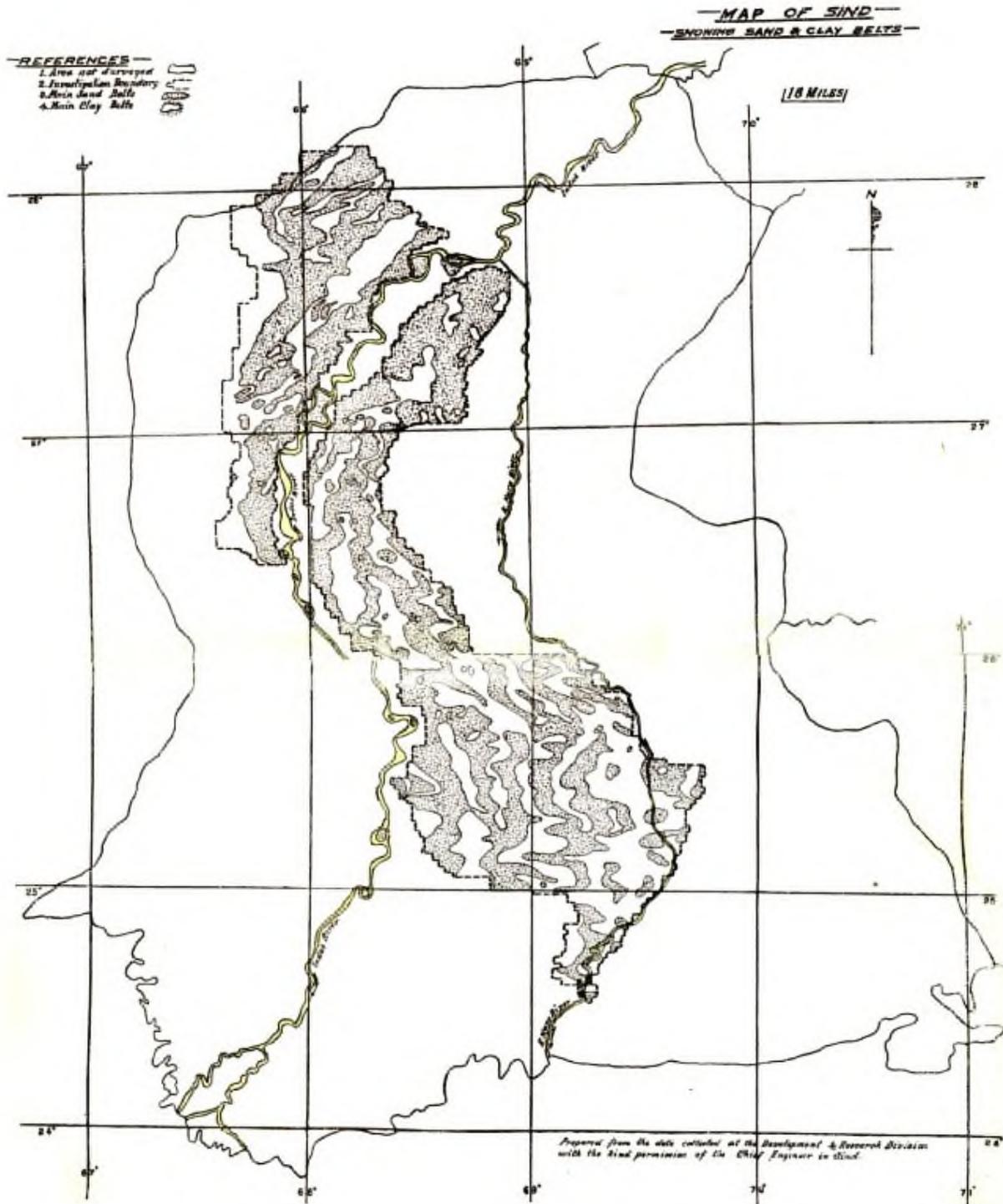


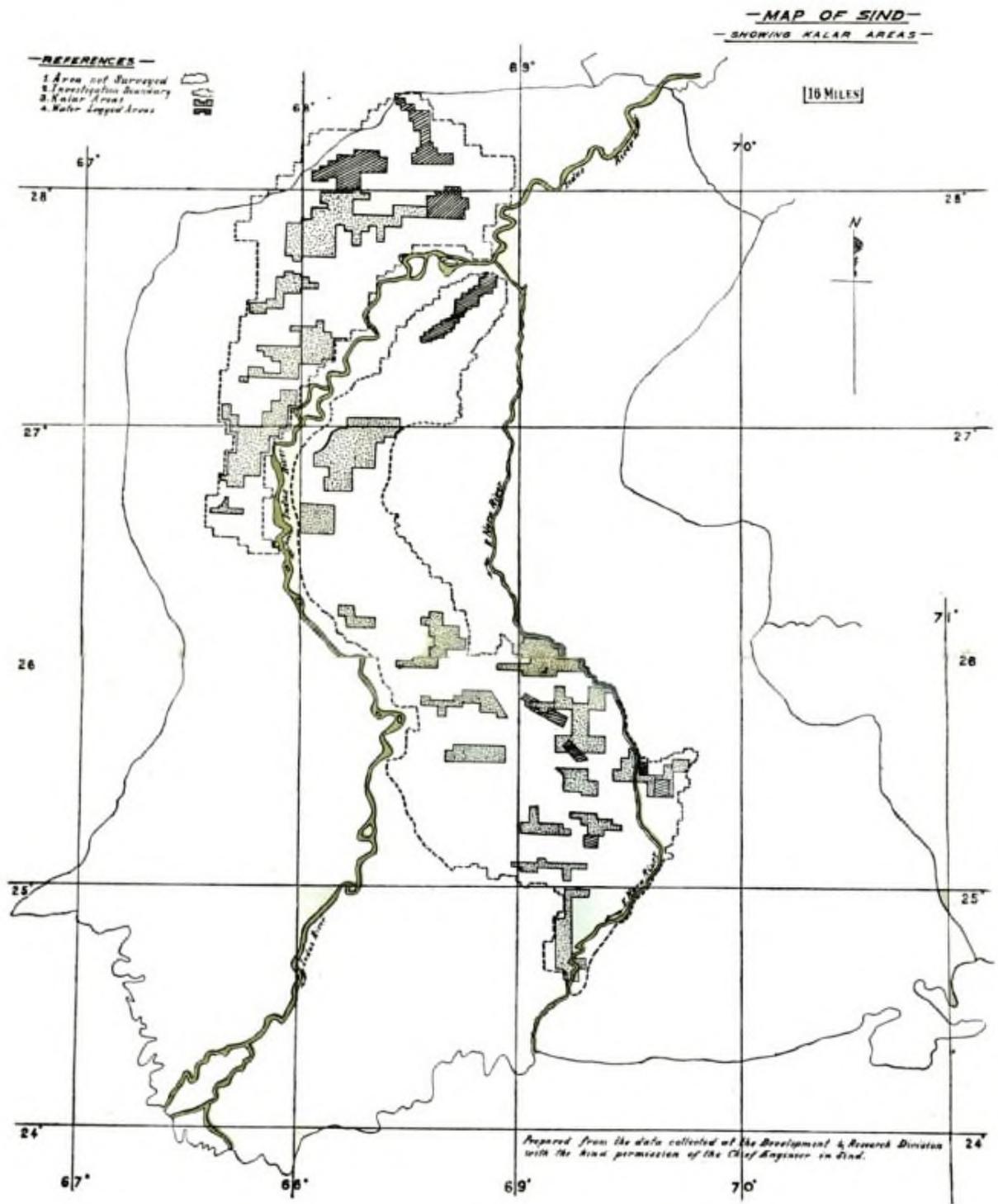
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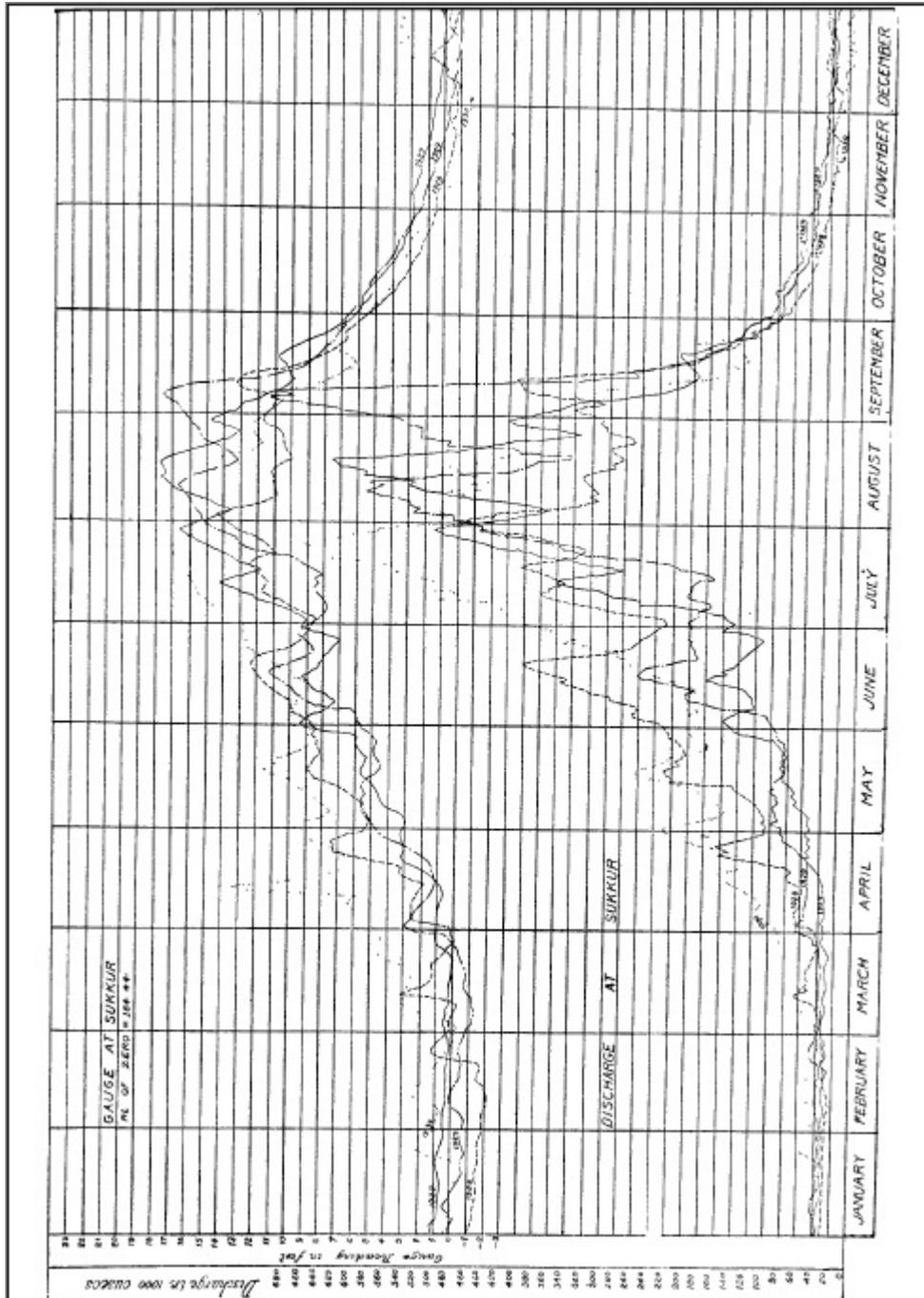


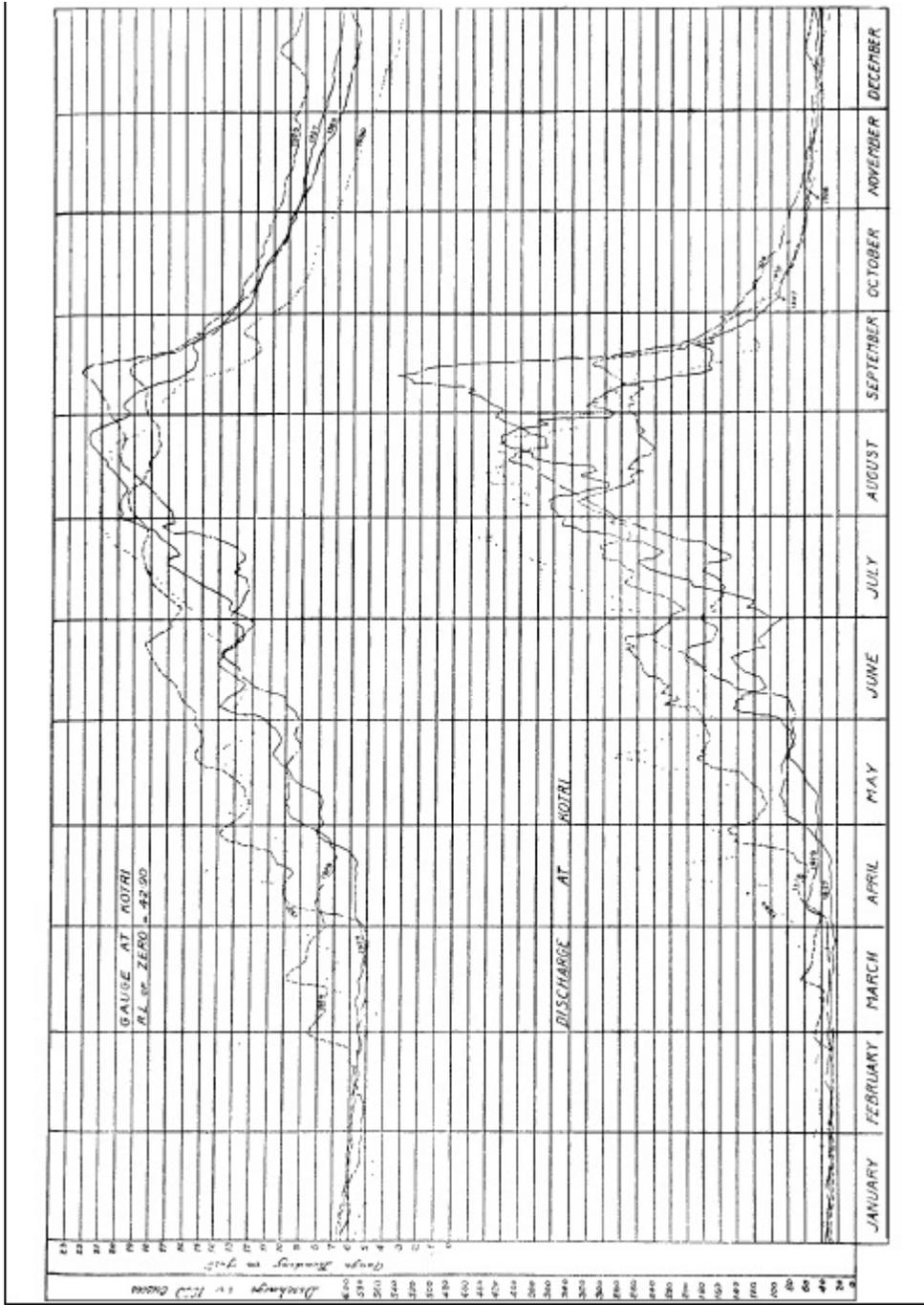
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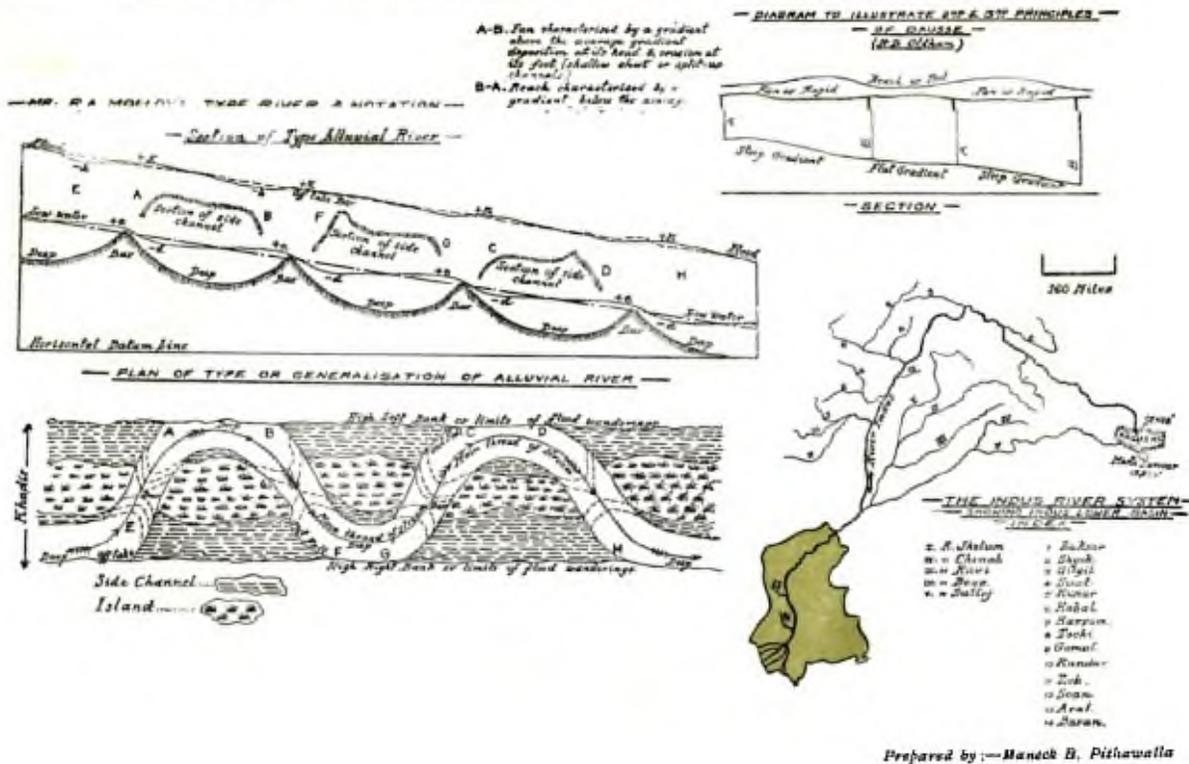
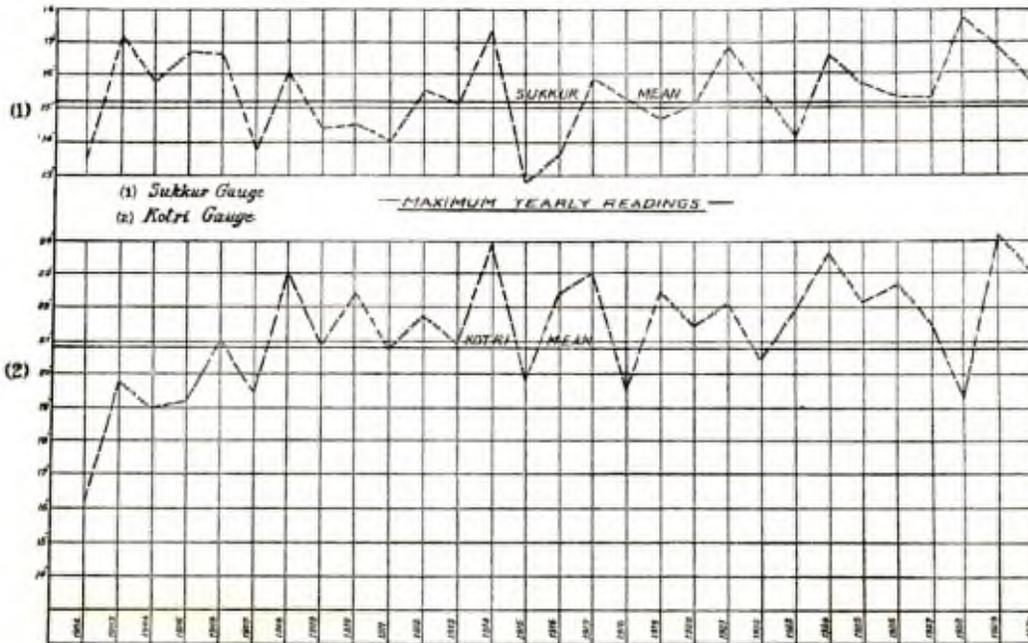


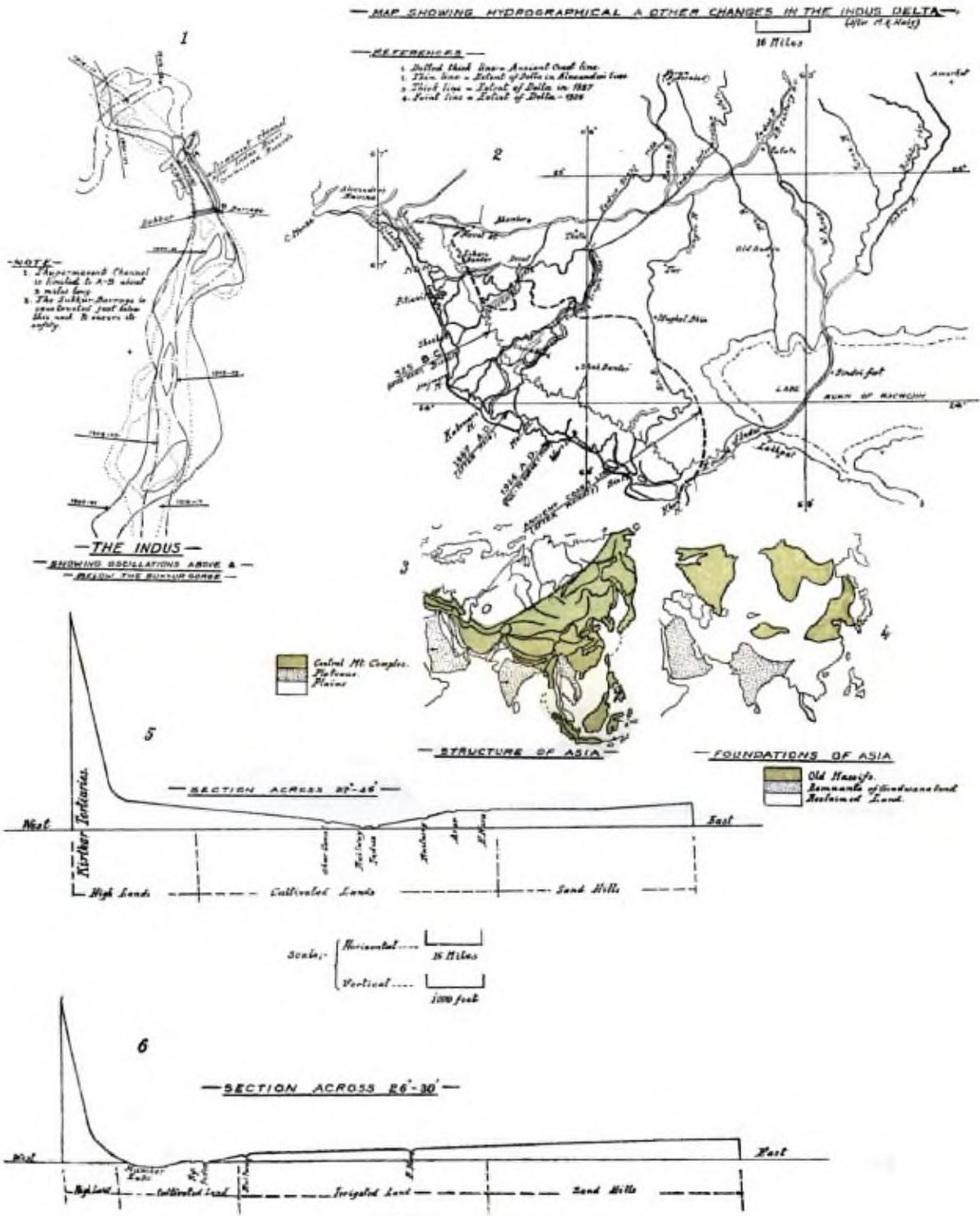








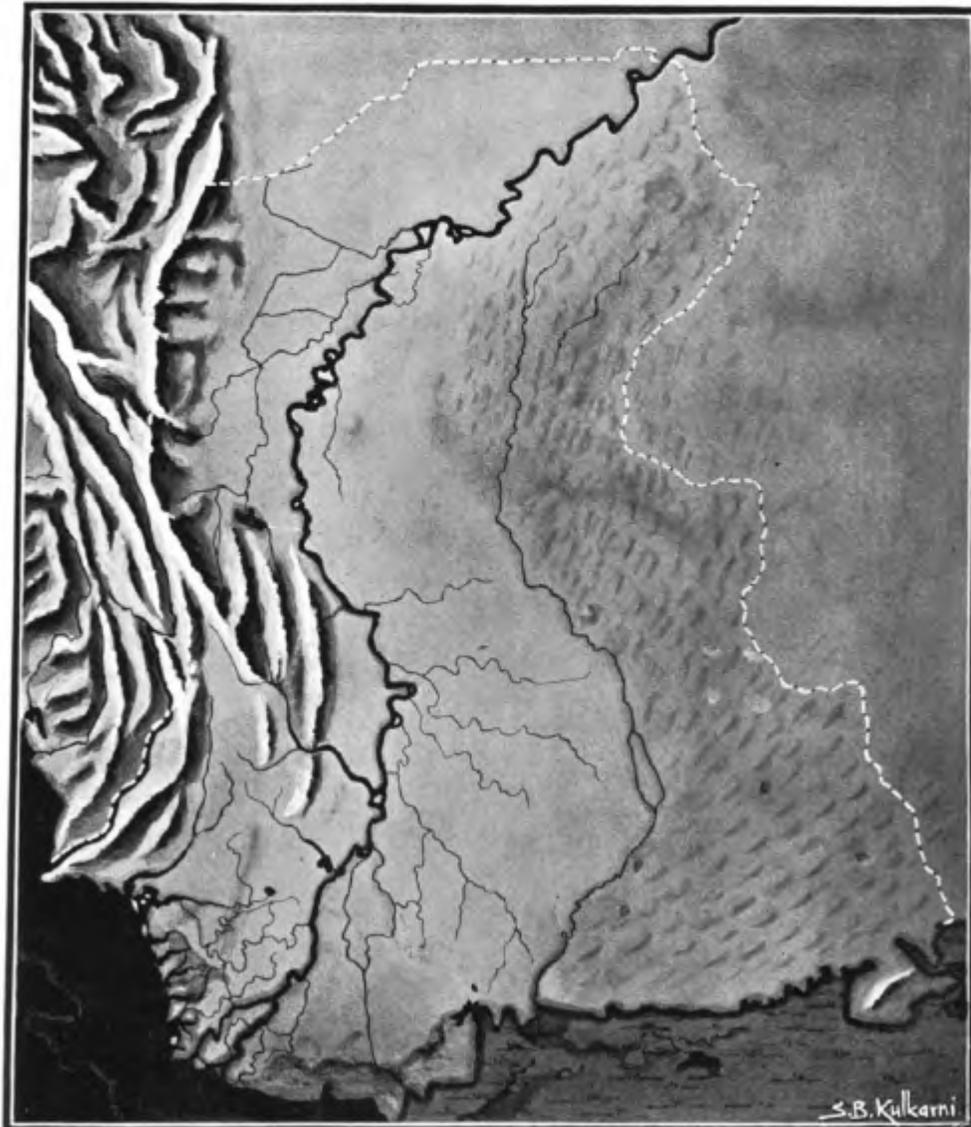




Prepared by — Maneck B. Pithawalla



SUBMARINE INDUS GORGE AND GONDWANA CONTINENT.



RELIEF MAP OF SINDH.

Historical geography of Sindh.

Part II .— Prehistoric and Early Historic Periods.

By: Prof. M, B. Pithawalla, F.G.S., M.R.A.S.

(Read on 26th July, 1936).

PREHISTORIC PERIOD I. (The Aborigines).

The story of the aborigines of Sindh is lost in the mists of antiquity. No information regarding them can be produced from any literature. But in all probability and relying upon indirect sources, we may say that they were nomadic hunters of the Stone Age, and that both in Paleolithic and in the early Neolithic periods agriculture was part of the life of the people and fish one of their important foods. They were very probably driven away from the region at the end of the Stone Age by the Indus Culture people and thereafter lived in neighboring hills and forests, and became ancestors to the jungle tribes of modern India, *viz.* Bhils, Veddas, etc. Thus they led the earliest exodus of the human race from Sindh. They have left a few interesting archaeological relics in Sindh⁸⁸. A few prehistoric stone monuments, such as dolmens, cairns, stone circles, etc. (as mentioned by Sir B. Frere in J. B. B. R. A. S., Vol. V, 1851) have been found near Sukkur and Rohri. Other relics are a few cairns, cromlechs, etc. near Karachi and the Hubb Valley (as described by Col. M. Taylor in his "*Tales of Rajasthan*"), caves in the Kehru Valley, burials of a Scythic-Druidical race near Waghodar, stone enclosures called "Kaffir Kote" on the right bank of the Gugger river, and neolithic altars etc., in the Mol Valley as far as Unarpur and also at Tharro Gujo (between Gharo and Thatta)⁸⁹.

Mr. G. E. L. Carter has made an excellent collection of stone implements, including small end scrapers, blades, small composite tools of flint, ground axes, chisels etc., (now preserved in the Prince of Wales Museum, Bombay), from the following localities: —

- (1) Tando Ghulam Husain near Hyderabad,
- (2) Ganja Takar, Hyderabad District,
- (3) Guja Takar, near Kali Temple Hyderabad District
- (4) Karri Plateau near Unarpur Railway Station, Sehvan
- (5) Veji Bathi near Unarpur
- (6) Ram Pattani Karachi District

⁸⁸ Cousens H. "Antiquities of Sindh," 1929 P. 41.

⁸⁹ *Ibid* Pp. 43, 45, 49.

- (7) Jangshahi Hilltop
- (8) Jhangri Makar near Lotri,
- (9) Tharro Hill near Gujo, Karachi District,
- (10) Budhka Takkar, near Jhermuk. Hyderabad District
- (11) Kotri Settlement No. 1
- (12) Kotri Settlement No. 2
- (13) Bado Pauri Factory, Karachi District
- (14) Chota Pauri near Kotri,
- (15) Bolari Hill-top Karachi District.

Mr. Carter considers some of these relics as belonging to the Microlithic age and others to the Neolithic age, ranging from 6000 B.C., to 8000 B.C. These relics show that they were manufactured at certain central prehistoric factories, such as the Rohri flint factory etc.

The earliest recollections of Arab geographers about this period are also very vague. The author of *Beg-Lar Nameh*⁹⁰ says: "Sindh derives its name from Sindh, the son of Ham, the son of Nuh (God's peace be with him) and the province remained in possession of his descendants; but their names cannot be found in any books of history, nor have I heard them in legendary stories and I am therefore compelled to omit them. That which I have heard from common report is this that in olden time the Province of Sindh was held by the tribes of Bina, Tak and Nabumiya; but the period of their government is not known.

Recent Research.

Stone implements of the neolithic age are now dug out in certain parts of Sindh (e.g.) those of Kot Diji, Narojo Daro, Tharoo, Aror, etc. Flint and other suitable stones of the lime-stone class are available plentifully in the neighboring hills and it is also probable that the Indus flowed beside these sites.

Revision of the Term "Aborigines."

Indian archaeology is as yet in its infancy. In view of the fact that there are chances of discovering relics of the prehistoric strata of human civilization going up to the earliest Stone Age in the Indus Valley, and that immigrations have taken place here from the most ancient human period, it is but fair that we drop the term "aborigines" and use the phrase "early settlers" of the land, upon whom the science of archeology has just begun to throw some light. Finds are yet to be made and missing links supplied before we are able to say that a particular race was the aborigines.

⁹⁰ Elliot & Dawson — "*History of Sindh*", Vol. I, 1867 P. 292.

PRE-HISTORIC PERIOD II. (Indus Culture People).

The discoveries of Mohenjo Daro have proved very valuable in this respect. Its relics of rare archeological value and interest have thrown all ancient historical records of India into the background by a single stroke. They have pushed the boundaries of Indian civilization further back and "put India on a par with Egypt and Mesopotamia"⁹¹. Its culture has been proved to be of the early Copper and late Stone Age, which was evidently a very glorious age for our region. They resemble "the early proto-historic culture of Sumer and the second prediluvian culture of Elam and Mesopotamia" to a certain extent. Its date is, approximately so far, 2700 B.C., to 2500 B.C., but it is certain that older layers can be discovered, if excavations are resumed in this locality⁹². There are chances also for later layers to be found, connecting this civilization with the historic period in the valley of Sindh.

Geographical Environments.

The geographical situation of Mohenjo Daro is unique in the valley of Sindh and the physical conditions are favorable. This locality is considered to be the best and most fertile part of the province. Originally called Chandookah, the whole of this district is known as the "Garden of Upper Sindh", and the scene of many a blood conflict, even at the time of the British conquest⁹³.

This area forms part of the Western Valley Section, which is, in many respects, superior to the land in the Eastern Section. It is covered over with old alluvium and silt deposits of the Indus and also derives the benefit of hill torrents or *Nais* every monsoon season. Though nearly flat, it has a kind of a gently rolling character on account of the Bhangar mounds or the aggraded parts of the river, which are usually safe from floods. Mohenjo Daro itself was located on one of these mounds in the Doab between the Western Nara on the west and the Indus on the east. The former is a depression between the Western High-lands and the raised bed of the Indus river and forms an intrinsic part of the Manchar-Aral drainage system, which is the most peculiar in the region, inasmuch as the Aral, at one time, admits the Indus waters into the Manchar lake when its level is lower and, at another, it drains the lake itself e.g. in the monsoon season, when the area gets flooded.

The physical conditions and environments of the Indus Valley civilisation were very favorable, Mohenjo Daro was like an island between the main Indus river and the

⁹¹ Kohli Sita Ram — "*Indus Valley Civilization*," 1934, P. 1.

⁹² Marshall, Sir John — "*Mohenjo Daro and the Indus Civilization*," Vol. I London 1931, P. 102.
Mackay E. — "*The Indus Civilization*," 1935 P. 11.

⁹³ James Lt. Hugh — Report on the Purgana of Chandookah in Upper Sind-Sel, Rec, Bom, Govt. No. XVII Pt. 2, P. 711—712.

Western Nara. The arrangement of mountain and plain, of land and water, of cultivated lands and river communications, of tropical heat and periodic summer water supply – all this formed a typical topography for this city. It was the case of a more or less enclosed flood plain, promising continuous prosperity and prolonged peace. Its alluvial soil was rich, and the process of sowing seeds in the ground, which is considered to be a critical step in human civilization in any part of the world, was evidently practiced by these people.

Man had, then, also learnt the lesson of growing cotton and manufacturing cloth. This use of cotton for textiles seems to have been traced to this period in India and was extended to other parts of the country later on.

The river Indus must have flowed close by the City, as the people were mainly dependent on the river waters, though the sea was far away extending perhaps as far as Thatta and about 60 miles less than the present coast. They also lived on fish and were traders by river or sea and by land.

The real geographical value of the Doab lies in the fact that it is surrounded by dry and barren lands e.g. the Iran plateau and barren Khirthar mountains on one side, and parts of the Thar desert on another.

Spending some time in the midst of these great ruins of Mohenjo Daro, the present writer thought what a large and flourishing emporium it must have been in those days. What rich fields with plentiful water supply must have belonged to it and what a hive of activities, private and public, it must have looked at so early a period, what good animal friends must have then helped humanity both, as domestic animals and beasts of burden across foreign countries, and, above all, what an organized human life it must have been! Today Mohenjo Daro lies largely buried under dust and sand with its life extinguished, its beauties lost and its glories eclipsed, but its ruins still reminiscent of them amidst the smiling agricultural fields, with which it is now surrounded. The only relieving feature here is the Indus river itself, eternally flowing past the ruins, although even it has moved away from it by a few miles.

The ruins of the City, already excavated, are found in several mounds, about 70 feet high above the surrounding area, covering about 240 acres. But surely there must be large parts of the metropolis still unearthened! Below 44 feet due to subsoil water these excavations had to be stopped, but there is no doubt that relics of earlier periods can be met with deeper still.

Climatic Conditions.

There are some indications in the excavations of Mohenjo Daro, which point to Sindh having experienced wetter days in that age than at present. That there was a more

favorable climate or at least better water supply in the whole of Central Asia, including the Iran plateau, has been proved by Sir A. Stein's researches in Gedrosia, having impenetrable forests. Ellsworth Huntington has also related the history of these parts particularly experiencing pulsatory climatic changes in the past. No doubt there were many flourishing towns, perhaps due to greater rainfall and less aridity or more plentiful streams in the region, which is now largely overstrewn with blown sand. There may have been an annual rainfall of 15 to 20 inches (that is, more than double the present precipitation) in these areas, as is surmised by Sir John Marshall and other archaeologists. This can only be possible, if the northern storm belt was deflected by arctic pressure, further south. At the same time, a deflection of the S. W. Monsoon towards Sindh was also possible. Dr. C. W. Normand, Director of Meteorology, has opined that more rain in the summer months was possible in Sindh and Baluchistan at the time of the Indus Valley civilization, as otherwise "a very much greater change in the meteorological condition is required to explain more copious rainfall in winter, unless a change in the orography of Sindh's surroundings is simultaneously postulated."⁹⁴

The presence of an elaborate drainage system with large drains and pipes, comparatively shallow wells dug not very far from one another, burnt bricks and figures cut on the seals and painted on pottery of denizens of forests and moist lands such as elephants, tigers, rhinoceros, buffaloes and of luxuriant vegetation, — these show that there must have been better rainfall in this locality in prehistoric times. The absence of animals, like lions, indicates that the country was not quite dry and open. There was, however, enough water for forests to grow and to harbor other wild animals. Burnt bricks suggest much fuel and water used.

The temperature of the air, however, seems to have been the same, if not higher than at present, because cotton was grown and cotton clothes were worn. The great bath is also a proof that summer days were hot and the growth of wheat a sign of winter cold sufficient for the corn to thrive. Lastly, the rhinoceros existed always in an almost steamy heat, actually more often under the equator than anywhere else.

But apart from rainfall, one probable source of a more plentiful supply of water not only in the Western Highlands of the Kirthars and Baluchistan, but also in the whole of the Iran plateau was the gradually receding glaciers of the last Ice age in the northern ranges of the Quinlun, the Pamirs, etc. They are now gradually disappearing and great desiccation has already been caused in Central Asia, as can be seen from the depth of the Caspian Sea, which has diminished much during historic times. Such is also the case with the glaciers of the Himalayas, to which attention has already been drawn by Sir Francis Younghusband and other geographers.

⁹⁴ Marshall Sir John, "*Mohenjo Daro and the Indus Civilization*" Vol. I. London, 1931 Pp. 2—5.
Also see Dr. Sven Hedin, Jour. K. R. Cama Orien. Inst. No. 25 Pp. 156-158

Thus, a diminished water supply does not necessarily mean a deficiency of rainfall; for, it has been noticed by travelers in Gedrosia and other neighboring lands, that even torrential rains do not leave much water behind, as the water rushes down the barren mountains and gets no chance of being collected in the dry areas without any dams and reservoirs on the hill sides, as was the case in ancient times. Remains of such water works can. even now. be found along the trade routes.

No doubt the Indus played a most prominent part in harboring this great civilization, for Mohenjo Daro was a port on the river. But what the nature of its flow, affluents, inundations etc. was cannot easily be ascertained beyond the fact that it was remarkable for its floods, which were very destructive at times.

Human Geography.

The greatness of the Mohenjo Daro civilization can be gauged from the remains which have already been excavated. The burnt bricks, the drains for rain water, the great water-tight baths, solid basements and buildings of excellent design and symmetry, wells, fireplaces, roads, roofs, – these are only a few of the evidences of Sindh's great prehistoric culture. Among the products of the land may be mentioned wheat and barley, charred specimens of which have been unearthed. This shows that the climate and soil both were favorable to the grains in those days, as they are even today. But the best and indigenous product of Mohenjo Daro was cotton. In fact, it was the original home of cotton (*gossypium*), which was freely exported to Greece and Babylonia and transplanted there, the Babylonian word for cotton being *Sindh*, while the Greek *Sindhon* after Sindh. Although they also used meat diet, such as mutton and fish, cereals and dates were on the list of their diet.

Thus the products of both dry and wet lands were secured, a rare circumstance possible only in lands with good communications. There were arable lands attached to the city according to a most ancient Indian custom. Agriculture at home was also flourishing, as is shown by the number of large grain jars discovered. The ploughshare had very heavy blades of flint and sickles of copper were made. The bullock carts of to-day even resemble those found in toys at Mohenjo Daro.

Evidently it was an intensive city life. Plentiful crops gave the people not only prosperity and peace but also leisure.

"The organization of society in cities; the continued use of stone side by side with copper or bronze for the manufacture of weapons, tools and vessels; the invention of the potter's wheel and the production, with its help, of improved kinds of pottery; the invention of wheeled vehicles to take the place of the older sleds; the construction of buildings with kiln-burnt and sun-burnt bricks and their elevation on platforms in

order to place them beyond the reach of floods; the use of picture signs for writing; the use of maces of stone or metal along with spears, daggers, bows and arrows as weapons of offence, the fashioning of ornaments out of faience and shell and various kinds of stone including amazonite; the development of a high pitch of the minor arts and crafts particularly those of the goldsmith and silversmith,¹⁹⁵ – these are, indeed, the enviable assets of Mohenjo Daro civilization. Nothing in the history of India's past can compare to this unique culture. It was a democratic civilization distinctly favorable to the large majority of human beings. No palaces belonging to any kings or royalty have yet been found. Rather the comforts of the common people were primarily taught, *e.g.* the great central baths, a revelation of the earliest political institution so far discovered in India.

It was, in fact, a civilization both of opportunity and of necessity. For, the excellent geographical situation and environments, as well as the rich fertile soil gave the occupants the best of everything.

There are some other sites in the vicinity closer to same era but not as developed as Mohenjo Daro:

- Lapis Lazuli – Afghanistan,
- Turquoise – Persia (Khorasan).
- Amazon Stone – Kashmir, Nilgiri hills, Ural mountains.
- Rock crystal – Kathiawar S. India.
- Stealite – Rajputana.
- Alabaster – Sindh Kachhi (Baluchistan), Kathiawar.
- Hoematite – Hormuzd Island, Persian Coast.
- Amethyst – Deccan (Trap area).
- Slate – Rajputana, Afghanistan, Persia.
- Agate, Camelian, Onyx, Chalcedony – Rajputana, Kathiawar, Kashmir, Deccan (Trap area).
- Jasper, Agate, Bloodstone – Rajpipla, Rajputana.
- Plasma (Chalcedony) – Rajputana, the Kishna, Godavery, and Bhima rivers.
- Tin – Burma, Malay Peninsula, Dharwar.
- Bitumen (Asphalt) – Isa Khel (N. W. F. Province), Marri hills (Baluchistan), Sauni (Sibi), Mesopotamia?
- Red Ochre – Hormuzd Island, Bu Musa, Halvi, Lakhpat,
- Padvania.
- Basalt – W. Sindh, (Ranikot to Jakhmari), Kathiawar.
- Tachylite – Deccan trap (Kathiawar).
- Nepheline Sodalite – Kishangarh (Rajputana).

- Jadeite – Nuji kyina (N. Burma), Pamirs, and E. Turkistan, Tibet.
- Lollingite (FeAs₂) – Persia, Herat, Kashmir, Chitral,

⁹⁵ *Ibid.* P. 102.

- Punjab, Asia Minor, Caucasus.
- Green Earth (Glauconite) – N. E. & E. Baluchistan, Deccan.

It may be noted herein that marble is very rare among the relics of Mohenjo Daro, indicating at least the great difficulty of communication between the Aravallis and Sindh with the intervening Thar desert.

Definitely a Commercial People.

The pictographic legends depicted on the coins, the business communications, bills of lading, etc., discovered at Mohenjo Daro definitely show that the people inhabiting the valley were a commercial people, living in large houses, well constructed and furnished with the necessities of life. The list of foreign countries, with which it came in contact, indicates that this city was a great centre of international trade.

The people were not content with the pastoral life of the Aryans and lived on agriculture alone, and did not give precious gifts to gods and to the priests. They were essentially traders and their trade was extended to distant lands, like Eastern Islands in the Pacific Ocean.

Recent Explorations.

But the civilization of the lower Indus valley was not restricted to Mohenjo Daro only. It did decidedly extend north-wards and along and up the same Indus river as far as Harappa, on the old river Ravi. The neolithic artifacts were first evolved from the palaeolithic in the Indus basin in relation to that great combination of circumstances we have already noticed, *viz.* vast fertile plains, abundance of game, variable seasons and the Indus. Such a culture could not be, therefore, restricted to a single locality. A considerable number of prehistoric sites have been discovered in Sindh itself; –

- Vijnot (5 miles E. of Reti).
- Alor. – (3 miles S. E. of Rohri.)
- Budhke Takar (opp. Jerruck).
- Limb Junejo (40 miles W. of Shikarpur).
- Badah (5 miles W. of Mohenjo Daro).
- Lohumjo-daro (15 miles west of Tharushah).
- Karri – (2 miles N. E. of Kotri.)
- Bhambor – (20 miles W. of Tatta.)
- Gujo – (10 miles W. of Tatta.)

Besides, these, Mr. Hargreaves and Sir Aure'l Stein⁹⁶ have also discovered a number of sites in N. and S. Baluchistan, suggesting a westward diffusion of the Indus valley culture. e.g., Nal (Kalat State), Mehi, Kulli etc.

In later years, other archaeologists have endeavored to search for more such sites in Sindh itself. One prominent among them is Mr. N. G. Majumdar, who actually toured Sindh for about 2000 miles during the years 1927-1931 and visited no less than 70 places in various districts, (See Map). His colleague. Dr. Mackay writes: "This latter work proved most successful, for settlements of the Indus valley civilization were discovered in many places in that province from the modern city of Hyderabad in the south nearly to Jacobabad in the north; they form a long chain of mounds between the present course of the Indus and the foothills of the Khirthar Range in Baluchistan and include a very large city built of unburnt bricks close to the eastern bank of the river. Only a brief examination of those mounds has yielded evidence of a yet earlier culture in some of them, lying beneath the remains left by the Indus valley people when they deserted these sites, which it should be mentioned, were not occupied again in later times."⁹⁷

Among the most prominent prehistoric sites discovered by Majumdar are the following:—

- (1) Tharro near Gujo in the deltaic region, already marked by Cousens as a wonderful neolithic city from the number of symbols on rock-sides.
- (2) Chanhu-Daro, where the ibex seal was found.
- (3) Jhukar, 6 miles W. of Larkana, where two mounds were opened out, in one of which were noticed sunburnt bricks, pottery of Indo-Sassanian period, while, in the other, burnt bricks (10/11" long) with pictographic characters and pottery were found.
- (4) Lohumjo-daro, Ghazi Shah, Ali Murad, Jhangar, Pokhran Arabjo-Thana and Orangi.
- (5) But the best of all was Amri on the Manchar lake, 18 miles south of Sehwan. It appeared to be a most flourishing city at first but was destroyed by the river floods. Chipped flakes of flint and bichrome ware were found in some mounds. The trenches in them showed two distinct levels (i) 1' to 4' deep and (ii) 6' to 7' deep.

⁹⁶ Stein Sir A: "*Alexander's Track to the-Indus.*" "*Explorations in Waziristan and N. Baluchistan*" Indo-Iranian Borderland," (Jour. Roy. Arch. Soc. Vol. LXIX 1934.)

⁹⁷ MaiCkay E. "*The Indus Civilization,*" 1935 Pp. 3— 4. Mujnmdar N. G. Explorations in Sindh," Mem. Arch, Sur. Ind. No. 40 1934. Pp. 145—154.

From most of these ruins the following were discovered: –

Pots painted black and red with thick walls similar to those from Mohenjo Daro, Jhukar and Harappa motifs showing fish, flowers, biconical leaves, birds, etc., also potsherds, coins, beads, vases, toys, pottery with their walls and plain reddish brown band in the neck, chocolate band on the lips and geometrical patterns on the body in black, chocolate, pink and cream color. They appeared to be at least as old as Mohenjo Daro.

Geographical Value of these Finds.

Majumdar's discoveries are of far reaching consequences in the domain of pre-historical geography of Sindh;

- (1) There was a possibility of linking up this zone of Chalcolithic civilization of Sindh with the chain surveyed by A. Stein in S. Baluchistan.
- (2) There were three distinct kinds of settlements in the region *viz.* (a) those established near hill torrents, springs and their channels in the mountainous area, with houses partly made of stone and rubble and perched on eminences and therefore better protected, but for want of sufficient food harboring a poorer class of people; (b) those in the neighborhood of the Manchar Lake with their pile dwellings and harboring a fishing folk; and (c) those established along the banks of the Indus as it flowed in those days and hence richer and more prosperous. The houses in this group were built of burnt bricks all throughout.
- (3) There was greater rainfall and better agriculture in the Indus Culture age than in subsequent times, in this valley as is indicated by the numerous street drains and rain water pipes, burnt bricks, and vegetation motifs and animal figures such as tigers, rhinoceros, elephants etc., on painted pottery found in these sites.
- (4) The chain of prehistoric sites within a narrow compass was found parallel to the Kirthar mountain and hence the sites were thought to have been deserted after the drier climate had set in and the people moved on towards the second and third groups of sites in the fertile plain and valley of the Indus. This theory is supported by A. Stein by a similar chain of prehistoric ruins found in the Jhalawan and Makran districts of Baluchistan.
- (5) Lastly, there was an actual cultural and racial intercourse established between Sindh and Western Asia through Iran, Makran and the Las Bela State across the Habb river, through the Mula Pass to the Manchar Lake;

and also through other minor passes, such as Lak Phusi and Lak Rohel, down the Baran and Mol valleys to Karachi.

Chanhu-Daro Excavations.

Under the auspices of the American School of Indic and Iranian Studies (Boston Museum of Fine Arts), Dr. E. J. H. Mackay⁹⁸ has made very successful excavations this year at Chanhu-Daro, near the village of Jamal Kirior, about 1½ mile from Sukhpur on the Feeder Line in the Nawabshah district.



There are two large Daroes, about 50 feet high and occupying some 29 acres of land. This is another good locality of archeological value in Sindh, and Dr. Mackay considers that the history of this site "runs through a longer period of time than did that of Mohenio Daro." This civilization seems also to have ended later, and is styled Harappa culture by the archaeologist.

Excavations have been carried to a depth of about 17 feet in one place and 26 feet in another, even down to the subsoil water level. There is evidence in the walls of these human settlements that they were destroyed by floods again and again and were renewed at higher levels.

Among the important relics discovered are:

⁹⁸ Vide, *Illustrated London News*, Nov. 14 1936

- (1) Elaborate methods of town drainage as at Mohenjo Daro.
- (2) Wells constructed on similar lines.
- (3) Plenty of bead-making apparatus, indicating that it must have been an important export centre for beads.
- (4) Painted pottery similar to that discovered at other sites in Sindh and Baluchistan.
- (5) Seals of great archeological interest and value.
- (6) Copper and bronze models, *e.g.* bullock cart.
- (7) Pottery and other prehistoric toys.

That there was a strong influence of the Minoan Culture of Crete in this Indus valley side is also shown by Dr. Mackay from the finds at Chanhu Daro – the mother goddess, the bull sports, the cults of dove and serpent and the double axe and the other Cretan devices. This influence is possible through trade connections between the two regions by sea, and the Indus valley might be the pioneer of the two. This discovery has also been simultaneously made and corroborated by Dr. Fabri, the Hungarian scholar and archaeologist.

Several interesting prehistoric relics such as glazed vases, dishes, terra cotta cakes and seals, have been dug up in Kathiawar, *e.g.* Rampur in the Limbdi State and are considered to be fugitive traces of the Indus Valley culture.

Similar pottery of "hybrid wares" was discovered by Sir A. Stein in S. Baluchistan.

In Sindh itself, there are chains of such mounds parallel to the Kirthar and the Indus in its recent course and also in the earlier course of the river on the east beside the Khairpur State and the Nawabshah district, now lying buried under the alluvium. They need intensive excavation. How far the Manchar lake was serviceable to this great civilization also remains to be seen.

Destruction of the Sites.

It may be asked: how were these prehistoric sites destroyed? The excellent state of their preservation denotes that the city of Mohenjo Daro was not destroyed by an earthquake. But it is possible that the Indus changed its course and threw this emporium of trade quite out of its influence. Politically, there seems to be no

destruction by enemy hands. Dr. Mackay has surmised that it was the floods of the Indus that from time to time inundated the low levels and when the floods subsided, the people again endeavored to rebuild their cities. Three such floods at least have been noticed in the case of Mohenjo Daro⁹⁹. Desiccation or climatic change may be another cause. At any rate, it seems that the sites were slowly vacated and were not re-occupied after the Metal Age, till the 1st or 2nd century B. C., when Buddhism spread in this region.

Defects of Indian Archaeology.

Among the earliest Indian archaeologists to throw light on the Indus Valley culture should be mentioned Dr. R. D. Bannerji, the discoverer of Mohenjo Daro and Mr. K. N. Dikshit, who found Limo Lunejo (Upper Sindh Frontier). Had it not been for these Indian Archaeologists, the world would not have known much of it.

A defect of Indian archaeology, however, was that excavations were all done vertically in a restricted area and not spread over a reasonably wide area, to enable students of history to correlate or compare relics and to draw some definite conclusions. The intensive, albeit interesting excavations at Mohenjo Daro could throw little light on the prehistoric culture of the whole valley. The conclusions drawn by Sir John Marshall and his colleagues are but premature, and under the present financial condition of the Government it is not likely that sufficient and satisfactory materials will, in the near future, be dug out in all the suspected sites, buried long under sand and silt. Even the only native state of Khairpur in Sindh is not in a position to establish a survey at present, though valuable relics have also been discovered near Kot Diji. We must, however, give due credit to all the pioneers.

Extent of this Civilization.

It is not possible to ascertain exactly the whole extent of this civilization. But there is no doubt that there were connections, commercial and social, between Egypt, Greece, Crete, Sumer, Elam, Iran, Makran and Baluchistan in the west (the Ibex on the pottery came from the western dry plateau) and parts of India, up to Harappa in the north and even the Ganges Valley in the east.¹⁰⁰

The Makran trade route (afterwards known as the Arab Trade route) was used by the people in all probability and the usual beasts of burden *viz.*, the bullock and the camel, helped humanity even in those early times.

The Originators.

⁹⁹ Mackay E. "*The Indus Civilization*." 1935 P. 20.

¹⁰⁰ *Ibid.* Pp. 191—202.

Who, then, were the originators of such a culture, whence they really came and what ultimately became of it, are problems, which await strenuous research and decision. That there is a marked resemblance between this and the Sumerian culture of Mesopotamia cannot be denied. But that the original inhabitants were the Dravidians, who were driven away towards Southern India and the Sumerian immigrants, occupying the valley, transplanted their eastern civilization in it, and, again, the Indo-Aryan culture never preceded anything like it in Northern India and had nothing to do with this Indus Valley culture, are open questions presenting doubts and difficulties to Indian scholars in the absence of sufficient data. The researches of Sir A. Stein and Sir Leonard Woolley have something in common with those of Sir John Marshall but this is not enough. To assign definite dates to the two rival civilizations, so far as the Indus Valley is concerned, *viz.* 2700 B.C. to Mohenjo Daro and 1800 B.C. to Vedic India, is mere rash scholarship in the eyes of the natives, who on the other hand boast of the Aryan civilization to be thousands, not centuries, older than any other civilization in the east of the west.¹⁰¹ Fr. H. Heras considers the Mohenjo Daro civilization to be proto-Indian or proto-Dravidian, and contends, on the interpretation of the seal inscriptions, that the migration must have taken place from S. India into Sindh. His theory thus upsets the old belief that the earliest centre of Asiatic culture was Central Asia and the culture stage was Aryan.¹⁰² Taking a consensus of opinions expressed by scholars both of the west and of the east, we can throw herein a suggestion that there can be no water-tight compartment of cultures in different parts of the world – geographical circumstances never could allow such a thing as this, – that the numerous migrations of races have ultimately results in mixtures of their cultures, modified to a certain extent by local conditions. Earlier or later, one section of the civilized and yet civilizing races came in contact with another and established their control and authority in various parts of the globe. This was the parent community, out of which sprang the so-called Sumerians, Aryans, Semites, Asuras, Daevas, and a horde of others as time went on. The Indus Valley harbored these peoples and helped them to mingle together and then their influence passed further inland.

Such a reconciliation was already suggested by L. A. Waddell,¹⁰³ though not with sufficient evidence, even before the discovery of Mohenjo Daro. He studied the Sumerian seals, compared them with those lately discovered in the Indus Valley, compared also the lists of kings of the early Aryan period, with those of Sumer, Babylonia and Hittite lands and discovered a substantial identity between them. Waddell's method of arbitrarily deciding details of dates and comparing proper names is of no scientific value but the general conclusion of showing a real contact between Mesopotamia and the Valley of Sindh cannot easily be refuted. His is a most daring hypothesis, but if further reliable data could be secured in support of it, it would solve the problem of Aryan and Sumerian antiquity or superiority once for all.

¹⁰¹ Das A. C. "*Rig Vedic India*", Calcutta 1927, Pp. 590—591.

¹⁰² Fr. Heras: Lecture delivered at Bombay, March 1936.

¹⁰³ Waddell L. A., "*Makers of Civilization in Race and History*," London 1929 P. 27 ff.

So also V. Gordon Childe¹⁰⁴ considered the Sumerian culture, in which industry and trade were highly developed to be "in direct touch with the Indus Valley" and "the transition from paleolithic to neolithic industry to have taken place in India."¹⁰⁵ Trade between Sindh and Mesopotamia in those days was firmly established and profited both of them, and in this connection Childe remarks:

"Surely that world is romantic and exciting enough. Here reaching back into the fourth millennium before our era we find on the now impoverished banks of the distant Indus, a brilliant civilization in touch at once with the prediluvian villages of the Iranian plateau and the nascent states of Babylonia. That discovery completes the graphic picture of the ancient Oriental world that the treasures of Ur disclosed. Already the laden caravans were crossing the wilderness of Iran that the merchandise of the Mysterious East might be bartered for the raw products of the young barbaric west in the marts of Kish. Already the Arabian Sea was ploughed by dhows, freighted with the stuffs of Sindh consigned to Babylonian river towns."¹⁰⁶

Conflict of Upper and Lower Indus Valley Cultures.

Rao Bahadur R. Chanda in a most thoughtful dissertation, on the "Survival of the Prehistoric Civilization of the Indus Valley"¹⁰⁷ suggests a similar solution. Did the Aryan invaders of the upper Indus valley sweep away the chalcolithic civilization of Mohenjo Daro and Harappa or did they produce, with congenial and intimate contact, a mixed Hindu population in the entire valley? In all probability the latter and not the former was the case. The Dasas (non-Aryan) were the early settlers of the region, who were already reconciled to the Aryan immigrants from the north. Sindh was known to the poets of Ramayana as a land of "Horses of noblest breed like Indra's for their form and speed," and also where the Sindhu mingles with the deep."¹⁰⁸

Whatever wars were waged in the past were those between "the ambitious Indra-worship ping kings themselves and the rival Rishi clans." The greatest war known to the Rishis of the Reg Veda is "the Dasarajna or King Sudas" battle with the ten kings against the warrior tribes, who held sway in the upper Indus valley and the kings of the tribes were defeated on the Parushi (Ravi) by Sudas."¹⁰⁹

Knowledge of the Aryans about the Sindhu (Indus).

¹⁰⁴ Gordon Childe V. "*The Most Ancient East*," London. 1929, Pp. 173 ff,

¹⁰⁵ *Ibid*, Pp. 210 ff.

¹⁰⁶ *Ibid*. P. 211.

¹⁰⁷ Mem. Arch. Sur. Ind. No. 41, 1929.

¹⁰⁸ Griffith's Ramayana, Bk. I, Ch. 6. Bk. IV. Ch. 42.

¹⁰⁹ Chanda R. "*Survival of the Pre- Historic Civilization of the Indus Valley*," Mem. Arch. Sur. Ind. No. 41. P.

That the Rig Vedic Aryans were well acquainted with the Indus and its valley can be gathered from the following passage in the Rig Veda (X: 75).

"The Sindhu is the best of all rivers. O Sindhu, when thou first didst rush towards the region that supplies food, Varuna cut various paths for thee. Thou flowest through elevated regions and boldest the highest place over all running streams.

"The roar of the Sindhu rises up from the earth and fills the heaven. She is flowing with great speed and her appearance is refulgent.

"The sound of her waters gives one the impression of rain falling in thundering torrents. Here comes the Sindhu like a bellowing bull.

"O Sindhu, as milch cows run to their calves with udders full of milk, so the other rivers are coming to thee with loving sounds, carrying waters from all sides. As a king starts on a military expedition followed by his army so thou art advancing accompanied by two different sets of streams. Thou art wending thy way with these rivers riding in the same chariot.

"The unconquerable Sindhu is running straight. Her color is white and bright and she is great. Her waters are flowing with great velocity and flooding all the four directions. Of all moving objects, none possesses such speed as she. She is an object of admiration like a mare and her shape is symmetrical like that of a robust woman.

"The Sindhu has perpetual youth and is beautiful. She has horses of the very best breed, excellent chariots and excellent cloths. She has been nicely decorated and has vast stores of food and very large quantities of wool. Her banks are covered with Silama grass and sweet smelling flowers, full of honey."

Portions of this description are suitable to the passage of the Indus through Sindh.

The Vedic Aryans are supposed to have settled in the region, through which the Ambala streams even now flow and lose themselves in the desert sands. The sacred Sareisvati, now almost lost, harbored the race. This Sarasvati once joined the Gaggar and the Hakra and flowed through the desert into the Eastern Nara. A large number of buried towns has been recently discovered in the path of this once prosperous river system. As ultimately all Punjab rivers joined the Indus (or Sindhu) and there is no physical barrier between the upper Indus and the lower Indus basins, it is probable that there was intercourse between the settlers in the whole valley. That intercourse might be political, social or commercial, for there is no doubt that the river proved immensely profitable to both the classes of people.

The people living in the lower reaches and the delta were not akin to the Aryans, as the ruins have shown. But they had a contact with the Aryans, living further up the stream even in the days of the Mahabharata, which says that Jayadatha, the Aryan king of Sindh, fought against Krishna on the side of the Kauravas. But afterwards he turned against the Pandavas and even attempted to take away Draupadi by force, but failed in the end. The fame of Sindh for its horses has been recorded also in the Upanishads.¹¹⁰

While the Aryans were a sort of nomadic race, living a kind of adventurous life, the Indus Valley people were settled in crowded cities, with well-marked occupations, such as trade involving communication and contact with foreigners. While abundant archaeological relics have been hitherto discovered in the lower Indus valley and at Harappa, few authentic remains of the Aryan civilization have been dug out in the Valley of the Sarasvati, their very home.

Mingling of Religions.

In Chanda's opinion¹¹¹ the Indo-Aryan, Iranian and Mitannian cultures had a common home, from which they migrated to India, Persia and Syria respectively. This is also the accepted opinion of other scholars. This common Aryan home was outside India and somewhere towards the north-west. The mutual relations of the different sections of the peoples of the upper Indus valley were likewise good, and the descendants of both were thoroughly reconciled. The wars and feuds, referred to in the Rig Veda, were only internal and not foreign. From a number of stone statuettes in a mutilated condition and belonging to the Jats who grew to be outcaste during the Vedic regime, and also seals depicting tree worship and pillars crowned by animal standards, this Hindu scholar came to the conclusion that, "If the hymns of the Rig Veda enable us to reconstruct the protohistoric civilization unearthed at Harappa on the Ravi and Mohenjo Daro in Sindh they warrant us in taking a further step and recognizing in the warrior clans — the Bharatas, Purus, Yadus, Turvasas, Anus, Druhyans and others celebrated in the Rig Veda the representatives of the ruling class of the indigenous Chalcolithic population."¹¹² Again, "Diversity of Indian castes, based to some extent on the diversity of cultures, render it probable, almost certain on a priori grounds, that the Indus religion of the Chalcolithic period survived the Aryan invasion and was merged in Buddhism and Hinduism that include so many non-Vedic elements."¹¹³

One of the greatest difficulties of Oriental scholars is in connection with the age of the Avesta (Ancient Persian lore) and the Vedas (sacred Hindu scriptures). Chanda has, therefore utilized these archaeological discoveries for ascertaining these dates. The Vedic people were aware of the sea (*samudra*) pearls, and other ocean treasures and also

¹¹⁰ Jethmul P. Gulraj — "Sindh and Its Sufis," Pp. 6—7.

¹¹¹ Ment. Arch. Sur. Ind. No. 41. P.8.

¹¹² Ibid. P. 35.

¹¹³ Ibid. P.36.

conversant with marine navigation. This Would not possibly be the case, unless the people of Rig Vedic India, i.e. the territory once occupied by the Sarasvati, popularly understood to be in the Ludhiana district now, had a close intercourse with the deltaic lands of the Indus and the Arabian Sea. Before the discoveries, 'samudra' meant merely territorial waters.¹¹⁴

The Panis – Probable Inhabitants of Sindh.

But even if the Rig Vedic Rishis did not know the sea themselves, they must have secured all information regarding it from their pre-Vedic predecessors. A question is asked: Did the Rig Vedic Indra-worshipping Aryans come in contact with an older civilization of a non-Aryan character? There are clear references to immigration by sea in the Rig Veda Samhita (6, 20, 12 =1 , 174, 9). The Jadus, Turvasas, descendants of sea immigrants lived in the south of the Punjab and had a recognized home of civilization of their own. Only they did not worship Indra like the northern provincial Aryans and were not settled tillers of the soil, but "wealthy merchants who did not offer Soma and other sacrifices and did not give gifts to priests", and who lived in Puras or fortified towns. Chanda has conjectured that these merchants must be the Panis ('pana' – price), from the Mohenjo Daro coins with pictographical legends on them. During the second millennium B.C., there were many Aryan invasions from the north against these early people of "material" culture and their cities and civilization were destroyed. So strong was the hatred against " the sinful inhabitants of Sindh who were of mixed origin"¹¹⁵ that even visitors to that province had to perform the cleansing ceremony before mixing with the population again.¹¹⁶ If now the age of the Mohenjo Daro civilization and therefore of the Panis can be fixed at 3000 B.C. – 2500 B.C., the age of the Rig Veda and of the Indo-Aryan settlement in the Punjab cannot be much earlier. According to the views of Dr. Fabri, it is certain that the Indus Culture continued to the time the Aryans arrived in the valley, *i.e.*, about 800 years longer than Mohenjo Daro. The destruction of a previous civilization does not take long and so the probable date of the Rig Veda comes to be 1800 B.C.

In the later Vedic period when the Yajur Vedas Were composed and when the Sarasvati disappeared in the desert sands, the earlier tribes migrated eastwards towards the Jumna and the Ganges and other Aryan invasions from the north followed.

"As the Aryans destroyed," says Chanda, "the great fabric of the prehistoric civilization of Panis of the Indus Valley, later immigrants all but overthrew the Aryan Culture in turn in the same region and the modern Hinduism of the Punjab and Sindh still bears a

¹¹⁴ Macdonald & Keith, "*Vedic Index*", London 1912 P. 432,

¹¹⁵ Bandhayana Pharmsutra (1, 1, 32–33).

¹¹⁶ Mahabharata Bk. 8; 40-46.

deep heterodox stamp, as compared to the Hinduism of the Punjab and the modern representatives of the ancient Kwa-Panchalas in the Delhi and Agra provinces."¹¹⁷

Thus there was a certain amount of mingling of northern and southern races in the Indus Valley in this prehistoric period, even though we cannot actually prove that one or the other race was destroyed in the contest for power and supremacy. "The most reasonable view," says another Indian scholar, "seems to be that they the people of Mohenjo Daro, were the pre-Aryan (probably Dravidian) people of India known in the Vedas as the Dasyus or Asuras, whose culture was largely destroyed in the second or third millennium B.C. by the invading Aryans from the north, just as the older aegean culture of the Mediterranean, (which in some respects bears a striking resemblance to this culture of the Indus), was largely overwhelmed by the invading Achaeans."¹¹⁸

A Mixed Population.

This view is also endorsed by another Indian writer: —

"The only conclusion one is, perhaps, justified to draw is that the population of Mohenjo Daro was a mixed population. Considering the geographical position of Sindh with easy access by sea and land to the southern coasts of Western India, it might have served, like Mesopotamia itself, as the meeting ground of the people of various races, though we should expect the indigenous type to predominate."¹¹⁹

A prehistoric town is yet to be discovered within the territories of Sindh, in which some Aryan skulls lie on top layers and relics of people are buried in the Indus Valley layers underneath. That would easily give a clue to the territorial limits reached by the Aryans in Sindh.

Migration of Races and the Indus Valley.

The question of migration of tribes and races cannot be easily solved. From a comparative study of the Mohenjo Daro script with those of other sixteen ancient scripts, Mr. Heras imagines that "the Mohenjo Daro civilization is not only non-Aryan but pre-Aryan and that, as S. India is mentioned in the geographical inscription twice, the Sumerian tradition points to the south as the place from where their civilization came. Buddhist tradition recorded in the *Jatakas* shows the Indian arriving at Mesopotamia for the first time and the seals with inscription similar to those of Mohenjo Daro discovered in Ur, Kixsh, Susa and other ancient cities of those countries confirm the truthfulness of these traditions. The Indian script is the parent of the Sumerian script and therefore the Cuneiform script that succeeded the Sumerian. With

¹¹⁷ Mem. Arch. Sur. India. No. 31. P. 8.

¹¹⁸ Mitra P. "*Prehistoric India*," Calcutta 1927 P. 272,

¹¹⁹ Kohli Sita Ram "*The Indus Civilization*" 1924 P. 35

this script the so-called Dravidian civilization was propagated through Sumer, Babylon, and Assyria, as the Zodiac proves."

The animals depicted on the seals show totemic signs of ancient Indian tribes, whose names are recorded in the Sanskrit literature, such as Mahishis, Nagas, Garudas, Vanars, Matsyas, etc. The seals refer to the deities like Siva and Parvati (Minaks), also typical of S. India.

On the other hand, from the occurrence of the ibex, an inhabitant of the northern regions in some of the pottery designs, Mr. Majumdar contends that the migration occurred into Sindh from beyond the western borderland and thus supports the Central Asian Culture theory.

The researches of Sir A. Stein point to the same theory of the Asian culture travelling from Asia Minor, through the Central Asian deserts to Baluchistan, Gedrosia and to the Helmund and the Indus basins. He is definitely of opinion that the long lines of ruins discovered along the Sindh-Baluchistan frontier coincides with a great cultural frontier, the old caravan route across the continent crossing Baluchistan to Elam and extending far northwards and westwards into Iran and Iraq. Thus his discoveries "point to a vast orbit of cultural unity realized in the affinities of a common Chalcolithic civilization."

Dr. Hunter's contribution to Indology is also helpful to us in this connection. He has suggested that the sailors of Mohenjo Daro had their meeting ground in the Isthmus of Suez and in the mines of Sinai.

So, on the whole, the migration from the Indus Valley seems to have taken place not in one direction but in several directions and not at one time in the history of human civilization but several times. There is not one single stratum of culture or human settlement in the Indus valley. Successive waves of human civilization seem to have moved perhaps from the Central Asian tableland, at first as the pre-Aryan and then as Aryan and passed through the Indus valley downwards by land or by river route to the open sea both to the east and to the west. There is not the least doubt that Sindh has been, to all the races, Sumerian or pre-Aryan and Aryan, a kind of meeting place for a time.

How the Valley of Sindh has Functioned.

As hinted above, the valley has functioned as an antechamber for the various races affording opportunities for a mingling of their cultures. Today there are few vestiges left in Sindh itself of the ancient Indus Valley or Aryan civilization. Of the latter no archaeological but literary traces are found in sacred books and of the former we have only (1) the script surviving in the Brahui alphabet, (2) a few religious symbols and (3) some pottery designs. Neither the non-Aryans nor the Aryans have left here their own

exclusive marks on the religious, social or even political life of the people of Sindh. In Stein's words; " The Sanskrit literature of the post-Veda age, the development of the Indo-Aryan culture and of the religious cult are sufficient to show that the Aryan victors, by forcing their language and rule on the indigenous population, had taken Over from this more civilized people many of their religious and cultural institutions. Hinduism provides many ancient illustrations of this phenomena. Even to-day it merges the foreign conqueror in itself. It digests its conquerors, so to say."¹²⁰

Mohenjo Daro has revealed another great archaeological truth, *viz.*, the history of human art and achievement is cyclical, *i.e.*, it shows a series of curves, of excellence and decadence alternating, an excellent urban civilization, as at Mohenjo Daro, showing an art full of vigor, virility, symbolism and originality, followed by an age of decay, weakness and sentimentality, fundamentally different from the former after its contact with Aryan invaders from the north. This young human race brought into the Indus valley a new civilization, a nomadic, warlike and to h great extent religious type, with no artistic or solid monuments as those of Mohenjo Daro in any part of the valley.

Even at Mohenjo Daro itself, the civilization had s. double phase, with the top of the crest moving in one direction of highly symbolic art and the bottom of it in another direction, pointing out the great social differences between the civilized rulers and the barbaric subjects, between the art of the upper strata of a metal age and that of the lower strata of society with stone implements persisting still.

¹²⁰ Press Interview "*Times of India*" 16-3-1985. "The Cradle of the Aryans."

PREHISTORIC PERIOD III. – (A Dark Age).

Centuries passed after the conflict of the old Indus Valley culture with the Aryan civilization. But the influx of peoples continued from the Iran plateau into the Indus valley, so that when Darius the Great of Persia entered this land, he actually found it to be in the possession of a tribe of Sakas (Scythians) – Para-Sugdian, distinguishable from the pre-historic peoples, who occupied the valley before.

The period between the Mohenjo Daro civilization and the first historical contact of Persia with the Indus Valley falls into the sea of obscurity, there being no monuments or other archaeological and literary evidence, to rely upon. The Iran plateau was also getting drier and drier.

As hinted above, tradition¹²¹ believes the race called "Tak" (Variants "Bina," "Mina" or "Baniya") to have migrated into Sindh at a very early period. They seem to have emigrated from Scythia. "Tod exalts the Taks to a high and important rank among the tribes which emigrated from Scythia to India making them the same as the Takshak, Nagabansi or Serpent race, who acted a conspicuous part in the legendary annals of ancient India."¹²² Mr. E. Pococke admires them still more: "The 'Tag' is a renowned Rajput race."¹²³ Later on, this tribe appears to have lost its individuality but "there are Taks among the Bhangis, who, though of spurious descent, have evidently preserved the name."

The Jats and the Meds.

Among other tribes, which have left their mark in Sindh may be mentioned the Jats and the Meds, the two rival tribes as "the oldest occupants of that province."¹²⁴ *The Mujmalu-i- Tawarikh* says, "The Jats and the Meds are reputed to be descendants of Ham the son of Noah, and they occupied the banks of the Indus, in the province of Sindh. The Meds, who devoted themselves to a pastoral life, used to invade the territories of the Jats, putting them to great distress, and compelling them to take up their abode on the opposite side of the river; but subsequently, the Jats being accustomed to the use of boats, crossed over and defeated the Meds, taking several prisoners and plundering their country.

¹²¹ Elliot and Dawson "History of India," London 1867 P. 503.

¹²² Tod "Annals of Rajasthan," I, Pp. 53 ff.

¹²³ Pococke E. "India in Greece," P. 172.

¹²⁴ Elliot and Dawson "History of India," 1867 Pp. 519-520.

"At last these two tribes, seeing the inutility of protracting their contacts any longer, agreed to send a deputation to Duryodhana, the King of Hastinapur, begging him to nominate a King to rule over them. Duryodhana, accordingly nominated his sister Dassal (Duhsala), the wife of Jaradratha, who exercised the functions of government with great wisdom and moderation. The families and adherents of 30,000 Brahmans, who were collected from all parts of Industan, were sent by Duryodhana to her court, and from that time Sindh became flourishing and populous and many cities were formed. The Jats and the Meds had separate tracts of land assigned to them and were governed by chiefs of their own election.

"The queen and Jayadratha made¹²⁵ the city of Askaland their capital, the same place apparently, which is called in a subsequent passage Askaland-usa, perhaps the Uchh of later times.

"Jayadratha was killed in the fatal field of Thanesar, and his faithful wife ascended the funeral pile, after their reign had continued for more than twenty years. On the same field was extinguished the dynasty called after the name of Bharata, he being the most celebrated ancestor of Dhritarashtra, the father of Duryodhana and Kurus. On the transfer of the empire to the Pandavas, Yudhishtira conferred Sindh upon Sanjwara, the son of Jayadratha and Dassal (Duhsala) and from him Hal was descended. As the Great War, in which these heroes enacted a conspicuous part, has been supposed, on astronomical grounds, to have taken place during the twelfth century B.C., we must assign an equal antiquity to their contemporaries, the Meds of Sindh."

The Original Home.

What the original homes of the Jats and the Meds were it is difficult to ascertain. Many are the speculations advanced by students of history regarding both the tribes. It is, however, certain that the Meds followed the Jats in their occupation of the valley. Here is one from Elliot and Dawson, again, regarding the Meds: "They may either have been transplanted to the banks of the Indus, when the Medo-Persian empire extended so far to the eastward; or they may have immigrated thither at some indefinitely early period; or they may have sought an asylum there upon the occupation of their country by the Scythians; or during the persecution of the Magi, who constituted one of the six tribes of Medas, just as the Parsis did in Guzerat, at a later period and on similar occasion."¹²⁶

¹²⁵ *Ibid.* Pp. 365 ff.

¹²⁶ *Ibid.* Pp. 525—526.

HISTORIC PERIOD B.C. I. - (Persian Conquest 515 B.C. – 330 B.C.)

Early Persian Contact.

As we approach the historic period of Sindh before the Christian era, and consider the contact and influences of ancient Iran on the province, we gradually come upon solid ground. Even so, nothing can be said with certainty about the state of things before the conquest of the Punjab and Sindh by Darius the Great in the 6th century B.C. The oldest source of information regarding this pre-Achsemenian age is the Zend-Avesta, the sacred books of the Parsees. Beyond this literary evidence, there is little help from archaeology, etc. to prove our statements. Prof. A. V. W. Jackson¹²⁷ of the Columbia University, has tried to show in the "*Cambridge History of India*" how old Iran influenced Hindustan. Just as Kabul, Kurran, Gomal (Pomati) are referred to in the Rig Veda, Sarasbati (Av. & O. P. Harahvaiti), Sindhu (Av. Hindu, A. P. Hi(n)du), and Sapta Sindhu (Av. Hapta Hindu) are mentioned in Parsee scriptures. The very names of the river "Indus" and the province of "Sindh" have been derived from Avesta. One of the 16 regions and world geographical units, referred to in the Vendidad, is this Hapta Hindu, created by the Zoroastrian deity Ahura Mazda (Vendidad Ch. I). In the same book there are shown the extreme ends of the Iranian world thus: "From the eastern Indus (India) to the Western Indus India"¹²⁸ or "An India in the west and an India in the east," as translated by Spiegel (Ref. Vend. 1.18. Meher Yasht X, 104 Yasna LVII, 29 (Sarosh Yasht). Hindu Kush¹²⁹ (Av. Us Hindava) is also remembered (Yt. VIII, 32, Bund. XII 6, XIII 5, Zatsparam XXII 3); and a whole hymn is devoted to the breaking of the monsoon or its failure in the locality (Ref. Tishtar Yasht. Yasht VIII) Another Avestic reference to India and neighboring countries is found in the Yasht XIX, wherein Bayana (Mt. Range) Seistan (Av. Zrayah Kasaoya) and the Helmund (Av. Haetumant) are given. All these show the close intimacy of the Avestan people with the Indus valley and its neighborhood.

Imbued with the pure Zoroastrian principles of life, the Iranian nation had already become the most dominant Asiatic race. They were a plateau people – struggling for food and water to be secured in fresh fields and for new pasture for their growing race. They were an intensely practical and truthful people. In search for wealth and power they sought the Indus valley no doubt.

¹²⁷ Cambridge History of India Bk, I, Pp. 321 ff.

¹²⁸ Macdonell & Keith "Vedic India" II, P. 424.

¹²⁹ If Hindu Kush is identified as Us Hindavo, then there is in this Yasht, a pointed reference to the pre-Tertiary Tethys Sea or at least a portion of it covering this land (vide) the Author's Geological References in Oriental Literature Journal, Kama Oriental Institute No. 23 P. 11).

As time passed and the plateau of Iran came into greater prominence after the fall of Assyria, Babylonia and Chaldea, the limits of the great Persian empire of uplands were extended further towards the east, covering the lower riverain tracts. Cyrus the Great (558 B.C. to 530 B.C.) and after him Cambysia are said to have held dominions between the Jaxartes and the Indus." (Ref. Commentary on Herodotus Vol. 1. 1912 by How and Wells). But the credit of conquering and annexing the valley goes to Darius the Great, who also organized expeditions to investigate the navigability of the river and feasibility of connecting India with Iran by sea. To Darius also the world owes the firsthand knowledge of the geographical, ethnological and political conditions of Hindustan, available through Herodotus. His own words recorded on the rock of Behistan are (*Herodotus*, Translated by A. D. Godley Vol. II, Bk. 4, pg. 44.).

Exploration of the Indus.

But as to Asia, most of it was discovered by Darius. There is a river Indus, in which so many crocodiles are found that only one river in the world has more. Darius, desiring to know where this Indus issues into the sea, sent ships manned by Scylax, a man of Caryanda, and others in whose word he trusted in 512 B.C.; these set out from the City Caspatyrus (Gandhara?) and the Pactyic country, and sailed down the river towards the east and the sunrise till they came to the sea; and voyaging over the sea westwards, they came in the thirtieth month to that place whence the Egyptian King sent the Phoenicians, afore mentioned, to send round Libya. After this circumnavigation Darius subdued the Indians and made use of this sea. Thus was it discovered that Asia, saving the parts towards the rising sun was in other respects like Libya." The great King thus secured the control of the whole river from the upper reaches to the sea.

Condition in the East.

"As far as India, Asia is an uninhabited land; but thereafter all the east is desert, nor can any man say what kind of land is there."¹³⁰ There is also a mention made of the Indians themselves: "The Indians wore garments of Tree-wool (cotton) and carried bows of reed and iron tipped arrows of the same. Such was their equipment: they were appointed to march under the command of Pharnazathres, son of Artabates."¹³¹

Oriental Wealth and Splendour.

These were very great indeed. — "The Indians made up the twentieth province. These are more in number than any nation known to me, and they paid a greater tribute than any other province, namely three hundred and sixty talents of gold dust."¹³²

¹³⁰ *Herodotus* (Translated by A. D. Godley), Vol. II, Bk. IV, § 40.

¹³¹ *Ibid.* Bk. VII §65.

¹³² *Ibid.* Bk. III §96 (Ref. Raverty "*Mihran of Sindh*," P. 311)

"Now if these Babylonian talents be reckoned in Euboic money, the sum is seen to be nine thousand eight hundred and eighty Euboic talents; and the gold coin being counted as thirteen times the value of the silver, the gold dust is found to be of the worth of four thousand six hundred and eighty Euboic talents. Therefore it is seen by adding together that Darius collected a yearly tribute of fourteen thousand five hundred and sixty talents. I take no account of figures less than ten.¹³³ This was Darius' revenue from Asia and a few parts of Libya. But as time went on we drew tribute also from the islands and the dwellers in Europe as far as Thessaly. The tribute is stored, by the King in this fashion: he melts it down and pours it into earthen vessels; when the vessel is full, he breaks the earthenware away, and when he needs money, cuts off as much as will serve his purpose.¹³⁴

"All this abundance of alluvial gold, whence the Indians send the aforesaid gold-dust to the King they win in such manner as I will show. All to the east of the Indian country is sand; among all men of whom hearsay gives us any clear knowledge the Indians dwell farthest to the east and the sunrise of all the nations of Asia; for on the eastern side of India all is desert by reason of the sand. There are many Indian nations none speaking the same language; some of them are nomads, some not, some dwell in the river marshes and live on raw fish, which they catch from reed boats. Each boat is made of one single length between the joints of a reed. These Indians wear clothes of rushes; they mow and cut these from the river, then plait them crosswise like a mat, and put it on like a brass plate."¹³⁵

Life of other Indians.

"Other Indians, to the east of these, are nomads and eat raw flesh, they are called Padoo. It is said to be their custom that when any of their country folk, male or female, are sick, the man's closest friends kill him, saying that they tore his flesh by the wasting of the disease: though he denies that he is sick, yet they will not believe him, but kill and eat him. When a woman is sick she is put to death like the men by the women who most consort with her. As for one that has come to old age, they sacrifice him and feast as his flesh; but there are not many who come thereto, for all who fall sick are killed ere that."¹³⁶

"There are other Indians; again, who kill no living creature, nor sow, nor are wont to have houses; they eat grass and they have a grain growing naturally from the earth in its clay about the size of a miller-seed, which they gather with the clay and roast and

¹³³ *Ibid.* Bk. III §94.

¹³⁴ *Ibid.* Bk. III §96.

¹³⁵ *Ibid.* Bk. III §98.

¹³⁶ *Ibid.* Bk. III §99.

eat. When any one of them falls sick he goes into the desert and lies there, none regarding whether he be sick or die."¹³⁷

"These Indians of whom I speak have intercourse openly like cattle; they are all black skinned like the Ethiopians. Their genital seed too is not white like other men's, but like the Ethiopians black. These Indians dwell far away from the Persians southwards and were no subject of King Darius."¹³⁸

Alluvial Gold.

"Other Indians dwell near the town of Caspatyrus and northward of the rest of India; these live like Bactriaris; they are of all Indians the most warlike, and it is they who are charged with the getting of the gold; for in these parts all is desert by reason of the sand. There are found in this sandy deserts, ants not so big as dogs but bigger than foxes; the Persian king has some of these, which have been caught there. These ants make their dwellings underground, digging out the sand in the same manner as do the ants in Greece, to which they are very like in shape, and the sand which they carry forth from the holes is full of gold. It is for this sand that the Indians set forth into the desert. They harness three camels apiece, a male led camel on either side to help in draught, and a female in the middle of the man himself rides on the female, careful that when harnessed she has been taken away from as young an offspring as may be. Their camels are as swift as horses, as much better able to bear burdens besides."¹³⁹

Thus and with teams so harnessed the Indians ride after the gold using all diligence that they shall be about the business of taking it when the heat is greatest, for the ants are then out of sight underground.

"Now in these parts the sun is hottest in the morning, not as midday as elsewhere, but from sunrise to the hour of market closing. Through these hours it is hotter by much than in Hellas at noon. So that men are said to sprinkle themselves with water at this time. At midday the sun's heat is well nigh the same in India and elsewhere. As it grows to afternoon, the sun of India has the power of the morning sun in other lands; with its sinking the day becomes ever cooler, till at sunset, it is exceedingly cold."¹⁴⁰

"So when the Indians came to the place with their sacks, they fill these with the sand and ride away back with all the speed; for, as the Persians say, the ants forthwith scent them out and give chase, being it would seem, so much swifter than all other creatures that if the Indians made not haste on their way while the ants are mustering, not one of them would escape. So they loose the male trace-camels that they lead, one at a time

¹³⁷ *Ibid.* Bk. III §100.

¹³⁸ *Ibid.* Bk. III §101.

¹³⁹ *Ibid.* Bk. III §102.

¹⁴⁰ *Ibid.* Bk. III §104.

(these being slower than the females) the males never tire, for they remember the young that they have left, such is the tale. Most of the gold (say the Persians) is got in this way by the Indians; there is some besides that they dig from mines in their country, but it is less abundant."¹⁴¹

Much of the description given above suits the Lower Indus valley, its surroundings, its climate, peoples etc.

Conquest of Sindh by Darius.

Prof. E. Herzfeld's discovery in 1928 of a "*New Inscription from Hamadan*" gives solid support to this literary evidence we have brought forth. He found a gold and a silver tablet (both identical) of Darius the Great, inscribed in his usual trilingual style – the old Persian, Elam and Babylonian and dated 520 B.C. – 515 B.C. The words as translated are:¹⁴²

"Darius the great King, the king of kings, the king of countries, the son of Vishtaspa the King: Thus saith Darius the King: This is the empire that I possess from the Saka, who are beyond Sugd as far as the Kush, *from the Hindu* as far as Sparda, which Ahura Mazda has granted unto me, who is the greatest of Gods. May Ahura Mazda protect me and my house"! The utmost limits of the Empire are herein recorded by Darius in this one of his latest inscriptions: "From the N. E. the Saka (Scythia) to S. W. the Kush or Ethiopia and from S. E. the Hindu or Sindh to N. W. Sparda, the satrapy of Sardis." In the Behistan inscription referred to above and dated 519 B.C. there were only two Indian nations mentioned *viz.*, Gandara and Thatagush, but the Hindu (Sindhi) was missing. The foundation inscription of the terrace of Persepolis also gives "Hindu" but not yet the European Scyths, and so, if the conquest of Sindh and the expedition of Egypt are linked together, it could only be possible *after* the exploration of the Indus by Skylax and the opening of the Suez canal by Darius that this Hamadan inscription was recorded between 518 B.C. to 515 B.C. The sculptures of Indians on the rocks show that "they are naked, but for a loin cloth and a sort of turban on their heads and their weapon is a long, broad sword hanging by a strap from the shoulder," – quite a suitable picture of natives of tropical lowlands of India and not of the Punjab or the Iran plateau.¹⁴³

After Darius the Great, Xerxes his son (486 B.C. – 465 B.C.) continued his interest in this Sindh satrapy. Xerxes is said to have sent an Indian contingent, consisting of infantry and cavalry for the invasion of Greece, under the leadership of Phamazathres, son of

¹⁴¹ Ibid. Bk. III §105.

¹⁴² Mem. Arch. Soc. Ind. No. 34 P. 1 – 3. (Translated by Dr. J. M. Unwala).

¹⁴³ Ref. Dr. J. M. Unwala's paper in the Journal of the K. R. Kama Institute 1926.

Artabates. " The Indians wore garments of three wool (cotton) and carried bows of reed and iron tipped arrows of the same."¹⁴⁴

They "were armed in like manner as their foot: they rode swift horses and they drove chariots drawn by horses and wild asses."¹⁴⁵

There is mention made of this satrapy in the new stone tablets, discovered early this year in a room of Xerxes' army garrison east of the Great Palace Terrace of Persepolis, by Dr. Erich Schmidt, Field Director of the Oriental Institute, University of Chicago. The inscription says¹⁴⁶ that Xerxes' empire, the greatest the world had then seen, extended north-east to the region north east of modern Afghanistan, south-west through ancient Kush to the borders of modern Ethiopia; south-east to the River Indus in North-Western India, and north-west through most of Asia Minor. The probable period of the inscription is, therefore, 485 B.C. to 4 B.C.

The Iranian power in Sindh lasted for over a hundred years. Indian troops consisting of elephants were called for at Arbela by Darius III. That was the last the historians have heard about the great Achsemenian Kings of Ancient Persia so far as the Indus valley is concerned. It was the time when Asia dominated Europe.

¹⁴⁴ *Herodotus* (Translated by Godley) Vol. II, Bk. VII §65.

¹⁴⁵ *Ibid.* §86. §187.

¹⁴⁶ *Illustrated London News*, 22-2-1936 P. 328.

HISTORIC PERIOD B.C. II. (The Greeks. 825 B.C. to 130 B.C.)

The Greeks soon followed in the footsteps of the Persians. As it was for the first time that an organized European attack was made on the valley of Sindh, it would be well to digress a little and ascertain the geographical factors, which made such an invasion a success, which it was.

During the previous century great struggle was going on for supremacy in the east and the west between the Greeks and the Persians. A vast empire extending from the Aegian sea, including Egypt, to the Indus river as a natural boundary, had been steadily built up by Darius and his successors. By land as well as by sea – thanks to the exploration of Darius's geographers, – their power had grown, they had amassed untold wealth from abroad, called for tributes from no less than 25 satrapies, both in gold and grain, and above all, organized a system of government, which won the praise of even their enemies in Greece. Peace and prosperity led them to do constructive works of art, architecture, etc. Even the gold coin – Daric – was first struck by the Great King. That was the *time element* in the development of history before Alexander. But what were the geographical circumstances which gave victory and control of territories at one time to the Persians and at another to the Greeks? In other words what were the specific Persian and Greek circumstances for their rise and fall?

So far as the Persians were concerned, they were a race of the uplands of the Iran plateau, a large part of which was a semi-desert grassland. Although all the people of the Persian empire were not of one class, they had all a superior and single Iranian culture, under which they came ever since the birth of the Prophet Zoroaster. To them all, his religion was a religion of righteousness and hope, of good thought, word and deed; work was its own reward in this world and the next, and cultivation was only next to godliness. Such a religion could but produce a virile race, and as the food resources of their land were limited, they always were in search of lowlands for grain. Hence the conquest by Persia of the Indus valley on the one side and Iraq and Asia Minor on the other. The desert land of the Thar in the east and of the Sahara in the west only put a stop to Persia's progress, but the genius of Cyrus and his son, Darius the Great, sought other means. The Persians excelled in horsemanship and herds of horses of good breed descended the plateau from time to time in search of new territories, fresh resources and opportunities and alien battlefields.

The Greeks, on the other hand, were a maritime race. Masters of the many mining territories in their own hilly country, of the large number of city states, of the islands of the Asiatic fringe inhabited as colonies, and of the Mediterranean waters, the Greeks came into direct conflict with the Persians. As the Persians were once aggressive and sought the mastery of the Nile Valley as well as the Ionian islands, an opportunity

presented itself to Alexander to follow in the footsteps of the Persians and conquer the whole empire which they once possessed. They had gained much geographical knowledge from the Persian pioneers. They were a sturdy race of culture and good physique, exhibiting loyalty to their Head and possessing a fighting spirit all their own. When the Empire of Persia became unwieldy and difficult to rule from the central place owing to various geographical obstacles, the control passed on to their Greek rivals. They pushed the Greek frontiers forward into Asia Minor, Egypt, Mesopotamia and Iran and were ready to pass through the Khaibar Pass into the valley of the Indus, even as far as Darius had penetrated. Alexander's course lay along the Indus and the Punjab rivers and he established new military stations at convenient points, such as the confluences of the rivers. His plan was "to take the most easterly waters of the Indus as far as the ocean and return by sea to Babylon." Alexander always kept separate contingents, which were occasionally reunited. This time he organized a fleet of a thousand ships with a mixture of people, Greeks, Phoenicians, Cyprists, Egyptians, Macedonians, Persians and lastly Indians and placed it in charge of Nearchus. He himself took command of the second division, having a flanking movement. But in the navigation of the Indus river he took a personal interest and obtained much geographical knowledge.

Geographical Information from the Voyage of Nearchus.

From a study of the geographical information given in the Voyage of Nearchus, it is easy to understand that the geographical conditions of Sindh were different from those existing today. A map has been prepared to show the probable routes taken by Alexander, the course of the Indus and its side branches, the probable position of Patala and the coast line. The chief cities appear to have been established on stable ground by the natives. Alexander's own city of Patala and his two ports have disappeared owing to the hydrographical changes, which have taken place in the region.

On entering the present limits of Sindh, Alexander found the province in possession of three or four independent tribal rulers: "The Sogdi were at Behkar (Bukkur), Musikanus at Sewee Oxykanus on the west of Sewee at the foot of the Mountains and Sambus on that range of mountains called Lukhy, iWhich extends from the great western range and approaches the Indus at Sewee."¹⁴⁷

These principalities nearly corresponded to the natural regions. It has been well remarked that a classical river such as the Indus has no ancient sites in existence on its banks today, except "Bekkar in Moultan¹⁴⁸ and Sewee in Thatta." The appearance of the parts intervening between these two chief places was thought to be monotonous." The Indus roll? down from the confluence of the Chenab or Akesines to Thatta four

¹⁴⁷ Vincent William D. "Voyage of Nearchus, From the Indus to the Euphrates," London 1797. Pp. 122— 123.

¹⁴⁸ The boundaries of Sindh were not limited to those existing at present. They were as Moultan at the time of the Greek invasion.

hundred miles¹⁴⁹ in one channel with hardly a single point to characterize one part of its course from another, except the island of Bekkar."¹⁵⁰

The author considers the Binagara of Ptolemy to be the same as Behkar on account of its central position and this also to be a most populous city in Sindh in those days. As no great ports on the sea coast have been mentioned, it seems the people were not keen on sea navigation. Parts of Sindh were desert land: "The country between the Sogdi and the territory of the Musikanus resembled a desert. The maps give us upwards of 80 miles — a desert subject in summer to the Simoon or suffocating wind."¹⁵¹ The term desert, however is qualified, because it has been stated that "the Indus changes its course, inclining some yards to the east and in others to the west and that it is not so absolutely desert but that there are villages of herdsmen who change their habitation with the stream."¹⁵²

Alexander found the land near Behkar to be the "richest in this part of India and the city so commodiously situated that he determined to erect a citadel here and leave a sufficient garrison for its support."¹⁵³

In regard to the hilly tracts (of Oxykanus and Sambus) it is stated that "These were inhabited by mountain tribes in the neighborhood of Musikanus and in hostility with that prince, as all the inhabitants of mountains constantly are with their neighbors in the plains." These mountains "afford security to tribes of plunderers,"¹⁵⁴ the reason being that their country was covered with hard rock, black and barren except the few fertile valleys where domestic animals, such as the horse, are bred and supplied to Sindh. For food they usually plundered the fields and farms of the Indus valley.

Patala represented the delta all the time. It meant "a region below or hell" in a bad sense, but "a country watered by the Indus in the lower part of its course" in a good sense. "Heat, burning sand and want of rain," characterized this region.¹⁵⁵ According to Ptolemy's map, there were seven mouths of the river and the extent between the two outer branches was 1800 stadia (Arrian), which are equivalent to 113 English miles (d'Auville). No definite measurements of the other two sides of the delta are known. But according to W. Vincent, the Westernmost branch was considered to be 144 miles, while the easternmost to be 170 miles.¹⁵⁶ With these measurements of the two sides of the delta, it is not possible to construct a map of Sindh and to fit Patala at the head of the delta. They would carry it to a much higher latitude than we would naturally

¹⁴⁹ Three hundred miles (De La Rochelle).

¹⁵⁰ *Ibid.* Pp. 120—122.

¹⁵¹ *Ibid.* P. 129.

¹⁵² *Ibid.* P. 130.

¹⁵³ *Ibid.* P. 131.

¹⁵⁴ *Ibid.* P. 122.

¹⁵⁵ *Ibid.* P. 142.

¹⁵⁶ *Ibid.* P. 144.

expect. But if the statement made by Onesikritus *viz* "the delta formed an equilateral triangle" with the base equal to the distance between the two extreme mouths of the river, the situation of Patala would be about 25 miles E. of modern Hyderabad and on one of the old branches of the Indus coincident with the Phuleli. The Sea then lay about 30 miles within the present coast line. The eastern branch was found better than the former branch for the purposes of navigation, perhaps due to the absence of rapids or giratory motions in it. At the end of this eastern branch there was a "lake or bay, which was of great extent and received its supplies from other waters in the adjacent tract. But as we know that the Indus receives no tributary of streams after it passes Behkar, we must conclude that these waters in the neighborhood can be no other than the different channels, which branch from the main river and. intersect the Delta in different directions. This lake is evidently no more than a bay into which the eastern branch falls and must be searched for in vain, at the distance of twenty centuries, considering the nature of the river and the accumulations of its mouth. It is described by Arrian as very extensive and abounding in all the species of fish, which are common to the neighboring sea."¹⁵⁷

At first Alexander navigated the western branch of the Indus and came to the sea near the western mouth of the river. Here he found the tide as well as the sea very rough due to the monsoon winds perhaps, unlike the Mediterranean sea, which is comparatively calm. Returning to Patala, he explored the eastern branch and found the lake, on whose shore he constructed more docks and quays. Proceeding from there, he reached the extremity of the eastern branch of the Indus. At both the extremities, the Greek General established ports.

Major General Haig¹⁵⁸, who has made a special study of the Delta, considers the western branch to be the Kalri. Gharo stream which silted up long ago, Patala to be situated about 35 miles south-east of present Hyderabad, the eastern branch to be some channel running into the Puran and the Rann of Cutch itself to be a portion of the lake, which Alexander came across before reaching the eastern mouth, the Kori. These seem to be probabilities, but the question of hydrographic changes, which have taken place in Sindh, will be dealt with in a separate chapter. Suffice it to say, that vast geographical changes have taken place and are still taking place in the deltaic region and, therefore, it is extremely difficult to locate everything on a modern map.

According to other Greek writers, Alexander and his men were also greatly struck with the large river, the monsoons, the fertility of the land, its fauna and flora, which included huge animals such as elephants, pythons, tigers, etc., and curious plants and trees, such as the banyan, the vegetable wool, i.e. cotton, etc.¹⁵⁹

¹⁵⁷ *Ibid.* Pp. 154-155.

¹⁵⁸ Haig Major Gen. M. R. "*The Indus Delta Country*," London 1894 Pp. 8-23.

¹⁵⁹ Rawlinson H. G. "*Intercourse between India and the Western World*," 1916 P. 44.

The tract between the two extreme branches of the Indus was not quite barren and uninhabitable. " The lower part of the Delta is intersected by a variety of channels, which, it is impossible to specify; it is without wood and abounds in camels the upper part near Thatta was fertile in the best rice and other produce of importance, while the country has any commerce and cultivation being probably in a higher state at the time the Macedonians visited the country, the support of three garrisons for its protection was neither superfluous or oppressive."¹⁶⁰

Alexander's Commercial Plans.

That the objects of Alexander in conquering Sindh were not only political but also commercial can be seen from the facts that, considering the Indus to be "the eastern frontier of his empire," he built the city of Patala at the head of the delta (probable situation shown on the map) and planned two new ports with naval yards and docks, at the east and at the west mouths (The English charts show Lari Bandar as the extreme point in the west and Bandar Lari for that in the east, Cutch West and Cutch east).¹⁶¹ He himself navigated the two main branches of the river successfully and even "explored the desert on both sides to find Water and sink wells."¹⁶² Before he entered the lower Indus basin, he had also established other ports at critical points in the upper Basin with the same object of commerce to pass up and down the river, e.g. Oxydrakoe (Uchh) at the confluence of the Indus and the Akesines. Thus, "everywhere his quick eye seized the points subservient to the realization of that image which fired his imagination – the Indus a great highway of the world's traffic with a chain of flourishing semi-Greek mercantile cities."¹⁶³ The whole expedition of Alexander was a success. He and his men were greatly struck with the sight of the magnificent river, lake, sea, crops, animals and plants, never to be found in Greece.

Return Journey.

At length leaving the navy in charge of Nearchus at Patala with instructions for him to explore the possibilities of a sea route from the Indus to the Persian Gulf, Alexander left his Indian possessions for his return journey through the western highlands, Gedrosia, and the Iran plateau *via* Makran.

Nearchus was to sail down the western branch of the Indus, as the eastern one was in dangerous hold of pirates. On reaching the coast, he found the current of the monsoon very strong. This natural obstacle, as also a mutiny among his men caused detention on the Sindh coast and Nearchus was driven to Krokala (or Alexander's Haven), where the monsoon current detained the navy for three weeks more. At last, progress was

¹⁶⁰ *Ibid.* P.157.

¹⁶¹ *Ibid.* P. 144–145

¹⁶² *Ibid.* P. 146.

¹⁶³ *Cambridge History of India* Bk, I, P. 379.

resumed and Nearchus anchored off Ahwaz on the Karun river, after some 30 months' journey, in 325 B.C.

A section of the army was ordered by Alexander to march through the Boian Pass to Sxxsa via Kandahar. For some distance, Alexander himself marched along the Makran coast, a course parallel to that of the navy; but later on he was driven inland along a longitudinal valley, in which his troops suffered terribly through heat and thirst.

Alexander's Achievements.

Thus he achieved: –

- (1) Occupation of the entire Indus valley
- (2) Establishment of three new cities in the upper valley and one new city (Patala) at the head of the delta and fortifying old ones
- (3) Planning two new ports at the eastern and western mouths.
- (4) Unification of upper and lower Basins politically for a time.
- (5) Increasing commercial activities between the east and the west via the Persian Gulf.
- (6) Hellenisation of conquered lands with art, sculpture, coinage, etc.
- (7) Establishment of the Satrapy of Sindh under Pithon.

The results of the geographical survey included the rediscovery of three routes round the countries conquered *viz* (1) the first entry route via the Khaiber Pass, (2) Sindh – Seistan (Persia) via the Mula-Bolan Passes, (3) Sea route Makran – Persian Coast). The hardships of the journey were the least in territories already surveyed by the Persian forerunners and the greatest in those of which the geographical knowledge was insufficient, as in Gedrosia. Scarcity of food and water in some places, opposition of savage folk, extremes of heat and cold etc. were some of them.

"The exploration of the Indus Valley was the beginning of a new era in the history of Greek geography, and We cannot help wondering what might have been the result, had Alexander lived to carry out his far-reaching schemes. Would the Indus valley have become the centre of Hellenistic culture as Egypt and Syria became, where the

civilization of East and West blended to form new products? The question was destined never to be solved."¹⁶⁴

Social and commercial intercourse between Sindh and the Western world continued during the days of the Roman Empire. The Greek establishments and settlements remained intact or were improved upon, and served the world as long as possible.

"The first of these is the harbor, called by the Greeks Barbarikon, whatever the Indian name may have been. It was on the middle mouth of the Indus and the cargoes were disembarked here and sent in boats to Minnagara, the Capital of Sindh. This was probably Patala. It was called Min-Nagara (City of the Min or Saka), as Sindh was then in the possession of Parth Princes, who were always driving one another out. These were, no doubt, the Indo-Persians, who had been turned out of the Punjab by the Kushans. When our author found them, the dynasty had evidently already relapsed into anarchy. The writer correctly notes that the natives called the Indus Sindhus (Sindhu). The exports of Sindh (which had not been eclipsed by the southern ports) were costus (Sk. Kushta, *Sanssurea lappa*) an aromatic plant from Kashmir, used for perfumes, lycium or berberry, a cosmetic fashionable in Rome; nard (citronella), gems, indigo skins, and costly silk from China. Silk Was destined to become an immensely important article of commerce."¹⁶⁵ Cotton was also one of the exported articles.

Greco-Roman influences passed on in later centuries to other parts of India as well. In coinage, sculpture, architecture, drama, etc., no doubt these were felt. At the same time Oriental literature, philosophy and even astronomy affected the western world.¹⁶⁶

¹⁶⁴ Rawlinson H. G. "*Intercourse between India and the Western World*," 1916 P. 36.

¹⁶⁵ *Ibid.* Pp. 114—115.

¹⁶⁶ *Ibid.* Pp. 156—180.

HISTORIC PERIOD B.C. III. (Post-Alexandrian Period.)

After the death of Alexander, Greek influence in the east continued for well-nigh two centuries. Not strong was the hold of the Greek Empire on the conquered territories. The Persian system of Government by Satraps was followed and the territories were partitioned. Silencus Kicater – 320 B.C. who governed the Indian satrapies made them over to Chandragupta (Sandacottus?), who ruled from Pataliputra through the illustrious Asoka, but the influence of these distant Buddhist rulers could not be felt to a great extent and for long in Sindh. On the close of the Mauryan dynasty in 231 B.C., a sort of semi-Greek rule, the Bactrian, set in; until at last the Sakas (Indo Scythians) broke down their power once for all in 130 B.C. Once again the country came into the hands of the early native settlers, among whom the Jats and the Meds occupied a prominent place. They have been already referred to above.

For a time again the history of Sindh runs parallel to that of Persia. "The movements of the Sakas and allied nomad tribes were closely connected with the development of the Parthian or Persian power under the Arsakidan (Ashkonian?) kings. Mithradates I, a very able monarch (C. 171 to 136 B.C.) who was for many years the contemporary of Eukratides, King of Bactria, succeeded in extending his dominions so widely that his power was felt as far as the Indus, and probably even to the east of that river. I see no reason for doubting the truth of the explicit statement of Orosius that, subsequent to the defeat of the General of Demetrios and the occupation of Babylon, Mithradates I annexed to his dominions the territory of all the nations between the Indus and the Hydaspes or Jhelam river. The chiefs of Taxila and Mathura would not have assumed the purely Persian title of Satrap. If they had not regarded themselves as subordinates of the Persian or Parthian sovereign and the close relations between the Parthian monarchy and the Indian borderland at his period are demonstrated by the appearance for a long time to princes of Parthian origin, who now enter on the scene."¹⁶⁷ Under these conditions, a great movement of population was bound to take place between Iran and the Indus valley. Kanishka, the last Indo-Parthian ruler of Sindh, had a prolonged association with our province, as a large number of his coins are found in it.

"His dominions included Upper Sindh, and his high reputation as a conqueror suggests the probability that he extended his power to the mouths of the Indus, and swept away, if they still existed, the pretty Parthian princes who still ruled that region in the first century after Christ, but are heard of no more afterwards."¹⁶⁸

¹⁶⁷ Smith Vincent "Early History of India," 1914 Pp. 227-228.

¹⁶⁸ *Ibid.* P.269.

GEOGRAPHICAL VALUE OF SINDH-Conclusion.

Thus it can be seen how the Indus valley had a great geographical value throughout all these periods of time, how through the few but free mountain passes came periodic, though long – delayed attacks of conquerors, – the Indus Valley people, Indian Aryans, Iranian Aryans, Greeks, Scythians and others, – how the frontier lay undefended by any civilized or organized force from the natives, who did not trouble about it, and how the upper Indus valley affected the lower and deltaic region politically, socially and economically to some extent.

Life in the lower Indus valley was, to a certain extent unsafe, instable and unsteady – the physical environments helped to make it so. It had a centrifugal population, settlers were not settled, when either the changing river or a foreign aggressor upset them. There was a re-sorting of tribes and races, escaping from aggressions or political crises, religious bigotry or even unfavorable climatic conditions. Therefore, Sindh's political frontiers oscillated, rulers changed hands and capital towns shifted, as the Indus waters or the desert sands do shift from place to place. Even at the time of the Persian invasion the desert approached the Indus valley on its eastern side and desiccation had already begun even on the borders of Sindh.

However, the valley itself, owing to its fertile soil and plenty of river water in a comparatively dry region all round, no doubt harbored settlements. But except the two ancient towns of Behkar and Sehvan, there are few natural strongholds and vestiges left of the previous conquests in Sindh. While people from the dry and hot Iran plateau could sustain themselves well in the burning land, conquerors from cooler regions such as the Greeks, could have no foothold in it and they either left it or moved on to cooler and more habitable parts of the Indo-Gangetic plain and the Deccan.

The open character of the valley allowed free movements, though, on account of some scattered desert tracts amidst fertile fields, they were restricted here and there. Thus, while the colonization of foreigners was easy and they could take native wives, there being no religious restriction thereto, the bulk of the people lived a quiet, peaceful life in their fields. There were no castes and few creeds, thus allowing facilities for the unification of peoples who happened to live in Sindh. There were, likewise risks of evils from foreigners as well. Though communication was defective and journeys were slow and tedious, nevertheless as a habitable area, it had a close relation between its physical regions and cultural regions. It gave facilities for internationalism and inter-communication. Much of its history is conjectural but the salient events, related above, support our statement that Sindh has played its part worthily in the ultimate unification of human races. How far this is true with regard to the later historical periods remains to be seen.

SINDH'S CHANGING MAP

CONTAINING

A PORTFOLIO OF 50 OLD MAPS OF SINDH WITH CRITICAL NOTES ON THEM

BY PROF. M. B. PITHAWALLA, F.G.S., M.R.A.S.

REPRODUCED BY

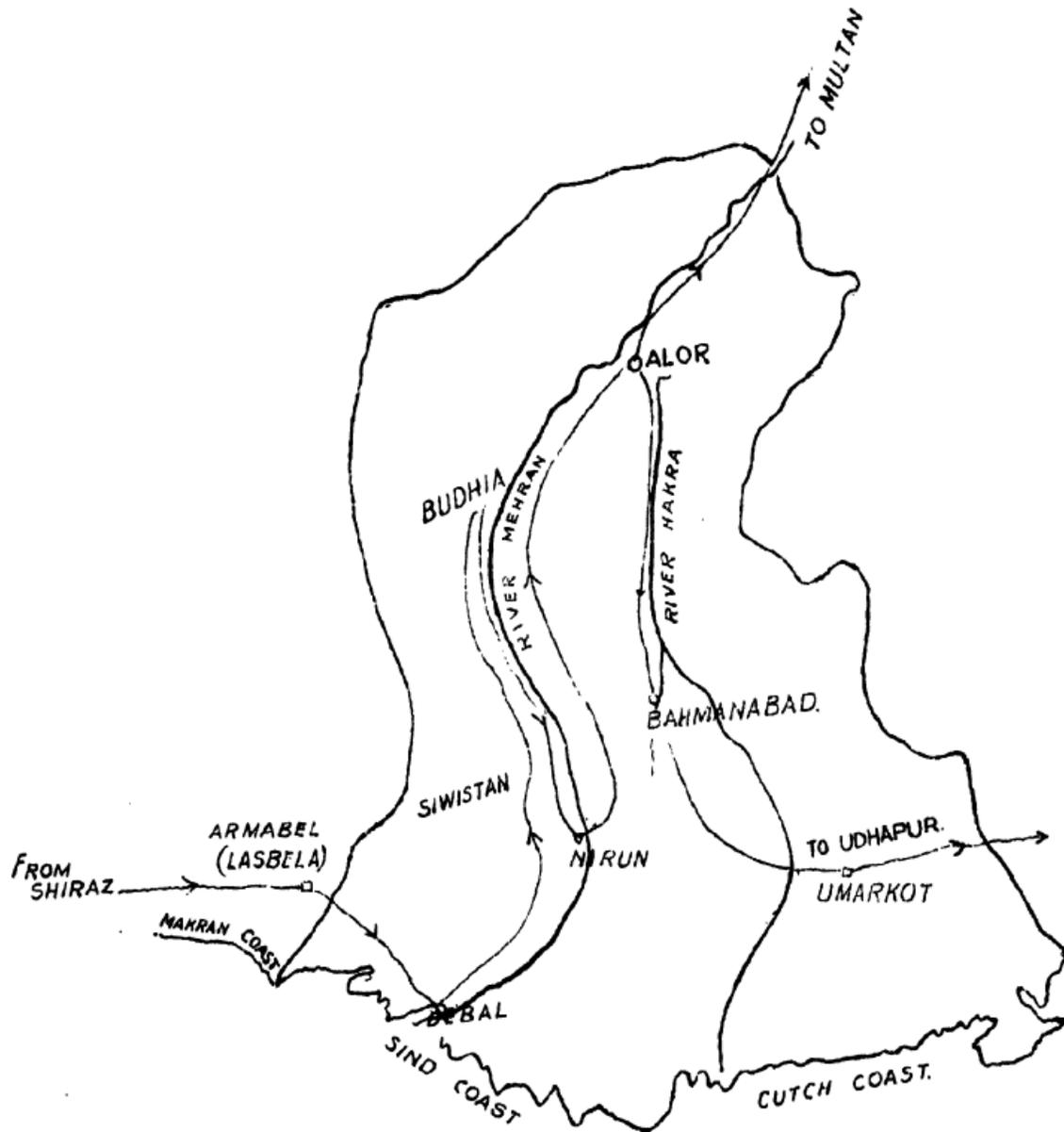
SANI H. PANHWAR (2018)

FOREWORD

This Part III of the Historical Geography of Sindh is published as reprints from the two issues of the *Journal of the Sindh Historical Society*, (Vol. II, Part 4 and Vol. III, Part 2), in connection with my projected thesis on "A Geographical Analysis of the Lower Indus Basin (Sindh) with special reference to the History and Progress of Human Settlement in the Region." It contains a correlated account of the History and Geography of Sindh for later historical period's *viz.*, post-Arab, the Sumra, Samma and other native dynasties up to the conquest of Sindh by the British 1843. Though such long periods of time are covered and though there is no single authentic work on the history of Sindh available as a solid and reliable background for such a regional study as this, the geographical perspective is kept in view by the author throughout and the life and achievements of the various peoples using the valley for settlement, are dealt with as far as possible. Gaps are bound to be left here and there in such a pioneer work, which can only be thoroughly completed with the help of other collaborators in the field. Suffice it to say, the present papers are earnest attempts to bring out the geographical effects on life in Sindh and the human power to modify environment.

Karachi, 1-1-1938.

M. B. P.



SKETCH MAP OF SINDH
 SHOWING ROUTE OF THE ARAB ARMY UNDER MUHAMMAD KASIM AND THE
 COURSE OF THE MEHRAN AND HAKRA (Ref. *Chahchnamah*) 7th CENTURY A.D.

HISTORICAL GEOGRAPHY OF SINDH: PART III. HISTORIC PERIOD A.D. I.

By Prof. M. B. Pithawalla, F.G.S., M.R.A.S.

The importance of the time factor in the geographical studies of Sindh has already been shown with regard to the preceding important epochs. The history of changing political, racial and economic conditions and their evolution through the centuries in the province has a bearing on its geographical features, which have been described. This knowledge of a geographical setting is also indispensable, while appreciating the historical events, which have taken place in subsequent times. Further changes in the river beds, advance of the delta, appearance and disappearance of fresh-water springy and lakes, hydrographical and political changes in the Upper Indus Basin (Punjab), a possible climatic change, accumulation of sand and clay, sand belts and clay belts, distribution of soils of various kinds and natural vegetation and even the human improvements or alterations of the countryside, — all these should be borne in mind, while studying the more recent history of the land.

The anonymous writer of the *Periplus of the Erythrean Sea*, containing an account of the navigation of the ancients, about 60 A.D., has given us a valuable picture of the land from personal observations in those days. He begins by first pointing out the distinction between Hind (Hindustan) and Sindh (Scythia, Scydia, Scindi); the tract of land lying low from the cape of Monze to the Indus and comprehending the country on both sides of the river, which between Multan and Thatta is called Mehran. It has been noticed that from the time of Alexander, the Greeks have considered "Patala to be the port to which they were to direct their views in order to obtain the precious commodities of the East." Individual merchants, if not large trade companies, must surely have come to Sindh from the ports of the Red Sea ever since. Even the embassies from Syria to the monarchs of Hindustan must have "embraced the objects of commerce as well as of empire, for, those who found their way to the Ganges would not be unacquainted with the profits to be derived from the commerce of the Indus."¹⁶⁹

Importance of Patala.

All trade vessels should naturally direct their course to Patala on the Indus. "Here it was known from history that the productions of the East were to be obtained, and here the trade, which the Indus and the coast of Malabar must always have fixed its centre."¹⁷⁰

¹⁶⁹ Vincent William — *The Periplus of the Erythrean Sea*, Part the First, London 1800.

¹⁷⁰ *Ibid.* Pp. 346—354.

As the knowledge of the Greeks and Romans about the Indus valley and the monsoon increased, they began to make their passage to Hindustan direct.

Other Markets

Besides Patala, there were two other important markets in Sindh, *viz.*, Barbarike near the mouth of the Indus, and Behker (Bukker) afterwards replaced by other capitals "occupied by different invaders in the various revolutions of the country." At the time of the Periplus, *Minnagara*, perhaps the Binagara of Ptolemy, was the capital of Sindh and the sovereign power extended from there as far as Barugaza or Gujarat. It has been said that the Government was actually in the hands of the Parthian tribe divided into two parties, each party, as it prevailed, chose a king of its own body and drove out the king of the opposite faction. The author of the Periplus thinks that this sovereign must have been very powerful and the trade of Sindh must have been very profitable, as he was offered such valuable presents by those who sought his protection, as:

"Plate of very great value
Musical instruments
Handsome girls for the Haram
The best wine
Plain cloth of high price (and)
The finest perfumes or the perfumed ingredients."

The Indus itself was decidedly used as the chief means of communication from the port of Barbarike to Minnagara inland.

Imports and Exports.

The following articles were imported at Barbarike: —

"Clothing plain and in considerable quantity Clothing mixed
Cloth, larger in the warp than in the woof
Topazes
Coral
Storax
Frankincense
Glass vessels
Plate
Spicie and wine."

The following typical indigenous products were exported: —

"Costus a spice

Bdellium a gum
Yellow dye
Spikenard
Emeralds or green stones
Sapphires
Hides from China
Cottons
Silk threads.
Indigo or Indian ink."

The Voyage.

The South West Monsoon, being the most favorable trade wind, the voyage was made in Epiphi or July down the Red Sea and through the Straits to the mouth of the Indus. The peculiarity of the Sindh Coast was that "near these mouths the sea was white and there was a multitude of snakes called Graai, floating on the surface; which is imputed to the rains of the monsoon washing down these animals out of the rivers." Indeed the sea fishery on the Sindh coast is even now remarkable.

Such, then, is the knowledge of the writer of the Periplus about Sindh in the first century A.D. Though scanty, it fits in well with the general trend of human activities in the province and the surrounding lands, which we have discussed.

THE PRE-ARAB PERIOD.

The period, which followed this, was the one in which Indian races, Buddhists and Brahmans, flourished and lived together in Sindh in peace and harmony for many centuries after the Christian era began. The pendulum of power turned east-wards, after the fall of Iran in the earlier centuries and the Sassaninan (Pahlavi) rulers took time to settle down. The Iranian capital was already shifted westwards in the Euphrates - Tigris valley and the Iranians themselves were concerned with settling their own home-affairs at first. They had, therefore, little time to turn to the Indus valley any more.

Meanwhile the Buddhistic element had worked its way into the Indus valley from the Ganges valley under the illustrious patronage of Asoka and Chandragupta. At the same time, the Brahmans had been living in great hostility against the Maurya dynasty flourishing in other parts of the country. But after the fall of the Mauryas, Brahmanism reasserted its authority in Hindustan. "The prohibition of bloody sacrifices and irritating proceedings of Censors must have produced much unrecorded discontent and we may fairly assume that when the strong hand of the old emperor dropped the scepter, Brahman influence reasserted itself and produced a revolt against the inquisitorial tyranny of Asoka's system."¹⁷¹

In peaceful Sindh, however, the two elements flourished side by side. The result was that both remained feeble, neither of them becoming aggressive at one time or another. Even earlier than this, Scythian sun or fire-worship was tolerated here, "The first dwellers of Ratika (a mound on the old Sutlaj bed) were most likely Scythians who brought with them the worship of Baal, the sun or fire God from the banks of the Oxus." The Indo-Scythians were in possession of lower Sindh two centuries B.C. and according to General Cunningham "they occupied the Punjab and Scinde and were in full possession of the Indus valley down to the seventh century."¹⁷²

The ruling class had adopted Buddhism after Kanishka, the last ruler of the Indo-Scythian Kingdom, and when this Brahmennical revival took place later, there was considerable toleration shown to the Brahmins in Sindh. So, while there was a constant conflict between Buddhism and Brahmanism in the hilly tracts of Malwa, Ujjain, Chitor and even in Cutch, in Sindh the two lived peacefully together, so much so that at the time of the Arab conquest of Sindh, while there was a Hindu kingdom flourishing, there were Brahmin ministers employed. The Governors and citizens were largely Buddhists. But it was not the pure kind of Buddhism that was to be found in the province. "Sindh was remarkable for being under the Government of Buddhist King, belonging to the

¹⁷¹ Smith V. — "*Early History of India*," 1914 p. 194.

¹⁷² Cal. Rev. LX 1875 p. 333.

Sudra caste and for the large number of Buddhist monks which the country supported, estimated at ten thousand. But the quality was not in proportion to the quantity; most of the ten thousand being denounced as idle followers given over to self indulgence."¹⁷³

There are several relics and stupas belonging to the Buddhists in Sindh. The site where Mohenjo Daro was discovered by R. D. Banerji in 1922 was originally a Buddhist stupa and a monastery in the north-west corner. The bricks used in these were evidently taken from the older ruins belonging to the Mohenjo Daro age.

Other stupas have been found at Tando Md. Khan, Jhirrak, Mirpurkhas, Depar Ghangro (visited by Chach, the Brahman minister of Rai Sahasi II), and Thul Mir Rukhan — "all forming a chain up the Indus valley."¹⁷⁴ The Brahmin element in Sindh has not been found only during the period under review. It has long been in existence in the province. It was at the advice of his Brahman councilors that Mousikanos, King of Alor, had revolted against the Macedonian conqueror in 325 B.C. Even in political departments both the classes of people had alternately occupied power and position. It is said that one of the reasons of the success of the Arabs in Sindh later on was that there were Buddhist governors of the several forts and Buddhist subject under the Brahman king and. they would not fight under the influence of their religion.

Continuation of Iranian Influence in Sindh

Although the Sassanian rulers of Persia did not organize campaigns against India on account of their sphere of activities being transferred to the western countries, intercourse between Persia and Sindh continued all throughout. This is supported by the discovery and interpretation of Sassanian coins.¹⁷⁵

Mr. Fardoonjee D. J. Paruck, an authority on Sassanian numismatics, has tried to show from the inscriptions on the coins that not only Sindh but Multan and Rajputana were in the possession of the Kushans, who ruled in North India and who were subjects under the Sassanian Kings Shahpur I, and Hormuzd I, in the 3rd century A.D. The latter King is mentioned, as "Malka Indi Irdati Harezi" — the Sovereign of Sindh, Punjab and Rajput kingdoms on one side of a coin, and "Mazdayasni Bagi Auharmazdi Raab Kushan Malkan Malka" — the Worshipper of the Lord of Wisdom, His Celestial Majesty Hormuzd, the Lord of the Kushans, the King of Kings, on the obverse of the coin.

Fire worship was noticeable in the temples of Sindh, the Punjab intermarriages were recorded and trade was maintained between the two countries. The old city of Bahmanabad has a considerable history of its own. "Bahman, son of Isfandiar who used

¹⁷³ Smith V.- *Op. cit.* p. 354

¹⁷⁴ Cousens H. — "*Antiquities of Sindh*" p, 59.

¹⁷⁵ Paruck F. D. J. "*Observations Sur cing Mounaies Sassandies*" (French)— Revue Numismatique, 1936.

to be styled Ard-Shir-i-Daraz Bazu (or of the long arm), founded a city in the Zamin of Sindh, which was named by him Bahmanabad or Bahamannah, and which they call Mansuriyah.¹⁷⁶

Mujinal-ul-Tawarikh (1131 A.D.) has another version about it. "In the time of Gushtashib, ruler of Iran Zamin, Bahman his grandson, surnamed Ard-Shir, son of Isfandiar, led an army into Hind and Sindh, and subdued a considerable portion of it. No member of the family of the ruler named Sunagh, retained any power therein. Bahman founded a city between the frontiers or borders of the Hindus and the Turks (the Indo-Scythians as they are styled), to which he gave the name of Kanda-il, and in another part which they call Budah he founded a city which he named Bahmanabad and according to one statement, this is Mansuriyah."

Muhammed, son of Jarir-ul-Tubari says that "Bahman conferred Hind on Ashtumish, a sage, after the Malik of Hind had revolted."¹⁷⁷

Occasionally the Iranian domination became greater, and tributes were exacted. Says, Al-masudi, "Kings of Sindh and Hind and of all the countries to the north and south sent ambassadors to Noshervan with rich presents and to enter into terms of peace with him." The Gardazi has also a story to tell of Persian connections with India; "Behram Gor (420 A. D. to 438 A. D.) came into Hind in disguise and Shermah its ruler gave his daughter to him in marriage and conferred upon him as her dowry Sindh and Makran."¹⁷⁸

Tod in his *Rajasthan* (Vol. II, P. 44) makes a daring remark that the Rana of Odeypur was descended from Bahman! During the reign of Noshervan, (531 A. D. to 579 A. D.) says the *Shah Nameh of Firdousi*; ambassadors came from the sovereign of Hind to the Chosroe, challenging him to solve the puzzle about the game of Chess. This Persian influence did not stop at the Indus. Fleets were employed by Noshervan to conquer other parts of India and Ceylon. In the canary caves near Bombay, there is found the famous Pahlavi (Sassanian) inscription, while the Parsee calendar (comprising the Parsee days and months) is still in vogue in the far-off Hyderabad (Deccan) State.

Later on we shall find that Iran influenced the Talpur rule and life in Sindh, particularly the Khairpur State, through the Baloch ruling race. After the Arab conquest of Sindh the game of chess passed on to the Arabians (7th Century A.D.) and from them it reached Europe about the 11th Century A.D. The word chess is derived from Persian *Shah* meaning King, Sassanian coins have also been discovered among the ruins near Larkana.¹⁷⁹

¹⁷⁶ Raverty — "*The Mihran of Sindh*" Footnote p, 197.

¹⁷⁷ *Ibid.* Pp. 196—197.

¹⁷⁸ *Ibid.* p. 198.

¹⁷⁹ Cousens H. — "*Antiquities of Sindh*" p. 6.

In his great work on the Parsecs Mr. D. F. Karaka¹⁸⁰ has summarized the whole situation Well: "About the beginning of the Christian era, the Kanerkis, the Indian Skythian rulers of the Punjab, from the fire altar on their coins, seem to have adopted the religion of the Magi (Lassen in J.B.A.S. IX P. 456; Princep's note on Hist. Res. from Bactrian Coins P. 106). As regards the south of India, Ptolemy's mention of Brahmani Magi has been thought to show a connection with Persia, but the Kanarcse word Mogi or son seems a simple and sufficient explanation. "Closer relations between India and Persia date from the revival of Persian power under the Sassanian Kings. (A. D. 226 – 650) In the fifth century, the visit of the Persian prince Behram Gor probably to ask for help in his struggle with the white Huns (Wilson's *Ariana Antiqua* P. 383) his marriage with a Hindu princess and according to Hindu accounts, his founding the dynasty of the Gordhabin King, was a fresh bond of intimacy (Wilford – As Res. IX P. 219), Macudi's *Paries d'Or*, Reinand's *Memoire sur l'Indo* P.112; Elliot's *History* II P. 159). In later times, both Noshirwan the just (A.D. 531-579) and his grandson Parvez (A.D. 591 – 628) were united by treaties and by the interchange of rich presents with the rulers of India and Sindh (Macudi's *Prairies d'Or* II P. 201).

In connection with these treaties, it is interesting to note that Noshirvan's embassy to Pulikesi II the ruler of Badani, in the Southern Maratha country is believed to be the subject of the Ajanta cave paintings and another of the pictures is supposed to be copied from a portrait of Purvez and the beautiful Shirin (Fergusson in Burgess's *Ajanta Notes* P. 92). According to one account early in the seventh century a large body of Persians landed in Western India and from one of the leaders, whom Wilfred believed to have been a son of Khosru Parvez, the family of Udepur is supposed to have sprung (Gladwin's *Ain-i-Akbari* II P. 81; Dr. Hunter As. Res. VI P. 8; Wilfred As. Res. IX P. 233; Princep – J. Ben. As. Soc. IV P. 684). Wilfred held that the Konkanshth Brahmans were of the same stock. . . . Besides by treaties Western India and Persia Were at this time very closely connected by trade. *Kosmas Inmkoplenshtes* (P. 545) found the Persians among the chief Indian Ocean (Migne's *Patrologioe Coursus* LXXXVIII P. 446; Yule's *Cathay I CLXXVII, CLXXIX*)."

Influence of Hind.

Before the conquest of Sindh by the Arabs in 711 A. D., the province was governed by Hindu Kings. Tradition assigns to them a dynasty of five Rabis, who altogether ruled for 137 years;

- 1 . Rai Diwaji.
2. Rai Sahiras I.
3. Rai Sahasi I.
4. Rai Sabaras II.

¹⁸⁰ *History of the Parsis*, London 1884 p, 25 (Ref. Gazetteer of the Bom. Presidency p. 247.)

5. Rai Sahasi II.

The last Rai was once attacked by Nimruz, King of Persia. He Was a wise man and built six forts *viz.*, Alor, Sehwan (Sehwan), Uchh, Mathelo, Mod and Suvrai. Baluchistan was then a dependency of Sindh.

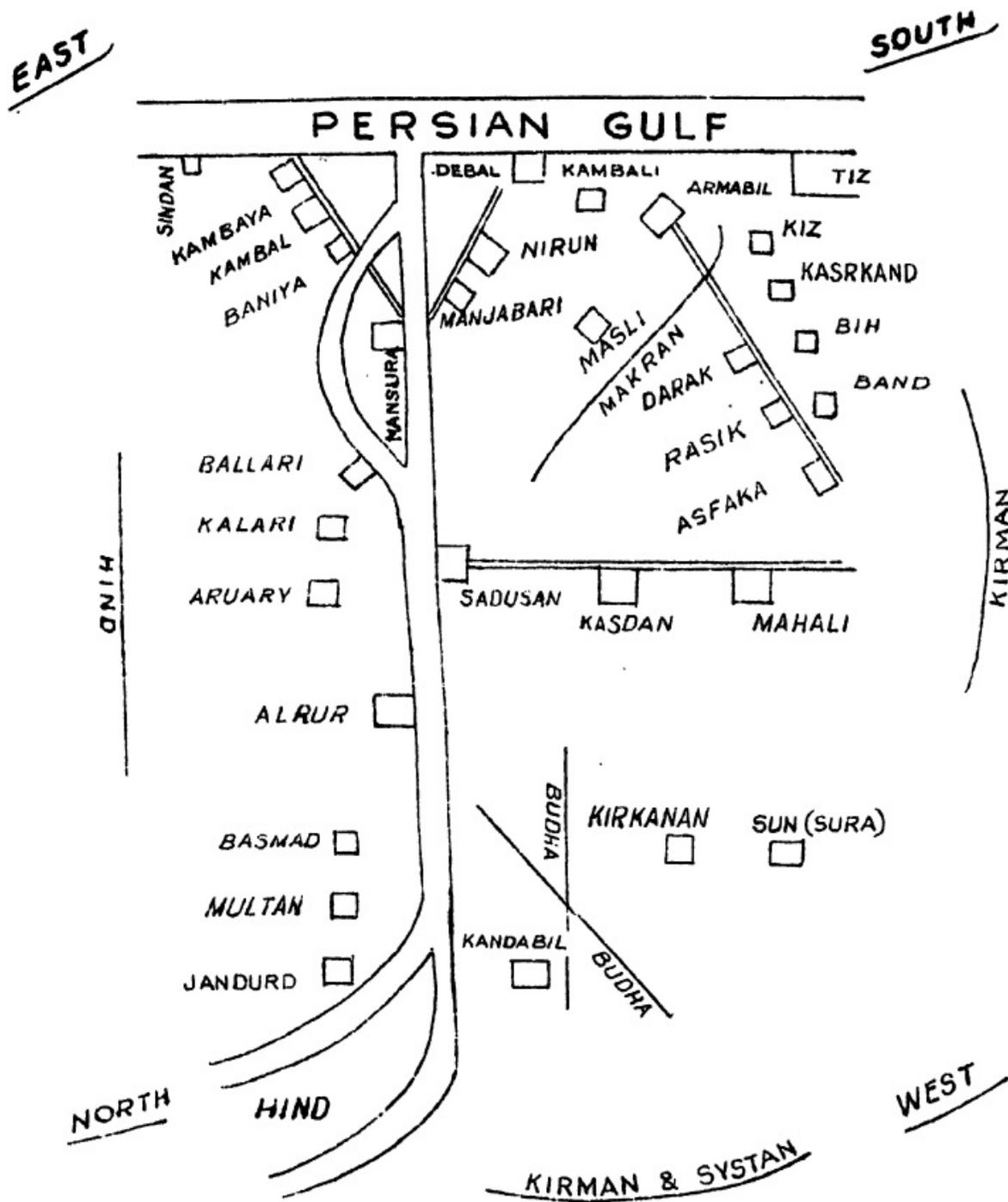
The decay of Buddhism in India had already set in and Brahmanism under these Kings was in a delicate condition. There was a large number of Jats, Meds, and Dasyus in the State and the people were imbued with the spirit of the peace-loving religion of Lord Buddha.

Sindh and the Punjab (the whole of the Indus basin) formed a single kingdom in the seventh Century A.D. and the influence of the Sindhi Rai extended as far north as Kashmir. According to the *Chachnameh*, the boundaries of the Kingdom Were Kashmir on the east, Makran on the West, the mountains of Kurdan and Kikanan on the north and the sea as far as Debal in the south. There were four governors appointed at (1) Bahmanabad commanding the forts of Nerun, Debal, Luhanah, Laklipat, Sammah and the river (2) Sivistan, commanding Ludhi (Budhia), Chingom or Jankan, the skirts of the hills of Rojhan (Dalkian) upto Makran, (3) Iskandah, commanding Babiah, Sawarah, Jajhor and Dhanod and (4) Multan, commanding Sikkah, Karad, Ishthar, Kih, and Kashmir.¹⁸¹ Thus the political organizations even in this Hindu Kingdom were almost identical with the natural regions.

Alor, the capital of Hind and Sindh, was a "town adorned with various kinds of royal buildings, villas, gardens, fountains, streams, meadows and trees and was situated on the bank of a river called Mihran."¹⁸² The King Rai Sahasi II, himself had "innumerable riches and buried treasures" and was a lover of justice, liberality and bravery. He was from his wife Suhandi's side related to the chiefs of Rajputana, while "the ancient ballads of Rajputana and Gujarat remind us of Rajput chief, who had kinsmen in Sindh. Often the women of Sindh burnt themselves to death like Rajput heroines. Whenever occasions demanded such an action. Shramans and Brahmans, merchants, and tradesmen and workers in stone etc. lived in the capital town, while the large majority of people followed agricultural pursuits.

¹⁸¹ Mirza, Kalichbeg — *History of Sindh* Vol. I (*Chachnameh*.) p. 11.

¹⁸² *Ibid.* pp. 11-12



ISLAM MAP OF SINDH

(ASHKALU-L-BILAD & ISTAHHRI)

10th CENTURY A.D.

Chach, a Brahman and son of Salaij, came into great prominence and power even during the life of Rai Sahasi, so that when the King died, his widow not only married Chach, whom she loved, but he was actually crowned King of Alor. As this action of his brother's Widow was not approved by Mahat, the king of Chitor, Chach was challenged by him in a duel. But Mahat was killed in the fray and Sindh proved victorious. Two sons were born of Chach and his queen Suhandi, Dahar and Daharsiah. Chach sometime later appointed his brother Chandra, who was "the crown of all ascetics," as his deputy at Alor and himself went abroad to the lands of his kingdom which he consolidated.

Movements of Chach in North India and Iran.

After controlling the four tributary rulers, who were under the Sindhi sovereign before, Chach led an army with their help "up to the very limits of Hindustan, which adjoined the country of the Tartars". Thus it became an attack of Sindh on neighboring lands.

After many days' journey he at first came to the fortified town of Babiah on the southern banks of the Bias. The ruler of Babiah fled to the fort of Iskandah, which was also attacked and taken from the enemy. Then he turned toward Sikkah and Multan on the opposite sides of the Ravi. As the ruler of Multan, who was also defeated, asked for the help of the king of Kashmir, Chach marched towards the State and fixed the northern boundary of his vast kingdom by planting some trees there. Even today the Kashmir valley is well-known for its poplar and Deodar trees. Similarly he fixed the western boundary of Sindh by moving as far as Kerman and beyond the steep declivity and the hills of Makran.

A small river running between Kerman and Makran was noted as the boundary and on it Chach planted some date trees. Later still he actually passed through the desert, which lay between Turan and Afghanistan, and exacted tributes from the rulers of Armanbel or Belah (Las Bela) and Kandail, (Kandhabel) or Kandhar. At last, Chach returned to his capital of Alor, He ruled for 40 years altogether and built up such a vast kingdom of different physical features, especially the northern and western highlands bordering the Indus basin. But such a heterogeneous mass of kingdoms could not be maintained by any sovereign weaker than Chach. Here then was the man factor in the rise and fall of the Hindu dynasty.

On his death in 670 A. D. his brother Chandra continued the rule till 678 A-D., when Dahir the younger son of Chach came to the throne. Misled by some false astrologers he married his own sister and brought upon himself and his subjects the misfortunes from which there was no relief.

Such a king could not have the several chieftains, within his kingdom, sufficiently under his control.¹⁸³

It was divided into six parts as under: —

Capital

Diwal.
Nerunkot
Sehwan
Bahmanabad
Alor
Sewi

Town. Chieftains.

Johim Bhada.
Samna.
Batchera, Son of Chuadram
A Lohana Chief.
Dahir himself.
Bhada son of Kaka.

Besides, he could not control "the people of the delta in their piratical dispositions." The dark age in Hindustan had already set in. It lasted for over two centuries, during which period the Kingdoms of Ujjan, Kanoj, Magatha also lay in a fallen and decaying state.

¹⁸³ Capt. MacMurdo — J.R.A.S. Vol. I p. 36.

HISTORIC PERIOD A. D. II: Arab Period.

Rise of the Arabs (7th Century A.D.)

While Sindh lay in such a weak condition under Dahar, great developments were taking place in western Asia. From the ashes of the Byzantine and other empires, now rose Arabia, using the fertile crescent lying between them as their base and expanding their power both westward and eastward. The Arabs were not merely a people of desert nomads, but a band of religious enthusiasts, who solemnly pledged themselves to follow the Prophet Mahommed and to extend the realms of their political power and religion far and wide. A series of Semitic outbursts was started in the near east by these mobile people, who absorbed the higher Aryan cultures of Iran (Zoroastrian) and Byzantine (Christian). Very quickly Syria, Egypt, Iberia and the W. Mediterranean islands on the one hand and Persia, Babylonia, and Assyria on the other were conquered by them stage by stage. Themselves a class of traders, they developed commercial relations soon among the Jews and Christians, Egyptians and Romans and along the ancient Arab trade routes all over the three countries. Agriculture, irrigation, art and other amenities of life were freely sought and above all, conversion to Mahommedanism went hand in hand with warfare. A vast empire was already built with the Caliph Abdul Malik as their head, from Spain in the West to Sindh in the east.

The Conquest of Sindh

This virile race of Arabs now turned their attention to the Indus valley. They had tried an initial attack by land in 671 A. D., when the Jats of Jhalawar (Baluchistan) had stopped their progress.

Though Dahar inherited a vast kingdom from his ancestral hero Chach, with the title of "The King of Sindh and the Sovereign of Hind and the ruler over land and water," this very possession of extensive and varied territories made him a very weak monarch. A religious war against Sindh and Hind was organized in 711 A.D. by the Khalifah through Hajjaj, Governor of Irak, who appointed a brilliant youth of 17, called Muhammad Kasim the leader of the contingent. He was instructed to march *via* Shiraz, where the detachments from Irak and Syria were to join and to go stage by stage, through Makran and Lasbelah to Sindh. The organization included a naval detachment with heavy war Weapons, battering rams, catapults etc., sent by sea to Debal, the first port on the Sindh coast, where Mohammed Kasim was to meet them with his army. (*See Map above.*)

On land every fair horseman took a strong camel loaded with provisions, and even the horses were protected with coats of mail, "so as to give them the appearance of wild beasts like the lion and the elephant."¹⁸⁴

Leaving Armanbelah, the invaders started for Debal, where the boats containing the weapons and war implements also arrived in time. A ditch, some 12 cubits wide and 6 cubits deep, was made round the Arab camp, but Debal with its idol temple was easily taken away by the enemy. On hearing the news about the fall of the port of Debal, Dahar wrote a letter to Muhamad Kasim in which he stated: "Be it known to you that the fortified town of Debal which you have taken is an insignificant town, where only traders and artisans reside. It contained neither a strong fortress nor was it occupied by a garrison of any importance with whom it was worth your while to fight. If I had sent against you Rai Jaisiah, Dahar's son, who is the most victorious of all the rulers on the face of the earth, and who can wreck vengeance on the strongest men of his age, or the King of Kashmir, who is the mighty possessor of a crown, kettle drums and standards, on whose royal threshold the other rulers of Hind have placed their heads, who sways the whole of Hind and even the country of Makran and Turan, whose chains a great many noblemen and grandees have willingly placed on their knees, who is the owner of one hundred elephants and is the rider of a white elephant whom neither a horse can stand against nor a man can put pressure upon, — if I had sent these heroes against you, you could not have done the slightest harm to them and no army would have dared to pass through the remotest limits of this country till the end of the world."¹⁸⁵

To this Mahommed Kasim replied by marching against the fort of Nerun in middle Sindh some 25 leagues from Debal, for six days and after crossing the intervening lake of Sangrah reached the place. Here the Arab army suffered much for want of water, as the flood waters of the Indus, called the Sehun, had not reached it yet. Victory, however, was theirs and they next proceeded towards the hilly tracts of Siwistan. The forts of Siwistan and Sisam were easily conquered, and much silver and gold was secured and sent on to Hajjaj with a number of slaves.

Instructions were then received from Hajjaj to abandon other towns to arrange to cross the Mehran and march against Dahar himself. Already that part of the country which lay from Buddhiah¹⁸⁶ up to the place opposite the fortified town of Aghror on the Mehran, had been conquered. The next target of attack was the fort of Bet "to the east of the Mehran on the bank of a rivulet in an island of the Gulf of Khanlehal in the country of Sakrah (Mirpur Sakra?)"¹⁸⁷ Here the tributary ruler under Dahar was easily defeated, and the Arabs afterwards organized a 4-days' battle of Jitor. According to *Tarikh*

¹⁸⁴ Mirza Kalechbeg Fredunbeg — *The Chachnamah* Karachi, 1900 p. 76—77.

¹⁸⁵ *Ibid.* p. 67.

¹⁸⁶ *Ibid.* p. 99

¹⁸⁷ *Ibid.* p. 100

Maasumi, Md. Kasim crossed the river at Thatta and not Jitor to go to Alor before crossing another lake called Gujri between Jitor and Raor, The main objective, however, of the Arab invaders was Alor, the proud capital of Sindh where Dahar himself ruled. This could not be done without crossing the Meran. Elaborate preparations were to be made for performing this action and the requisite cartographical knowledge was to be possessed. Full instructions were supplied by Hajjaj from the Headquarters: "As for the permission to cross the river and to fight with Dahar, you have already been informed that you may cross it from that point where you expect the least trouble and loss to your men. Or rather draw a sketch map, on paper showing the length and breadth of the portion of the river within 4 leagues above and below the (various) cross points, which should also be marked on the bank on which they are situated. I may then select one point and you may cross the river from there."¹⁸⁸

The river was to be actually crossed by making a bridge of boats. This was done by filling the boats with a ballast of sand and stone and linking them together by fixing nails into the connecting planks. The island of Bet between the waters of the Mehran was ultimately selected as the crossing point, the Arab army being stationed on the western bank and that of Dahar on the eastern. Long and tedious was the battle between the hosts. All the Jats of the eastern country joined Dahar, great Thakurs, swordsmen and standard-bearers, slaughterers, subject rulers, long trains of war-like elephants, famous horsemen and foot soldiers numbering thousands. Mahommad Kasim divided his cavalry into the right and the left wings in charge of his two best lieutenants respectively and the central front in charge of another. Naphtha shooters were ordered to be ready with their weapons and appliances, to light their torches and to set up their fires. Kasim's exhortation to his troops had always a religious touch in it. "O! Mussalmans", he declared, "be constantly asking pardon of God for your sins. The great and glorious God has sent two gifts to the followers of Muhammad, (the chosen one): one is repeating blessings on his holiness Muhammad the chosen one and the other asking pardon of God for sins."¹⁸⁹ On the other side, Dahar is said to have been amusing himself with the games of chess and dice, and believed in the prophecies of astrologers and philosophers of Sindh and Hind. No wonder, Alor fell, Dahar was killed and the Arabs secured the control of most of Sindh.

It was a naphtha arrow shooter who took Dakar's life, as an arrow struck him in his litter on the elephant which he rode. It was in the Gulf of Dhawah, in the waters of the Mekran The heads of Dahar and of his tributary princes were sent to Hajjaj together with all the royal ensigns etc. Hajjaj is said to have proclaimed; "Good news and good luck to the people of Syria and Arabia, whom I congratulate on the conquest of Hind and on the possession of immense wealth the sweet waters of the Mehran and

¹⁸⁸ *Ibid.* p. 115

¹⁸⁹ *Ibid.* p. 139

unlimited benefits and boons, which the great and omnipotent God has kindly bestowed on them."¹⁹⁰

On the fall of Aror, Jaisiah desired to carry on the war and occupied the fort of Raor, which was soon taken by the Arabs but Bakar's sister Bai and other Women in the fort burnt themselves alive. Jaisiah then moved on to the fort of Bahmanabad, a great manufacturing town in those days. Muhammad Kasim was also determined to follow him. On his way to Bahmanabad he took other forts, Bahrur and Dahlelah after a battle against thousands of fighting men belonging to the forts. The next scene of activity was the fort of Bahmanabad itself, situated on a small channel of Halwai on the west of it.¹⁹¹ For six months the siege continued, till Jaisiah decided to escape to the province of Jitor. The traders and artisans of Bahmanabad were taken prisoners, but they were given pardon, while all the military classes were beheaded with swords. Conversion was made of as many natives as possible. "He, who received the honor of Islam and became a convert, was exempt from slavery as well as tribute and was not injured. Those, however, who did not accept the true faith were compelled to pay the fixed tribute (*Jizia*)"¹⁹². The management of all the internal affairs were left in the hands of the natives, however. Thus Muhammad Kasim was at last able to subjugate the whole of Sindh, having secured the most important fortified towns, situated at the critical points. But there was no limit to the ambition of Hajjaj for Asiatic conquests and he sent the following complimentary letter to the Arab hero: "O' my cousin Muhammad Kasim, praise and credit is due to you in maintaining your position as commander of the army, in showing favor and courtesy to the people in general, in improving their condition and in satisfactorily settling the state affairs. That which you have done in fixing assessments on each Mauza and in encouraging every class of people to follow the path of law in their worldly business, cannot but conduce to the permanency of the kingdom and to the systematic administration of the country. You should not stick to that city (Bahmanabad) any longer. The props of the Kingdom of Hind and Sindh are the towns of Alor and Multan. Those two cities are the capitals of Kings and in them lay the external and internal treasure of kings. Select that town for your residence which is the best and most pleasant, so that, from it, you may command the entire Kingdom of Hind and Sindh. Whoever refuses to submit to the power of Islam, let him be killed. The great God will help you in that cause. It should be your anxiety to extend your conquests from the country of Hind to the limits of China."¹⁹³

And Hind.

Thereupon Muhammad Kasim employed some native merchants to manage money and revenue matters, and posted one of his own trusted men to the fortified capital town of

¹⁹⁰ *Ibid.* p. 150

¹⁹¹ *Ibid.* p. 158

¹⁹² *Ibid.* p. 164-165

¹⁹³ *Ibid.* p. 171.

Raor and asked him "to watch the river traffic and to collect boats. If any boat coming from the upper part of the river and sailing down, contained any weapons or other military stores it was to be removed to the port of Raor."¹⁹⁴

Muhammad Kasim continued his progress at first eastwards towards the Aravalli mountain across the desert. Being the products of a barren land themselves, the Arabs were not dismayed by the hardships of their movements through the Thar desert and the next move was towards the country round about Banbanwah, in the vicinity of the lake, called Dhand Wikarbha. The residents not being fighting men but mere priests (Samaris), artisans (Bahzams) and merchants (Luhanas), there was practically no fighting. They next took possession of the land of the Sahtahs, who were mostly rural classes. Thus, practically the whole of Sindh was conquered by the Arabs, as we have seen that Sindhi forts formed the vital parts of the province. But the Arab's thirst of conquest was not quenched thereby and they moved northwards. They took Babiah on the south of the modern Beas, the fort of Gholkandah, Sikkah, Multan, on the south bank of the Ravi, Kanuj and penetrated as far as the frontier of Kashmir, called Panj Nahiyat. The Arabs, according to the *Chachnameh* returned from the northern highlands, moved towards the mountain fastnesses of Rajputana and actually encamped as far as Udhepur. But here at this unhappy time Muhammad Kasim came to grief at the hands of Hajjaj himself, owing to the genius of the two daughters of King Dahar. The great Arab leader and hero of Sindh was recalled under the most adverse circumstances at the very time when the Arab power was at its best in Hind. Even those who succeeded him were weak.

Federated Sindh.

Thus ended the long period of local Hindu regime in Sindh once for all, giving place to a purely Semitic control and authority from a neighboring region, which produced such a daring race. But as has been noticed before, apart from enforcing their religion on the conquered races, the Arabs did not altogether Arabianise them. Rather they assimilated all the native cultures they came in contact with and thereby their own progress became rapid. The Arabs also absorbed the native population, *e.g.*, the Jats.

Today in Sindh and in Bengal – the two extremes of India, the Mahommedan population is the thickest. In our province it was by conquest as well as by conversion and immigration that such a large majority of the people are Mahommedans. But in Bengal, it was a matter of pure conversion of a large number of Buddhists who were cast away by the Hindu propagandists after the revival of Hinduism. When the onslaught of Mahommedan conquerors came in the 16th century, a large body of the out castes in Bengal got voluntarily converted to Islamism and secured the social status, which was denied to them as Buddhists, by their Hindu neighbors.

¹⁹⁴ Ibid. p. 172.

In Sindh, the Mahommedan majority has continued for the last millennium and more, even the Rajput rulers after the Arab period being the first Mahommedan converts in this provinces.

The Arabs did not materially alter the Government, but kept the Brahman governors and tax-collectors in their service. To the natives it was only a case of changing hands and they soon settled down to the new conditions in Sindh as a province federated to the Arab Empire.

How the Arab influence died away.

The progress of the Arabs up the Indus was rather slow, and the successors of Mahommed Kasim were weak. "With Ibn-al-Athir we may here anticipate a few years further the Muslims in India. Habib one of Al-Muhallab's family as Governor of Sindh, fixed his court at Ror and allowed the princes, displaced by Ibn-al-Kasim, to return as protected to their several states. The pious Omar II, summoned them to embrace Islam, on which they received Arabian names. In the days of Hisham, a little later, Junied pushed the Muslim bounds still farther east. But the prestige of Islam again waned for a time. Most of the princes relapsed into heathenism and to hold them in check the fortified camp Al-Mahfuza (the protected) was founded, from which expeditions, both naval and military, were sent forth."¹⁹⁵ But the natives created troubles for the Arabs on every side. Soon the end of the Ummaide dynasty came and the Abbasides succeeded in 750 A.D. But they too were not to rule here long. In 817 A.D.), there was an end of Khalifas.

The Arabs did not build new cities but strengthened the old ones, such as Thatta, Debal and Bahmanabad, Mansura the last founded by Mansur bin Jamhur near Bahmanabad.

The Arab soldiers held land in lieu of their services to the Government.¹⁹⁶ Taxes were levied on certain produces such as dates, grapes, fruits, also fish, and wines.

The land tax was: 2/5 of the produce of wheat and barley (by canals), 3/10 of the produce of wheat and barley (by wheels), and 1/4 of the produce of wheat and barley (unirrigated.)

Extraordinary taxes were levied on certain tribes *viz.*, Jats, Machhi Gorej, Bhatia, Lohana, Sahta, Janda etc., Commerce was the Arab's strong point and all the ancient trade routes were revived between Khorassan, Zabulistan, Sijistan, Kandahar and

¹⁹⁵ Sir Win. Muir — "The Caliphate" 1924 p. 354.

¹⁹⁶ "Cambridge History of India" Vol. I.

Ghazni, Turkastan, China, Ceylon and Malbar. Horses were imported from Arabia and wood for boat building from far-off Malabar.

Sindh a difficult country for Foreigners.

That there were inherent difficulties in the matter of the Arab conquest and government of Sindh cannot be denied. And these difficulties were mainly of a geographical nature. First and foremost was the difficulty of communication. There was the river with its changing beds and the numerous Dhands or lakes to cross and recross, as we have noticed in the case of the marching army. Those of the forts on whose stability depended the chief strength of the natives, were on its banks, bridges of boats etc., had to be built and convenient crossing points had to be discovered. The forts themselves were situated in the different physiographic regions and were scattered far and distant from one another. The Arabs had some difficulties of obtaining proper food. "I shall be much obliged," Kasim writes to Hajjaj, "by your sending a little vinegar from your own stores or securing it in any other way, as my men badly require it, because owing to their eating disagreeable kinds of food out of season, the humans of their bodies are disturbed and they get unwell."¹⁹⁷ It must here be noted that the required vinegar was supplied by a strange method. Cotton was soaked in vinegar and dried and then sewn in bales to be transported to the Arab camp!

The scarcity of water in Arab camps was indeed keenly felt. It has been recorded in one place; "The floods of the Sehim had not yet spread out to that place and so want of water was felt by the troops, who began to complain of thirst." Strangely enough on Kasim offering prayers, "There was a downpour by divine order and all the tanks in that town were filled, with water."¹⁹⁸ These cannot but be storm waters.

Summary and Conclusion.

Though the account of the Arab conquest and government of Sindh, given above, is so scanty, it shows clearly the changing nature of the country, the movements of troops, the kind of peoples, their habits etc. That it was possible for the Arabs to subjugate the whole of the valley in a single campaign inspite of the difficulties we have tried to enumerate, confirms the relationship of its history and geography. This information we owe to the *Chachnameh*, the only reliable history book for the period. "We can gather from its pages that besides Shramans and Brahmans there were rich merchants, at least at Alor, that there Were workers in marble who could make life-like statues, even equestrian statues, that the very powerful discus used by Dahar with signal effect was probably of home manufacture, that there was a large class of artisans and that the bulk of the population lived on agriculture. We read of a Buddhist monk who apparently

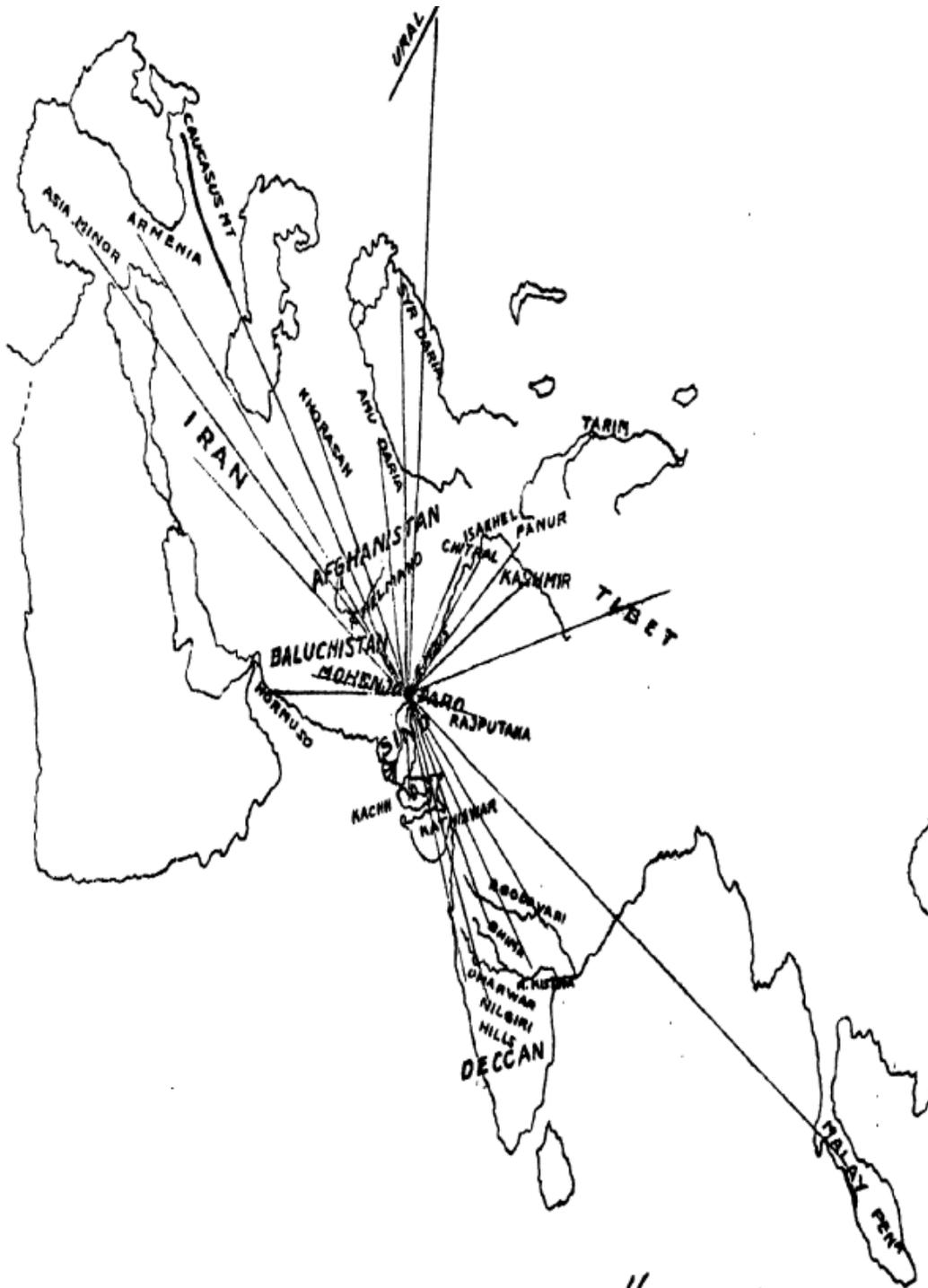
¹⁹⁷ Mirza Kalichbeg Fredunbeg — *The Chachnameh Karachi*, 1900. p. 120.

¹⁹⁸ *Ibid.* p. 91.

knew the art of war, and there is little doubt that almost all the officials were Brahmans, even before Chach usurped the throne. There were numerous temples. Buddhistic as well as Brahmanic, which were frequented by the people especially on holidays and which had large revenues."¹⁹⁹ We also know about other weapons of war manufactured at home, such as, the battering rams, naphtha arrows, nooses and cutting wheels, about the games of chess and dice, the mailed animals especially elephants of Dahar and the world famous Arab horses, boat bridges, boat ballasts, fortifications, castellated cities, etc. We have reference to the climate of the country, and also the floods of the river Mehran. No doubt the river was used by the Arab seamen, though the bulk of the armies moved to and from land. It was crossed at several points, boat bridges were constructed and rich spoils were dispatched by the Arab navy from Debal to the very seat of the Khalifah. The Arab's naval supremacy of the Arabian Sea and the Indian ocean has been recognized by all chroniclers of this period. Upto the middle of the 15th century A. D. (the Middle Ages) they had, in fact, the monopoly of these waters. Many were the gifts they gave to the then known world *e.g.*, the mariner's compass. Their maritime empire was great and wide. They even showed Vasco do Gama the way round the Cape of Good Hope. Their cartography inspired and guided the European adventures, which produced the age of discoveries.²⁰⁰

¹⁹⁹ *Ibid* p. IX.

²⁰⁰ Nadawi Syed Suleiman — *Arbon ki Nahazrani* (Urdu) Bombay. 1935.



Mansoor B. Pithawalla

CONTACT OF FOREIGN LANDS WITH MOHENJO DARO
 1700 B.C. - 2500 B.C.
 SCALE 1" 640 MILES.

HISTORICAL GEOGRAPHY OF SINDH V.

By Prof. M. B. Pithawalla, F.G.S., M.R.A.S.

Historic Period A. D. III.

(Read before the Sindh Historical Society on 27-6-1937.)

Post-Arab Conditions.

In our attempt to emphasize the association of the history and geography of Sindh by the fundamental law, "that the progress of civilization depends upon the as well as the factor we cannot ignore the fact that man is, however, trying to subjugate nature as much as possible throughout the ages. The history of Sindh, during the period, which followed the Arab conquest, is a suitable illustration of the above fact. In the first flash of the conquest of the Indus valley by the Arab invaders, a new life was given to the land. They gave Sindh and Hind, — an inseparable pair in those days, — the idea of empire-building. There was peace restored in the region, which was brought under a single supreme government, the natives were allowed to till their own soil with renewed zest and vigor, trade was increased, fresh lessons were given in international commerce, settlements were renewed or removed to more stable and safe localities, an impetus was given to the Indus irrigation, and above all, a new theology, with belief in one God, was forced upon the people, who were worshipping idols, dedicated to various gods. The Arabs found, in Sindh, geographical and climatic conditions somewhat similar to those prevailing in Arabia and so were at home in this province. But the distance between the homeland and subjugated Sindh was very great indeed and the communication was difficult. The conquest of Sindh was synchronous with the conquest of Spain, the two extremes of the then known world, to which Arab influence was extending. The smallness of their number in a new region compelled them to be tolerant in some ways, e.g. there were independent native potentates allowed to rule here and there, "holding the name of the prophet in respect, though they continued to worship their own idols", but wherever possible, they either destroyed the native temples e.g., Debal, or exacted tribute from them e.g., Alor and Multan. Few women could be imported from Arabia, so they had to take native wives, with whom they lived in cantonments or military colonies, which became quite a peculiar feature of their new settlement. They generally had other towns or forts built along the coasts or river banks, in island homes or in oases.

Their national characteristics of thrift and tenacity, which they owed entirely to the geographical conditions of the desert land, stood them in good stead in Sindh, where their income was limited and the stress and strain of life were great. They could, if they wanted to, live without much food or drink and bear the tropical heat or winter cold. Their caravans moved through fertile tracts as well as barren lands, their ships sought

harbors on sea coasts or in river mouths, while they had a characteristic, two-fold mobilization of their men, the army and the navy, in parallel zones along the coastal strips *e.g.*, Makran. They conveyed heavy war machinery in ships across the seas or rivers, while their light-footed horses carried their regiments through mountain fastnesses or desert areas and along river banks, though not without impediments in a country intersected by rivers, lakes, swamps, canals and sand hills. The coast of Sindh also was not quite hospitable, there being no great natural harbors on it or on the main river. Even Debal lay inland, beside a side-stream of the Indus. The monsoon broke sterile upon the shore with great violence for a whole season and even the stream of the Indus was often too rapid or giratory to allow smooth navigation throughout the year. Though the fertile fields of Sindh helped the conquerors to secure rich crops, the enervating climate of lowlands and the delta made the virile people stagnate soon, many becoming dreamers and idlers. Only a fresh invasion from the needy Tartar or Balooch hordes could stir the Sindhis again. In Sindh no doubt was felt the earliest racial antagonism between the Hindus and the Mussalmans; even the converted Rajput chiefs could not tolerate their less fortunate brethren on this account. The valley itself being unevenly watered, the Arab kingdom was soon broken up into antagonistic principalities, which the new rulers could not long control. They themselves could not completely coalesce the rival tribes, which immigrated into the province from time to time, and this was one of the causes also of their downfall in Sindh. No rulers with a mercenary army could long be in possession of a foreign land, – the soldiers chose or left a leader as they liked, and as soon as their turbulent spirits were calmed, climatic conditions compelling them so, they failed the foreigners completely.

Earliest Oriental Chronicler of Sindh

Few writers have touched upon the history of Sindh, following the Arab period. The Chinese traveler, a Buddhist monk, Hiuen Tsang visited parts of Sindh about 645 A. D. But the geographical information given by him is meager. He refers to Pi-shen-p'o-pulo, as the Capital of Sindh, on the west of the Indus, Multan only 150 miles distant from it to the east of the Indus and a Shuto'lo King ruling over Sindh. The boundaries of the Kingdom of Sindh extended as far as the Salt Range, as salt was found as red as cinnabar along with white, black and rock salt. Commenting upon the part of the delta country between Umarkot and the Rann of Kachh, called Pitoshilo (Patala?), which was visited by Hiuen Tsang, Haig remarks, "It is there that we ought to look for whatever district our pilgrim meant by Pi-to-shi-lo and I would suggest that the Nagar Parkar country, which contains some very ancient remains, might be what we are in search of; or again, the district about Umarkot, or that immediately west of it in the Mirpur Khas Parganah or a little south of it. This last portion of Eastern Sindh is certainly more likely to have contained a dense population as we are told Pitoshilo did, than any part of the

Dhat country."²⁰¹ Indeed, this condition is likely, as Kach, then, was a dependency of Sindh, and the Fakra had not dried up.

A Dark Age Follows

Some of the history of the dark age, which followed the Arab period in Sindh, has been recorded by those famous Arab geographers, who were also their earliest cartographers in the east. The literature produced by them in Arabia and afterwards carried into Persia, is very wide. They

wrote not from hearsay only but from actual observations in the field; in fact, they were great travelers and recorders of world events, which took place within their own life time. The intrinsic value of their work is so great that renowned English scholars, such as Elliot and Raverty,²⁰² labored for many years over the rare manuscripts and produced their own commentaries, which have themselves passed into classical literature. Through these historians we get glimpses into Sindhi life and Sindh geography chiefly of the 9th, 10th, and 11th centuries A. D. The maps drawn by them, though clumsy and inaccurate, are their most valuable asset. They had a false compass bearing, sometimes distances were roughly measure in days' journeys only, and place names were often misspelt and confused. But as pioneers of Asiatic cartographers they were unrivalled. They were travelers, geographers, historians and cartographers all command, They afford least some ideas about Sindh and neighboring minds.

Elliot give extracts from eight such Arab writers, from which I have selected the following details regarding the region of our study. Though the information is scanty, it gives us an account of what the conditions were in those days.

Arab Geographers of Sindh

The work of the Arab geographers was first brought to light in 1718 by a French scholar Abbe Renaudot, and, by a curious coincidence, says Elliot, his translation happened to be that of the earliest Arab geographer of the east, *viz.*, the merchant Sulaiman (851 A.D.) on whose travels Abu Zaidu-l Hasan (916 A.D.) commented further, "by questioning travelers to those countries." In his observations on the countries of India and China the merchant stated that there were four great principal kings in the world, of whom the king of the Arabs (Khalif of Baghdad) was the head. The Balhara was the most eminent of the princes of India and the Indians acknowledged his superiority. Every prince in India was master in his own state, but all paid homage to the

²⁰¹ Haig Major Genl. M. R., — "*The Indus Delte Country*," London 1894., page 39.

²⁰² Elliot Sir H. M. — "*The History of India, as told by its own Historians*" London, 1867. Raverty Major H. G. — "*The Mihran of Sindh and its Tributaries*" Jour. Alia, Soc. Beng. Voi. LX 1893.

supremacy of the Balhara.²⁰³ Who this prince Balhara was it is difficult to ascertain, but it is probable that the king of Sindh was not one of the principal kings of India and the king of the Arabs was thought by these Arab geographers to be ruling over Sindh all the time. There was trade connection between Sindh and India, as Abu Zaid says, "Formerly the dinars of Sindh, each of which worth three and a fraction of the ordinary dinars, were brought into India."²⁰⁴

When the traveler visited Sindh, he found the people believing in idolatry and Multan was yet an important place for Hindu pilgrimage "The idol, called Multan, is situated in the environs of Mansura, and people come on pilgrimage to it from many months distance bring thither the Indian aloes called *al amruni* from Kamrun, the name of the country in which it grows. These aloes are of the finest quality. They are given to the ministers of the temples for use as incense . . . Merchants buy them from the ministers of the temple."

Ibn Khurdadba is the next traveler mentioned. He died in 912 A.D. and so his picture of Sindh is that of the end of 9th century. He mentions 26 "Countries of Sindh", Makran, Kandahar, Sadusan, Debal, Alor, Multan, etc., and fixes some of the important places in the days' journeys e.g. "From the Mihran to Bakar, which is the first place on the borders of Hind, or four days' journey. From Bakar to the junction of the river Mihran with seas is two *parsangs*." Two natural positions in Sindh are pointed out *viz.* Highland or Kohran and the country is all grass lands: The country abounds with caves and the hill tracks put in the plains where wheat is cultivated. "Of commerce Arab travelers forget to speak: Wheat and cans are already mentioned. The people are considered to be "wanderers or robbers."

"One of the most admired writers in the Arabic language", gives the fruits of his travels in Sindh and other countries in his time *viz.* about 940 A.D. He definitely says that the King of Kandahar "is one of the kings of Sindh and its mountains", and so was the king of Kanouj, one of the kings of Sindh. Kashmir formed a part of Sindh. The Multan temple was yet the most important at the time, as the inhabitants of Sindh and India "perform pilgrimage to Multan."

The topographical description of parts of the country was exact; "When all the rivers, which we have enumerated, have passed the 'boundary of the house of gold,' which is the meaning of the name of Multan, they unite at about three days journey below the city and above Mansura at a place called Dushab (Duab) into one stream, which proceeds to the town of Al Rur (Alor), which lies on its western bank and belong to one of the districts of Mansura, where it receives the name of Mihran. There it divides into two branches, both of which fall at the town of Shakira, which belongs to one of the

²⁰³ Elliot, Sir H. - *op. Cit.* P.3.

²⁰⁴ *Ibid.* P. 11.

districts of Mansura into the Indian sea, under the name of Mihran of Sindh, about two days' journey from the, town of Debal."²⁰⁵ The description is valuable, as it indicates the position of Debal, the chief fort of Sindh in those days. It must be noted here that the ruins of Aror at present lie on the eastern bank of the Indus and the delta of the river has now extended about 50 miles into the sea. Between the statements of these Arab writers themselves there are some inaccuracies i.e. Ibn Khurdadba says Debal was only two parsangs from the mouth of the Mihran, while this writer Masudi asserts that "it was two days' journey from Debal". Crocodiles are particularly mentioned by this geographer as living in sweet water and in the estuaries of India. "In the bays of this sea (Indian Ocean), there are many crocodiles."²⁰⁶ The language of Sindh is noted as different

from that of India. Islam, though not the only religion prevalent in Sindh and India, is honoured and protected and "of all the kings of Sindh and India, there is no one who pays greater respect to the Mussalmah than the Balhara."²⁰⁷

Al Istakhri, who also flourished in the middle of the tenth century (951 A.D.) and who met Ibn Haukal in the valley of the Indus and exchanged observational notes with him, has described some 12 cities of Sindh and a number of others of Hind with the distances in days' journeys. He has also drawn a map from the *Ashkalu-l-Bilad*, showing the course of the Mihran and the places on its banks and along the main caravan routes. Debal is still the most important port, on the *western side* of the chief mouth of the river. Mansuria is shown within the loop of the river on its left bank and surrounded by a branch of it. "The inhabitants are Mussalmans. The date tree and the sugar cane grow here. The land of Mansura also produces the fruit of the size of the apple, which is called Zaiman, and is exceedingly sour. The land also produces a fruit called Ambaj (mango), which is like the peach."

Makran is for the most part a desert with very few rivers, while Kandabil is a great city in another part of the desert within the confines of Budha. "The palm tree does not grow there. The cultivated fields are mostly irrigated. Vines grow there and cattle are pastured. The vicinity is fruitful."²⁰⁸ "This author is also eloquent in his account of the river Mihran. "It is said that it springs from the summit of a mountain from which many affluents of the Jihun rise It rises as the Nile rises, and inundates the land, which on the subsidence of the water is sown in the manner we have described in the land of Egypt."

Ibn Haukal, who made a fortune by travelling and trading in foreign countries from 943 A.D. to 968 A.D., published his "*Book of Roads and Kingdoms*" in 976 A.D.; which also contained a map of the World, similar to that drawn by Istakhri. His work is the same

²⁰⁵ *Ibid.* pp. 23-24.

²⁰⁶ *Ibid.* p. 21.

²⁰⁷ *Ibid.* p. 24.

²⁰⁸ *Ibid.* p. 27.

as given in Ashkalu-l-Bilad, "Diagrams of the countries of Islam." He says "I have placed the country of Sindh and its dependencies in one map, which exhibits the entire country of Sindh, part of Hind, and Turan and Budha. On the entire east of this tract there lies the sea of Fars and on the west, Kirman and the desert of Sijistan and the countries subject to it. To the north are the countries of Hind, and to the south is the desert lying between Makran and Kufs, beyond which is the sea of Fars."²⁰⁹ He, too, mentions some eleven chief towns of Sindh putting Mansura at the top of the list. It is "about a mile long and a mile broad and is surrounded by a branch of the Mehran. It is like an island and the inhabitants are Musalmans. The king of the country is one of the tribes of Kuraish and is said to be a descendant of Hubad, the son of Aswad. He and his ancestors ruled over this country, but the Khutba is read in the name of the Khalifa. The climate is hot and the date tree grows here; but there is neither grape nor apple nor ripe date (*tamr*) nor walnut in it. The sugarcane grows here."

Debal is still a flourishing town. It is a large mart and the port not only of this but neighbouring regions. "Debal is remarkable for the richness of its grain cultivation, but it is not overabundant in large trees or the date tree. It is famous for the manufacture of swords. The inhabitants generally maintain themselves by their commerce."²¹⁰ The language spoken by the people in Mansura, Multan, etc. is Arabic and Sindhian.

Sir William Ousley, who translated in 1800 the oriental Geography of Ibn Haukal from his own copy of the Mss, has thrown some more light on the Sindh of the 10th century A.D. and its towns etc. "The people of Mansura have their dress and habits, resembling those of the people of Iraq; but their kings affect the appearance of Indian kings, and wear pendants in their ears. "Scind is surrounded by infidel tribes of whom the Burhooe is most celebrated. This tribe is distributed over the country between Zoran, Mukran, Multan and Mansoorah: the men are great breeders of camels and export animals much sought after in Khorasan, Persia, etc. The central town of theirs is Gundava."

Again, "About Saimur it is said that it is a city of Hind near the Confines of Sindh. The people are very handsome from being of Turk and Indian people. There are Musalmans, Christians, Jews and Fire-worshippers there. The merchandise of the Turks is conveyed hither and the aloes, called Saimur, are named from this place. In the city, there are mosques, churches, synagogues, and fire temples. The infidels do not slaughter animals nor do they eat flesh, fish or eggs."

The above description clearly shows how Sindh must have looked even these earlier centuries, quite cosmopolitan with so many people, living peacefully together in the province.

²⁰⁹ *Ibid.* p. 33.

²¹⁰ *Ibid.* p. 37.

Makran, which formed the boundary land of pure Islam, was quite different. "Water is very scarce throughout. Many of the inhabitants resemble the Arabs. They eat fowl and fish; others of them are like the curds. Here is the extreme boundary of the land of Islam in their direction."

Al Biruni (970 A.D. to 1039 A.D.), throws more light on the changing geography of Sindh. He seems to have specialised himself in the study of hills and rivers. Regarding the Indus he writes: "They all (rivers of Punjab) combine with the Satlader (Sutlej) below Multan at a place called Panjnad, or the junction of the five rivers. They form a very wide stream, which at the time it attains its extreme breadth, extends ten *parasangs*, submerging trees of the forest, and leaving its spoils upon the trees like nests of tods. This stream after passing Audar (Alor) in the middle of Sindh bears the name of Mihran and flows with a slower current, and widens, forming several islands, till it reaches Mansura, which city is situated in the middle of the waters of the river. At this place the river divides into the two streams, one empties itself into the sea in the neighbourhood of the city of Luharani (Lari Bunder) and the other branches off to the east to the borders of Kach and is known by the name of Sindh Sagar i.e., Sea of Sindh."²¹¹

It appears that Debalwas, by this time, thrown inland and Lari Bunder came into existence. The Indus itself had developed other "small and big mouths." How many of these mouths were then extant is not said, though the earliest map of Ptolemy (150 A.D.) shows eight.

Al Idrisi, who wrote his book on "The delight of those who seek to wander through the regions of the world," about the end of the 11th century, has also drawn a map, of which two versions are reproduced. In the one taken from the Ms. lying in the Bodleian library, three main river systems are shown without any details, e.g., *al Scindi* (The Indus), *al Hind* (it is not clear which river is meant), and *al Seen* (perhaps the river in China). In the other map, there is a tendency to show the physiographic regions of Sindh, for which Idrisi deserves great credit as a pioneer. The course of the Indus is more natural than in other Arab maps. Besides Debal, another port is shown as Munnabari, on the opposite side of the Indus. "There are six miles between the mouth of the great Mihran and Debal. From Debal to Nirun, on the west of the Mihran, three days' journey. Nirun is half way between Debal and Mansura, and people going from one town to other, here cross the river." Alor is still meant to be on the west bank of the Mihran. Some of the highlands and the source of the Indus are probably shown and, on the whole, it is good cartographical work. But the compass bearing is reversed and places on the eastern side of the river are deliberately shown on the west.

According to Al Idrisi there seems to be a further hydrographic change, which is noticeable in his description of Mansura, He says, "It is on the west of the principal

²¹¹ *Ibid.* pp. 48-49.

branch of the river, which flows from its source to Kalari, a town situated one day's journey from Mansura. At Kalari, it divides – the principal branch runs towards Mansura, the other flows, northward as far as Sharusan (Sadusan), it then turns westwards, and rejoins the chief stream, forming henceforward only one river. The junction takes place twelve miles from Mansura. The Mihran passes on to Niron, and then flows into the sea."²¹²

As regards Sadusan (Sharusan), he suggests that it came into prominence in his time. It is "remarkable for its size and for the number of its fountains and canals, for the abundance of its productions and for its rich commerce. It is much resorted to. From Sharusan to Manhabari (Manjabari), a town placed in a hollow well built of a pleasant aspect, surrounded with gardens, fountains and running waters; the distance is three days. From Manhabari to Debal two days."²¹³

Against this prosperity of a portion of Sindh there are patches of barren land inhabited still by turbulent tribes. "Going from Multan towards the North, there is a desert which extends as far as the eastern boundary of Tubaran. From Multan to the vicinity of Mansura, the country is occupied by a warlike race, called Nadha. It consists of a number of tribes scattered about between Tabran, Makran, Multan and Mansura like the Berber nomads. The Nadhas have peculiar dwellings and marshes, in which they take refuge *on the west* of the Mihran. They possess excellent camels, particularly a sort of which they breed, called Karah."²¹⁴

Al Kazwini, who flourished about the middle of the 13th century, is the last Arab author mentioned by Elliot, and called "Pliny of the East." He does not say much about Sindh but his writings indicate that many peoples of different denominations still lived in it and in the neighbourhood. Describing Saimur, a city of Hind near the confines of Sindh (near to Debal), he says, like Ibn Haukal, "The people are very beautiful and handsome, from being born of Turk and Indian parts. There are Musalmans, Jews, Christians and Fire-worshippers there."²¹⁵ The inhabitants of Multan were Musalmans and infidels. "The ruler of Myltan does not abolish this idol, because he takes the large offerings which are brought to it and disburses certain sums to the attendants for their maintenance."²¹⁶ The Musalmans were evidently the ruling race.

R. D. Oldham – On the defects of Arab Geography:²¹⁷

That there were inherent defects in Arab geography is also shown by Oldham.

²¹² *Ibid.* p. 78.

²¹³ *Ibid.* p. 79.

²¹⁴ *Ibid.* p. 83.

²¹⁵ *Ibid.* p. 97.

²¹⁶ *Ibid.* p. 96.

²¹⁷ Jour. Asia Soc. Beng. Vol. LV 1886 pp. 328-329. Elliot & Dawson H. *Op, cit* pp. 78-79.

"The Arab geographer Al Idrisi places the head of the delta or the place where the first distributary is given off, at Kallari 'a hard day's journey of forty miles from Mansura.' The exact words of the translation are: 'At Kallari it divides – the principal branch runs towards Mansura, the other flows northwards (southwards) as far as Sharusan, it then turns westwards (eastwards) and rejoins the chief stream, forming henceforth only one river. The Mihran passes on to Narun and then flows into the sea.'

"Further on he says, Kallari on the west (east) bank of the Mihran is a town well-fortified and is a busy trading place. Near it the Mihran separates into two branches, the largest runs towards the west (east) as far as the vicinity of Mansuria, which is on the west (east?) bank; the other runs towards the north-west (south-east) then to the north (south) and then towards the west (east). Both unite at the distance about twelve miles below Mansuria."

"It will be noticed that the bearings in these two accounts do not agree; probably in the second case we should be satisfied with turning them three quarters of a semi-circle, but even then they would not fit in, and in consequence the first set, which are most consistent must be regarded as more nearly correct; any way it is clear that the river bifurcated at the place called Kallari, forty miles or a hard day's journey from Mansura and that the two united below Mansura."

"At the conclusion of the second account he says that from Kallari to Sharusan is three days. I refer to this now as the statement is puzzling, but is due to the confusion of the two places of very similar names."

Kallari and Ballari. – On Ibn Haukal's map, the town at the bifurcation of the river is called Ballari, while Kallari is further north at some distance from the river. In it he says that Ibn and Labri - which Prof. Dawson identifies with Amari and Kallari – are situated east of the Indus but distant from it. Al Idrisi's two accounts are evidently from different sources and it is probable that either he or his informant must have confused the Ballari or Kallari at the bifurcation of the Indus with the other town of similar name situated to the east, which might well be three days distant from Sehvan.

"The first account too is somewhat difficult to understand, for it is impossible how from any point one day's journey – even if it be one of four miles – from Mansura, a branch of the Indus could flow south to Sehvan. It is of course a physical impossibility that the Indus should have flowed any distance northwards, and the general reversal of Al Idrisi's bearings has already been referred to. No other authority makes this statement, and the map of Ibn Haukal places Sadusan on the west bank of the Indus above Bellari, where the river bifurcates. This is altogether a more probable disposition."

Changing Sindh as seen by Ibn Batuta.

Samuel Lee's translation of "the Travels of Ibn Batuta" (1324-25) gives a glimpse of Sindh of the time of Mahomad Shah, the ruler of Sindhia²¹⁸ and India. One of the Mamluks of the Sultan Mohommad, Sir Tiz Shah, was the Emir of Sindia then. This shows that the Arab control in Sindh had, by that time, completely passed away. Delhi and not Baghdad, was the centre of political power over the province. Batuta found Sivastan quite a large and flourishing part of Sindh as before. "Without it is a desert in which there is no tree except Egyptian thorn." Melon, millet, peas, fish and milk of buffaloes were found in great abundance. The climate was exceedingly hot and it took people ten days to go from there to Multan. In Batuta's opinion, "the Sindh was the greatest river in the world and overflowed during the hot weather just as the Nile does and at this time they sow the lands." Irrigation was in vogue and trade was in a flourishing condition. The new port of Larry Bunder, called by the traveller Lahari, was greatly developed. He writes, "It has a large harbour, into which ships from Persia, Yeman and other places put in. At a distance of a few miles from this city are the ruins of another (perhaps Debal?) in which stones, the shapes of men and beasts almost innumerable, are to be found. The people of this place think that there was a city formerly in this place the greater part of the inhabitants were so base, that God transformed them, their beasts, their herbs, even to the very seeds, into stones; and indeed stones in the shape of seeds are here almost innumerable."

We may here throw a hint that these so-called seeds converted into stones must be the numerous Gaj and Kirthar fossils, which are found in abundance in the Tertiary limestone rocks of this locality.

Alor, the principal Hindu city, is also thrown in the background, the Indus must have entirely changed its course and cut through the Bukkar gorge, for, Bukkar was found by the traveller to be a "a handsome city divided by an arm of the Sindhe," and was a city of saints.

In a place called, by Ibn Batuta, by the name of Janai, there lived a people called El Samira, most probably the Sumras, who were ruling over at least a good part of the Sindh desert soon after the Arab hold on the province was slackened. "They never eat with strangers nor are seen eating by them; nor do they contract affinities or suffer any one to contract affinities with them."

Already some of the converted native princes, Rajputs and others, had assumed Arab names and regained their power and position, though the spiritual supremacy continued to be alien *e.g.* Bahmanabad. Occasional presents to the Khalif included, "An elephant, a cast of hawks, a suit of silk hangings or some pounds of musk and amber, a

²¹⁸ Lee, the Rev. Samuel — "*Travels of Ibn Batuta*," translated from the Arabic. London 1829. pp. 100 — 102.

cart load of four armed idols," etc., but no real revenue was paid. Sindh had been definitely broken up into two kingdoms at least, with their headquarters at Mansura (Lower Indus) and Multan (Upper Indus), which when the Ghazni rulers of Delhi became powerful, also lost their independence again.

A good deal of Arab geography yet remains to be translated from Arabic and Persian sources. Further light may thereby be thrown on Medieval Sindh, the changing nature of which was so clearly grasped by them.

HISTORIC PERIOD IV

Makers of Sindh's History and Patterns of State

That Sindh is not a uniform country with the same political conditions conforming with the physical and climatic conditions throughout, can also be shown by the history of subsequent dynasties. Whenever a conqueror took possession of the fertile valley of the Indus proper, heroic tribes found shelter in other areas, which were less likely to be attracted and in which they could still live their independent life, without interference. When Lower Sindh was put in order, Upper Sindh went out of gear. The deserts specially offered temporary asylums not only to fugitive kings but warlike tribes, which preferred to live independently in uninviting territories. One such tribe, whose origin is one of the most knotty points of Sindh history, after the downfall of the Hindu kingdom of Alor in the beginning of the eighth century A. D., is said to have assembled in the vicinity of Thari, the "Little Desert", separating Sindh from Kachh but who extended their power later as far as Nasamur. It may be recalled that Alor had been abandoned and Mansura (Bahmanabad) depopulated since then, and the new capital town had been established in the eastern delta country.

As we had to depend upon the Arab geographers for the information about Sindh in earlier centuries as described in the previous pages, we have here to depend upon various scattered sources of Sindh History chiefly from Arab and Persian historians. I shall, for my purpose, select from the material put together by Mirza Kalich Beg in his "*History of Sindh*" Vol. II, aided by Elliot as far as possible. From all the mass of vernacular literature, we shall choose those events, which will be helpful in our coordination of history and geography.

1. The Sumra Dynasty (750 A.D. to 1850 A.D.).

Conversion to Islam and absolute subjugation of the natives and their trade, were the main purposes of the Arab invasion of Sindh. Their religious zeal and control of the Indus Valley helped them to establish their kingdom at first. A vital portion of the native population came originally from the adjacent hill tracts of Rajputana, which has been known in history as a stronghold of Hinduism. But the Rajput tribes in Sindh, called the Sumras, were the first to yield to the Arabs. Depending upon Arabic, Persian and other sources of information, Elliot concludes that "In calling the Sumras Rajputs, Elphinstone is without doubt correct, for notwithstanding the assertions of the local writers, the real fact must be admitted that the Sumras are not of Arab descent at all, and that this fictitious geneology was assumed by them, when the majority of the tribe were converted to Islam, and that, as the name of Sumarra offered a sufficiently

specious semblance, that town was adopted as the probable seat of their origin, though it was not built till after the supposed period of their emigration."²¹⁹

Even before the Arab conquest of Sindh, the Sumras were a dominating race, although today "many of the tribe still continue to be Hindus, roaming as shepherds through the *thals* of Jaisalmir and Upper Dhat country to the east of Sindh, we know from personal communication."²²⁰

Such a race, though converted to Islam for the time being, would always seek an opportunity to regain their political position in the country. The sudden recall of Muhammad Kasim in 714 A. D. had altered the situation and shattered Arabia's hope of an eastern empire. Even the long rule of his successor Temim for 36 years, did not improve matters and the Arab rulers are said to have been expelled from Sindh by 750 A. D. But though the rulers were squeezed out of Sindh, Arab settlers, landowners and governors remained in Sindh.

Mahmud of Ghazni invaded Hindustan in 1019 A.D. and after conquering Multan and Uchh appointed Abdul Razai to take Sindh (in 1026 A.D.,) which was at that time nominally ruled by the Arab governor under the Khalif Kadir Billah Abdul Abbas Ahmad. The Ghazni dynasty soon came into power at Delhi. From there came a menace both on Multan and Tatta on the Indus river, as has always been the case. At Tatta the Sumras established themselves as independent rulers of Lower Sindh at least. After the death of Ghyasuddin and his son Muhammad Shah, Feroz Taghlak actually came down to Sindh and punished the rebels of his empire, who had taken refuge at Tatta. He also built a fort on the bank of the lake Sangrah (now lost), and appointed a viceroy at Bukkur in 1351 A.D.

According to *Ayin-i-Akbari* (Vol. II, page 120) and also *Firishta* (Vol. IV, page 411), there flourished 36 Sumras or Zamindar princes, came into prominence, was Mahomad Tur in the Pargana of Dirak, and according to Elliot, represented by the modern divisions of Chachagam and Badhan on the borders of the Thari or sandy desert between Paikar and Wanga Bazar.

They had intercourse with other tribes living on the sandhills. It was a period of great struggle for them, as they had to re-establish their political power in their own country against the foreign invaders. The Ghori, Khilji and Tughlakh kings of Delhi exploited Sindh now and then, but they generally retired after ravaging the crops and plundering the towns. When Alauddin Khilji invaded Sindh, the Sumras sent away their families to Kachh, where they themselves sought refuge later but were soon destroyed by the Sammah chiefs who had taken possession of that land. Jam Rainah and Jam Nizamudin

²¹⁹ Elliot & Dawson — *Op, cit*, pp. 488-489.

²²⁰ *Ibid* p. 489.

(Nindo) were powerful Sumrah rulers, who extended their authority over the whole of Sindh gradually. But attacks were continuous. At one time even the Moghuls came under Shah Beg from Kandahar, but Jam Nizammuddin drove them out of Chandukah. But, on the whole, the government of the province was not centralised and while, for example, one man went to Bakkar, in the north to settle affairs, another would usurp the throne in Lower Sindh. During the reign of Jam Sikanda, the governors of Sehvan and Bakkar became actually independent.

Such was the state of affairs for well-nigh five centuries. It agrees with the natural conditions, which existed in Sindh. Even nature was against the Sumra rulers. The story of Dalu Rai's foul deed against the daughter of Saiful Muluk is well known. The tradition is that a sudden earthquake diverted the whole course of the Indus from Alor and Bahmanabad, which were thus destroyed. The capital town of Muhamed Tur, established on the Ren (Gungro), seems also to have been destroyed by a change in the river course. The Hakra or Waindah dried up and there was migration of population westwards towards the Makali hills, situated on a higher level. Nearby, the Sumrahs built another capital town of Samui, which was afterwards known as Tatta or Kalankot, so that Lower Sindh became well populated.

Although we have devoted this space to an account of the Sumra dynasty, it is doubtful if such a kingdom was either extensive or absolute in Sindh. It is certain that there was no other powerful and rival dynasty in Sindh established like this after the Arab period. Though this dynasty came to an end in the middle of the 14th century after such a long rule, Sumra influence remained in Sindh, There are thousands of Sumra inhabitants living in various parts of Sindh even today.²²¹

2. The Sammas. (1851 A.D. – 1521 A.D.)

The situation, before the Sammas came into power, was typical of the province. Upper Sindh was controlled by representatives of Turkish rulers of Delhi, *viz.*, Malik Feroz and Ali Shah Turk. Lower Sindh, especially, from Sehvan to Kuchh, was recovered by the native chiefs.

First Conflict between converted Sindhis.

When Feroz Tughlakh invaded Sindh a second time, he found another Rajput (Kuchhi from Kuchh) tribe very powerful. Perhaps it was this very tribe that had come into conflict even with Alexander, who called them Samburgs. Their capital was then located at Sindhonalia, Sindhimona or Sindhomana (Sehvan) and they had governors at other chief cities *e.g.* Bukkur. Elliot gives his opinion about the race as under: –

²²¹ Census Reports of 1921, 1931.

"They were then (at the time of Arab conquest) either Buddhists or Hindus and were received into favour in consideration of their prompt and early submission. They form a branch of the great stock of the Yadavas and their pedigree is derived from Samba, the son of Krishan, who is himself known by the epithet of "Yama," indicative of his dark complexion. Sammanagar, on the Indus, was their original capital, which has been supposed by some to be the Manager of the Greek geographers and is probably represented by modern Sehvan. The more modern capital of the Sammas during a part of the period under review and before its transfer to Thatta, was Samui. Since the Sammas became proselytes to Islam, which probably occurred not earlier than 1391 A.D., their name, though it still comprised several large erratic and pastoral communities, is less known than that of their brethren, or descendants the Samejas and the demi-Hindu Jharejas of Kachh, who do honour to their extraction by their martial qualities, however notoriously they may be deficient in other virtues.²²²

Population of Lower Sindh.

The population of this part of Sindh must have been good, as during Firoz Shah's campaign in Sindh's numerous villages were met with. According to Haig, the new capital Samui was on the Kalri branch of the Indus, the then perennial stream on which Tatta was established later on, after Debal sank into insignificance.²²³

After beating the Sumras out, the Sammas returned to Sindh from Kachh as original inhabitants, and soon came into power. From 1351 onwards, one Jam alter another ruled over Lower Sindh, while Upper Sindh passed through the same kind of tribulations as in the days of the Sumras – *viz.*, attacks from the imperial rulers of Delhi. There were occasional revolts also within the territories of the Jams.

Jam Unar, son of Baniah, had to prepare the way for himself at the outset. He proceeded northwards and took Sehvan. Then he attacked the Tartar forces at Bakkar and drove them out to Uchh. But an invasion from Alauddin was imminent. He responded by taking Bakkar and attacking Sehvan, and carried away Jam Tamachi even to Delhi. The Sammas gathered forces round Thari again and enthroned Jam Khairuddin. At Delhi again the Soghas came into power, and as soon as Mahomed Shah Taghlak completed his conquest of Gujrat, he hurried to Sindh in 1351 actually arriving at Tatta, but died there. Another Taghluk attack on Sindh came from Sultan Feroz Shah in the time of Jam Babniah in 1372. It is said that being troubled by mosquitoes, floods and strong winds, he returned to Gujrat and other open plains to spend the rainy season there. Returning again in the fair season, he conquered the whole of Sindh and took Jam Babniah as a prisoner to Delhi. The Jams, who succeeded, saw evil days of revolts and civil wars.

²²² Elliot & Dawson.— Op. cit. p. 496-497.

²²³ Haig Major Genl. M. R. — *The Indus Delta Country*, London, 1894, p. 77.

Upper Indus Valley affects the Delta Country

In 1398 A.D., Tamerlane the Tartar marched on to Multan and thence to Delhi which he conquered. This change of imperial power gave the Sammas a fresh opportunity to acquire independence and their power was extended from the sea to Mathelo and Ubauro. At Bukkur and Sehvan they appointed their own governors and they themselves founded Tatta under Jam Nizam-u-din (Nindo), whose reign saw the golden age of Hindu Sindh. Sindh found a hero in the person of Darya Khan who, acting for Jam Feroz a minor son of Nindo, defeated the rival claimant Salabuddin at Kahan and restored peace for a time. When Jam Feroz actually began to rule over his territories, he became doubtful about Darya Khan who had grown very powerful. He foolishly invited from Kandahar some Moghal subjects of Shahbeg Arghun, grandson of Changiz Khan, to settle at the newly established capital town of Tatta. This gave a chance to the ruler of Kandahar to turn his attention to the Indus delta. The Sindhis themselves were tired of the maladministration of the province by the Jam. Events at Kandahar in 1519 A.D. stimulated Shahbeg's efforts to serve himself. When the great Moghul Babar took his own throne at Kandahar, he sought fresh fields and took a straight course through the Laki Pass for the town of Tatta. A battle was fought at a place midway between the Gharo River (since dried up) and Tatta. Daryakhan, the Samma general, was himself killed. Soon the Arghun leader passed on to Sehvan and Bakkar, the other chief towns in Sindh. At Bakkar he repaired the fortification with materials from the ruins of Alor. He also subjugated the Baluchis and destroyed many of their villages on the frontier. The final meeting of the Sammas and the Arghuns took place at Chachvan in the eastern delta region. Victory for the Arghuns was predicted. Writes Mir Masum: – "At Karo Kabaro (Tando Bago Pargana), a battle shall be fought lasting six watches (18 hours). The Mirmichi shall be beaten. Sindh shall enjoy peace." And so was a new dynasty founded.

3. The Arghuns (1521 A.D.) – 1664 A.D.)

The Arghuns came into power in 1521, Though powerful and victorious so far, Shah Beg committed political blunders. He allowed the fallen Jam Feroz to live at Tatta as a feudatory; and having quarrelled with his own son at Kandahar, he had lost his sympathy. He appointed Muhammad Tarkhan, the forerunner of the next Tarkhan dynasty, the governor of Bakhar. Fearing that he would soon lose Sindh, he himself attempted to conquer some other region Gujrat. He actually proceeded towards it, "having cleared both the banks of the river of hostile tribes living there."²²⁴ At Chandiko, he found his brave general Mir Fazil ill. The sudden death of Shah Beg's right hand made him sad, and although he tried to proceed to Gujrat via Sehvan Tatta and Agham Kot (ancient capital of Afghan Luhara.), he died on the way.

²²⁴ Mirza Kalichbeg Fredunbeg — "*History of Sindh*" Vol. II 1902, p 70. & Dawson.

As soon as Shah Beg got a footing in Sindh, attacks came to him from the Iran plateau and turbulent tribes descended through the Bolan Pass down to the rich tracts of Chanduka and Siwi. Mir Ma'sum gives a good description of Siwistan of that period: "The fort of Siwi, which is situated on a small hill, is built of round stones, of a kind which is found wherever the earth is dug in that neighbourhood.

"In Korzamin and Chhatur, which are districts of Siwi, cotton plants grow as large as trees, insomuch that men pick the cotton mounted. In the plain of Siwi there were formerly many forts and much cultivation but all is now waste. Between Siwi, Dehra and Kasmur, there is a tract of land called Bargan, which breeds horses not inferior to those of Irak."²²⁵

Iran Plateau and Sindh.

Mirza Shah Husain, who was the only other powerful ruler of this dynasty, knew very well how to make himself safe in Sindh. His wise policy was to recognise Baber as the sovereign over himself. He took up his position at Nasarpur, put to rout his rival Jam Firoz from Tatta and then marched to Sehvan, the second important place, on his way to Bakkar to settle the affairs in Upper Sindh. He tried to control the Baluchis, Dahars and Machhis of Mathelo and Ubauro. Hearing that a large treasure was buried in the fort of Dilawar (Dera Gazi Khan), he marched towards it and found himself in a great difficulty of finding water. He got 100 wells sunk in the course of only 3 days.²²⁶ Marching still further up the valley, he took Multan and made it a present to Baber, who was pleased to appoint his son Haman as its governor, while Mirza himself remained contented with the lower Indus valley. The Gharo was fixed as the natural boundary between Bakkar and Multan territories.²²⁷

Kachh and Sindh Relations.

No sooner were the affairs in Upper Sindh and Multan settled than troubles came from Kachh. A letter from Rai Khamgan, who was about to march against Tatta, stated: "You killed my brother Amir Amrani and to revenge his death, I have collected an army. You had gone to Multan and in your absence I would have easily taken Tatta, but I did not do so to oblige you. Now either make peace with me giving me part of Sindh or prepare yourself for fight."²²⁸ Shah Husain, however, came out victorious, for instead of the Kachh army attacking Sindh, he himself marched into the capital town in Kachh and plundered the whole country. He brought a large booty of horses, camels, cows, etc. to Tatta.

²²⁵ Elliot — *Op cit* pp. 237-238.

²²⁶ Mirza Kalichbeg Fredunbeg — *Op cit* p. 78

²²⁷ *Ibid* p. 77.

²²⁸ *Ibid* p. 79.

Baber died in 1530 and Humayan, who had already conquered Bengal and also parts of Gujrat, in order to continue the cordial relationship with Sindh, invited Shah Hasan to Patan in Gujrat. He had laid siege to Jitor (Jetpur?) and excited Sultan Mahmud Bahadur, the ruler of Gujrat. While things were thus coming to a head in Gujrat, news came from Bakkar and Tatta about a revolt from that turbulent tribe of Jators and Mirza had to return to Tatta. Affairs at Delhi also took a turn and Humayun was actually dethroned by Sher Khan (1540). Humayun was obliged to escape to Sindh and sought Mirza Shah Hasan's help. But instead of continuing his father's tradition, he avoided Humayun, who actually tried to make inroads into Sehvan and Bakkar. The fallen emperor was virtually supreme in North Sindh with Mirza Shah, as his vassal. But the Sindhi prince would not be friendly. Besides the military tactics used by Mirza, there were those of laying waste the country round about, which due to scanty cultivation and sparse population actually reduced the enemy troops to starvation. An invitation to Hurnayan then came from Raja Maldeo of Jodhpur, but thinking it to be a plot, he went to Jesalmir instead and thence to Umerkot, where his son Akbar the Great was born in 1542. About this time the battle of Jun was fought unsuccessfully by him. This was in the central part of the delta country about 75 miles south-east of Umarkot and 50 miles north-east of Thatta – a fertile and populous district, according to Haigt. After some further wanderings in Sindh, during which many of his people died of thirst, Humayun went to Kandahar. Subsequent events show how he succeeded in regaining the throne of Delhi with the help from Kandahar. Had the Sindhi ruler been as wise as his father and befriended Humayan, he would not have himself come to grief in later years and lost his family throne of Tatta. For, in this capital town of Lower Sindh, the Arghuns as well as Tarkhans under Mirza Isa revolted and by the time Shah Hasan died in 1554, Sindh was broken into parts again. It remained for Mirza Isa Tarkhan to reunite the various principalities, created in the province.

The history of this period shows that, however capable a leader might be and however strongly he tried to establish his authority over the province of Sindh, it was physically impossible to keep it united for long. Not even the most powerful sovereign rulers of Delhi could control it even after conquering it later on. As soon as a chief left, his troubles arose; while peace could be established with some difficulty at the capital, in the deltaic region, some one else pounced upon the northern parts of the valley and the vanquished heads of government had to seek shelter in parts of the desert here and there.

4. The Tarkhan Dynasty. (1655 A.D. – 1608 A.D.)

The mistake, committed by the last king of the Samma dynasty, of inviting a foreigner to hold power in Sindh, was also committed by the Arghuns, who came to grief within half a century of their rule. Mirza Shah Hussan had no son to succeed him and so his lieutenant Sultan Mahomed tried to assume authority over North Sindh (Bakkar and

Sehvan), while Mirza Isa Tarkhan took possession of the throne of Tatta in Lower Sindh.

The Arghuns and the Tarkhans – the two most important rival tribes, – now had a united voice in Sindh and much could be expected by way of peace and prosperity in the province.

Mirza Isa also had the advantage of the good relations with his homeland – the land of the Timurs, and, for a while, the history of Sindh is made to merge in the general history of the Timurian Empire.

A further attempt at the unification of Sindh was made by Mirza Isa. He was actually attacking Bukkur with this object, when a trouble of an altogether novel character for Sindh arose, this time from the direction of the Arabian sea. It was after several centuries that another sea-faring race was tempted to make a naval attack on the Sindh coast. At the same time the assailants did not belong to any neighbouring Asiatic country.

Early European aspirations in Sindh.

It appears that Mirza Isa Tarkhan did actually invite the Portuguese Governor of Bassein near Bombay and the west coast, to help him against his northern opponent, Sultan Mahmud of Bukkur. This European aspirant did not want to lose the opportunity to get an insight into other Indian coast lands, and so he sent a fleet of 28 ships and 700 men under Pedro Baretto Rolim, who arrived at Tatta, evidently an important port of Sindh at the time. Finding, however, that Mirza had already made peace with his enemy and that Sindhi prince would not defray the cost of this expedition, Pedro sacked Tatta in a rage and looted the town in 1555 A. D. "According to the *Tuhfatulkiram*, they landed at the port of Lahri on the river, and while the men were offering prayers in mosques on Friday, they entered and massacred the assembled men, plundered the bazars and went away shortly before Mirza Isa's arrival. They scattered gunpowder in different parts of the town and on the bank of the river and set fire to it, so that for some time the river appeared to be in flames. Mirza Isa had to repair the town and the fort anew.

"He now put a big wall along the river and cut a winding and secret canal from the river to reach the town. About this time he is also said to have built a new port and called it Shahbunder."²²⁹

Thus the first contact with a European power was certainly not pleasant. It did not augur well for the natives as well as the foreigners.

²²⁹ Mirza Kalichbeg — *Op. cit*, p. 95.

Further extension of the delta and the sea coast from Tatta to Lahri and Shahbunder added difficulties of administration, while in the extreme northern boundary Bakkar was again rising rapidly under Sultan Mahomed Khan. The struggle between him and the Tarkhan ruler, therefore, continued. Added to this was the family quarrel of his own sons, one of whom had to flee to Wango, a village of Sodhas and thence to Umerkot. The Arghuns made common cause with Sultan Mahmud Khan who marched against Sehvan and a battle was fought at Darbelah, where a peace treaty was made. But they suffered much at the hands of the next Tarkhan ruler, Mirza Muhammed Baki. His was a reign of terror and cruelty in Sindh and the people were greatly troubled, though he tried to win them over later on.

Delhi as the new Centre of Gravity.

Events at Delhi, especially the ascension of Akbar the Great on the throne of Delhi in 1556, meant much for Sindh, which was worthy of conquest as the land of his birth, and which also was a base of his military operations for Kandahar. Though Baki tried to flatter the Emperor and sought relationships with him, Akbar's men were soon at Bakkar, which was besieged. The only way left for Baki was to distribute his powers among his men at the important political centres in Sindh. "He sent one of his sons Mirza Paindah with Jani Beg and Shams Kashmiri to Sehvan. Another of his sons, Shahrukh, he posted at Nasarpur with Sher Ali Kukah to take care of that part of the country. His third son Mirza Muzaffar Tarkhan with Ali Khan Kukah was put in charge of Chichikan and Badin districts; and lastly Neran Kot was entrusted to the care of Mirza Mohommed Tarkhan and Kasim Ali Sultan Sarban. He himself remained at Tatta with his councillors, getting weekly reports from the different divisions of his country."²³⁰ How can a province with as many as 6 divisions with double rulers in them preserve its solidarity? It only made Baki's successor, Mirza Jani Beg's work very difficult. But he was capable of handling the situation. "He defeated his uncle at Badin and made peace with him. He took measures for the improvement of affairs at Tatta. He distributed heaps of grain lying useless in the granaries and storehouses of his father, to the people who were in want of it. He extended his patronage to many of the deserving nobles, giving them rewards and honorary titles. He encouraged commerce and made some important changes in weights and measures and coinage of money."²³¹

While thus peace was procured at the capital at any price, Bakkar still remained out of Control and in, 1585, Janieg "had to fight with Muhammad Sadik Khan, a nobleman sent by Emperor Akbar to Sindh."²³² Akbar had already conquered a part of Hindustan and he naturally turned his attention to Bakkar. In 1572 he sent Kesu Khan as Governor;

²³⁰ *Ibid* p. 101.

²³¹ *Ibid* p. 105.

²³² *Ibid* p. 96.

in 1577 he appointed another, and the next year another and so on until in 1585 the Emperor gave the district of Bakkar as a *Jagir* to Nawab Muhammad Sadik Khan and sent him instructions to take Tatta."²³³ This Nawab, after settling the affairs of Bakkar, started for Sehvan. Before reaching there, he gave a sort of naval battle, in which the two armies, his and Jahi Beg's, fought in boats in the Indus river. The Sindhi ruler lost this battle. At Laki, fire was opened by his men from the boats and after a severe fight the Nawab was obliged to return to Bakkar.

In 1589 Akbar again tried to subjugate Sindh,²³⁴ as Mirza Jani Beg was behaving like his equal in such close vicinity to his new capital of Lahore. The campaign of the Imperial troops in Sindh in 1591-92 throws a flood of light on the hydrographical features of the region at that time. The course taken by the troops was Bakkar – Sehvan – Lahari – Nasarpur (then 75 miles S.E. of Sehvan on the left bank of the Indus) and Tatta. The attack was chiefly on Sehvan under Nawab Khan Khanan at first and then on Nasarpur. The Khan Khanan even reached Lahori Bandar and in the words of Haig, "gazed upon the sea." Orders were then given to the Khan to return to the capital with Jani Beg himself, who was confirmed as "Governor of Sehvan, Tatta and the sea port Lohri."²³⁵ In 1599 Mirza Jan, Beg died. Mirza Ghazi Beg, who was the last of the Tarkhans, had also to re-establish his position in Sindh, and before he could do so, he had to quell some rebellions as before. This time the trouble came from the desert area. Abdul Kassim Sultan, who had defeated the Sodhas and who took Umerkot, attacked Tatta and plundered some merchants. When he was reprimanded by Ghazi Beg, he wrote to him; "I shall be obliged to extend the boundary line of my division to the very bank of the Alijan." (This river flowed north of Tatta).²³⁶ Forthwith he revolted and stopped all the ways of communication with Tatta, either by land or by water. But Gazi Beg subdued the rival and began tonile in peace at Tatta. Next time Jam Halah of Kakralah revolted and he too had to be punished by the Mirza, as he encroached upon The western frontier of the Sindhi ruler. The war ended with a matrimonial alliance between the rival tribes. Akbar sent for Ghazi Beg to his capital at Agra, to which the latter had to go, after making some temporary appointments at Tatta. He was received well by the Emperor and declared as "the Governor of the Subah of Sindh." But when Akbar died, Jehangir sent for him again. While at Agra in 1606, Jehangir issued orders to Ghazi to proceed to Kandahar, while a new governor was being appointed at Tatta. Jehangir's intention was not to allow Mirza Ghazi Beg to be independent and so when he was actually murdered in 1612, he annexed Sindh to Delhi.

5. Sindh under the Great Moghuls

²³³ *Ibid* pp. 109-110.

²³⁴ *Ibid* pp. 110-111.

²³⁵ *Ibid* p. 114.

²³⁶ *Ibid* p. 116.

After the death of Akbar the Great, in 1605 A.D. the Imperial control of Sindh from Delhi continued with this difference that during the reign of his son Jehangir, instead of local native governors, Imperial Governors, called Subaddars (Sobdars) were appointed to govern the various divisions. No longer was Sindh regarded as a part of the Subah of Multan, though to Jani Beg, who subsequently entered the Imperial service, was granted what the native historian calls the "country of Tatta."²³⁷ Formerly only Upper Sindh was a Sarkar but now Lower Sindh went also under the Moghuls. According to *Tahfat-ul-Kiram* there were some 40 Subahdars, who governed Sindh for 128 years from 1612 to 1739 nominally as governors, but really as revenue collectors. They were also good builders. One governor, Khusro Khan, built some 360 public buildings, mosques, tombs, wells and bridges at Tatta.

Sindh Architecture

An alluvial valley, such as Sindh, could afford good clay for bricks of which even the most ancient buildings were made in the province. These were burnt bricks in the days when Sindh saw a wetter climate in past ages, but later on, buildings were made of sun-baked bricks also. Thus, brick-buildings were a characteristic of Sindh towns throughout the previous historic periods. With this, there was also a flourishing industry of Sindh pottery and tiles, the latter being quite peculiar to Sindh in style and technique owing to Iranian influence.

When Akbar included the lower Indus basin within his Indian empire, the building art of the Moghuls was brought here, and stone, chiefly limestone and sandstone from Kohistan in Lower Sindh, was quarried for building purposes. Here, again, owing to Arab and Iranian influences, a peculiar art was developed e.g. ornamentation in coloured tiles. This tradition for "brick and glaze" remained long in a plain valley, which sought some contrast in nature. The main colour scheme was white and light and dark blue and the design was geometrical. "Such a monochromatic prospect, which this vast plain presents, cries out for colour, so that it became the custom to decorate all buildings with brilliant schemes of glazed tiles. This method of ornamentation was probably first introduced by the Arabs and was revived later by intercourse with Persia at a time, when that country was enriching all its larger towns with brick buildings, covered with patterns in coloured faience. Sindh tiles are, however, not copies of the Persian model, nor are they similar even to those of the Punjab, a much nearer neighbour. They have a special character, which is easily recognised. Most of the patterns are geometrical and where foliage is interposed, it is of a strictly conventional order. In technique, the tiles are rarely a square or rectangular but cut in geometrical shapes corresponding to the details of the design."²³⁸

²³⁷ Hughes — Gazetteer of the Province of Sindh" p. 30.

²³⁸ *The Cambridge History of India*, vol IV. 1937. P. 569

Such stone buildings are found today at Hyderabad, Khudadad, Sukkur, etc. But at Tatta, certain tombs, built by Mirza Isa Tarkhan between 1624 and 1644 during his governorship there, marked, a distinct Moghul phase of sandstone buildings similar to those at Fatehpur Sikri. Thus Akbar's scheme of architecture found an echo in distant Sindh, though the individuality of local architects still persisted.

Later on, in the time of Shah Jehan for instance, the old customary architecture of brick and tile returned to Sindh.

The Daudpotras.

In 1625 Shah Jehan took refuge at Tatta against his own father Jehangir. But for over a century we hear little of Sindh, except as regards a tribe called Daudpotras, sons of Daud Khan who was descended from Mahammud Kambatha, and really weavers of cloth by profession. They donned the warriors' uniform, as time went on. They struggled for power against another agricultural tribe of Maharas (Hindus) under Sher Khan their leader, living at Lakhi, from which they had themselves previously "ousted the former occupants — a Balooch race called the Jatois." Shikarpur on the trade route was a new settlement established by them in Sindh.

Note on Shikarpur

This town appears to have occupied the hunting ground (Shikargah) of the famous Daudpotras. "Upon the site on which the present town is built, there was, a few hundred years ago, a noted forest. It lay between the old town of Lakhi and the village of Khanpur."²³⁹ There were frequent feuds between these Daudpotras and the Mhats, who were the rulers at Lakhi, regarding the use of the forest. Pir Sultan Ibrahim Shah is said to have muttered some prayers and dropped a nail on the ground saying, "Here let a city be built and let it bear the name of Shikarpur".²⁴⁰ Thus Shikargah was turned into Shikarpur, as a commercial town.

Later on, the Governor of Bukkur drove the Daudpotras from here to Multan and took the town. During the reign of Aurangzib, however, Prince Moizuddin restored the town to them for their loyal services. Still later, Mian Nur Muhamed Kalhoro fought with them and took some revenue from Shikarpur.

But Nadir Shah, the Persian invader, befriended the Afghan invaders in 1747 A.D., when Shikarpur fell into the han of the Afghans whose rule lasted from 1747 to 1824.²⁴¹ Under them it became a great trading centre and with the help of the Bannia settlers

²³⁹ *The Young Builder*, Karachi, June 1934. p. 4.

²⁴⁰ *Ibid* p. 5.

²⁴¹ *Ibid* p. 6.

under Timur Shah, it grew and formed an important agency in the chain of great commercial cities on the trade route of Central Asia.

6. The Kalhoras (1701 A.D. – 1783 A.D.).

Meanwhile another branch of the same Daudpotra family, claiming their descent from a line of spiritual leaders (and the Prophet himself) had already assumed temporal power also in Sindh towards the end of the 17th century A.D. Before this time Adam Shah, one of their race, was the head of the mendicants in the Chandukah District. The Kalhoras, as they were called, even went to the extent of looting the old Zamindars on the right bank of the Indus and possessing their lands. The Moghul governor of Multan tried to check their aggression and defeated Din Mahomed their leader. "But the pliant saints", says Burton, "after a year's exile at Kalat returned to power." Miyan Nasir Mahomed son of Din Mahomed, came into power after his father's death. He opposed the Moghuls in the province with some success and established a new town Naosharah. His son Yar Mahomed, as we have noticed before, took Shikarpur and later on visiting Delhi obtained from the emperor Aurangzib the "firman of the Subahdari of the Dera district" and the title of "Khuda Yar Khan" in 1701 A.D., thus establishing the power of the Kalhoras in Sindh. Soon he founded a new capital on the other side of the river (near Sehvan), called Khudabad after himself, for the purpose of avoiding the pressure from Shikarpur and Sukkur, and at the same time stamping out the Hindu influence in the east and the south. Under him, too, Lirkana and Siwi (Sibi) grew into importance as towns rival to Shikarpur. Khuda Yar died in 1719 and was succeeded by his son Nur Mahomed, who conquered the territory of the Daudpotras and extended his influence up to Sehvan and Kohistan in the west, Tatta in the south, the desert in the east and Multan in the north. The fort of Bukkur was, however, not taken till 1736 A.D., three years before the famous invasion of Nadirshah from Persia. Mahomed Shah, the old Emperor of Delhi, handed over all the provinces west of the Indus to the invader. Thus by 1737 A.D. Noor Mahomed was the ruler practically of the whole province of Sindh. He slew even Mir Abdullah, the Khan of Kelat.

Afghan control again.

With Aurangzeb's death in 1707, the Moghul power in India dwindled away. On Nadirshah's conquering Delhi and Hindustan, Sindh again fell into his hands. He adopted the policy of "divide and rule" by appointing two powers in 1739; (1) The Daudpotras at Shikarpur for Upper Sindh, and (2) Nur Mahomed at Tatta for Lower Sindh.

The result was a prolonged period of internal quarrels between external attacks.

A fresh treaty between Nadirshah and Nur Mahomed, by which a large part of the Sindh Kingdom was transferred to the Afghan sovereign, reveals the changiig

geographical features of the region of those times: "I make over to him (Nadir Shah) all the countries to the west of the river Attock, the water of Sindh (River Indus) and Nala Sunkra (Saiigra), which is a branch of the water of Sindh; that is to say, Peshawar with its territories, the principality of Cabul, Ghaznawi, the mountain residences of the Afghans, the Hazarejat, the Passes with the Castle of Bakhar, Sakhar and Khudabad, the rest of the territories, passes, and abodes of the Jokias, Baloch, etc., with the province of Tatta, the castle of Ram, and the village of Terbin, the towns of Chun (Jun), Samawali (Samawati) and Ketra places dependent on Tatta, all their fields, villages, castles, towns, and ports from the first of the river Attock with all the passes and habitations which the above said water, with its several branches, comprehends and surrounds, as far as the Nala Sankra where it empties into the sea; in short, all places westward of the river Attock and those parts and westward of the river Sindh and Nala Sankra, I have annexed to the dominions of that powerful sovereign"

"The castle and town of Lahri Bandar with all the countries to the east of the river Attock, water of Sindh and Nala Sankra shall, as formerly, belong to the empire of Hindostan."²⁴²

This was not all. While Nur Mahomed was engaged with the Ladkanah division on account of Nadirshah's inroads into Sindh, his own capital was threatened by the ruler of Dharajah and the Jam of Kakralah of the western frontier. "They brought down ships from the sea to the river and commenced war both by land and by water. The ships came as far as Khat and from there upto Nasarpur. They commenced fighting and plundering on both the sides of the river. But as the guns were soon placed upon the banks and fired by the Sirais, the enemy were driven back."²⁴³

After the death of Nadirshah in 1747 A.D., Ahmed Khan Durrani, King of Kandahar, exercised his authority over Sindh. He appointed Nur Mahomed under the title of "Shah Nawaz". The result was that the Daudpotras had to finally leave the province in 1747 and settle in what is now known as the Bahawalpur State, established by Bahwalkhan, son of Sadik. Gaining his powers, Nur Mahomed tried to be independent. He did not regularly pay his annual tribute of 12 lakhs of rupees to Kandahar. Ahmed Shah invaded Sindh to enforce the tribute and Nur Mahomed had to fly to Jesalmir where he died in 1755 A.D. The results were disastrous for Sindh and its solidarity. A number of semi-independent Hindu chiefs rose in Lower Sindh e.g. Chief of Wangah (Chachikan district), Jam of Kakrab (between the Indus and Shah Bunder) and Rana of Dharaja (Mirpur Sakraoj).

Other Events.

²⁴² Fraser's *History of Nadirshah* Ph. 225-226.

²⁴³ Mirza Kalichbeg Fredunbeg — *Op cit.* p. 149.

The Hindu influence was silently working in Sindh administration all these centuries. Prominent Sindhi Hindus were actually engaged as 'Diwans', though as such, they suffered many indignities. As the professions of military men and merchants were not open to them, they largely assisted the Muslim ruling class in book-keeping, clerical work, etc. About this time, Gidumal became a great favourite of Nur Mahomed, who appointed him as Diwan. He helped, in 1754, his son Mahomed Murad Yar Khan also to succeed to the throne of the Kalhoras as "Sarbuland Khan". He had worked as an intermediary between Nur Mahomed and the conqueror Ahmed Shah before.

Mahomed Murad Yar was soon deposed by the people on account of his bad government and a struggle arose between the two other brothers, Ghulam Shah and Attar Khan. Twice the Kandahar King assisted the latter and twice Ghulam Shah had to escape to Jodhpur. Between two powers at Delhi and Kandahar and between two persons Ghulam Shah and Attar Khan, the condition of Sindh could well be imagined. The province was again actually divided between the two brothers, into Lower Sindh (from Shahgarh to Naspur) and Upper Sindh respectively. Ultimately the gifts secured from the Afghan potentate were the independence of Sindh which he sought for, and the fresh title "Shah Viridi Khan."

In 1759 Mian Gulam Shah moved to Kujah, which was a deserted place in the delta. "He ordered all the residents of the part of Oranga to move to Kujah, which once more became a populous town and which he named Shahgarg. He appointed it as his headquarters and in its vicinity he founded a new fort, calling it Shahbunder. He built a castle and collected all materials of war there."²⁴⁴

Kuchh too received Gulam Shah's early attention. He won the battle of Jhara (20 miles N.E. of Lakhpat) and the fort of Sindhri was taken in 1763. He is said to have dammed the Puran river (now changed)²⁴⁵ and turned a portion of Kutch into a desert and a marsh in 1764-65. The sea ports of Basta and Lakhpat on the Indus were secured and Nerankot (modern Hyderabad) was founded.

Map of Sindh changes again.

The circumstances, in which Hyderabad came to be the capital town of Sindh, are unique. They reveal a most remarkable hydrographical change in the Indus valley about the year 1758 – 59. How, for example, the old Ren was gradually drying up, how the Phuleli Channel came into being and the river itself shifted for a distance of several miles "close to the western border of the alluvial land," is an interesting story.

²⁴⁴ *Ibid* p. 158.

²⁴⁵ Jour. Roy. Asia. Soc. Vol. III, p. 551.

"The shifting of the river's course last century was the most extensive of all the movements of the Indus bed in Sindh, of which there is any record or tradition. The length of main channel abandoned was not less than 100 miles, and may have been much more; while that of the Ren which was necessarily laid dry at the same time was some 70 miles. Whether there was at that time any eastward running branch higher up than the Ren which contained water during the inundation season, it is impossible to say, but if there was, it of course failed too and the consequences in the eastern Delta country must have been very serious. The change was brought about by the stream's taking a sudden curve from its hitherto south-eastern direction to one almost due west at a point nearly in lat. 25° 40' and long 68° 31'.

"This loss of the Ren stream was in some degree compensated by a new branch, known as the Phuleli, which leaving the main river 10 miles north of Hyderabad runs southward along the eastern side of the low ridge of hills called Ganjo Takar, and crossing the deserted channel of the Indus falls into the old course of the Ren. It must have been owing to the formation of the Phuleli channel that Ghulam Shah first decided to found the new and greater capital which he named Hyderabad (1770)."²⁴⁶

Another change in the course of the river took place in 1786. A more central capital than Tatta in the south, *viz*, Khudabad on the west of Sehvan, was needed. He also defeated the chiefs of Daudpotras in the north and the district around Karachi was taken away from the Brahui people.

Another event of paramount importance for the future of Sindh also took place in the reign of Gulam Shah. This was the establishment of a factory at Tatta, the sea port, by the British East India Co. in 1758 A.D. Ghulam Shah died of the curse of a Fakir in 1771 A.D. His successor, Sarfaraz Khan, received a *firman* from the Afghan monarch in 1772 as Khudayar Khan but he committed some blunders. He thought of building a *Sindhi empire* by extending his powers to Katch and Gujrat. When at home the Talpur influence was just allowed to be exercised by the Mir Shahdad Khan and Mir Fateh Ali Talpur, who actually attacked Khudabad.

Abdul Nabi was at first helped by the authorities at Kandahar but he was defeated by Mir Fateh Ali, finally at Halani (Upper Sindh). He fled to Sevistan at first, and then to Jodhpur where he died. His descendants now hold a distinguished place at Jodhpur. He it was who expelled the British from the East India Co.'s factory at Tatta in 1775 and murdered Mir Behram Talpur, a Baluch chief, whose clan was invited to Sindh by Mian Nur Md. Kalhora, the chief in the army, to settle in the new town of Shahdadpur. The result was that Feroz Khan had to escape and there was confusion in the royal family.

²⁴⁶ Haig— *Op. cit* p. 118 — 120.

Plight of Sindh in 1781 – 1782. A. D.

"About this time broke out the rebellion of the Talpoories, which ended in the expulsion of the Governor of Sindh. In the course of the next year the king (Timour Shah) sent a force under Madad Khan to reduce the insurgents, who soon overran the whole province. The Talpoories retired to their original desert, and the other inhabitants fled to hills and jungles to avoid the Dooranee army. Madad Khan laid waste the country with fire and sword; and so severe were his ravages, that a dreadful famine followed his campaign and the province of Sindh is said not yet to have recovered from what it suffered on that occasion." (Elphinstone's *Cabul*). Abudun Nabi could not stand against the vehement attack of the Baluches and gave way. "He plunged into the water of a lake, that was close to the battle-field and made his escape with a few attendants, leaving his friends to shift for themselves. Crossing the lake with some difficulty, he betook himself to the river and putting himself in a boat went to the other side. Then he fled once more straight to the hills."²⁴⁷

Strong hostilities continued between the Kalhoras and the Baluchis under Fateh Ali Khan Talpur, a cousin of Mir Bizar, son of the murdered chief of Mir Behram. The latter worked their way into the Indus valley from their camp in the desert. Thus the Mirs became more and more powerful in the centre and also prevailed upon the Afghan king Taimur Jamanshah, who "closed the question in Sindh by sending a fobe of honour, some Arab horses and Sanad appointing him ruler of Sindh," in 1783 A.D. During the time of the Kolhoras both the political and the population centres in Sindh were changed.

Settlements of the Kalhoras

So long as the imperial powers at Delhi controlled Sindh, Shikarpur in the N. W. flourished, but it was too near the Afghan gateway to be left free with the Daudpotras, who had escaped to Bhawalpur. The Kalhoras themselves had to settle down further south in the new capital Khodabad, at first leaving Larkana to face Shikarpur. The old town of Bukkur was coming into disuse more and more. Hindu influence in the Eastern parts was still extant and such minor towns in the desert as Umerkot and Kakrala continued to be in the hands of minor Sodha kings. Naturally the Kalhora rulers tried to extend their powers southwards and eastwards. The first step towards this object was the foundation of the city of Hyderabad and a mud fort at Makai hills on the old site of Nerankot. From here the control over Cutch and the sea ports was secured. Tatta, the centre of the Kalhora rulers, received an impetus from the European foreigners, but not for a long time. This town being nearer the sea was not much affected by the movements of power and population in the north. The Hindu element was

²⁴⁷ *Ibid* p. 195.

predominant here. Being born of "soft soil", the natives here excelled in manufacture and even learning and offered only passive resistance to the fighting hillmen, the Baluchis and others, who descended from the hills of Kohistan now and then. As a last resource they destroyed their own settlement and retired. Thus nearly every Kalhora chief chose a new capital town for himself.

A Desert Warfare

A weak king on the throne of Khudabad meant a renewed attack by a stronger native neighbour and a fresh trial to conquer Sindh. Even the rulers of Rajputana tried their luck. No sooner was Sadik Ali Khan placed on the throne than the news came that Bajasing, Raja of Jodhpur, was trying to invade the province, while at the same time the Brohis from Kalat were organising their own attack. But the Kalhoras aided by the Baluchis, decided to meet the Rajput kings in the desert. "They passed the waterless desert easily as they had carried their own supply of water with them, and came to a hilly tower, where they found 100 men armed with golden muskets posted in it. They were Rajas and Chiefs of the Rathor tribes, among whom the most prominent were Bajasing's son and son-in-law. On the ground had assembled an innumerable army, who, when they saw the Balochies, flattered themselves with the belief that the latter had been brought to the place by fate never to return alive.

"Mir Abdullah now prepared an attack and began to array his army. The kettle drums began, to beat, the pipes began to play and war cries rose in the air. At first the fight went on with guns, subsequently swords were brought in use. A very severe battle ensued. At last Mir Fateh Ali Khan gained the upper hand on his side and the Rajputs were put to flight. Soon they were followed by others and a general route ensued. In a short time the field was clear of the enemy, who disappeared leaving a large number of Hindus dead and wounded together with their heavy baggage. Valuable booty fell into the hands of the victorious Balochis, tents, carpets, guns, elephants, camels, etc. The solid golden armlets alone, removed from the arms of the dead, were enough to cheer the hearts of the Baloch conquerors."²⁴⁸

Irrigation Works of Kalhoras

The Kalhoras were the greatest canal builders in Sindh. For their great perseverance in the industry of agriculture they were well-known. They acquired land from religious mendicants and turned themselves into big Zamindars. Mian Nur Mahomed Khan Kalhora especially introduced, much irrigation in Upper Sindh, where his power was first established. He it was who built the Ghar system of canals in Sindh, *viz.*, the Nur Wah (10 miles), Shah ji Kur (20 miles), Date ji Kur (20 miles), the first forming the principal branch of the Begari, while the other two are now replaced by the Warah and

²⁴⁸ Ibid p. 182.

other branches in the Barrage system of canals. The Dato canal was used also as a means of communication between Larkana and Shahdadkot. Even on the left bank of the Indus the Kalhoras cut new canals, e.g., the Nasrat Wah (Naushahro division), the Murad, the Bag and the Phiroz branches of the Naulakhi canal, which are now absorbed by the great Rohri canal of Today. Though they turned large desert tracts into fertile fields, they were not great engineers, however; their canals were not quite graded or regulated and they followed the old courses of the parent river such as the Dhoroës and the fresh-water lakes called the Dhands. But the mileage amounted to thousands and since these rulers of Sindh were more or less absolute rulers, they managed the systems of irrigation more efficiently than their successors, the Talpurs, who were more fond of Shikar than canal administration.²⁴⁹

7. The Talpurs (178B A.D. – 1843 A.D.)

The rule of the Talpur began in 1783 A.D. triumphantly by Mir Fateh Ali Shah at the newly established and more central home of Hyderabad. They had in them the Arab as well as Baluch blood, and being all hillmen, they were vigorous, resolute and go-ahead. The Iranian influence was continued in Sindh through these people. Fateh Ali's own grand-father belonged to the Kalhora military department, and so the Talpurs were thus connected with the previous dynasty.

Difficulties of Administration In Sindh.

King after king endeavoured to unify the province but would the nature of the country allow such a unity? The deltaic lands were expanding, and new ports were developing with their growth. After the Moghul decline at Delhi, the Afghan king would still like to overlord Sindh. One man tried to uproot another from power at home and all external control was only nominal. The king's army, whoever he was, was mere mercenary and the whole system of government was feudatory. At times it was despotic feudalism. At the same time the ryots, largely subjugated converts to Islam, having still a pride of their ancestry, were groaning under the tyranny of the Zamindars. Land was fertile but the supply of water was irregular, insufficient at one time or season, and extraordinary at another. New cities had to be established in accordance with the needs of the times while old inland towns, such as Tatta, were getting slowly depopulated. Mir Fateh Ali Khan prepared to settle down in the fort of Hyderabad with his other brothers. To be on the safe side, he also got two more forts, Fatehgarh and Islamgarh, built in the Thar, though against the wish of the neighbouring kings. Now that the Mir had become the sole ruler of Sindh, he demanded the division watered by Kurs or mountain streams from the Khan of Kalat.

²⁴⁹ Lambrick H. T. "Early Canal Administration in Sindh" Jour. Sind. Hist. Soc, Vol. III Pt. 1 pp. 14-15.

Taimur Shah died at the headquarters and was succeeded by Zaman Shah, who settled the affairs satisfactorily for the Mir and gave him a fresh *sanad*. But soon he committed the blunder of dividing Sindh into seven parts, three parts for himself with Hyderabad as the centre, two for his brother Sohrab Khan with Khairpur as the capital, one share for his other brother to reside at Mirpur and one share he kept for his own relations. Soon was Sohrab Khan incited to deal directly with the Afghan king and not through his elder brother, while from the south sea-faring people were trying to work their way up the Indus.

Before Fateh Ali Khan died in 1802, he had allowed a British commercial mission in Sindh. "Mr. Nathan Crowe of the Bombay Civil Service was sent to Sindh to conduct the mercantile and political interests of the British Government with the Talpur Mirs, but like the former attempt, it ended in an unsatisfactory manner. The British agent resided at times at Tatta, Shahbunder and Karachi, where he had to endure various petty indignities till at last he received a peremptory order from the Mirs to quit the country within ten days and this he thought it best to obey." (Sindh Gazetteer 1799).

Coming events cast their shadows.

A patricidal war was inevitable with divisions in the ownership of Sindh after this Mir's death. At the same time great events were taking place outside the province.

Shuja-ul-mulk, who succeeded his brother Zaman Shah on the throne of Kabul, did not receive any Sindh tribute regularly and he invaded Sindh in 1803: "The people of the province were so frightened that most of them deserted their towns and villages fleeing to the sandy desert of Thar." But the Talpur brothers came to terms and a tribute of 10 lakhs of rupees was arranged for there and then, and one of 5 lakhs was settled as an annual one.

Shikarpur, lying on the Bolan Pass – Iran route was growing in importance. Through it the Bania merchants were establishing their agencies in Central Asia. It was at the same time, the last post of the Afghans.

The Khan of Kalat got into matrimonial alliances with the Mirs. But the Mir's army had yet to invade the Bahawalpur territory to settle a religious dispute at Uchh.

A terrible famine visited Kachh and "the people of the country flocked to Sindh in large numbers, selling their children for Rs. 3 or 4 per child. Corn became a great scarcity in Sindh, Juwari and Bajri selling for 6 seers per Korah rupee. Mir Gulam Ali Khan distributed heaps of corn in charity among the poor famine-stricken people."²⁵⁰

²⁵⁰ Mirza Kalichbeg — *Op cit* p. 211.

Afterwards on an appeal being made by the Rao of Kachh through the British Government, the Kachh children were returned by the Mir.

The next ruler Mir Karim Ali Khan, being very fond of art, science, literature, commerce, etc., "many good sword makers as well as good writers, painters, besides men of art and science, came from Persia and Khurasan to live in the town of Haiderabad."²⁵¹

A Commercial Treaty with the British.

Mir Karam Ali Khan also contracted friendship with the Iranian king Fateh Ali Shah Kajar and made a commercial treaty with the British Government; as a result of this, free communication was started between Sindh and Bombay (1812). Among the exact terms of the Skeene Treaty there were the following:

- (1) That no European should employ any native in service.
- (2) That the officer coming to take the survey of the Indus river should not be prohibited from or hindered in doing his work.
- (3) That any person coming through Kachh, with articles of trade, bearing a pass from the Governor of Bombay, should be free from any tax or toll.²⁵²

About this time, Shuja-ul-Mulk was dethroned at Kabul and came to live at Jacobabad at first and then at Hyderabad as a fugitive. Later on, Shikarpur was given to him by the Mir as a revenue to live upon.

Punjab's attack on Sindh Again.

But the greatest event of the reign was a projected attack on Sindh by Ranjit Singh, the Sikh ruler of the Punjab, who was coming into prominence (1817). The Mirs offered a united resistance to his progress at Shikarpur, but the attempt ultimately turned out to be a friendly overture. Thus during the reign of this Talpur Mir, there were many bonds of friendship created between Sindh and the neighbouring powers, and the province flourished. The mission of Dr. Burnes cemented the bonds of friendship particularly between Sindh and the British (1824). During the succeeding reign all the happy relations with Sindh's neighbours were continued and at their capital town, "gold coins (*Ashrafis*) were actually struck at the Hyderabad mint for the first time."

This peaceful prosperity, was, however, not to continue long in the province which was again divided between the Baluch chiefs of the Talpur dynasty, — small states under

²⁵¹ *Ibid* p. 213.

²⁵² *Ibid* pp. 214-215

minor and more or less independent chiefs but with no stalwart to control them all from the centre. Mir Nur Ma omed Khan had to try and drive away Shuja-ul-Mulk from Shikarpur where he had assumed independence. The British demand for allowing their troops to pass through Sindh up the river Indus on their way to Kabul in favour of Shuja-ul-Mulk and against Dost Mahomed, had to be opposed. Napoleon Bonaparte had been intriguing with Iran and there were clear signs of a Russian menace on Afghanistan. Ranjit Singh had become aggressive already and taken away a portion of the Afghanistan territories in Kashmir and the Upper Indus valley. But the Mirs were too weak to declare war against the British. On the latter's taking the fort of Manora and the town of Karachi by attack from the sea, the party came to terms and a treaty was signed, whereby the Mirs had to supply provisions and beasts of burden to the British at reasonable rates or on hire, to pay an indemnity of 23 lakhs of rupees and a tribute of 3 lakhs of rupees annually and a British force was to be posted at Karachi. After this the British troops sailed through the Indus via Kotri and Chhipri to Khurasan. General Sir John Keane actually reinstated Shuja-ul-Mulk on the throne of Kabul and returning to Bombay again, passed through Sindh via Hyderabad.

But these foreigners were not to remain content with the former arrangements and under the new aspiring Resident of Sindh, Sir Charles Napier, they demanded a fresh treaty in 1843, of which the terms included: –

- "(1) The coin of Sindh should bear the name of the king of England on one side,
- (2) The Mirs should cede to the British Government, Karachi, Shikarpur, Sabzalkot, Umarmkot and all the land attached to these towns,
- (3) A slip of land 100 yards in width along both the banks of the river be given to the British Government."²⁵³

This Was impossible on the part of the Talpur Mirs, and the situation became at once estranged. There was, besides, no union among the Mirs themselves and a final war was inevitable.

Sindh a Geographical Necessity for the British

The British themselves saw the position and potentialities of Sindh and the Sindhu river and at once worked out the destiny of the province. Sindh was a natural geographical necessity for the British inroads on Kandahar in Afghanistan. The artery of the Indus was the only passage of the British to Kandahar and the Mirs had to yield to them. Their gateway was the then flourishing sea port of Ghorabari, and their road to its conquest

²⁵³ *Ibid* p. 228.

was the river, the life and soul of Sindh. They decided the fate of the Mirs at the battle of Mianee on the Fuleli in 1843 A.D.

The following description of the battle shows how the geographical situation of Miani helped the British to win it: –

"Having ascertained that the Ameers were in position at Miani (ten miles distance from Hala, and 6 miles from Hyderabad), and well knowing that a delay for reinforcements would both strengthen their confidence and add to their numbers, already seven times that which I commanded, I resolved to attack them and we marched at 4 a.m. on the morning of the 17th February, 1843 The enemy were strongly posted; woods were on their flanks which I did not think could be turned. These two woods were joined by the dry bed of the river Fulaillee, which had a high bank. The bed of the river was nearly straight and about 1,200 yards in length. Behind this and in both woods were the enemy posted. In front of their extreme right and on the edge of the wood was a village.

"Having made the best examination of their position, which so short a time permitted, the artillery was posted on the right of the line, and some skirmishers of infantry, with the Scinde irregular horse, were sent in front, to try and make the enemy show his force more distinctly; we then advanced from the right in echelon of battalions, refusing the left to save it from the fire of the village. The 9th Bengal Light Cavalry formed the reserve in rear of the left wing, and the Poona Horse, together with four companies of infantry, guarded the baggage. In this order of battle we advanced as at a review across a fine plain swept by the cannon of the enemy. The artillery and Her Majesty's 22 regiment in line formed the leading echelon, the 25th Native Infantry, the second, the 12th Native Infantry, the third, and the 1st Grenadier Native Infantry, the fourth. The enemy were 1,000 yards from our line, which soon traversed the intervening space. Our fire of musketry opened at about 100 yards from the bank, in reply to that of the enemy and in a few minutes the engagement became general along the bank of the river on which the combatants fought, for about three hours or more, with great fury, man to man. Then, My Lord, the superiority of the musket and bayonet over the sword and shield and matchlock. The brave Balooches first discharging their matchlocks and pistols, dashed over the banks with desperate resolution, but down went these bold and skilful swordsmen under the superior power of the musket and bayonet. At one time My Lord, the courage and numbers of the enemy against the 22nd, the 25th and the 12th Regiment bore heavily in that part of the battle. There was no time to be lost, and I sent orders to the cavalry to force the right of the enemy's line. This order was very gallantly executed by the 9th Bengal Cavalry and the Scinde Horse.

"The loss of the British force is 256 men killed and wounded. The enemy is generally supposed to have lost 5,000.

"I ought to have observed that I had the night before the action detached Major Outram in the steamers with 200 sepoy to set fire to the wood in which we understood the enemy's left flank was posted. However the enemy had moved about eight miles to their right during the night."²⁵⁴

Condition of Sindh Canals under the British.

The Talpurs did not pay huge tributes to Kandahar regularly, though they were reaping the fruits of the Kalhora systems of canal irrigation all the time. They were luxury-loving and, therefore, negligent of administration. The canals, in their time, largely deteriorated, until the British took over the charge. In the Khairpur State, however, canal construction continued, and some of the large canals, e.g., the Mir Wah, were constructed.²⁵⁵ After the conquest, the British extended the system, though very slowly at first. The British engineers made scientific surveys and improvements in the canals. They simplified the whole system by straightening them, assured regular supplies to cultivators and converted desert lands into cultivable areas. The Jacob-Frere heritage of inundation canals to the Sindh Public Works Department is really great. Then at last, the climax of irrigation in Sindh reached in 1932 when the Lloyd (Sukkur) Barrage, the largest irrigation system in the world, was opened. Even now the Barrage area is limited, as nearly half of the eight districts are outside the Barrage zone, viz., the whole of the Karachi district, the southern half of the Hyderabad district, and large parts of the Sukkur and Upper Sindh Frontier districts. These have yet to depend upon an awkward river and its irregular inundations every year. The Sukkur Barrage itself, however, is proved to be a great success within the short period of five years. (See the Author's *A Geographical Analysis of the Lower Indus Basin (Sindh); Part II, Natural Vegetation, Irrigation and Agriculture, Karachi 1937*).

British Port and Capital.

Karachi, a mere fishing village, has grown to be a great port and the capital of British Sindh since the conquest of 1843.

Summary and Conclusion.

Surrounded largely by lands of barrenness and desolation and possessing a fertile river valley, Sindh has played its part worthily from the earliest days of human civilisation. Being an antechamber for a larger plain of prosperity beyond, it gave life and impetus to those races, which entered it and then passed on to India. Their influence, then, reached far and wide e. g., Easter Islands. Life could be lived on easier terms in this

²⁵⁴ Extract from the Blue Book of the Parliament, "The Sindh Correspondence", Sir C. Napier to the Governor General, Miani.

²⁵⁵ See the author's "A Geographic analysis of the Khairpur State" Jour, Sindh Historical Soc. Vol. I. Pt 4. pp. 44 ff.

region than in the surrounding areas. This prosperity, for the time being, made the valley unsafe and even the people were not prepared to repel foreign attacks on this eastern El Dorado but to receive them unmindful of any less. Access to the valley was possible, though difficult and shelter given by it real, though not permanent. In this respect, it has differed greatly from other valleys such as the Euphrates, Tigris, which continually subjugated foreign neighbours and succeeded in building up their empires. Not so the lower Indus valley. It was hard to preserve Sindh itself intact.

Like India proper, Sindh, too, had no political unity of its own, in spite of its mountain barrier in the west and the desert in the east. Even a powerful foreign race, as the Baluchas, could not unify the land, but their kingdom was broken up into several principalities, which even against a common danger, such as the British, did not well coalesce and offer a united stand. It was the last attempt of an Asiatic government over Asiatics, land people controlling land people.

The control of the sea board has made it possible for the present seafaring rulers, to recover its much needed peace and its finances. Throughout these eleven centuries and more we have found Sindh struggling for its very existence, for its self-assertion and political evolution. There was no continuous rule of one tribe or one people, no long and sustained peace to secure. Peace was hard to procure in a region like this. It was the government of different tribes, which came into power one after another by chance. But their influence abode for long e. g. Moghul architecture at Tatta.

This long course of Sindh's history, which we have so rapidly surveyed, can be better divided into three periods instead of the different dynasties;

- (1) Period of a resettlement of affairs at home, of carving out native kingdoms and sub-kingdoms after a haphazard foreign conquest. *e.g.* Bakkar till the last was more or less detached.
- (2) Period of empire-building, at first, by the natives as far as Kashmir and then by foreign rulers *viz.*, Arabs, Afghans, Mughals, Baluchas and others who tried to subjugate Sindh and exact tribute; or when the foreigners became weak, the local rulers became strong and tried to conquer neighbouring lands, Cutch, Kathiawar and Gujrat, but failed.
- (3) Period of a struggle for separation and independence.

Sindh was not an easy country to achieve all that. It was not a uniformly habitable or cultivable tract, but had patches of desert land, pools of shallow water or swamps or barren Kohistan here and there. It had no great lines of communication, no easy contacts of all its parts with the capital town, no uniform climate throughout the province and no regular distribution of water supply. Floods for droughts were its

characteristic. It had three or four important political centres coinciding with the chief physiographic divisions, on which the central government had constantly to rely, but which often failed to give succour or shelter to the ruling prince – Bukkar, Sehvan, Umerkot and Tatta, at first, and Shikarpur, Hyderabad and Karachi later on, all near and yet far enough for Sindh. The capital towns had to be shifted from north to south and south to north, as the occasions demanded. When a tribe had to hide itself from another more powerful one, which had occupied the central Indus valley, it sought the desert and the secluded parts of Sindh for its existence and self preservation. They too sought opportunities to rule again by chance. With the changes in the main artery of the river Indus, settlements had to be shifted, with the growth of the delta new ports had to be established and old but rich towns had to be set aside. Battles were hard to fight on land, in the rivers or in the desert. The desert had its geographical value changed from time to time, – it gave shelter to the weaker tribes driven away from the main valley or to fugitive kings both Sindhi and Indian, or was completely deserted for a time.

Whenever the geographical factor of a powerful human personality was procurable and leadership was sought in him, peace was restored for a time and critical situations were saved. But he, too, was at the mercy of the mercenary armies, which was a constant feature of Sindh's political history. A powerful general of the State army invariably succeeded the king and a whole dynasty was changed.

Sindh was at the mercy also of the neighbouring lands – Afghanistan, Kalat, Delhi, Rajputana and Cutch, the rulers of which made occasional inroads into this province, exacted tribute and retired. The Moghul at Delhi, being nearer and in the upper Indus basin, were the most successful invaders of all, [downstream] but they, too, at first left their own governors behind or accepted native ones whenever outsiders could not be tolerated. What Kandahar was chiefly concerned with was the annual tribute. When the Moghul empire came to an end, Afghanistan once again tried to vanquish Sindh and to exact tribute from the rulers, who were no better than Zamindar princes or farmers-general. The land was no doubt fertile and even the Arab geographers waxed eloquent on the Mihran and its tributaries. Prosperity in Sindh meant ultimate stagnation and indifference to any outside attacks. The history of Sindh is full of patricidal wars, civil wars, revolts and foreign invasions. It took Sindh to recover from such shocks always a long time. There was no prolonged peace and hence there was no great architecture or even art developed. Everything was like the shifting sand-hills. The rulers as well as the ruled indulged in poetry, philosophy and music and neglected the State.

The destiny of Sindh was largely linked with Iran, Baluchistan and Afghanistan, and although the Sindh coast was uninviting and Sindh climate unsuitable to foreigners, it was to vanquish the Amir of Kabul, that the British subjugated Sindh by trying to fight an inland "naval" battle.

Sindh is destined to be a separate province physically as well as politically. A strong and supreme government is needed to rule it from its centre. Minority communities in such a region are bound to be strong. There is also a likelihood of mingling of ideals, of cultures and religions, in such a land.

Despite the great river, the most ancient canal system and rich soil, which got more and more enriched by its own silt every season, the State was not exceedingly rich in the past. The revenue was not therefore very great. Even the Arab conquerors of Hindu Sindh were not able to secure much; it was hardly sufficient to maintain themselves. It required a central and organized irrigation system with strict laws of canal distribution of water throughout the valley. Then Sindh would easily come into its own and bloom like a rose. With the recent separation of Sindh from the shackles of the Bombay Presidency, with the more or less perfect system of perennial irrigation system of the Sukkur Barrage and with the introduction of provincial autonomy, Sindh is expected to see better days. This is a lesson, which an impartial survey of Sindh's history and its coordination with the regional geography of its past, can teach.

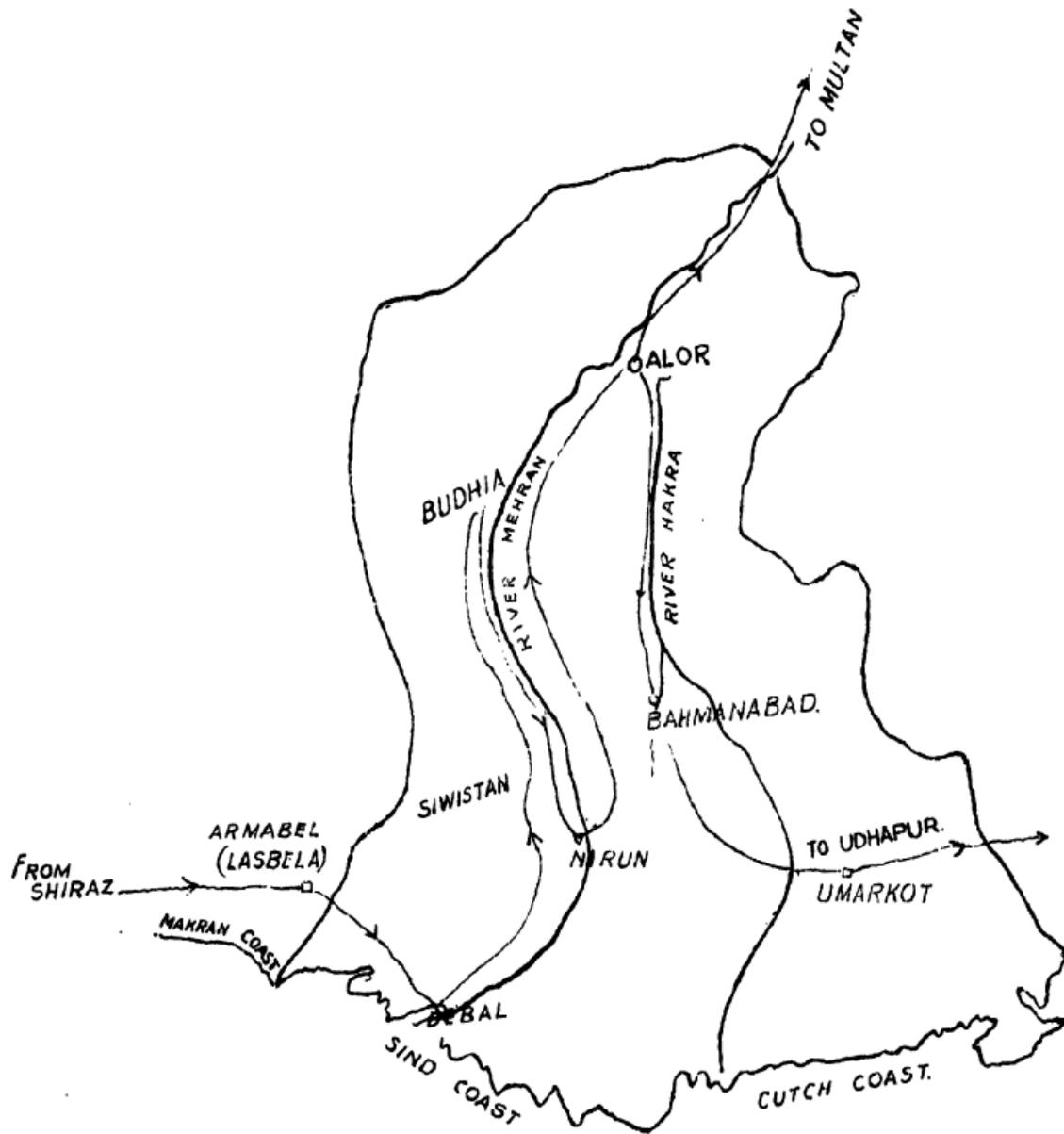
HISTORICAL GEOGRAPHY OF SINDH: PART III. HISTORIC PERIOD A.D. I.

FOREWORD

This Part III of the Historical Geography of Sindh is published as reprints from the two issues of the *Journal of the Sindh Historical Society*, (Vol. II, Part 4 and Vol. III, Part 2), in connection with my projected thesis on "A Geographical Analysis of the Lower Indus Basin (Sindh) with special reference to the History and Progress of Human Settlement in the Region." It contains a correlated account of the History and Geography of Sindh for later historical period's *viz.*, post-Arab, the Sumra, Samma and other native dynasties up to the conquest of Sindh by the British 1843. Though such long periods of time are covered and though there is no single authentic work on the history of Sindh available as a solid and reliable background for such a regional study as this, the geographical perspective is kept in view by the author throughout and the life and achievements of the various peoples using the valley for settlement, are dealt with as far as possible. Gaps are bound to be left here and there in such a pioneer work, which can only be thoroughly completed with the help of other collaborators in the field. Suffice it to say, the present papers are earnest attempts to bring out the geographical effects on life in Sindh and the human power to modify environment.

Karachi, 1-1-1938.

M. B. P.



SKETCH MAP OF SINDH
 SHOWING ROUTE OF THE ARAB ARMY UNDER MUHAMMAD KASIM AND THE
 COURSE OF THE MEHRAN AND HAKRA (Ref. *Chahchnamah*) 7th CENTURY A.D.

HISTORICAL GEOGRAPHY OF SINDH: PART III. HISTORIC PERIOD A.D. I.

By Prof. M. B. Pithawalla, F.G.S., M.R.A.S.

The importance of the time factor in the geographical studies of Sindh has already been shown with regard to the preceding important epochs. The history of changing political, racial and economic conditions and their evolution through the centuries in the province has a bearing on its geographical features, which have been described. This knowledge of a geographical setting is also indispensable, while appreciating the historical events, which have taken place in subsequent times. Further changes in the river beds, advance of the delta, appearance and disappearance of fresh-water springy and lakes, hydrographical and political changes in the Upper Indus Basin (Punjab), a possible climatic change, accumulation of sand and clay, sand belts and clay belts, distribution of soils of various kinds and natural vegetation and even the human improvements or alterations of the countryside, — all these should be borne in mind, while studying the more recent history of the land.

The anonymous writer of the *Periplus of the Erythrean Sea*, containing an account of the navigation of the ancients, about 60 A.D., has given us a valuable picture of the land from personal observations in those days. He begins by first pointing out the distinction between Hind (Hindustan) and Sindh (Scynthia, Scythia, Scindi); the tract of land lying low from the cape of Monze to the Indus and comprehending the country on both sides of the river, which between Multan and Thatta is called Mehran. It has been noticed that from the time of Alexander, the Greeks have considered "Patala to be the port to which they were to direct their views in order to obtain the precious commodities of the East." Individual merchants, if not large trade companies, must surely have come to Sindh from the ports of the Red Sea ever since. Even the embassies from Syria to the monarchs of Hindustan must have "embraced the objects of commerce as well as of empire, for, those who found their way to the Ganges would not be unacquainted with the profits to be derived from the commerce of the Indus."²⁵⁶

Importance of Patala.

All trade vessels should naturally direct their course to Patala on the Indus. "Here it was known from history that the productions of the East were to be obtained, and here the trade, which the Indus and the coast of Malabar must always have fixed its centre."²⁵⁷

²⁵⁶ Vincent William — *The Periplus of the Erythrean Sea*, Part the First, London 1800.

²⁵⁷ *Ibid.* Pp. 346—354.

As the knowledge of the Greeks and Romans about the Indus valley and the monsoon increased, they began to make their passage to Hindustan direct.

Other Markets

Besides Patala, there were two other important markets in Sindh, *viz.*, Barbarike near the mouth of the Indus, and Behker (Bukker) afterwards replaced by other capitals "occupied by different invaders in the various revolutions of the country." At the time of the Periplus, *Minnagara*, perhaps the Binagara of Ptolemy, was the capital of Sindh and the sovereign power extended from there as far as Barugaza or Gujarat. It has been said that the Government was actually in the hands of the Parthian tribe divided into two parties, each party, as it prevailed, chose a king of its own body and drove out the king of the opposite faction. The author of the Periplus thinks that this sovereign must have been very powerful and the trade of Sindh must have been very profitable, as he was offered such valuable presents by those who sought his protection, as:

"Plate of very great value
Musical instruments
Handsome girls for the Haram
The best wine
Plain cloth of high price (and)
The finest perfumes or the perfumed ingredients."

The Indus itself was decidedly used as the chief means of communication from the port of Barbarike to Minnagara inland.

Imports and Exports.

The following articles were imported at Barbarike: —

"Clothing plain and in considerable quantity Clothing mixed
Cloth, larger in the warp than in the woof
Topazes
Coral
Storax
Frankincense
Glass vessels
Plate
Spicie and wine."

The following typical indigenous products were exported: —

"Costus a spice

Bdellium a gum
Yellow dye
Spikenard
Emeralds or green stones
Sapphires
Hides from China
Cottons
Silk threads.
Indigo or Indian ink."

The Voyage.

The South West Monsoon, being the most favorable trade wind, the voyage was made in Epiphi or July down the Red Sea and through the Straits to the mouth of the Indus. The peculiarity of the Sindh Coast was that "near these mouths the sea was white and there was a multitude of snakes called Graai, floating on the surface; which is imputed to the rains of the monsoon washing down these animals out of the rivers." Indeed the sea fishery on the Sindh coast is even now remarkable.

Such, then, is the knowledge of the writer of the Periplus about Sindh in the first century A.D. Though scanty, it fits in well with the general trend of human activities in the province and the surrounding lands, which we have discussed.

THE PRE-ARAB PERIOD.

The period, which followed this, was the one in which Indian races, Buddhists and Brahmans, flourished and lived together in Sindh in peace and harmony for many centuries after the Christian era began. The pendulum of power turned east-wards, after the fall of Iran in the earlier centuries and the Sassaninan (Pahlavi) rulers took time to settle down. The Iranian capital was already shifted westwards in the Euphrates - Tigris valley and the Iranians themselves were concerned with settling their own home-affairs at first. They had, therefore, little time to turn to the Indus valley any more.

Meanwhile the Buddhistic element had worked its way into the Indus valley from the Ganges valley under the illustrious patronage of Asoka and Chandragupta. At the same time, the Brahmans had been living in great hostility against the Maurya dynasty flourishing in other parts of the country. But after the fall of the Mauryas, Brahmanism reasserted its authority in Hindustan. "The prohibition of bloody sacrifices and irritating proceedings of Censors must have produced much unrecorded discontent and we may fairly assume that when the strong hand of the old emperor dropped the scepter, Brahman influence reasserted itself and produced a revolt against the inquisitional tyranny of Asoka's system."²⁵⁸

In peaceful Sindh, however, the two elements flourished side by side. The result was that both remained feeble, neither of them becoming aggressive at one time or another. Even earlier than this, Scythian sun or fire-worship was tolerated here, "The first dwellers of Ratika (a mound on the old Sutlaj bed) were most likely Scythians who brought with them the worship of Baal, the sun or fire God from the banks of the Oxus." The Indo-Scythians were in possession of lower Sindh two centuries B.C. and according to General Cunningham "they occupied the Punjab and Scinde and were in full possession of the Indus valley down to the seventh century."²⁵⁹

The ruling class had adopted Buddhism after Kanishka, the last ruler of the Indo-Scythian Kingdom, and when this Brahmennical revival took place later, there was considerable toleration shown to the Brahmins in Sindh. So, while there was a constant conflict between Buddhism and Brahmanism in the hilly tracts of Malwa, Ujjain, Chitor and even in Cutch, in Sindh the two lived peacefully together, so much so that at the time of the Arab conquest of Sindh, while there was a Hindu kingdom flourishing, there were Brahmin ministers employed. The Governors and citizens were largely Buddhists. But it was not the pure kind of Buddhism that was to be found in the province. "Sindh was remarkable for being under the Government of Buddhist King, belonging to the

²⁵⁸ Smith V. — "*Early History of India*," 1914 p. 194.

²⁵⁹ Cal. Rev. LX 1875 p. 333.

Sudra caste and for the large number of Buddhist monks which the country supported, estimated at ten thousand. But the quality was not in proportion to the quantity; most of the ten thousand being denounced as idle followers given over to self indulgence."²⁶⁰

There are several relics and stupas belonging to the Buddhists in Sindh. The site where Mohenjo Daro was discovered by R. D. Banerji in 1922 was originally a Buddhist stupa and a monastery in the north-west corner. The bricks used in these were evidently taken from the older ruins belonging to the Mohenjo Daro age.

Other stupas have been found at Tando Md. Khan, Jhirrak, Mirpurkhas, Depar Ghangro (visited by Chach, the Brahman minister of Rai Sahasi II), and Thul Mir Rukhan — "all forming a chain up the Indus valley."²⁶¹ The Brahmin element in Sindh has not been found only during the period under review. It has long been in existence in the province. It was at the advice of his Brahman councilors that Mousikanos, King of Alor, had revolted against the Macedonian conqueror in 325 B.C. Even in political departments both the classes of people had alternately occupied power and position. It is said that one of the reasons of the success of the Arabs in Sindh later on was that there were Buddhist governors of the several forts and Buddhist subject under the Brahman king and. they would not fight under the influence of their religion.

Continuation of Iranian Influence in Sindh

Although the Sassanian rulers of Persia did not organize campaigns against India on account of their sphere of activities being transferred to the western countries, intercourse between Persia and Sindh continued all throughout. This is supported by the discovery and interpretation of Sassanian coins.²⁶²

Mr. Fardoonjee D. J. Paruck, an authority on Sassanian numismatics, has tried to show from the inscriptions on the coins that not only Sindh but Multan and Rajputana were in the possession of the Kushans, who ruled in North India and who were subjects under the Sassanian Kings Shahpur I, and Hormuzd I, in the 3rd century A.D. The latter King is mentioned, as "Malka Indi Irdati Harezi" — the Sovereign of Sindh, Punjab and Rajput kingdoms on one side of a coin, and "Mazdayasni Bagi Auharmazdi Raab Kushan Malkan Malka" — the Worshipper of the Lord of Wisdom, His Celestial Majesty Hormuzd, the Lord of the Kushans, the King of Kings, on the obverse of the coin.

Fire worship was noticeable in the temples of Sindh, the Punjab intermarriages were recorded and trade was maintained between the two countries. The old city of Bahmanabad has a considerable history of its own. "Bahman, son of Isfandiar who used

²⁶⁰ Smith V.- *Op. cit.* p. 354

²⁶¹ Cousens H. — "*Antiquities of Sindh*" p, 59.

²⁶² Paruck F. D. J. "*Observations Sur cing Mounaies Sassandies*" (French)— Revue Numismatique, 1936.

to be styled Ard-Shir-i-Daraz Bazu (or of the long arm), founded a city in the Zamin of Sindh, which was named by him Bahmanabad or Bahamannah, and which they call Mansuriyah.²⁶³

Mujinal-ul-Tawarikh (1131 A.D.) has another version about it. "In the time of Gushtashib, ruler of Iran Zamin, Bahman his grandson, surnamed Ard-Shir, son of Isfandiar, led an army into Hind and Sindh, and subdued a considerable portion of it. No member of the family of the ruler named Sunagh, retained any power therein. Bahman founded a city between the frontiers or borders of the Hindus and the Turks (the Indo-Scythians as they are styled), to which he gave the name of Kanda-il, and in another part which they call Budah he founded a city which he named Bahmanabad and according to one statement, this is Mansuriyah."

Muhammed, son of Jarir-ul-Tubari says that "Bahman conferred Hind on Ashtumish, a sage, after the Malik of Hind had revolted."²⁶⁴

Occasionally the Iranian domination became greater, and tributes were exacted. Says, Al-masudi, "Kings of Sindh and Hind and of all the countries to the north and south sent ambassadors to Noshervan with rich presents and to enter into terms of peace with him." The Gardazi has also a story to tell of Persian connections with India; "Behram Gor (420 A. D. to 438 A. D.) came into Hind in disguise and Shermah its ruler gave his daughter to him in marriage and conferred upon him as her dowry Sindh and Makran."²⁶⁵

Tod in his *Rajasthan* (Vol. II, P. 44) makes a daring remark that the Rana of Odeypur was descended from Bahman! During the reign of Noshervan, (531 A. D. to 579 A. D.) says the *Shah Nameh of Firdousi*; ambassadors came from the sovereign of Hind to the Chosroe, challenging him to solve the puzzle about the game of Chess. This Persian influence did not stop at the Indus. Fleets were employed by Noshervan to conquer other parts of India and Ceylon. In the canary caves near Bombay, there is found the famous Pahlavi (Sassanian) inscription, while the Parsee calendar (comprising the Parsee days and months) is still in vogue in the far-off Hyderabad (Deccan) State.

Later on we shall find that Iran influenced the Talpur rule and life in Sindh, particularly the Khairpur State, through the Baloch ruling race. After the Arab conquest of Sindh the game of chess passed on to the Arabians (7th Century A.D.) and from them it reached Europe about the 11th Century A.D. The word chess is derived from Persian *Shah* meaning King, Sassanian coins have also been discovered among the ruins near Larkana.²⁶⁶

²⁶³ Raverty — "*The Mihran of Sindh*" Footnote p, 197.

²⁶⁴ *Ibid.* Pp. 196—197.

²⁶⁵ *Ibid.* p. 198.

²⁶⁶ Cousens H. — "*Antiquities of Sindh*" p. 6.

In his great work on the Parsecs Mr. D. F. Karaka²⁶⁷ has summarized the whole situation Well: "About the beginning of the Christian era, the Kanerkis, the Indian Skythian rulers of the Punjab, from the fire altar on their coins, seem to have adopted the religion of the Magi (Lassen in J.B.A.S. IX P. 456; Princep's note on Hist. Res. from Bactrian Coins P. 106). As regards the south of India, Ptolemy's mention of Brahmani Magi has been thought to show a connection with Persia, but the Kanarcse word Mogi or son seems a simple and sufficient explanation. "Closer relations between India and Persia date from the revival of Persian power under the Sassanian Kings. (A. D. 226 – 650) In the fifth century, the visit of the Persian prince Behram Gor probably to ask for help in his struggle with the white Huns (Wilson's *Ariana Antiqua* P. 383) his marriage with a Hindu princess and according to Hindu accounts, his founding the dynasty of the Gordhabin King, was a fresh bond of intimacy (Wilford – As Res. IX P. 219), Macudi's *Paries d'Or*, Reinand's *Memoire sur l'Indo* P.112; Elliot's *History* II P. 159). In later times, both Noshirwan the just (A.D. 531-579) and his grandson Parvez (A.D. 591 – 628) were united by treaties and by the interchange of rich presents with the rulers of India and Sindh (Macudi's *Prairies d'Or* II P. 2ol).

In connection with these treaties, it is interesting to note that Noshirvan's embassy to Pulikesi II the ruler of Badani, in the Southern Maratha country is believed to be the subject of the Ajanta cave paintings and another of the pictures is supposed to be copied from a portrait of Purvez and the beautiful Shirin (Fergusson in Burgess's *Ajanta Notes* P. 92). According to one account early in the seventh century a large body of Persians landed in Western India and from one of the leaders, whom Wilfred believed to have been a son of Khosru Parvez, the family of Udepur is supposed to have sprung (Gladwin's *Ain-i-Akbari* II P. 81; Dr. Hunter As. Res. VI P. 8; Wilfred As. Res. IX P. 233; Princep – J. Ben. As. Soc. IV P. 684). Wilfred held that the Konkanshth Brahmans were of the same stock. . . . Besides by treaties Western India and Persia Were at this time very closely connected by trade. *Kosmas Inmkoplenshtes* (P. 545) found the Persians among the chief Indian Ocean (Migne's *Patrologioe Coursus* LXXXVIII P. 446; Yule's *Cathay I CLXXVII, CLXXIX*)."

Influence of Hind.

Before the conquest of Sindh by the Arabs in 711 A. D., the province was governed by Hindu Kings. Tradition assigns to them a dynasty of five Rabis, who altogether ruled for 137 years;

- 1 . Rai Diwaji.
2. Rai Sahiras I.
3. Rai Sahasi I.
4. Rai Sabaras II.

²⁶⁷ *History of the Parsis*, London 1884 p, 25 (Ref. Gazetteer of the Bom. Presidency p. 247.)

5. Rai Sahasi II.

The last Rai was once attacked by Nimruz, King of Persia. He Was a wise man and built six forts *viz.*, Alor, Sehwan (Sehwan), Uchh, Mathelo, Mod and Suvrai. Baluchistan was then a dependency of Sindh.

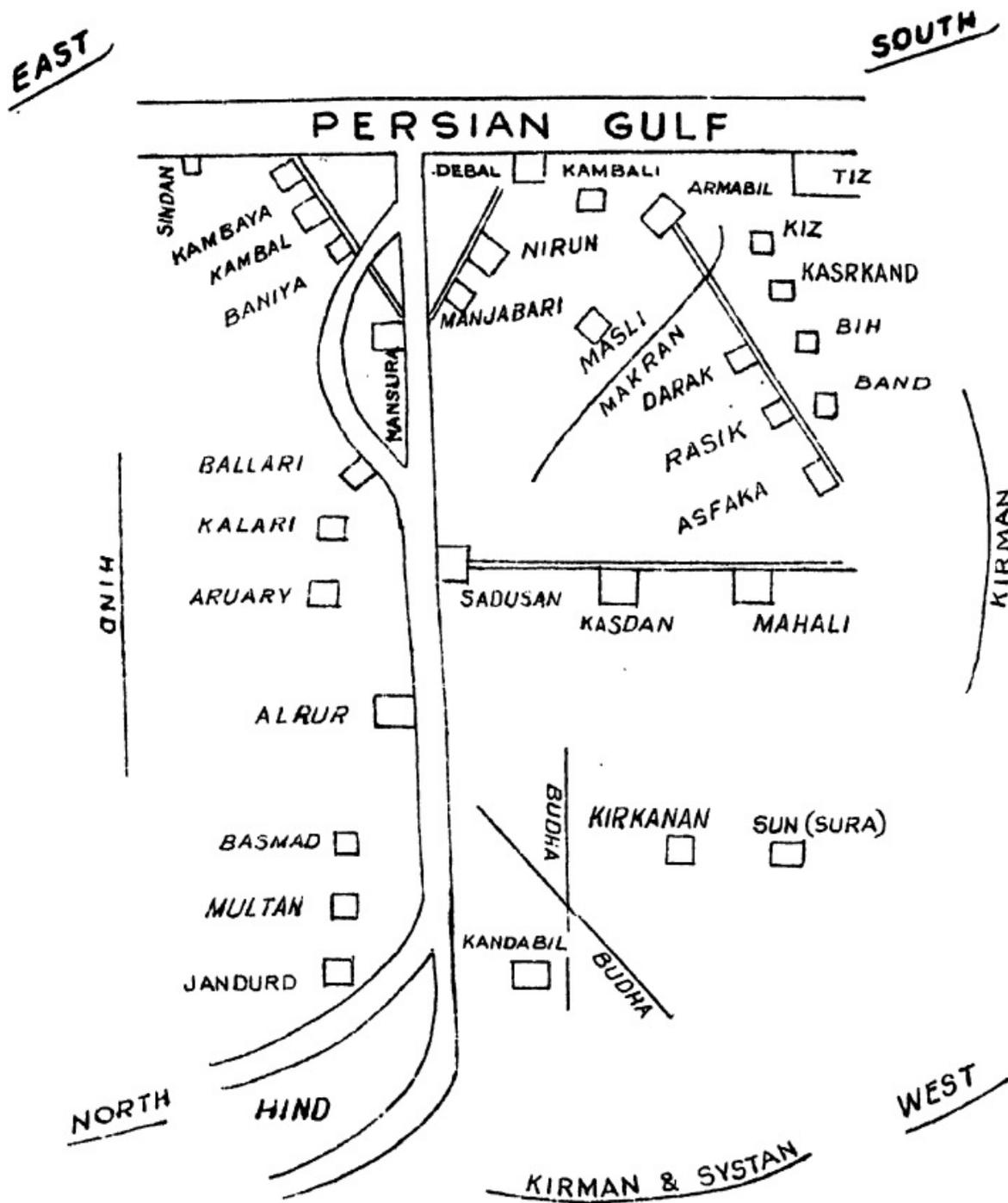
The decay of Buddhism in India had already set in and Brahmanism under these Kings was in a delicate condition. There was a large number of Jats, Meds, and Dasyus in the State and the people were imbued with the spirit of the peace-loving religion of Lord Buddha.

Sindh and the Punjab (the whole of the Indus basin) formed a single kingdom in the seventh Century A.D. and the influence of the Sindhi Rai extended as far north as Kashmir. According to the *Chachnameh*, the boundaries of the Kingdom Were Kashmir on the east, Makran on the West, the mountains of Kurdan and Kikanan on the north and the sea as far as Debal in the south. There were four governors appointed at (1) Bahmanabad commanding the forts of Nerun, Debal, Luhanah, Laklipat, Sammah and the river (2) Sivistan, commanding Ludhi (Budhia), Chingom or Jankan, the skirts of the hills of Rojhan (Dalkian) upto Makran, (3) Iskandah, commanding Babiah, Sawarah, Jajhor and Dhanod and (4) Multan, commanding Sikkah, Karad, Ishthar, Kih, and Kashmir.²⁶⁸ Thus the political organizations even in this Hindu Kingdom were almost identical with the natural regions.

Alor, the capital of Hind and Sindh, was a "town adorned with various kinds of royal buildings, villas, gardens, fountains, streams, meadows and trees and was situated on the bank of a river called Mihran."²⁶⁹ The King Rai Sahasi II, himself had "innumerable riches and buried treasures" and was a lover of justice, liberality and bravery. He was from his wife Suhandi's side related to the chiefs of Rajputana, while "the ancient ballads of Rajputana and Gujarat remind us of Rajput chief, who had kinsmen in Sindh. Often the women of Sindh burnt themselves to death like Rajput heroines. Whenever occasions demanded such an action. Shramans and Brahmans, merchants, and tradesmen and workers in stone etc. lived in the capital town, while the large majority of people followed agricultural pursuits.

²⁶⁸ Mirza, Kalichbeg — *History of Sindh* Vol. I (*Chachnameh*.) p. 11.

²⁶⁹ *Ibid.* pp. 11-12



ISLAM MAP OF SINDH

(ASHKALU-L-BILAD & ISTAHHRI)

10th CENTURY A.D.

Chach, a Brahman and son of Salaij, came into great prominence and power even during the life of Rai Sahasi, so that when the King died, his widow not only married Chach, whom she loved, but he was actually crowned King of Alor. As this action of his brother's Widow was not approved by Mahat, the king of Chitor, Chach was challenged by him in a duel. But Mahat was killed in the fray and Sindh proved victorious. Two sons were born of Chach and his queen Suhandi, Dahar and Daharsiah. Chach sometime later appointed his brother Chandra, who was "the crown of all ascetics," as his deputy at Alor and himself went abroad to the lands of his kingdom which he consolidated.

Movements of Chach in North India and Iran.

After controlling the four tributary rulers, who were under the Sindhi sovereign before, Chach led an army with their help "up to the very limits of Hindustan, which adjoined the country of the Tartars". Thus it became an attack of Sindh on neighboring lands.

After many days' journey he at first came to the fortified town of Babiah on the southern banks of the Bias. The ruler of Babiah fled to the fort of Iskandah, which was also attacked and taken from the enemy. Then he turned toward Sikkah and Multan on the opposite sides of the Ravi. As the ruler of Multan, who was also defeated, asked for the help of the king of Kashmir, Chach marched towards the State and fixed the northern boundary of his vast kingdom by planting some trees there. Even today the Kashmir valley is well-known for its poplar and Deodar trees. Similarly he fixed the western boundary of Sindh by moving as far as Kerman and beyond the steep declivity and the hills of Makran.

A small river running between Kerman and Makran was noted as the boundary and on it Chach planted some date trees. Later still he actually passed through the desert, which lay between Turan and Afghanistan, and exacted tributes from the rulers of Armanbel or Belah (Las Bela) and Kandail, (Kandhabel) or Kandhar. At last, Chach returned to his capital of Alor, He ruled for 40 years altogether and built up such a vast kingdom of different physical features, especially the northern and western highlands bordering the Indus basin. But such a heterogeneous mass of kingdoms could not be maintained by any sovereign weaker than Chach. Here then was the man factor in the rise and fall of the Hindu dynasty.

On his death in 670 A. D. his brother Chandra continued the rule till 678 A-D., when Dahir the younger son of Chach came to the throne. Misled by some false astrologers he married his own sister and brought upon himself and his subjects the misfortunes from which there was no relief.

Such a king could not have the several chieftains, within his kingdom, sufficiently under his control.²⁷⁰

It was divided into six parts as under: —

Capital

Diwal.
Nerunkot
Sehwan
Bahmanabad
Alor
Sewi

Town. Chieftains.

Johim Bhada.
Samna.
Batchera, Son of Chuadram
A Lohana Chief.
Dahir himself.
Bhada son of Kaka.

Besides, he could not control "the people of the delta in their piratical dispositions." The dark age in Hindustan had already set in. It lasted for over two centuries, during which period the Kingdoms of Ujjan, Kanoj, Magatha also lay in a fallen and decaying state.

²⁷⁰ Capt. MacMurdo — J.R.A.S. Vol. I p. 36.

HISTORIC PERIOD A. D. II: Arab Period.

Rise of the Arabs (7th Century A.D.)

While Sindh lay in such a weak condition under Dahar, great developments were taking place in western Asia. From the ashes of the Byzantine and other empires, now rose Arabia, using the fertile crescent lying between them as their base and expanding their power both westward and eastward. The Arabs were not merely a people of desert nomads, but a band of religious enthusiasts, who solemnly pledged themselves to follow the Prophet Mahommed and to extend the realms of their political power and religion far and wide. A series of Semitic outbursts was started in the near east by these mobile people, who absorbed the higher Aryan cultures of Iran (Zoroastrian) and Byzantine (Christian). Very quickly Syria, Egypt, Iberia and the W. Mediterranean islands on the one hand and Persia, Babylonia, and Assyria on the other were conquered by them stage by stage. Themselves a class of traders, they developed commercial relations soon among the Jews and Christians, Egyptians and Romans and along the ancient Arab trade routes all over the three countries. Agriculture, irrigation, art and other amenities of life were freely sought and above all, conversion to Mahommedanism went hand in hand with warfare. A vast empire was already built with the Caliph Abdul Malik as their head, from Spain in the West to Sindh in the east.

The Conquest of Sindh

This virile race of Arabs now turned their attention to the Indus valley. They had tried an initial attack by land in 671 A. D., when the Jats of Jhalawar (Baluchistan) had stopped their progress.

Though Dahar inherited a vast kingdom from his ancestral hero Chach, with the title of "The King of Sindh and the Sovereign of Hind and the ruler over land and water," this very possession of extensive and varied territories made him a very weak monarch. A religious war against Sindh and Hind was organized in 711 A.D. by the Khalifah through Hajjaj, Governor of Irak, who appointed a brilliant youth of 17, called Muhammad Kasim the leader of the contingent. He was instructed to march *via* Shiraz, where the detachments from Irak and Syria were to join and to go stage by stage, through Makran and Lasbelah to Sindh. The organization included a naval detachment with heavy war Weapons, battering rams, catapults etc., sent by sea to Debal, the first port on the Sindh coast, where Mohammed Kasim was to meet them with his army. (*See Map above.*)

On land every fair horseman took a strong camel loaded with provisions, and even the horses were protected with coats of mail, "so as to give them the appearance of wild beasts like the lion and the elephant."²⁷¹

Leaving Armanbelah, the invaders started for Debal, where the boats containing the weapons and war implements also arrived in time. A ditch, some 12 cubits wide and 6 cubits deep, was made round the Arab camp, but Debal with its idol temple was easily taken away by the enemy. On hearing the news about the fall of the port of Debal, Dahar wrote a letter to Muhamad Kasim in which he stated: "Be it known to you that the fortified town of Debal which you have taken is an insignificant town, where only traders and artisans reside. It contained neither a strong fortress nor was it occupied by a garrison of any importance with whom it was worth your while to fight. If I had sent against you Rai Jaisiah, Dahar's son, who is the most victorious of all the rulers on the face of the earth, and who can wreck vengeance on the strongest men of his age, or the King of Kashmir, who is the mighty possessor of a crown, kettle drums and standards, on whose royal threshold the other rulers of Hind have placed their heads, who sways the whole of Hind and even the country of Makran and Turan, whose chains a great many noblemen and grandees have willingly placed on their knees, who is the owner of one hundred elephants and is the rider of a white elephant whom neither a horse can stand against nor a man can put pressure upon, — if I had sent these heroes against you, you could not have done the slightest harm to them and no army would have dared to pass through the remotest limits of this country till the end of the world."²⁷²

To this Mahommed Kasim replied by marching against the fort of Nerun in middle Sindh some 25 leagues from Debal, for six days and after crossing the intervening lake of Sangrah reached the place. Here the Arab army suffered much for want of water, as the flood waters of the Indus, called the Sehun, had not reached it yet. Victory, however, was theirs and they next proceeded towards the hilly tracts of Siwistan. The forts of Siwistan and Sisam were easily conquered, and much silver and gold was secured and sent on to Hajjaj with a number of slaves.

Instructions were then received from Hajjaj to abandon other towns to arrange to cross the Mehran and march against Dahar himself. Already that part of the country which lay from Buddhiah²⁷³ up to the place opposite the fortified town of Aghror on the Mehran, had been conquered. The next target of attack was the fort of Bet "to the east of the Mehran on the bank of a rivulet in an island of the Gulf of Khanlehal in the country of Sakrah (Mirpur Sakra?)"²⁷⁴ Here the tributary ruler under Dahar was easily defeated, and the Arabs afterwards organized a 4-days' battle of Jitor. According to *Tarikh*

²⁷¹ Mirza Kalechbeg Fredunbeg — *The Chachnamah* Karachi, 1900 p. 76—77.

²⁷² *Ibid.* p. 67.

²⁷³ *Ibid.* p. 99

²⁷⁴ *Ibid.* p. 100

Maasumi, Md. Kasim crossed the river at Thatta and not Jitor to go to Alor before crossing another lake called Gujri between Jitor and Raor, The main objective, however, of the Arab invaders was Alor, the proud capital of Sindh where Dahar himself ruled. This could not be done without crossing the Meran. Elaborate preparations were to be made for performing this action and the requisite cartographical knowledge was to be possessed. Full instructions were supplied by Hajjaj from the Headquarters: "As for the permission to cross the river and to fight with Dahar, you have already been informed that you may cross it from that point where you expect the least trouble and loss to your men. Or rather draw a sketch map, on paper showing the length and breadth of the portion of the river within 4 leagues above and below the (various) cross points, which should also be marked on the bank on which they are situated. I may then select one point and you may cross the river from there."²⁷⁵

The river was to be actually crossed by making a bridge of boats. This was done by filling the boats with a ballast of sand and stone and linking them together by fixing nails into the connecting planks. The island of Bet between the waters of the Mehran was ultimately selected as the crossing point, the Arab army being stationed on the western bank and that of Dahar on the eastern. Long and tedious was the battle between the hosts. All the Jats of the eastern country joined Dahar, great Thakurs, swordsmen and standard-bearers, slaughterers, subject rulers, long trains of war-like elephants, famous horsemen and foot soldiers numbering thousands. Mahommad Kasim divided his cavalry into the right and the left wings in charge of his two best lieutenants respectively and the central front in charge of another. Naphtha shooters were ordered to be ready with their weapons and appliances, to light their torches and to set up their fires. Kasim's exhortation to his troops had always a religious touch in it. "O! Mussalmans", he declared, "be constantly asking pardon of God for your sins. The great and glorious God has sent two gifts to the followers of Muhammad, (the chosen one): one is repeating blessings on his holiness Muhammad the chosen one and the other asking pardon of God for sins."²⁷⁶ On the other side, Dahar is said to have been amusing himself with the games of chess and dice, and believed in the prophecies of astrologers and philosophers of Sindh and Hind. No wonder, Alor fell, Dahar was killed and the Arabs secured the control of most of Sindh.

It was a naphtha arrow shooter who took Dakar's life, as an arrow struck him in his litter on the elephant which he rode. It was in the Gulf of Dhawah, in the waters of the Mekran The heads of Dahar and of his tributary princes were sent to Hajjaj together with all the royal ensigns etc. Hajjaj is said to have proclaimed; "Good news and good luck to the people of Syria and Arabia, whom I congratulate on the conquest of Hind and on the possession of immense wealth the sweet waters of the Mehran and

²⁷⁵ *Ibid.* p. 115

²⁷⁶ *Ibid.* p. 139

unlimited benefits and boons, which the great and omnipotent God has kindly bestowed on them."²⁷⁷

On the fall of Aror, Jaisiah desired to carry on the war and occupied the fort of Raor, which was soon taken by the Arabs but Bakar's sister Bai and other Women in the fort burnt themselves alive. Jaisiah then moved on to the fort of Bahmanabad, a great manufacturing town in those days. Muhammad Kasim was also determined to follow him. On his way to Bahmanabad he took other forts, Bahrur and Dahlelah after a battle against thousands of fighting men belonging to the forts. The next scene of activity was the fort of Bahmanabad itself, situated on a small channel of Halwai on the west of it.²⁷⁸ For six months the siege continued, till Jaisiah decided to escape to the province of Jitor. The traders and artisans of Bahmanabad were taken prisoners, but they were given pardon, while all the military classes were beheaded with swords. Conversion was made of as many natives as possible. "He, who received the honor of Islam and became a convert, was exempt from slavery as well as tribute and was not injured. Those, however, who did not accept the true faith were compelled to pay the fixed tribute (*Jizia*)"²⁷⁹. The management of all the internal affairs were left in the hands of the natives, however. Thus Muhammad Kasim was at last able to subjugate the whole of Sindh, having secured the most important fortified towns, situated at the critical points. But there was no limit to the ambition of Hajjaj for Asiatic conquests and he sent the following complimentary letter to the Arab hero: "O' my cousin Muhammad Kasim, praise and credit is due to you in maintaining your position as commander of the army, in showing favor and courtesy to the people in general, in improving their condition and in satisfactorily settling the state affairs. That which you have done in fixing assessments on each Mauza and in encouraging every class of people to follow the path of law in their worldly business, cannot but conduce to the permanency of the kingdom and to the systematic administration of the country. You should not stick to that city (Bahmanabad) any longer. The props of the Kingdom of Hind and Sindh are the towns of Alor and Multan. Those two cities are the capitals of Kings and in them lay the external and internal treasure of kings. Select that town for your residence which is the best and most pleasant, so that, from it, you may command the entire Kingdom of Hind and Sindh. Whoever refuses to submit to the power of Islam, let him be killed. The great God will help you in that cause. It should be your anxiety to extend your conquests from the country of Hind to the limits of China."²⁸⁰

And Hind.

Thereupon Muhammad Kasim employed some native merchants to manage money and revenue matters, and posted one of his own trusted men to the fortified capital town of

²⁷⁷ *Ibid.* p. 150

²⁷⁸ *Ibid.* p. 158

²⁷⁹ *Ibid.* p. 164-165

²⁸⁰ *Ibid.* p. 171.

Raor and asked him "to watch the river traffic and to collect boats. If any boat coming from the upper part of the river and sailing down, contained any weapons or other military stores it was to be removed to the port of Raor."²⁸¹

Muhammad Kasim continued his progress at first eastwards towards the Aravalli mountain across the desert. Being the products of a barren land themselves, the Arabs were not dismayed by the hardships of their movements through the Thar desert and the next move was towards the country round about Banbanwah, in the vicinity of the lake, called Dhand Wikarbha. The residents not being fighting men but mere priests (Samaris), artisans (Bahzams) and merchants (Luhanas), there was practically no fighting. They next took possession of the land of the Sahtahs, who were mostly rural classes. Thus, practically the whole of Sindh was conquered by the Arabs, as we have seen that Sindhi forts formed the vital parts of the province. But the Arab's thirst of conquest was not quenched thereby and they moved northwards. They took Babiah on the south of the modern Beas, the fort of Gholkandah, Sikkah, Multan, on the south bank of the Ravi, Kanuj and penetrated as far as the frontier of Kashmir, called Panj Nahiyat. The Arabs, according to the *Chachnameh* returned from the northern highlands, moved towards the mountain fastnesses of Rajputana and actually encamped as far as Udhepur. But here at this unhappy time Muhammad Kasim came to grief at the hands of Hajjaj himself, owing to the genius of the two daughters of King Dahar. The great Arab leader and hero of Sindh was recalled under the most adverse circumstances at the very time when the Arab power was at its best in Hind. Even those who succeeded him were weak.

Federated Sindh.

Thus ended the long period of local Hindu regime in Sindh once for all, giving place to a purely Semitic control and authority from a neighboring region, which produced such a daring race. But as has been noticed before, apart from enforcing their religion on the conquered races, the Arabs did not altogether Arabianise them. Rather they assimilated all the native cultures they came in contact with and thereby their own progress became rapid. The Arabs also absorbed the native population, *e.g.*, the Jats.

Today in Sindh and in Bengal – the two extremes of India, the Mahommedan population is the thickest. In our province it was by conquest as well as by conversion and immigration that such a large majority of the people are Mahommedans. But in Bengal, it was a matter of pure conversion of a large number of Buddhists who were cast away by the Hindu propagandists after the revival of Hinduism. When the onslaught of Mahommedan conquerors came in the 16th century, a large body of the out castes in Bengal got voluntarily converted to Islamism and secured the social status, which was denied to them as Buddhists, by their Hindu neighbors.

²⁸¹ Ibid. p. 172.

In Sindh, the Mahommedan majority has continued for the last millennium and more, even the Rajput rulers after the Arab period being the first Mahommedan converts in this provinces.

The Arabs did not materially alter the Government, but kept the Brahman governors and tax-collectors in their service. To the natives it was only a case of changing hands and they soon settled down to the new conditions in Sindh as a province federated to the Arab Empire.

How the Arab influence died away.

The progress of the Arabs up the Indus was rather slow, and the successors of Mahommed Kasim were weak. "With Ibn-al-Athir we may here anticipate a few years further the Muslims in India. Habib one of Al-Muhallab's family as Governor of Sindh, fixed his court at Ror and allowed the princes, displaced by Ibn-al-Kasim, to return as protected to their several states. The pious Omar II, summoned them to embrace Islam, on which they received Arabian names. In the days of Hisham, a little later, Junied pushed the Muslim bounds still farther east. But the prestige of Islam again waned for a time. Most of the princes relapsed into heathenism and to hold them in check the fortified camp Al-Mahfuza (the protected) was founded, from which expeditions, both naval and military, were sent forth."²⁸² But the natives created troubles for the Arabs on every side. Soon the end of the Ummaide dynasty came and the Abbasides succeeded in 750 A.D. But they too were not to rule here long. In 817 A.D.), there was an end of Khalifas.

The Arabs did not build new cities but strengthened the old ones, such as Thatta, Debal and Bahmanabad, Mansura the last founded by Mansur bin Jamhur near Bahmanabad.

The Arab soldiers held land in lieu of their services to the Government.²⁸³ Taxes were levied on certain produces such as dates, grapes, fruits, also fish, and wines.

The land tax was: 2/5 of the produce of wheat and barley (by canals), 3/10 of the produce of wheat and barley (by wheels), and 1/4 of the produce of wheat and barley (unirrigated.)

Extraordinary taxes were levied on certain tribes *viz.*, Jats, Machhi Gorej, Bhatia, Lohana, Sahta, Janda etc., Commerce was the Arab's strong point and all the ancient trade routes were revived between Khorassan, Zabulistan, Sijistan, Kandahar and

²⁸² Sir Win. Muir — "The Caliphate" 1924 p. 354.

²⁸³ "Cambridge History of India" Vol. I.

Ghazni, Turkastan, China, Ceylon and Malbar. Horses were imported from Arabia and wood for boat building from far-off Malabar.

Sindh a difficult country for Foreigners.

That there were inherent difficulties in the matter of the Arab conquest and government of Sindh cannot be denied. And these difficulties were mainly of a geographical nature. First and foremost was the difficulty of communication. There was the river with its changing beds and the numerous Dhands or lakes to cross and recross, as we have noticed in the case of the marching army. Those of the forts on whose stability depended the chief strength of the natives, were on its banks, bridges of boats etc., had to be built and convenient crossing points had to be discovered. The forts themselves were situated in the different physiographic regions and were scattered far and distant from one another. The Arabs had some difficulties of obtaining proper food. "I shall be much obliged," Kasim writes to Hajjaj, "by your sending a little vinegar from your own stores or securing it in any other way, as my men badly require it, because owing to their eating disagreeable kinds of food out of season, the humans of their bodies are disturbed and they get unwell."²⁸⁴ It must here be noted that the required vinegar was supplied by a strange method. Cotton was soaked in vinegar and dried and then sewn in bales to be transported to the Arab camp!

The scarcity of water in Arab camps was indeed keenly felt. It has been recorded in one place; "The floods of the Sehim had not yet spread out to that place and so want of water was felt by the troops, who began to complain of thirst." Strangely enough on Kasim offering prayers, "There was a downpour by divine order and all the tanks in that town were filled, with water."²⁸⁵ These cannot but be storm waters.

Summary and Conclusion.

Though the account of the Arab conquest and government of Sindh, given above, is so scanty, it shows clearly the changing nature of the country, the movements of troops, the kind of peoples, their habits etc. That it was possible for the Arabs to subjugate the whole of the valley in a single campaign in spite of the difficulties we have tried to enumerate, confirms the relationship of its history and geography. This information we owe to the *Chachnameh*, the only reliable history book for the period. "We can gather from its pages that besides Shramans and Brahmans there were rich merchants, at least at Alor, that there were workers in marble who could make life-like statues, even equestrian statues, that the very powerful discus used by Dahar with signal effect was probably of home manufacture, that there was a large class of artisans and that the bulk of the population lived on agriculture. We read of a Buddhist monk who apparently

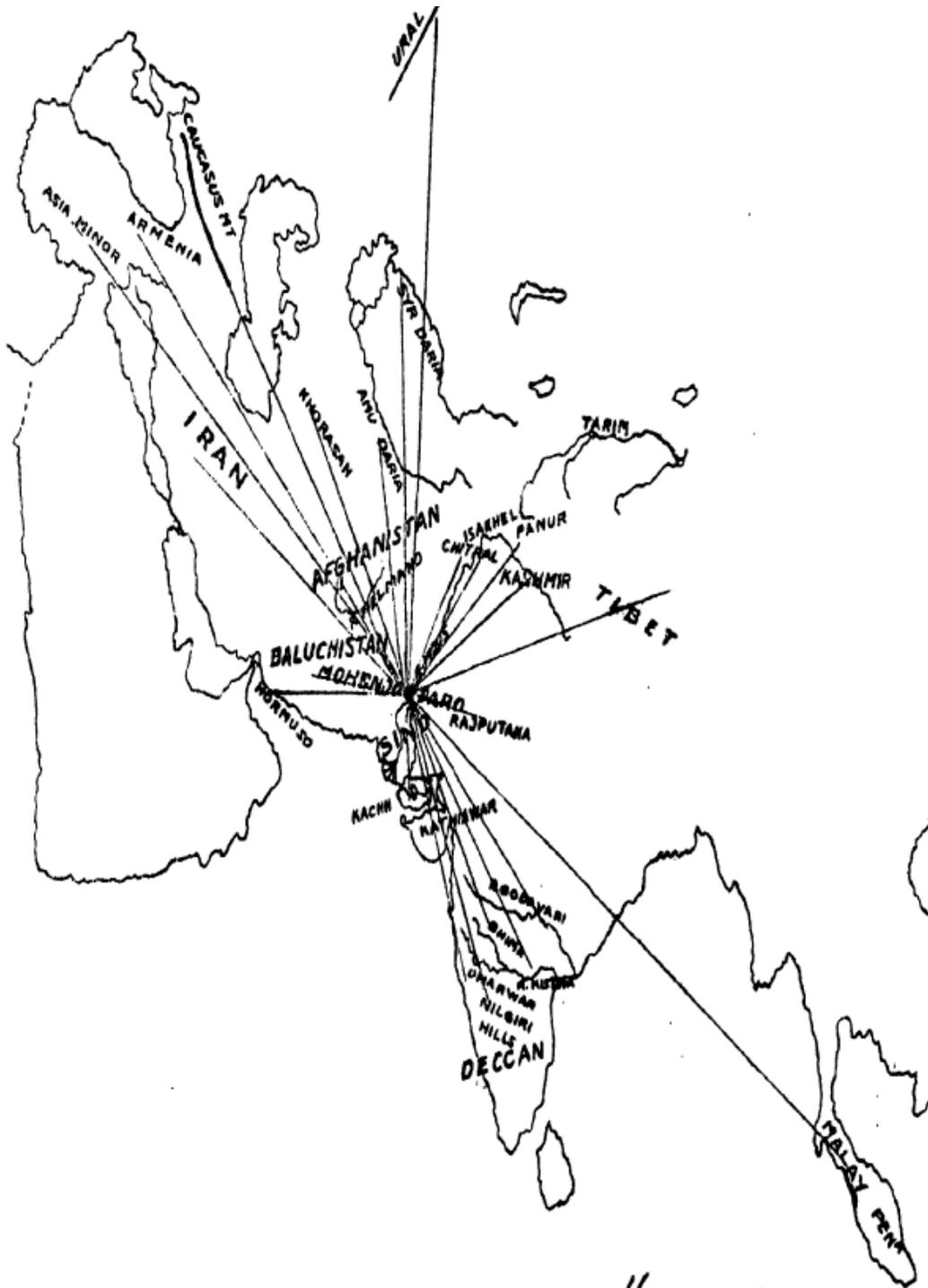
²⁸⁴ Mirza Kalichbeg Fredunbeg — *The Chachnameh Karachi*, 1900. p. 120.

²⁸⁵ *Ibid.* p. 91.

knew the art of war, and there is little doubt that almost all the officials were Brahmans, even before Chach usurped the throne. There were numerous temples. Buddhistic as well as Brahmanic, which were frequented by the people especially on holidays and which had large revenues."²⁸⁶ We also know about other weapons of war manufactured at home, such as, the battering rams, naphtha arrows, nooses and cutting wheels, about the games of chess and dice, the mailed animals especially elephants of Dahar and the world famous Arab horses, boat bridges, boat ballasts, fortifications, castellated cities, etc. We have reference to the climate of the country, and also the floods of the river Mehran. No doubt the river was used by the Arab seamen, though the bulk of the armies moved to and from land. It was crossed at several points, boat bridges were constructed and rich spoils were dispatched by the Arab navy from Debal to the very seat of the Khalifah. The Arab's naval supremacy of the Arabian Sea and the Indian ocean has been recognized by all chroniclers of this period. Upto the middle of the 15th century A. D. (the Middle Ages) they had, in fact, the monopoly of these waters. Many were the gifts they gave to the then known world *e.g.*, the mariner's compass. Their maritime empire was great and wide. They even showed Vasco do Gama the way round the Cape of Good Hope. Their cartography inspired and guided the European adventures, which produced the age of discoveries.²⁸⁷

²⁸⁶ *Ibid* p. IX.

²⁸⁷ Nadawi Syed Suleiman — *Arbon ki Nahazrani* (Urdu) Bombay. 1935.



Mansoor B. Pithawalla

CONTACT OF FOREIGN LANDS WITH MOHENJO DARO
 1700 B.C. - 2500 B.C.
 SCALE 1" 640 MILES.

HISTORICAL GEOGRAPHY OF SINDH V.

By Prof. M. B. Pithawalla, F.G.S., M.R.A.S.

Historic Period A. D. III.

(Read before the Sindh Historical Society on 27-6-1937.)

Post-Arab Conditions.

In our attempt to emphasize the association of the history and geography of Sindh by the fundamental law, "that the progress of civilization depends upon the as well as the factor we cannot ignore the fact that man is, however, trying to subjugate nature as much as possible throughout the ages. The history of Sindh, during the period, which followed the Arab conquest, is a suitable illustration of the above fact. In the first flash of the conquest of the Indus valley by the Arab invaders, a new life was given to the land. They gave Sindh and Hind, — an inseparable pair in those days, — the idea of empire-building. There was peace restored in the region, which was brought under a single supreme government, the natives were allowed to till their own soil with renewed zest and vigor, trade was increased, fresh lessons were given in international commerce, settlements were renewed or removed to more stable and safe localities, an impetus was given to the Indus irrigation, and above all, a new theology, with belief in one God, was forced upon the people, who were worshipping idols, dedicated to various gods. The Arabs found, in Sindh, geographical and climatic conditions somewhat similar to those prevailing in Arabia and so were at home in this province. But the distance between the homeland and subjugated Sindh was very great indeed and the communication was difficult. The conquest of Sindh was synchronous with the conquest of Spain, the two extremes of the then known world, to which Arab influence was extending. The smallness of their number in a new region compelled them to be tolerant in some ways, e.g. there were independent native potentates allowed to rule here and there, "holding the name of the prophet in respect, though they continued to worship their own idols", but wherever possible, they either destroyed the native temples e.g., Debal, or exacted tribute from them e.g., Alor and Multan. Few women could be imported from Arabia, so they had to take native wives, with whom they lived in cantonments or military colonies, which became quite a peculiar feature of their new settlement. They generally had other towns or forts built along the coasts or river banks, in island homes or in oases.

Their national characteristics of thrift and tenacity, which they owed entirely to the geographical conditions of the desert land, stood them in good stead in Sindh, where their income was limited and the stress and strain of life were great. They could, if they wanted to, live without much food or drink and bear the tropical heat or winter cold.

Their caravans moved through fertile tracts as well as barr lands, their ships sought harbors on sea coasts or in river mouths, while they had a characteristic, two-fold mobilization of their men, the army and the navy, in parallel zones along the coastal strips *e.g.*, Makran. They conveyed heavy war machinery in ships across the seas or rivers, while their light-footed horses carried their regiments through mountain fastnesses or desert areas and along river banks, though not without impediments in a country intersected by rivers, lakes, swamps, canals and sand hills. The coast of Sindh also was not quite hospitable, there being no great natural harbors on it or on the main river. Even Debal lay inland, beside a side-stream of the Indus. The monsoon broke sterile upon the shore with great violence for a whole season and even the stream of the Indus was often too rapid or giratory to allow smooth navigation throughout the year. Though the fertile fields of Sindh helped the conquerors to secure rich crops, the enervating climate of lowlands and the delta made the virile people stagnate soon, many becoming dreamers and idlers. Only a fresh invasion from the needy Tartar or Balooch hordes could stir the Sindhis again. In Sindh no doubt was felt the earliest racial antagonism between the Hindus and the Mussalmans; even the converted Rajput chiefs could not tolerate their less fortunate brethren on this account. The valley itself being unevenly watered, the Arab kingdom was soon broken up into antagonistic principalities, which the new rulers could not long control. They themselves could not completely coalesce the rival tribes, which immigrated into the province from time to time, and this was one of the causes also of their downfall in Sindh. No rulers with a mercenary army could long be in possession of a foreign land, — the soldiers chose or left a leader as they liked, and as soon as their turbulent spirits were calmed, climatic conditions compelling them so, they failed the foreigners completely.

Earliest Oriental Chronicler of Sindh

Few writers have touched upon the history of Sindh, following the Arab period. The Chinese traveler, a Buddhist monk, Hiuen Tsang visited parts of Sindh about 645 A. D. But the geographical information given by him is meager. He refers to Pi-shen-p' o-pulo, as the Capital of Sindh, on the west of the Indus, Multan only 150 miles distant from it to the east of the Indus and a Shuto'lo King ruling over Sindh. The boundaries of the Kingdom of Sindh extended as far as the Salt Range, as salt was found as red as cinnabar along with white, black and rock salt. Commenting upon the part of the delta country between Umarkot and the Rann of Kachh, called Pitoshilo (Patala?), which was visited by Hiuen Tsang, Haig remarks, "It is there that we ought to look for whatever district our pilgrim meant by Pi-to-shi-lo and I would suggest that the Nagar Parkar country, which contains some very ancient remains, might be what we are in search of; or again, the district about Umarkot, or that immediately west of it in the Mirpur Khas Parganah or a little south of it. This last portion of Eastern Sindh is certainly more likely to have contained a dense population as we are told Pitoshilo did, than any part of the

Dhat country."²⁸⁸ Indeed, this condition is likely, as Kach, then, was a dependency of Sindh, and the Fakra had not dried up.

A Dark Age Follows

Some of the history of the dark age, which followed the Arab period in Sindh, has been recorded by those famous Arab geographers, who were also their earliest cartographers in the east. The literature produced by them in Arabia and afterwards carried into Persia, is very wide. They

wrote not from hearsay only but from actual observations in the field; in fact, they were great travelers and recorders of world events, which took place within their own life time. The intrinsic value of their work is so great that renowned English scholars, such as Elliot and Raverty,²⁸⁹ labored for many years over the rare manuscripts and produced their own commentaries, which have themselves passed into classical literature. Through these historians we get glimpses into Sindhi life and Sindh geography chiefly of the 9th, 10th, and 11th centuries A. D. The maps drawn by them, though clumsy and inaccurate, are their most valuable asset. They had a false compass bearing, sometimes distances were roughly measure in days' journeys only, and place names were often misspelt and confused. But as pioneers of Asiatic cartographers they were unrivalled. They were travelers, geographers, historians and cartographers all command, They afford least some ideas about Sindh and neighboring minds.

Elliot give extracts from eight such Arab writers, from which I have selected the following details regarding the region of our study. Though the information is scanty, it gives us an account of what the conditions were in those days.

Arab Geographers of Sindh

The work of the Arab geographers was first brought to light in 1718 by a French scholar Abbe Renaudot, and, by a curious coincidence, says Elliot, his translation happened to be that of the earliest Arab geographer of the east, *viz.*, the merchant Sulaiman (851 A.D.) on whose travels Abu Zaidu-l Hasan (916 A.D.) commented further, "by questioning travelers to those countries." In his observations on the countries of India and China the merchant stated that there were four great principal kings in the world, of whom the king of the Arabs (Khalif of Baghdad) was the head. The Balhara was the most eminent of the princes of India and the Indians acknowledged his superiority. Every prince in India was master in his own state, but all paid homage to the

²⁸⁸ Haig Major Genl. M. R., — "*The Indus Delte Country*," London 1894., page 39.

²⁸⁹ Elliot Sir H. M. — "*The History of India, as told by its own Historians*" London, 1867. Raverty Major H. G. — "*The Mihran of Sindh and its Tributaries*" Jour. Alia, Soc. Beng. Voi. LX 1893.

supremacy of the Balhara.²⁹⁰ Who this prince Balhara was it is difficult to ascertain, but it is probable that the king of Sindh was not one of the principal kings of India and the king of the Arabs was thought by these Arab geographers to be ruling over Sindh all the time. There was trade connection between Sindh and India, as Abu Zaid says, "Formerly the dinars of Sindh, each of which worth three and a fraction of the ordinary dinars, were brought into India."²⁹¹

When the traveler visited Sindh, he found the people believing in idolatry and Multan was yet an important place for Hindu pilgrimage "The idol, called Multan, is situated in the environs of Mansura, and people come on pilgrimage to it from many months distance bring thither the Indian aloes called *al amruni* from Kamrun, the name of the country in which it grows. These aloes are of the finest quality. They are given to the ministers of the temples for use as incense . . . Merchants buy them from the ministers of the temple."

Ibn Khurdadba is the next traveler mentioned. He died in 912 A.D. and so his picture of Sindh is that of the end of 9th century. He mentions 26 "Countries of Sindh", Makran, Kandahar, Sadusan, Debal, Alor, Multan, etc., and fixes some of the important places in the days' journeys e.g. "From the Mihran to Bakar, which is the first place on the borders of Hind, or four days' journey. From Bakar to the junction of the river Mihran with seas is two *parsangs*." Two natural positions in Sindh are pointed out *viz.* Highland or Kohran and the country is all grass lands: The country abounds with caves and the hill tracks put in the plains where wheat is cultivated. "Of commerce Arab travelers forget to speak: Wheat and cans are already mentioned. The people are considered to be "wanderers or robbers."

"One of the most admired writers in the Arabic language", gives the fruits of his travels in Sindh and other countries in his time *viz.* about 940 A.D. He definitely says that the King of Kandahar "is one of the kings of Sindh and its mountains", and so was the king of Kanouj, one of the kings of Sindh. Kashmir formed a part of Sindh. The Multan temple was yet the most important at the time, as the inhabitants of Sindh and India "perform pilgrimage to Multan."

The topographical description of parts of the country was exact; "When all the rivers, which we have enumerated, have passed the 'boundary of the house of gold,' which is the meaning of the name of Multan, they unite at about three days journey below the city and above Mansura at a place called Dushab (Duab) into one stream, which proceeds to the town of Al Rur (Alor), which lies on its western bank and belong to one of the districts of Mansura, where it receives the name of Mihran. There it divides into two branches, both of which fall at the town of Shakira, which belongs to one of the

²⁹⁰ Elliot, Sir H. - *op. Cit.* P.3.

²⁹¹ *Ibid.* P. 11.

districts of Mansura into the Indian sea, under the name of Mihran of Sindh, about two days' journey from the, town of Debal."²⁹² The description is valuable, as it indicates the position of Debal, the chief fort of Sindh in those days. It must be noted here that the ruins of Aror at present lie on the eastern bank of the Indus and the delta of the river has now extended about 50 miles into the sea. Between the statements of these Arab writers themselves there are some inaccuracies i.e. Ibn Khurdadba says Debal was only two parsangs from the mouth of the Mihran, while this writer Masudi asserts that "it was two days' journey from Debal". Crocodiles are particularly mentioned by this geographer as living in sweet water and in the estuaries of India. "In the bays of this sea (Indian Ocean), there are many crocodiles."²⁹³ The language of Sindh is noted as different

from that of India. Islam, though not the only religion prevalent in Sindh and India, is honoured and protected and "of all the kings of Sindh and India, there is no one who pays greater respect to the Mussalmah than the Balhara."²⁹⁴

Al Istakhri, who also flourished in the middle of the tenth century (951 A.D.) and who met Ibn Haukal in the valley of the Indus and exchanged observational notes with him, has described some 12 cities of Sindh and a number of others of Hind with the distances in days' journeys. He has also drawn a map from the *Ashkalu-l-Bilad*, showing the course of the Mihran and the places on its banks and along the main caravan routes. Debal is still the most important port, on the *western side* of the chief mouth of the river. Mansuia is shown within the loop of the river on its left bank and surrounded by a branch of it. "The inhabitants are Mussalmans. The date tree and the sugar cane grow here. The land of Mansura also produces the fruit of the size of the apple, which is called Zaiman, and is exceedingly sour. The land also produces a fruit called Ambaj (mango), which is like the peach."

Makran is for the most part a desert with very few rivers, while Kandabil is a great city in another part of the desert within the confines of Budha. "The palm tree does not grow there. The cultivated fields are mostly irrigated. Vines grow there and cattle are pastured. The vicinity is fruitful."²⁹⁵ "This author is also eloquent in his account of the river Mihran. "It is said that it springs from the summit of a mountain from which many affluents of the Jihun rise It rises as the Nile rises, and inundates the land, which on the subsidence of the water is sown in the manner we have described in the land of Egypt."

Ibn Haukal, who made a fortune by travelling and trading in foreign countries from 943 A.D. to 968 A.D., published his "*Book of Roads and Kingdoms*" in 976 A.D.; which also contained a map of the World, similar to that drawn by Istakhri. His work is the same

²⁹² *Ibid.* pp. 23-24.

²⁹³ *Ibid.* p. 21.

²⁹⁴ *Ibid.* p. 24.

²⁹⁵ *Ibid.* p. 27.

as given in Ashkalu-l-Bilad, "Diagrams of the countries of Islam." He says "I have placed the country of Sindh and its dependencies in one map, which exhibits the entire country of Sindh, part of Hind, and Turan and Budha. On the entire east of this tract there lies the sea of Fars and on the west, Kirman and the desert of Sijistan and the countries subject to it. To the north are the countries of Hind, and to the south is the desert lying between Makran and Kufs, beyond which is the sea of Fars."²⁹⁶ He, too, mentions some eleven chief towns of Sindh putting Mansura at the top of the list. It is "about a mile long and a mile broad and is surrounded by a branch of the Mehran. It is like an island and the inhabitants are Musalmans. The king of the country is one of the tribes of Kuraish and is said to be a descendant of Hubad, the son of Aswad. He and his ancestors ruled over this country, but the Khutba is read in the name of the Khalifa. The climate is hot and the date tree grows here; but there is neither grape nor apple nor ripe date (*tamr*) nor walnut in it. The sugarcane grows here."

Debal is still a flourishing town. It is a large mart and the port not only of this but neighbouring regions. "Debal is remarkable for the richness of its grain cultivation, but it is not overabundant in large trees or the date tree. It is famous for the manufacture of swords. The inhabitants generally maintain themselves by their commerce."²⁹⁷ The language spoken by the people in Mansura, Multan, etc. is Arabic and Sindhian.

Sir William Ousley, who translated in 1800 the oriental Geography of Ibn Haukal from his own copy of the Mss, has thrown some more light on the Sindh of the 10th century A.D. and its towns etc. "The people of Mansura have their dress and habits, resembling those of the people of Iraq; but their kings affect the appearance of Indian kings, and wear pendants in their ears. "Scind is surrounded by infidel tribes of whom the Burhooe is most celebrated. This tribe is distributed over the country between Zoran, Mukran, Multan and Mansoorah: the men are great breeders of camels and export animals much sought after in Khorasan, Persia, etc. The central town of theirs is Gundava."

Again, "About Saimur it is said that it is a city of Hind near the Confines of Sindh. The people are very handsome from being of Turk and Indian people. There are Musalmans, Christians, Jews and Fire-worshippers there. The merchandise of the Turks is conveyed hither and the aloes, called Saimur, are named from this place. In the city, there are mosques, churches, synagogues, and fire temples. The infidels do not slaughter animals nor do they eat flesh, fish or eggs."

The above description clearly shows how Sindh must have looked even these earlier centuries, quite cosmopolitan with so many people, living peacefully together in the province.

²⁹⁶ *Ibid.* p. 33.

²⁹⁷ *Ibid.* p. 37.

Makran, which formed the boundary land of pure Islam, was quite different. "Water is very scarce throughout. Many of the inhabitants resemble the Arabs. They eat fowl and fish; others of them are like the curds. Here is the extreme boundary of the land of Islam in their direction."

Al Biruni (970 A.D. to 1039 A.D.), throws more light on the changing geography of Sindh. He seems to have specialised himself in the study of hills and rivers. Regarding the Indus he writes: "They all (rivers of Punjab) combine with the Satlader (Sutlej) below Multan at a place called Panjnad, or the junction of the five rivers. They form a very wide stream, which at the time it attains its extreme breadth, extends ten *parasangs*, submerging trees of the forest, and leaving its spoils upon the trees like nests of tods. This stream after passing Audar (Alor) in the middle of Sindh bears the name of Mihran and flows with a slower current, and widens, forming several islands, till it reaches Mansura, which city is situated in the middle of the waters of the river. At this place the river divides into the two streams, one empties itself into the sea in the neighbourhood of the city of Luharani (Lari Bunder) and the other branches off to the east to the borders of Kach and is known by the name of Sindh Sagar i.e., Sea of Sindh."²⁹⁸

It appears that Debalwas, by this time, thrown inland and Lari Bunder came into existence. The Indus itself had developed other "small and big mouths." How many of these mouths were then extant is not said, though the earliest map of Ptolemy (150 A.D.) shows eight.

Al Idrisi, who wrote his book on "The delight of those who seek to wander through the regions of the world," about the end of the 11th century, has also drawn a map, of which two versions are reproduced. In the one taken from the Ms. lying in the Bodleian library, three main river systems are shown without any details, e.g., *al Scindi* (The Indus), *al Hind* (it is not clear which river is meant), and *al Seen* (perhaps the river in China). In the other map, there is a tendency to show the physiographic regions of Sindh, for which Idrisi deserves great credit as a pioneer. The course of the Indus is more natural than in other Arab maps. Besides Debal, another port is shown as Munnabari, on the opposite side of the Indus. "There are six miles between the mouth of the great Mihran and Debal. From Debal to Nirun, on the west of the Mihran, three days' journey. Nirun is half way between Debal and Mansura, and people going from one town to other, here cross the river." Alor is still meant to be on the west bank of the Mihran. Some of the highlands and the source of the Indus are probably shown and, on the whole, it is good cartographical work. But the compass bearing is reversed and places on the eastern side of the river are deliberately shown on the west.

According to Al Idrisi there seems to be a further hydrographic change, which is noticeable in his description of Mansura, He says, "It is on the west of the principal

²⁹⁸ *Ibid.* pp. 48-49.

branch of the river, which flows from its source to Kalari, a town situated one day's journey from Mansura. At Kalari, it divides – the principal branch runs towards Mansura, the other flows, northward as far as Sharusan (Sadusan), it then turns westwards, and rejoins the chief stream, forming henceforward only one river. The junction takes place twelve miles from Mansura. The Mihran passes on to Niron, and then flows into the sea."²⁹⁹

As regards Sadusan (Sharusan), he suggests that it came into prominence in his time. It is "remarkable for its size and for the number of its fountains and canals, for the abundance of its productions and for its rich commerce. It is much resorted to. From Sharusan to Manhabari (Manjabari), a town placed in a hollow well built of a pleasant aspect, surrounded with gardens, fountains and running waters; the distance is three days. From Manhabari to Debal two days."³⁰⁰

Against this prosperity of a portion of Sindh there are patches of barren land inhabited still by turbulent tribes. "Going from Multan towards the North, there is a desert which extends as far as the eastern boundary of Tubaran. From Multan to the vicinity of Mansura, the country is occupied by a warlike race, called Nadha. It consists of a number of tribes scattered about between Tabran, Makran, Multan and Mansura like the Berber nomads. The Nadhas have peculiar dwellings and marshes, in which they take refuge *on the west* of the Mihran. They possess excellent camels, particularly a sort of which they breed, called Karah."³⁰¹

Al Kazwini, who flourished about the middle of the 13th century, is the last Arab author mentioned by Elliot, and called "Pliny of the East." He does not say much about Sindh but his writings indicate that many peoples of different denominations still lived in it and in the neighbourhood. Describing Saimur, a city of Hind near the confines of Sindh (near to Debal), he says, like Ibn Haukal, "The people are very beautiful and handsome, from being born of Turk and Indian parts. There are Musalmans, Jews, Christians and Fire-worshippers there."³⁰² The inhabitants of Multan were Musalmans and infidels. "The ruler of Myltan does not abolish this idol, because he takes the large offerings which are brought to it and disburses certain sums to the attendants for their maintenance."³⁰³ The Musalmans were evidently the ruling race.

R. D. Oldham – On the defects of Arab Geography:³⁰⁴

That there were inherent defects in Arab geography is also shown by Oldham.

²⁹⁹ *Ibid.* p. 78.

³⁰⁰ *Ibid.* p. 79.

³⁰¹ *Ibid.* p. 83.

³⁰² *Ibid.* p. 97.

³⁰³ *Ibid.* p. 96.

³⁰⁴ Jour. Asia Soc. Beng. Vol. LV 1886 pp. 328-329. Elliot & Dawson H. *Op, cit* pp. 78-79.

"The Arab geographer Al Idrisi places the head of the delta or the place where the first distributary is given off, at Kallari 'a hard day's journey of forty miles from Mansura.' The exact words of the translation are: 'At Kallari it divides – the principal branch runs towards Mansura, the other flows northwards (southwards) as far as Sharusan, it then turns westwards (eastwards) and rejoins the chief stream, forming henceforth only one river. The Mihran passes on to Narun and then flows into the sea.'

"Further on he says, Kallari on the west (east) bank of the Mihran is a town well-fortified and is a busy trading place. Near it the Mihran separates into two branches, the largest runs towards the west (east) as far as the vicinity of Mansuria, which is on the west (east?) bank; the other runs towards the north-west (south-east) then to the north (south) and then towards the west (east). Both unite at the distance about twelve miles below Mansuria."

"It will be noticed that the bearings in these two accounts do not agree; probably in the second case we should be satisfied with turning them three quarters of a semi-circle, but even then they would not fit in, and in consequence the first set, which are most consistent must be regarded as more nearly correct; any way it is clear that the river bifurcated at the place called Kallari, forty miles or a hard day's journey from Mansura and that the two united below Mansura."

"At the conclusion of the second account he says that from Kallari to Sharusan is three days. I refer to this now as the statement is puzzling, but is due to the confusion of the two places of very similar names."

Kallari and Ballari. – On Ibn Haukal's map, the town at the bifurcation of the river is called Ballari, while Kallari is further north at some distance from the river. In it he says that Ibn and Labri - which Prof. Dawson identifies with Amari and Kallari – are situated east of the Indus but distant from it. Al Idrisi's two accounts are evidently from different sources and it is probable that either he or his informant must have confused the Ballari or Kallari at the bifurcation of the Indus with the other town of similar name situated to the east, which might well be three days distant from Sehvan.

"The first account too is somewhat difficult to understand, for it is impossible how from any point one day's journey – even if it be one of four miles – from Mansura, a branch of the Indus could flow south to Sehvan. It is of course a physical impossibility that the Indus should have flowed any distance northwards, and the general reversal of Al Idrisi's bearings has already been referred to. No other authority makes this statement, and the map of Ibn Haukal places Sadusan on the west bank of the Indus above Bellari, where the river bifurcates. This is altogether a more probable disposition."

Changing Sindh as seen by Ibn Batuta.

Samuel Lee's translation of "the Travels of Ibn Batuta" (1324-25) gives a glimpse of Sindh of the time of Mahomad Shah, the ruler of Sindhia³⁰⁵ and India. One of the Mamluks of the Sultan Mohommad, Sir Tiz Shah, was the Emir of Sindia then. This shows that the Arab control in Sindh had, by that time, completely passed away. Delhi and not Baghdad, was the centre of political power over the province. Batuta found Sivastan quite a large and flourishing part of Sindh as before. "Without it is a desert in which there is no tree except Egyptian thorn." Melon, millet, peas, fish and milk of buffaloes were found in great abundance. The climate was exceedingly hot and it took people ten days to go from there to Multan. In Batuta's opinion, "the Sindh was the greatest river in the world and overflowed during the hot weather just as the Nile does and at this time they sow the lands." Irrigation was in vogue and trade was in a flourishing condition. The new port of Larry Bunder, called by the traveller Lahari, was greatly developed. He writes, "It has a large harbour, into which ships from Persia, Yeman and other places put in. At a distance of a few miles from this city are the ruins of another (perhaps Debal?) in which stones, the shapes of men and beasts almost innumerable, are to be found. The people of this place think that there was a city formerly in this place the greater part of the inhabitants were so base, that God transformed them, their beasts, their herbs, even to the very seeds, into stones; and indeed stones in the shape of seeds are here almost innumerable."

We may here throw a hint that these so-called seeds converted into stones must be the numerous Gaj and Kirthar fossils, which are found in abundance in the Tertiary limestone rocks of this locality.

Alor, the principal Hindu city, is also thrown in the background, the Indus must have entirely changed its course and cut through the Bukkar gorge, for, Bukkar was found by the traveller to be a "a handsome city divided by an arm of the Sindhe," and was a city of saints.

In a place called, by Ibn Batuta, by the name of Janai, there lived a people called El Samira, most probably the Sumras, who were ruling over at least a good part of the Sindh desert soon after the Arab hold on the province was slackened. "They never eat with strangers nor are seen eating by them; nor do they contract affinities or suffer any one to contract affinities with them."

Already some of the converted native princes, Rajputs and others, had assumed Arab names and regained their power and position, though the spiritual supremacy continued to be alien *e.g.* Bahmanabad. Occasional presents to the Khalif included, "An elephant, a cast of hawks, a suit of silk hangings or some pounds of musk and amber, a

³⁰⁵ Lee, the Rev. Samuel — "*Travels of Ibn Batuta*," translated from the Arabic. London 1829. pp. 100 — 102.

cart load of four armed idols," etc., but no real revenue was paid. Sindh had been definitely broken up into two kingdoms at least, with their headquarters at Mansura (Lower Indus) and Multan (Upper Indus), which when the Ghazni rulers of Delhi became powerful, also lost their independence again.

A good deal of Arab geography yet remains to be translated from Arabic and Persian sources. Further light may thereby be thrown on Medieval Sindh, the changing nature of which was so clearly grasped by them.

HISTORIC PERIOD IV

Makers of Sindh's History and Patterns of State

That Sindh is not a uniform country with the same political conditions conforming with the physical and climatic conditions throughout, can also be shown by the history of subsequent dynasties. Whenever a conqueror took possession of the fertile valley of the Indus proper, heroic tribes found shelter in other areas, which were less likely to be attracted and in which they could still live their independent life, without interference. When Lower Sindh was put in order, Upper Sindh went out of gear. The deserts specially offered temporary asylums not only to fugitive kings but warlike tribes, which preferred to live independently in uninviting territories. One such tribe, whose origin is one of the most knotty points of Sindh history, after the downfall of the Hindu kingdom of Alor in the beginning of the eighth century A. D., is said to have assembled in the vicinity of Thari, the "Little Desert", separating Sindh from Kachh but who extended their power later as far as Nasamur. It may be recalled that Alor had been abandoned and Mansura (Bahmanabad) depopulated since then, and the new capital town had been established in the eastern delta country.

As we had to depend upon the Arab geographers for the information about Sindh in earlier centuries as described in the previous pages, we have here to depend upon various scattered sources of Sindh History chiefly from Arab and Persian historians. I shall, for my purpose, select from the material put together by Mirza Kalich Beg in his "*History of Sindh*" Vol. II, aided by Elliot as far as possible. From all the mass of vernacular literature, we shall choose those events, which will be helpful in our coordination of history and geography.

1. The Sumra Dynasty (750 A.D. to 1850 A.D.).

Conversion to Islam and absolute subjugation of the natives and their trade, were the main purposes of the Arab invasion of Sindh. Their religious zeal and control of the Indus Valley helped them to establish their kingdom at first. A vital portion of the native population came originally from the adjacent hill tracts of Rajputana, which has been known in history as a stronghold of Hinduism. But the Rajput tribes in Sindh, called the Sumras, were the first to yield to the Arabs. Depending upon Arabic, Persian and other sources of information, Elliot concludes that "In calling the Sumras Rajputs, Elphinstone is without doubt correct, for notwithstanding the assertions of the local writers, the real fact must be admitted that the Sumras are not of Arab descent at all, and that this fictitious geneology was assumed by them, when the majority of the tribe were converted to Islam, and that, as the name of Sumarra offered a sufficiently

specious semblance, that town was adopted as the probable seat of their origin, though it was not built till after the supposed period of their emigration."³⁰⁶

Even before the Arab conquest of Sindh, the Sumras were a dominating race, although today "many of the tribe still continue to be Hindus, roaming as shepherds through the *thals* of Jaisalmir and Upper Dhat country to the east of Sindh, we know from personal communication."³⁰⁷

Such a race, though converted to Islam for the time being, would always seek an opportunity to regain their political position in the country. The sudden recall of Muhammad Kasim in 714 A. D. had altered the situation and shattered Arabia's hope of an eastern empire. Even the long rule of his successor Temim for 36 years, did not improve matters and the Arab rulers are said to have been expelled from Sindh by 750 A. D. But though the rulers were squeezed out of Sindh, Arab settlers, landowners and governors remained in Sindh.

Mahmud of Ghazni invaded Hindustan in 1019 A.D. and after conquering Multan and Uchh appointed Abdul Razai to take Sindh (in 1026 A.D.,) which was at that time nominally ruled by the Arab governor under the Khalif Kadir Billah Abdul Abbas Ahmad. The Ghazni dynasty soon came into power at Delhi. From there came a menace both on Multan and Tatta on the Indus river, as has always been the case. At Tatta the Sumras established themselves as independent rulers of Lower Sindh at least. After the death of Ghyasuddin and his son Muhammad Shah, Feroz Taghlak actually came down to Sindh and punished the rebels of his empire, who had taken refuge at Tatta. He also built a fort on the bank of the lake Sangrah (now lost), and appointed a viceroy at Bukkur in 1351 A.D.

According to *Ayin-i-Akbari* (Vol. II, page 120) and also *Firishta* (Vol. IV, page 411), there flourished 36 Sumras or Zamindar princes, came into prominence, was Mahomad Tur in the Pargana of Dirak, and according to Elliot, represented by the modern divisions of Chachagam and Badhan on the borders of the Thari or sandy desert between Paikar and Wanga Bazar.

They had intercourse with other tribes living on the sandhills. It was a period of great struggle for them, as they had to re-establish their political power in their own country against the foreign invaders. The Ghori, Khilji and Tughlakh kings of Delhi exploited Sindh now and then, but they generally retired after ravaging the crops and plundering the towns. When Alauddin Khilji invaded Sindh, the Sumras sent away their families to Kachh, where they themselves sought refuge later but were soon destroyed by the Sammah chiefs who had taken possession of that land. Jam Rainah and Jam Nizamudin

³⁰⁶ Elliot & Dawson — *Op, cit*, pp. 488-489.

³⁰⁷ *Ibid* p. 489.

(Nindo) were powerful Sumrah rulers, who extended their authority over the whole of Sindh gradually. But attacks were continuous. At one time even the Moghuls came under Shah Beg from Kandhahar, but Jam Nizammuddin drove them out of Chandukah. But, on the whole, the government of the province was not centralised and while, for example, one man went to Bakkar, in the north to settle affairs, another would usurp the throne in Lower Sindh. During the reign of Jam Sikanda, the governors of Sehvan and Bakkar became actually independent.

Such was the state of affairs for well-nigh five centuries. It agrees with the natural conditions, which existed in Sindh. Even nature was against the Sumra rulers. The story of Dalu Rai's foul deed against the daughter of Saiful Muluk is well known. The tradition is that a sudden earthquake diverted the whole course of the Indus from Alor and Bahmanabad, which were thus destroyed. The capital town of Muhamed Tur, established on the Ren (Gungro), seems also to have been destroyed by a change in the river course. The Hakra or Waindah dried up and there was migration of population westwards towards the Makali hills, situated on a higher level. Nearby, the Sumrahs built another capital town of Samui, which was afterwards known as Tatta or Kalankot, so that Lower Sindh became well populated.

Although we have devoted this space to an account of the Sumra dynasty, it is doubtful if such a kingdom was either extensive or absolute in Sindh. It is certain that there was no other powerful and rival dynasty in Sindh established like this after the Arab period. Though this dynasty came to an end in the middle of the 14th century after such a long rule, Sumra influence remained in Sindh, There are thousands of Sumra inhabitants living in various parts of Sindh even today.³⁰⁸

2. The Sammas. (1851 A.D. – 1521 A.D.)

The situation, before the Sammas came into power, was typical of the province. Upper Sindh was controlled by representatives of Turkish rulers of Delhi, *viz.*, Malik Feroz and Ali Shah Turk. Lower Sindh, especially, from Sehvan to Kuchh, was recovered by the native chiefs.

First Conflict between converted Sindhis.

When Feroz Tughlakh invaded Sindh a second time, he found another Rajput (Kuchhi from Kuchh) tribe very powerful. Perhaps it was this very tribe that had come into conflict even with Alexander, who called them Sambus. Their capital was then located at Sindhonalia, Sindhimona or Sindhomana (Sehvan) and they had governors at other chief cities *e.g.* Bukkur. Elliot gives his opinion about the race as under: –

³⁰⁸ Census Reports of 1921, 1931.

"They were then (at the time of Arab conquest) either Buddhists or Hindus and were received into favour in consideration of their prompt and early submission. They form a branch of the great stock of the Yadavas and their pedigree is derived from Samba, the son of Krishan, who is himself known by the epithet of "Yama," indicative of his dark complexion. Sammanagar, on the Indus, was their original capital, which has been supposed by some to be the Manager of the Greek geographers and is probably represented by modern Sehvan. The more modern capital of the Sammas during a part of the period under review and before its transfer to Thatta, was Samui. Since the Sammas became proselytes to Islam, which probably occurred not earlier than 1391 A.D., their name, though it still comprised several large erratic and pastoral communities, is less known than that of their brethren, or descendants the Samejas and the demi-Hindu Jharejas of Kachh, who do honour to their extraction by their martial qualities, however notoriously they may be deficient in other virtues.³⁰⁹

Population of Lower Sindh.

The population of this part of Sindh must have been good, as during Firoz Shah's campaign in Sindh's numerous villages were met with. According to Haig, the new capital Samui was on the Kalri branch of the Indus, the then perennial stream on which Tatta was established later on, after Debal sank into insignificance.³¹⁰

After beating the Sumras out, the Sammas returned to Sindh from Kachh as original inhabitants, and soon came into power. From 1351 onwards, one Jam after another ruled over Lower Sindh, while Upper Sindh passed through the same kind of tribulations as in the days of the Sumras – *viz.*, attacks from the imperial rulers of Delhi. There were occasional revolts also within the territories of the Jams.

Jam Unar, son of Baniah, had to prepare the way for himself at the outset. He proceeded northwards and took Sehvan. Then he attacked the Tartar forces at Bakkar and drove them out to Uchh. But an invasion from Alauddin was imminent. He responded by taking Bakkar and attacking Sehvan, and carried away Jam Tamachi even to Delhi. The Sammas gathered forces round Thari again and enthroned Jam Khairuddin. At Delhi again the Soghas came into power, and as soon as Mahomed Shah Taghlak completed his conquest of Gujrat, he hurried to Sindh in 1351 actually arriving at Tatta, but died there. Another Taghluk attack on Sindh came from Sultan Feroz Shah in the time of Jam Babniah in 1372. It is said that being troubled by mosquitoes, floods and strong winds, he returned to Gujrat and other open plains to spend the rainy season there. Returning again in the fair season, he conquered the whole of Sindh and took Jam Babniah as a prisoner to Delhi. The Jams, who succeeded, saw evil days of revolts and civil wars.

³⁰⁹ Elliot & Dawson.— Op. cit. p. 496-497.

³¹⁰ Haig Major Genl. M. R. — *The Indus Delta Country*, London, 1894, p. 77.

Upper Indus Valley affects the Delta Country

In 1398 A.D., Tamerlane the Tartar marched on to Multan and thence to Delhi which he conquered. This change of imperial power gave the Sammas a fresh opportunity to acquire independence and their power was extended from the sea to Mathelo and Ubauro. At Bukkur and Sehvan they appointed their own governors and they themselves founded Tatta under Jam Nizam-u-din (Nindo), whose reign saw the golden age of Hindu Sindh. Sindh found a hero in the person of Darya Khan who, acting for Jam Feroz a minor son of Nindo, defeated the rival claimant Salabuddin at Kahan and restored peace for a time. When Jam Feroz actually began to rule over his territories, he became doubtful about Darya Khan who had grown very powerful. He foolishly invited from Kandahar some Moghal subjects of Shahbeg Arghun, grandson of Changiz Khan, to settle at the newly established capital town of Tatta. This gave a chance to the ruler of Kandahar to turn his attention to the Indus delta. The Sindhis themselves were tired of the maladministration of the province by the Jam. Events at Kandahar in 1519 A.D. stimulated Shahbeg's efforts to serve himself. When the great Moghul Babar took his own throne at Kandahar, he sought fresh fields and took a straight course through the Laki Pass for the town of Tatta. A battle was fought at a place midway between the Gharo River (since dried up) and Tatta. Daryakhan, the Samma general, was himself killed. Soon the Arghun leader passed on to Sehvan and Bakkar, the other chief towns in Sindh. At Bakkar he repaired the fortification with materials from the ruins of Alor. He also subjugated the Baluchis and destroyed many of their villages on the frontier. The final meeting of the Sammas and the Arghuns took place at Chachvan in the eastern delta region. Victory for the Arghuns was predicted. Writes Mir Masum: — "At Karo Kabaro (Tando Bago Pargana), a battle shall be fought lasting six watches (18 hours). The Mirmichi shall be beaten. Sindh shall enjoy peace." And so was a new dynasty founded.

3. The Arghuns (1521 A.D.) – 1664 A.D.)

The Arghuns came into power in 1521, Though powerful and victorious so far, Shah Beg committed political blunders. He allowed the fallen Jam Feroz to live at Tatta as a feudatory; and having quarrelled with his own son at Kandahar, he had lost his sympathy. He appointed Muhammad Tarkhan, the forerunner of the next Tarkhan dynasty, the governor of Bakhar. Fearing that he would soon lose Sindh, he himself attempted to conquer some other region Gujrat. He actually proceeded towards it, "having cleared both the banks of the river of hostile tribes living there."³¹¹ At Chandiko, he found his brave general Mir Fazil ill. The sudden death of Shah Beg's right hand made him sad, and although he tried to proceed to Gujrat via Sehvan Tatta and Agham Kot (ancient capital of Afghan Luhara.), he died on the way.

³¹¹ Mirza Kalichbeg Fredunbeg — "*History of Sindh*" Vol. II 1902, p 70. & Dawson.

As soon as Shah Beg got a footing in Sindh, attacks came to him from the Iran plateau and turbulent tribes descended through the Bolan Pass down to the rich tracts of Chanduka and Siwi. Mir Ma'sum gives a good description of Siwistan of that period: "The fort of Siwi, which is situated on a small hill, is built of round stones, of a kind which is found wherever the earth is dug in that neighbourhood.

"In Korzamin and Chhatur, which are districts of Siwi, cotton plants grow as large as trees, insomuch that men pick the cotton mounted. In the plain of Siwi there were formerly many forts and much cultivation but all is now waste. Between Siwi, Dehra and Kasmur, there is a tract of land called Bargan, which breeds horses not inferior to those of Irak."³¹²

Iran Plateau and Sindh.

Mirza Shah Husain, who was the only other powerful ruler of this dynasty, knew very well how to make himself safe in Sindh. His wise policy was to recognise Baber as the sovereign over himself. He took up his position at Nasarpur, put to rout his rival Jam Firoz from Tatta and then marched to Sehvan, the second important place, on his way to Bakkar to settle the affairs in Upper Sindh. He tried to control the Baluchis, Dahars and Machhis of Mathelo and Ubauro. Hearing that a large treasure was buried in the fort of Dilawar (Dera Gazi Khan), he marched towards it and found himself in a great difficulty of finding water. He got 100 wells sunk in the course of only 3 days.³¹³ Marching still further up the valley, he took Multan and made it a present to Baber, who was pleased to appoint his son Haman as its governor, while Mirza himself remained contented with the lower Indus valley. The Gharo was fixed as the natural boundary between Bakkar and Multan territories.³¹⁴

Kachh and Sindh Relations.

No sooner were the affairs in Upper Sindh and Multan settled than troubles came from Kachh. A letter from Rai Khamgan, who was about to march against Tatta, stated: "You killed my brother Amir Amrani and to revenge his death, I have collected an army. You had gone to Multan and in your absence I would have easily taken Tatta, but I did not do so to oblige you. Now either make peace with me giving me part of Sindh or prepare yourself for fight."³¹⁵ Shah Husain, however, came out victorious, for instead of the Kachh army attacking Sindh, he himself marched into the capital town in Kachh and plundered the whole country. He brought a large booty of horses, camels, cows, etc. to Tatta.

³¹² Elliot — *Op cit* pp. 237-238.

³¹³ Mirza Kalichbeg Fredunbeg — *Op cit* p. 78

³¹⁴ *Ibid* p. 77.

³¹⁵ *Ibid* p. 79.

Baber died in 1530 and Humayan, who had already conquered Bengal and also parts of Gujrat, in order to continue the cordial relationship with Sindh, invited Shah Hasan to Patan in Gujrat. He had laid siege to Jitor (Jetpur?) and excited Sultan Mahmud Bahadur, the ruler of Gujrat. While things were thus coming to a head in Gujrat, news came from Bakkar and Tatta about a revolt from that turbulent tribe of Jators and Mirza had to return to Tatta. Affairs at Delhi also took a turn and Humayun was actually dethroned by Sher Khan (1540). Humayun was obliged to escape to Sindh and sought Mirza Shah Hasan's help. But instead of continuing his father's tradition, he avoided Humayun, who actually tried to make inroads into Sehvan and Bakkar. The fallen emperor was virtually supreme in North Sindh with Mirza Shah, as his vassal. But the Sindhi prince would not be friendly. Besides the military tactics used by Mirza, there were those of laying waste the country round about, which due to scanty cultivation and sparse population actually reduced the enemy troops to starvation. An invitation to Hurnayan then came from Raja Maldeo of Jodhpur, but thinking it to be a plot, he went to Jesalmir instead and thence to Umerkot, where his son Akbar the Great was born in 1542. About this time the battle of Jun was fought unsuccessfully by him. This was in the central part of the delta country about 75 miles south-east of Umarkot and 50 miles north-east of Thatta – a fertile and populous district, according to Haigt. After some further wanderings in Sindh, during which many of his people died of thirst, Humayun went to Kandahar. Subsequent events show how he succeeded in regaining the throne of Delhi with the help from Kandahar. Had the Sindhi ruler been as wise as his father and befriended Humayan, he would not have himself come to grief in later years and lost his family throne of Tatta. For, in this capital town of Lower Sindh, the Arghuns as well as Tarkhans under Mirza Isa revolted and by the time Shah Hasan died in 1554, Sindh was broken into parts again. It remained for Mirza Isa Tarkhan to reunite the various principalities, created in the province.

The history of this period shows that, however capable a leader might be and however strongly he tried to establish his authority over the province of Sindh, it was physically impossible to keep it united for long. Not even the most powerful sovereign rulers of Delhi could control it even after conquering it later on. As soon as a chief left, his troubles arose; while peace could be established with some difficulty at the capital, in the deltaic region, some one else pounced upon the northern parts of the valley and the vanquished heads of government had to seek shelter in parts of the desert here and there.

4. The Tarkhan Dynasty. (1655 A.D. – 1608 A.D.)

The mistake, committed by the last king of the Samma dynasty, of inviting a foreigner to hold power in Sindh, was also committed by the Arghuns, who came to grief within half a century of their rule. Mirza Shah Hussan had no son to succeed him and so his lieutenant Sultan Mahomed tried to assume authority over North Sindh (Bakkar and

Sehvan), while Mirza Isa Tarkhan took possession of the throne of Tatta in Lower Sindh.

The Arghuns and the Tarkhans – the two most important rival tribes, – now had a united voice in Sindh and much could be expected by way of peace and prosperity in the province.

Mirza Isa also had the advantage of the good relations with his homeland – the land of the Timurs, and, for a while, the history of Sindh is made to merge in the general history of the Timurian Empire.

A further attempt at the unification of Sindh was made by Mirza Isa. He was actually attacking Bukkur with this object, when a trouble of an altogether novel character for Sindh arose, this time from the direction of the Arabian sea. It was after several centuries that another sea-faring race was tempted to make a naval attack on the Sindh coast. At the same time the assailants did not belong to any neighbouring Asiatic country.

Early European aspirations in Sindh.

It appears that Mirza Isa Tarkhan did actually invite the Portuguese Governor of Bassein near Bombay and the west coast, to help him against his northern opponent, Sultan Mahmud of Bukkur. This European aspirant did not want to lose the opportunity to get an insight into other Indian coast lands, and so he sent a fleet of 28 ships and 700 men under Pedro Baretto Rolim, who arrived at Tatta, evidently an important port of Sindh at the time. Finding, however, that Mirza had already made peace with his enemy and that Sindhi prince would not defray the cost of this expedition, Pedro sacked Tatta in a rage and looted the town in 1555 A. D. "According to the *Tuhfatulkiram*, they landed at the port of Lahri on the river, and while the men were offering prayers in mosques on Friday, they entered and massacred the assembled men, plundered the bazars and went away shortly before Mirza Isa's arrival. They scattered gunpowder in different parts of the town and on the bank of the river and set fire to it, so that for some time the river appeared to be in flames. Mirza Isa had to repair the town and the fort anew.

"He now put a big wall along the river and cut a winding and secret canal from the river to reach the town. About this time he is also said to have built a new port and called it Shahbunder."³¹⁶

Thus the first contact with a European power was certainly not pleasant. It did not augur well for the natives as well as the foreigners.

³¹⁶ Mirza Kalichbeg – *Op. cit*, p. 95.

Further extension of the delta and the sea coast from Tatta to Lahri and Shahbunder added difficulties of administration, while in the extreme northern boundary Bakkar was again rising rapidly under Sultan Mahomed Khan. The struggle between him and the Tarkhan ruler, therefore, continued. Added to this was the family quarrel of his own sons, one of whom had to flee to Wango, a village of Sodhas and thence to Umerkot. The Arghuns made common cause with Sultan Mahmud Khan who marched against Sehvan and a battle was fought at Darbelah, where a peace treaty was made. But they suffered much at the hands of the next Tarkhan ruler, Mirza Muhammed Baki. His was a reign of terror and cruelty in Sindh and the people were greatly troubled, though he tried to win them over later on.

Delhi as the new Centre of Gravity.

Events at Delhi, especially the ascension of Akbar the Great on the throne of Delhi in 1556, meant much for Sindh, which was worthy of conquest as the land of his birth, and which also was a base of his military operations for Kandahar. Though Baki tried to flatter the Emperor and sought relationships with him, Akbar's men were soon at Bakkar, which was besieged. The only way left for Baki was to distribute his powers among his men at the important political centres in Sindh. "He sent one of his sons Mirza Paindah with Jani Beg and Shams Kashmiri to Sehvan. Another of his sons, Shahrukh, he posted at Nasarpur with Sher Ali Kukah to take care of that part of the country. His third son Mirza Muzaffar Tarkhan with Ali Khan Kukah was put in charge of Chichikan and Badin districts; and lastly Neran Kot was entrusted to the care of Mirza Mohommed Tarkhan and Kasim Ali Sultan Sarban. He himself remained at Tatta with his councillors, getting weekly reports from the different divisions of his country."³¹⁷ How can a province with as many as 6 divisions with double rulers in them preserve its solidarity? It only made Baki's successor, Mirza Jani Beg's work very difficult. But he was capable of handling the situation. "He defeated his uncle at Badin and made peace with him. He took measures for the improvement of affairs at Tatta. He distributed heaps of grain lying useless in the granaries and storehouses of his father, to the people who were in want of it. He extended his patronage to many of the deserving nobles, giving them rewards and honorary titles. He encouraged commerce and made some important changes in weights and measures and coinage of money."³¹⁸

While thus peace was procured at the capital at any price, Bakkar still remained out of Control and in, 1585, Janieg "had to fight with Muhammad Sadik Khan, a nobleman sent by Emperor Akbar to Sindh."³¹⁹ Akbar had already conquered a part of Hindustan and he naturally turned his attention to Bakkar. In 1572 he sent Kesu Khan as Governor;

³¹⁷ *Ibid* p. 101.

³¹⁸ *Ibid* p. 105.

³¹⁹ *Ibid* p. 96.

in 1577 he appointed another, and the next year another and so on until in 1585 the Emperor gave the district of Bakkar as a *Jagir* to Nawab Muhammad Sadik Khan and sent him instructions to take Tatta."³²⁰ This Nawab, after settling the affairs of Bakkar, started for Sehvan. Before reaching there, he gave a sort of naval battle, in which the two armies, his and Jahi Beg's, fought in boats in the Indus river. The Sindhi ruler lost this battle. At Laki, fire was opened by his men from the boats and after a severe fight the Nawab was obliged to return to Bakkar.

In 1589 Akbar again tried to subjugate Sindh,³²¹ as Mirza Jani Beg was behaving like his equal in such close vicinity to his new capital of Lahore. The campaign of the Imperial troops in Sindh in 1591-92 throws a flood of light on the hydrographical features of the region at that time. The course taken by the troops was Bakkar – Sehvan – Lahari – Nasarpur (then 75 miles S.E. of Sehvan on the left bank of the Indus) and Tatta. The attack was chiefly on Sehvan under Nawab Khan Khanan at first and then on Nasarpur. The Khan Khanan even reached Lahori Bandar and in the words of Haig, "gazed upon the sea." Orders were then given to the Khan to return to the capital with Jani Beg himself, who was confirmed as "Governor of Sehvan, Tatta and the sea port Lohri."³²² In 1599 Mirza Jan, Beg died. Mirza Ghazi Beg, who was the last of the Tarkhans, had also to re-establish his position in Sindh, and before he could do so, he had to quell some rebellions as before. This time the trouble came from the desert area. Abdul Kassim Sultan, who had defeated the Sodhas and who took Umerkot, attacked Tatta and plundered some merchants. When he was reprimanded by Ghazi Beg, he wrote to him; "I shall be obliged to extend the boundary line of my division to the very bank of the Alijan." (This river flowed north of Tatta).³²³ Forthwith he revolted and stopped all the ways of communication with Tatta, either by land or by water. But Gazi Beg subdued the rival and began tonile in peace at Tatta. Next time Jam Halah of Kakralah revolted and he too had to be punished by the Mirza, as he encroached upon The western frontier of the Sindhi ruler. The war ended with a matrimonial alliance between the rival tribes. Akbar sent for Ghazi Beg to his capital at Agra, to which the latter had to go, after making some temporary appointments at Tatta. He was received well by the Emperor and declared as "the Governor of the Subah of Sindh." But when Akbar died, Jehangir sent for him again. While at Agra in 1606, Jehangir issued orders to Ghazi to proceed to Kandahar, while a new governor was being appointed at Tatta. Jehangir's intention was not to allow Mirza Ghazi Beg to be independent and so when he was actually murdered in 1612, he annexed Sindh to Delhi.

5. Sindh under the Great Moghuls

³²⁰ *Ibid* pp. 109-110.

³²¹ *Ibid* pp. 110-111.

³²² *Ibid* p. 114.

³²³ *Ibid* p. 116.

After the death of Akbar the Great, in 1605 A.D. the Imperial control of Sindh from Delhi continued with this difference that during the reign of his son Jehangir, instead of local native governors, Imperial Governors, called Subaddars (Sobdars) were appointed to govern the various divisions. No longer was Sindh regarded as a part of the Subah of Multan, though to Jani Beg, who subsequently entered the Imperial service, was granted what the native historian calls the "country of Tatta."³²⁴ Formerly only Upper Sindh was a Sarkar but now Lower Sindh went also under the Moghuls. According to *Tahfat-ul-Kiram* there were some 40 Subahdars, who governed Sindh for 128 years from 1612 to 1739 nominally as governors, but really as revenue collectors. They were also good builders. One governor, Khusro Khan, built some 360 public buildings, mosques, tombs, wells and bridges at Tatta.

Sindh Architecture

An alluvial valley, such as Sindh, could afford good clay for bricks of which even the most ancient buildings were made in the province. These were burnt bricks in the days when Sindh saw a wetter climate in past ages, but later on, buildings were made of sun-baked bricks also. Thus, brick-buildings were a characteristic of Sindh towns throughout the previous historic periods. With this, there was also a flourishing industry of Sindh pottery and tiles, the latter being quite peculiar to Sindh in style and technique owing to Iranian influence.

When Akbar included the lower Indus basin within his Indian empire, the building art of the Moghuls was brought here, and stone, chiefly limestone and sandstone from Kohistan in Lower Sindh, was quarried for building purposes. Here, again, owing to Arab and Iranian influences, a peculiar art was developed e.g. ornamentation in coloured tiles. This tradition for "brick and glaze" remained long in a plain valley, which sought some contrast in nature. The main colour scheme was white and light and dark blue and the design was geometrical. "Such a monochromatic prospect, which this vast plain presents, cries out for colour, so that it became the custom to decorate all buildings with brilliant schemes of glazed tiles. This method of ornamentation was probably first introduced by the Arabs and was revived later by intercourse with Persia at a time, when that country was enriching all its larger towns with brick buildings, covered with patterns in coloured faience. Sindh tiles are, however, not copies of the Persian model, nor are they similar even to those of the Punjab, a much nearer neighbour. They have a special character, which is easily recognised. Most of the patterns are geometrical and where foliage is interposed, it is of a strictly conventional order. In technique, the tiles are rarely a square or rectangular but cut in geometrical shapes corresponding to the details of the design."³²⁵

³²⁴ Hughes — *Gazetteer of the Province of Sindh* p. 30.

³²⁵ *The Cambridge History of India*, vol IV. 1937. P. 569

Such stone buildings are found today at Hyderabad, Khudadad, Sukkur, etc. But at Tatta, certain tombs, built by Mirza Isa Tarkhan between 1624 and 1644 during his governorship there, marked, a distinct Moghul phase of sandstone buildings similar to those at Fatehpur Sikri. Thus Akbar's scheme of architecture found an echo in distant Sindh, though the individuality of local architects still persisted.

Later on, in the time of Shah Jehan for instance, the old customary architecture of brick and tile returned to Sindh.

The Daudpotras.

In 1625 Shah Jehan took refuge at Tatta against his own father Jehangir. But for over a century we hear little of Sindh, except as regards a tribe called Daudpotras, sons of Daud Khan who was descended from Mahammud Kambatha, and really weavers of cloth by profession. They donned the warriors' uniform, as time went on. They struggled for power against another agricultural tribe of Maharas (Hindus) under Sher Khan their leader, living at Lakhi, from which they had themselves previously "ousted the former occupants — a Balooch race called the Jatois." Shikarpur on the trade route was a new settlement established by them in Sindh.

Note on Shikarpur

This town appears to have occupied the hunting ground (Shikargah) of the famous Daudpotras. "Upon the site on which the present town is built, there was, a few hundred years ago, a noted forest. It lay between the old town of Lakhi and the village of Khanpur."³²⁶ There were frequent feuds between these Daudpotras and the Mhats, who were the rulers at Lakhi, regarding the use of the forest. Pir Sultan Ibrahim Shah is said to have muttered some prayers and dropped a nail on the ground saying, "Here let a city be built and let it bear the name of Shikarpur".³²⁷ Thus Shikargah was turned into Shikarpur, as a commercial town.

Later on, the Governor of Bukkur drove the Daudpotras from here to Multan and took the town. During the reign of Aurangzib, however, Prince Moizuddin restored the town to them for their loyal services. Still later, Mian Nur Muhamed Kalhoro fought with them and took some revenue from Shikarpur.

But Nadir Shah, the Persian invader, befriended the Afghan invaders in 1747 A.D., when Shikarpur fell into the han of the Afghans whose rule lasted from 1747 to 1824.³²⁸ Under them it became a great trading centre and with the help of the Bannia settlers

³²⁶ *The Young Builder*, Karachi, June 1934. p. 4.

³²⁷ *Ibid* p. 5.

³²⁸ *Ibid* p. 6.

under Timur Shah, it grew and formed an important agency in the chain of great commercial cities on the trade route of Central Asia.

6. The Kalhoras (1701 A.D. – 1783 A.D.).

Meanwhile another branch of the same Daudpotra family, claiming their descent from a line of spiritual leaders (and the Prophet himself) had already assumed temporal power also in Sindh towards the end of the 17th century A.D. Before this time Adam Shah, one of their race, was the head of the mendicants in the Chandukah District. The Kalhoras, as they were called, even went to the extent of looting the old Zamindars on the right bank of the Indus and possessing their lands. The Moghul governor of Multan tried to check their aggression and defeated Din Mahomed their leader. "But the pliant saints", says Burton, "after a year's exile at Kalat returned to power." Miyan Nasir Mahomed son of Din Mahomed, came into power after his father's death. He opposed the Moghuls in the province with some success and established a new town Naosharah. His son Yar Mahomed, as we have noticed before, took Shikarpur and later on visiting Delhi obtained from the emperor Aurangzib the "firman of the Subahdari of the Dera district" and the title of "Khuda Yar Khan" in 1701 A.D., thus establishing the power of the Kalhoras in Sindh. Soon he founded a new capital on the other side of the river (near Sehvan), called Khudabad after himself, for the purpose of avoiding the pressure from Shikarpur and Sukkur, and at the same time stamping out the Hindu influence in the east and the south. Under him, too, Lirkana and Siwi (Sibi) grew into importance as towns rival to Shikarpur. Khuda Yar died in 1719 and was succeeded by his son Nur Mahomed, who conquered the territory of the Daudpotras and extended his influence up to Sehvan and Kohistan in the west, Tatta in the south, the desert in the east and Multan in the north. The fort of Bukkur was, however, not taken till 1736 A.D., three years before the famous invasion of Nadirshah from Persia. Mahomed Shah, the old Emperor of Delhi, handed over all the provinces west of the Indus to the invader. Thus by 1737 A.D. Noor Mahomed was the ruler practically of the whole province of Sindh. He slew even Mir Abdullah, the Khan of Kelat.

Afghan control again.

With Aurangzeb's death in 1707, the Moghul power in India dwindled away. On Nadirshah's conquering Delhi and Hindustan, Sindh again fell into his hands. He adopted the policy of "divide and rule" by appointing two powers in 1739; (1) The Daudpotras at Shikarpur for Upper Sindh, and (2) Nur Mahomed at Tatta for Lower Sindh.

The result was a prolonged period of internal quarrels between external attacks.

A fresh treaty between Nadirshah and Nur Mahomed, by which a large part of the Sindh Kingdom was transferred to the Afghan sovereign, reveals the changiig

geographical features of the region of those times: "I make over to him (Nadir Shah) all the countries to the west of the river Attock, the water of Sindh (River Indus) and Nala Sunkra (Saiigra), which is a branch of the water of Sindh; that is to say, Peshawar with its territories, the principality of Cabul, Ghaznawi, the mountain residences of the Afghans, the Hazarejat, the Passes with the Castle of Bakhar, Sakhar and Khudabad, the rest of the territories, passes, and abodes of the Jokias, Baloch, etc., with the province of Tatta, the castle of Ram, and the village of Terbin, the towns of Chun (Jun), Samawali (Samawati) and Ketra places dependent on Tatta, all their fields, villages, castles, towns, and ports from the first of the river Attock with all the passes and habitations which the above said water, with its several branches, comprehends and surrounds, as far as the Nala Sankra where it empties into the sea; in short, all places westward of the river Attock and those parts and westward of the river Sindh and Nala Sankra, I have annexed to the dominions of that powerful sovereign"

"The castle and town of Lahri Bandar with all the countries to the east of the river Attock, water of Sindh and Nala Sankra shall, as formerly, belong to the empire of Hindostan."³²⁹

This was not all. While Nur Mahomed was engaged with the Ladkanah division on account of Nadirshah's inroads into Sindh, his own capital was threatened by the ruler of Dharajah and the Jam of Kakralah of the western frontier. "They brought down ships from the sea to the river and commenced war both by land and by water. The ships came as far as Khat and from there upto Nasarpur. They commenced fighting and plundering on both the sides of the river. But as the guns were soon placed upon the banks and fired by the Sirais, the enemy were driven back."³³⁰

After the death of Nadirshah in 1747 A.D., Ahmed Khan Durrani, King of Kandahar, exercised his authority over Sindh. He appointed Nur Mahomed under the title of "Shah Nawaz". The result was that the Daudpotras had to finally leave the province in 1747 and settle in what is now known as the Bahawalpur State, established by Bahwalkhan, son of Sadik. Gaining his powers, Nur Mahomed tried to be independent. He did not regularly pay his annual tribute of 12 lakhs of rupees to Kandahar. Ahmed Shah invaded Sindh to enforce the tribute and Nur Mahomed had to fly to Jesalmir where he died in 1755 A.D. The results were disastrous for Sindh and its solidarity. A number of semi-independent Hindu chiefs rose in Lower Sindh e.g. Chief of Wangah (Chachikan district), Jam of Kakrab (between the Indus and Shah Bunder) and Rana of Dharaja (Mirpur Sakraoj).

Other Events.

³²⁹ Fraser's *History of Nadirshah* Ph. 225-226.

³³⁰ Mirza Kalichbeg Fredunbeg — *Op cit.* p. 149.

The Hindu influence was silently working in Sindh administration all these centuries. Prominent Sindhi Hindus were actually engaged as 'Diwans', though as such, they suffered many indignities. As the professions of military men and merchants were not open to them, they largely assisted the Muslim ruling class in book-keeping, clerical work, etc. About this time, Gidumal became a great favourite of Nur Mahomed, who appointed him as Diwan. He helped, in 1754, his son Mahomed Murad Yar Khan also to succeed to the throne of the Kalhoras as "Sarbuland Khan". He had worked as an intermediary between Nur Mahomed and the conqueror Ahmed Shah before.

Mahomed Murad Yar was soon deposed by the people on account of his bad government and a struggle arose between the two other brothers, Ghulam Shah and Attar Khan. Twice the Kandahar King assisted the latter and twice Ghulam Shah had to escape to Jodhpur. Between two powers at Delhi and Kandahar and between two persons Ghulam Shah and Attar Khan, the condition of Sindh could well be imagined. The province was again actually divided between the two brothers, into Lower Sindh (from Shahgarh to Naspur) and Upper Sindh respectively. Ultimately the gifts secured from the Afghan potentate were the independence of Sindh which he sought for, and the fresh title "Shah Viridi Khan."

In 1759 Mian Gulam Shah moved to Kujah, which was a deserted place in the delta. "He ordered all the residents of the part of Oranga to move to Kujah, which once more became a populous town and which he named Shahgarg. He appointed it as his headquarters and in its vicinity he founded a new fort, calling it Shahbunder. He built a castle and collected all materials of war there."³³¹

Kuchh too received Gulam Shah's early attention. He won the battle of Jhara (20 miles N.E. of Lakhpat) and the fort of Sindhri was taken in 1763. He is said to have dammed the Puran river (now changed)³³² and turned a portion of Kutch into a desert and a marsh in 1764-65. The sea ports of Basta and Lakhpat on the Indus were secured and Nerankot (modern Hyderabad) was founded.

Map of Sindh changes again.

The circumstances, in which Hyderabad came to be the capital town of Sindh, are unique. They reveal a most remarkable hydrographical change in the Indus valley about the year 1758 – 59. How, for example, the old Ren was gradually drying up, how the Phuleli Channel came into being and the river itself shifted for a distance of several miles "close to the western border of the alluvial land," is an interesting story.

³³¹ *Ibid* p. 158.

³³² Jour. Roy. Asia. Soc. Vol. III, p. 551.

"The shifting of the river's course last century was the most extensive of all the movements of the Indus bed in Sindh, of which there is any record or tradition. The length of main channel abandoned was not less than 100 miles, and may have been much more; while that of the Ren which was necessarily laid dry at the same time was some 70 miles. Whether there was at that time any eastward running branch higher up than the Ren which contained water during the inundation season, it is impossible to say, but if there was, it of course failed too and the consequences in the eastern Delta country must have been very serious. The change was brought about by the stream's taking a sudden curve from its hitherto south-eastern direction to one almost due west at a point nearly in lat. 25° 40' and long 68° 31'.

"This loss of the Ren stream was in some degree compensated by a new branch, known as the Phuleli, which leaving the main river 10 miles north of Hyderabad runs southward along the eastern side of the low ridge of hills called Ganjo Takar, and crossing the deserted channel of the Indus falls into the old course of the Ren. It must have been owing to the formation of the Phuleli channel that Ghulam Shah first decided to found the new and greater capital which he named Hyderabad (1770)."³³³

Another change in the course of the river took place in 1786. A more central capital than Tatta in the south, *viz*, Khudabad on the west of Sehvan, was needed. He also defeated the chiefs of Daudpotras in the north and the district around Karachi was taken away from the Brahui people.

Another event of paramount importance for the future of Sindh also took place in the reign of Gulam Shah. This was the establishment of a factory at Tatta, the sea port, by the British East India Co. in 1758 A.D. Ghulam Shah died of the curse of a Fakir in 1771 A.D. His successor, Sarfaraz Khan, received a *firman* from the Afghan monarch in 1772 as Khudayar Khan but he committed some blunders. He thought of building a *Sindhi empire* by extending his powers to Katch and Gujrat. When at home the Talpur influence was just allowed to be exercised by the Mir Shahdad Khan and Mir Fateh Ali Talpur, who actually attacked Khudabad.

Abdul Nabi was at first helped by the authorities at Kandahar but he was defeated by Mir Fateh Ali, finally at Halani (Upper Sindh). He fled to Sevistan at first, and then to Jodhpur where he died. His descendants now hold a distinguished place at Jodhpur. He it was who expelled the British from the East India Co.'s factory at Tatta in 1775 and murdered Mir Behram Talpur, a Baluch chief, whose clan was invited to Sindh by Mian Nur Md. Kalhora, the chief in the army, to settle in the new town of Shahdadpur. The result was that Feroz Khan had to escape and there was confusion in the royal family.

³³³ Haig— *Op. cit* p. 118 — 120.

Plight of Sindh in 1781 – 1782. A. D.

"About this time broke out the rebellion of the Talpoories, which ended in the expulsion of the Governor of Sindh. In the course of the next year the king (Timour Shah) sent a force under Madad Khan to reduce the insurgents, who soon overran the whole province. The Talpoories retired to their original desert, and the other inhabitants fled to hills and jungles to avoid the Dooranee army. Madad Khan laid waste the country with fire and sword; and so severe were his ravages, that a dreadful famine followed his campaign and the province of Sindh is said not yet to have recovered from what it suffered on that occasion." (Elphinstone's *Cabul*). Abudun Nabi could not stand against the vehement attack of the Baluches and gave way. "He plunged into the water of a lake, that was close to the battle-field and made his escape with a few attendants, leaving his friends to shift for themselves. Crossing the lake with some difficulty, he betook himself to the river and putting himself in a boat went to the other side. Then he fled once more straight to the hills."³³⁴

Strong hostilities continued between the Kalhoras and the Baluchis under Fateh Ali Khan Talpur, a cousin of Mir Bizar, son of the murdered chief of Mir Behram. The latter worked their way into the Indus valley from their camp in the desert. Thus the Mirs became more and more powerful in the centre and also prevailed upon the Afghan king Taimur Jamanshah, who "closed the question in Sindh by sending a fobe of honour, some Arab horses and Sanad appointing him ruler of Sindh," in 1783 A.D. During the time of the Kolhoras both the political and the population centres in Sindh were changed.

Settlements of the Kalhoras

So long as the imperial powers at Delhi controlled Sindh, Shikarpur in the N. W. flourished, but it was too near the Afghan gateway to be left free with the Daudpotras, who had escaped to Bhawalpur. The Kalhoras themselves had to settle down further south in the new capital Khodabad, at first leaving Larkana to face Shikarpur. The old town of Bukkur was coming into disuse more and more. Hindu influence in the Eastern parts was still extant and such minor towns in the desert as Umerkot and Kakrala continued to be in the hands of minor Sodha kings. Naturally the Kalhora rulers tried to extend their powers southwards and eastwards. The first step towards this object was the foundation of the city of Hyderabad and a mud fort at Makai hills on the old site of Nerankot. From here the control over Cutch and the sea ports was secured. Tatta, the centre of the Kalhora rulers, received an impetus from the European foreigners, but not for a long time. This town being nearer the sea was not much affected by the movements of power and population in the north. The Hindu element was

³³⁴ *Ibid* p. 195.

predominant here. Being born of "soft soil", the natives here excelled in manufacture and even learning and offered only passive resistance to the fighting hillmen, the Baluchis and others, who descended from the hills of Kohistan now and then. As a last resource they destroyed their own settlement and retired. Thus nearly every Kalhora chief chose a new capital town for himself.

A Desert Warfare

A weak king on the throne of Khudabad meant a renewed attack by a stronger native neighbour and a fresh trial to conquer Sindh. Even the rulers of Rajputana tried their luck. No sooner was Sadik Ali Khan placed on the throne than the news came that Bajasing, Raja of Jodhpur, was trying to invade the province, while at the same time the Brohis from Kalat were organising their own attack. But the Kalhoras aided by the Baluchis, decided to meet the Rajput kings in the desert. "They passed the waterless desert easily as they had carried their own supply of water with them, and came to a hilly tower, where they found 100 men armed with golden muskets posted in it. They were Rajas and Chiefs of the Rathor tribes, among whom the most prominent were Bajasing's son and son-in-law. On the ground had assembled an innumerable army, who, when they saw the Balochies, flattered themselves with the belief that the latter had been brought to the place by fate never to return alive.

"Mir Abdullah now prepared an attack and began to array his army. The kettle drums began, to beat, the pipes began to play and war cries rose in the air. At first the fight went on with guns, subsequently swords were brought in use. A very severe battle ensued. At last Mir Fateh Ali Khan gained the upper hand on his side and the Rajputs were put to flight. Soon they were followed by others and a general route ensued. In a short time the field was clear of the enemy, who disappeared leaving a large number of Hindus dead and wounded together with their heavy baggage. Valuable booty fell into the hands of the victorious Balochis, tents, carpets, guns, elephants, camels, etc. The solid golden armlets alone, removed from the arms of the dead, were enough to cheer the hearts of the Baloch conquerors."³³⁵

Irrigation Works of Kalhoras

The Kalhoras were the greatest canal builders in Sindh. For their great perseverance in the industry of agriculture they were well-known. They acquired land from religious mendicants and turned themselves into big Zamindars. Mian Nur Mahomed Khan Kalhora especially introduced, much irrigation in Upper Sindh, where his power was first established. He it was who built the Ghar system of canals in Sindh, *viz.*, the Nur Wah (10 miles), Shah ji Kur (20 miles), Date ji Kur (20 miles), the first forming the principal branch of the Begari, while the other two are now replaced by the Warah and

³³⁵ Ibid p. 182.

other branches in the Barrage system of canals. The Dato canal was used also as a means of communication between Larkana and Shahdadkot. Even on the left bank of the Indus the Kalhoras cut new canals, e.g., the Nasrat Wah (Naushahro division), the Murad, the Bag and the Phiroz branches of the Naulakhi canal, which are now absorbed by the great Rohri canal of Today. Though they turned large desert tracts into fertile fields, they were not great engineers, however; their canals were not quite graded or regulated and they followed the old courses of the parent river such as the Dhoroos and the fresh-water lakes called the Dhands. But the mileage amounted to thousands and since these rulers of Sindh were more or less absolute rulers, they managed the systems of irrigation more efficiently than their successors, the Talpurs, who were more fond of Shikar than canal administration.³³⁶

7. The Talpurs (178B A.D. – 1843 A.D.)

The rule of the Talpur began in 1783 A.D. triumphantly by Mir Fateh Ali Shah at the newly established and more central home of Hyderabad. They had in them the Arab as well as Baluch blood, and being all hillmen, they were vigorous, resolute and go-ahead. The Iranian influence was continued in Sindh through these people. Fateh Ali's own grand-father belonged to the Kalhora military department, and so the Talpurs were thus connected with the previous dynasty.

Difficulties of Administration In Sindh.

King after king endeavoured to unify the province but would the nature of the country allow such a unity? The deltaic lands were expanding, and new ports were developing with their growth. After the Moghul decline at Delhi, the Afghan king would still like to overlord Sindh. One man tried to uproot another from power at home and all external control was only nominal. The king's army, whoever he was, was mere mercenary and the whole system of government was feudatory. At times it was despotic feudalism. At the same time the ryots, largely subjugated converts to Islam, having still a pride of their ancestry, were groaning under the tyranny of the Zamindars. Land was fertile but the supply of water was irregular, insufficient at one time or season, and extraordinary at another. New cities had to be established in accordance with the needs of the times while old inland towns, such as Tatta, were getting slowly depopulated. Mir Fateh Ali Khan prepared to settle down in the fort of Hyderabad with his other brothers. To be on the safe side, he also got two more forts, Fatehgarh and Islamgarh, built in the Thar, though against the wish of the neighbouring kings. Now that the Mir had become the sole ruler of Sindh, he demanded the division watered by Kurs or mountain streams from the Khan of Kalat.

³³⁶ Lambrick H. T. "Early Canal Administration in Sindh" Jour. Sind. Hist. Soc, Vol. III Pt. 1 pp. 14-15.

Taimur Shah died at the headquarters and was succeeded by Zaman Shah, who settled the affairs satisfactorily for the Mir and gave him a fresh *sanad*. But soon he committed the blunder of dividing Sindh into seven parts, three parts for himself with Hyderabad as the centre, two for his brother Sohrab Khan with Khairpur as the capital, one share for his other brother to reside at Mirpur and one share he kept for his own relations. Soon was Sohrab Khan incited to deal directly with the Afghan king and not through his elder brother, while from the south sea-faring people were trying to work their way up the Indus.

Before Fateh Ali Khan died in 1802, he had allowed a British commercial mission in Sindh. "Mr. Nathan Crowe of the Bombay Civil Service was sent to Sindh to conduct the mercantile and political interests of the British Government with the Talpur Mirs, but like the former attempt, it ended in an unsatisfactory manner. The British agent resided at times at Tatta, Shahbunder and Karachi, where he had to endure various petty indignities till at last he received a peremptory order from the Mirs to quit the country within ten days and this he thought it best to obey." (Sindh Gazetteer 1799).

Coming events cast their shadows.

A patricidal war was inevitable with divisions in the ownership of Sindh after this Mir's death. At the same time great events were taking place outside the province.

Shuja-ul-mulk, who succeeded his brother Zaman Shah on the throne of Kabul, did not receive any Sindh tribute regularly and he invaded Sindh in 1803: "The people of the province were so frightened that most of them deserted their towns and villages fleeing to the sandy desert of Thar." But the Talpur brothers came to terms and a tribute of 10 lakhs of rupees was arranged for there and then, and one of 5 lakhs was settled as an annual one.

Shikarpur, lying on the Bolan Pass – Iran route was growing in importance. Through it the Bania merchants were establishing their agencies in Central Asia. It was at the same time, the last post of the Afghans.

The Khan of Kalat got into matrimonial alliances with the Mirs. But the Mir's army had yet to invade the Bahawalpur territory to settle a religious dispute at Uchh.

A terrible famine visited Kachh and "the people of the country flocked to Sindh in large numbers, selling their children for Rs. 3 or 4 per child. Corn became a great scarcity in Sindh, Juwari and Bajri selling for 6 seers per Korah rupee. Mir Gulam Ali Khan distributed heaps of corn in charity among the poor famine-stricken people."³³⁷

³³⁷ Mirza Kalichbeg — *Op cit* p. 211.

Afterwards on an appeal being made by the Rao of Kachh through the British Government, the Kachh children were returned by the Mir.

The next ruler Mir Karim Ali Khan, being very fond of art, science, literature, commerce, etc., "many good sword makers as well as good writers, painters, besides men of art and science, came from Persia and Khurasan to live in the town of Haiderabad."³³⁸

A Commercial Treaty with the British.

Mir Karam Ali Khan also contracted friendship with the Iranian king Fateh Ali Shah Kajar and made a commercial treaty with the British Government; as a result of this, free communication was started between Sindh and Bombay (1812). Among the exact terms of the Skeene Treaty there were the following:

- (1) That no European should employ any native in service.
- (2) That the officer coming to take the survey of the Indus river should not be prohibited from or hindered in doing his work.
- (3) That any person coming through Kachh, with articles of trade, bearing a pass from the Governor of Bombay, should be free from any tax or toll.³³⁹

About this time, Shuja-ul-Mulk was dethroned at Kabul and came to live at Jacobabad at first and then at Hyderabad as a fugitive. Later on, Shikarpur was given to him by the Mir as a revenue to live upon.

Punjab's attack on Sindh Again.

But the greatest event of the reign was a projected attack on Sindh by Ranjit Singh, the Sikh ruler of the Punjab, who was coming into prominence (1817). The Mirs offered a united resistance to his progress at Shikarpur, but the attempt ultimately turned out to be a friendly overture. Thus during the reign of this Talpur Mir, there were many bonds of friendship created between Sindh and the neighbouring powers, and the province flourished. The mission of Dr. Burnes cemented the bonds of friendship particularly between Sindh and the British (1824). During the succeeding reign all the happy relations with Sindh's neighbours were continued and at their capital town, "gold coins (*Ashrafis*) were actually struck at the Hyderabad mint for the first time."

This peaceful prosperity, was, however, not to continue long in the province which was again divided between the Baluch chiefs of the Talpur dynasty, — small states under

³³⁸ *Ibid* p. 213.

³³⁹ *Ibid* pp. 214-215

minor and more or less independent chiefs but with no stalwart to control them all from the centre. Mir Nur Ma omed Khan had to try and drive away Shuja-ul-Mulk from Shikarpur where he had assumed independence. The British demand for allowing their troops to pass through Sindh up the river Indus on their way to Kabul in favour of Shuja-ul-Mulk and against Dost Mahomed, had to be opposed. Napoleon Bonaparte had been intriguing with Iran and there were clear signs of a Russian menace on Afghanistan. Ranjit Singh had become aggressive already and taken away a portion of the Afghanistan territories in Kashmir and the Upper Indus valley. But the Mirs were too weak to declare war against the British. On the latter's taking the fort of Manora and the town of Karachi by attack from the sea, the party came to terms and a treaty was signed, whereby the Mirs had to supply provisions and beasts of burden to the British at reasonable rates or on hire, to pay an indemnity of 23 lakhs of rupees and a tribute of 3 lakhs of rupees annually and a British force was to be posted at Karachi. After this the British troops sailed through the Indus via Kotri and Chhipri to Khurasan. General Sir John Keane actually reinstated Shuja-ul-Mulk on the throne of Kabul and returning to Bombay again, passed through Sindh via Hyderabad.

But these foreigners were not to remain content with the former arrangements and under the new aspiring Resident of Sindh, Sir Charles Napier, they demanded a fresh treaty in 1843, of which the terms included: –

- "(1) The coin of Sindh should bear the name of the king of England on one side,
- (2) The Mirs should cede to the British Government, Karachi, Shikarpur, Sabzalkot, Umarmkot and all the land attached to these towns,
- (3) A slip of land 100 yards in width along both the banks of the river be given to the British Government."³⁴⁰

This Was impossible on the part of the Talpur Mirs, and the situation became at once estranged. There was, besides, no union among the Mirs themselves and a final war was inevitable.

Sindh a Geographical Necessity for the British

The British themselves saw the position and potentialities of Sindh and the Sindhu river and at once worked out the destiny of the province. Sindh was a natural geographical necessity for the British inroads on Kandahar in Afghanistan. The artery of the Indus was the only passage of the British to Kandahar and the Mirs had to yield to them. Their gateway was the then flourishing sea port of Ghorabari, and their road to its conquest

³⁴⁰ *Ibid* p. 228.

was the river, the life and soul of Sindh. They decided the fate of the Mirs at the battle of Mianee on the Fuleli in 1843 A.D.

The following description of the battle shows how the geographical situation of Miani helped the British to win it: –

"Having ascertained that the Ameers were in position at Miani (ten miles distance from Hala, and 6 miles from Hyderabad), and well knowing that a delay for reinforcements would both strengthen their confidence and add to their numbers, already seven times that which I commanded, I resolved to attack them and we marched at 4 a.m. on the morning of the 17th February, 1843 The enemy were strongly posted; woods were on their flanks which I did not think could be turned. These two woods were joined by the dry bed of the river Fulaillee, which had a high bank. The bed of the river was nearly straight and about 1,200 yards in length. Behind this and in both woods were the enemy posted. In front of their extreme right and on the edge of the wood was a village.

"Having made the best examination of their position, which so short a time permitted, the artillery was posted on the right of the line, and some skirmishers of infantry, with the Scinde irregular horse, were sent in front, to try and make the enemy show his force more distinctly; we then advanced from the right in echelon of battalions, refusing the left to save it from the fire of the village. The 9th Bengal Light Cavalry formed the reserve in rear of the left wing, and the Poona Horse, together with four companies of infantry, guarded the baggage. In this order of battle we advanced as at a review across a fine plain swept by the cannon of the enemy. The artillery and Her Majesty's 22 regiment in line formed the leading echelon, the 25th Native Infantry, the second, the 12th Native Infantry, the third, and the 1st Grenadier Native Infantry, the fourth. The enemy were 1,000 yards from our line, which soon traversed the intervening space. Our fire of musketry opened at about 100 yards from the bank, in reply to that of the enemy and in a few minutes the engagement became general along the bank of the river on which the combatants fought, for about three hours or more, with great fury, man to man. Then, My Lord, the superiority of the musket and bayonet over the sword and shield and matchlock. The brave Balooches first discharging their matchlocks and pistols, dashed over the banks with desperate resolution, but down went these bold and skilful swordsmen under the superior power of the musket and bayonet. At one time My Lord, the courage and numbers of the enemy against the 22nd, the 25th and the 12th Regiment bore heavily in that part of the battle. There was no time to be lost, and I sent orders to the cavalry to force the right of the enemy's line. This order was very gallantly executed by the 9th Bengal Cavalry and the Scinde Horse.

"The loss of the British force is 256 men killed and wounded. The enemy is generally supposed to have lost 5,000.

"I ought to have observed that I had the night before the action detached Major Outram in the steamers with 200 sepoy to set fire to the wood in which we understood the enemy's left flank was posted. However the enemy had moved about eight miles to their right during the night."³⁴¹

Condition of Sindh Canals under the British.

The Talpurs did not pay huge tributes to Kandahar regularly, though they were reaping the fruits of the Kalhora systems of canal irrigation all the time. They were luxury-loving and, therefore, negligent of administration. The canals, in their time, largely deteriorated, until the British took over the charge. In the Khairpur State, however, canal construction continued, and some of the large canals, e.g., the Mir Wah, were constructed.³⁴² After the conquest, the British extended the system, though very slowly at first. The British engineers made scientific surveys and improvements in the canals. They simplified the whole system by straightening them, assured regular supplies to cultivators and converted desert lands into cultivable areas. The Jacob-Frere heritage of inundation canals to the Sindh Public Works Department is really great. Then at last, the climax of irrigation in Sindh reached in 1932 when the Lloyd (Sukkur) Barrage, the largest irrigation system in the world, was opened. Even now the Barrage area is limited, as nearly half of the eight districts are outside the Barrage zone, viz., the whole of the Karachi district, the southern half of the Hyderabad district, and large parts of the Sukkur and Upper Sindh Frontier districts. These have yet to depend upon an awkward river and its irregular inundations every year. The Sukkur Barrage itself, however, is proved to be a great success within the short period of five years. (See the Author's *A Geographical Analysis of the Lower Indus Basin (Sindh); Part II, Natural Vegetation, Irrigation and Agriculture, Karachi 1937*).

British Port and Capital.

Karachi, a mere fishing village, has grown to be a great port and the capital of British Sindh since the conquest of 1843.

Summary and Conclusion.

Surrounded largely by lands of barrenness and desolation and possessing a fertile river valley, Sindh has played its part worthily from the earliest days of human civilisation. Being an antechamber for a larger plain of prosperity beyond, it gave life and impetus to those races, which entered it and then passed on to India. Their influence, then, reached far and wide e. g., Easter Islands. Life could be lived on easier terms in this

³⁴¹ Extract from the Blue Book of the Parliament, "The Sindh Correspondence", Sir C. Napier to the Governor General, Miani.

³⁴² See the author's "*A Geographic analysis of the Khairpur State*" Jour, Sindh Historical Soc. Vol. I. Pt 4. pp. 44 ff.

region than in the surrounding areas. This prosperity, for the time being, made the valley unsafe and even the people were not prepared to repel foreign attacks on this eastern El Dorado but to receive them unmindful of any less. Access to the valley was possible, though difficult and shelter given by it real, though not permanent. In this respect, it has differed greatly from other valleys such as the Euphrates, Tigris, which continually subjugated foreign neighbours and succeeded in building up their empires. Not so the lower Indus valley. It was hard to preserve Sindh itself intact.

Like India proper, Sindh, too, had no political unity of its own, in spite of its mountain barrier in the west and the desert in the east. Even a powerful foreign race, as the Baluchas, could not unify the land, but their kingdom was broken up into several principalities, which even against a common danger, such as the British, did not well coalesce and offer a united stand. It was the last attempt of an Asiatic government over Asiatics, land people controlling land people.

The control of the sea board has made it possible for the present seafaring rulers, to recover its much needed peace and its finances. Throughout these eleven centuries and more we have found Sindh struggling for its very existence, for its self-assertion and political evolution. There was no continuous rule of one tribe or one people, no long and sustained peace to secure. Peace was hard to procure in a region like this. It was the government of different tribes, which came into power one after another by chance. But their influence abode for long e. g. Moghul architecture at Tatta.

This long course of Sindh's history, which we have so rapidly surveyed, can be better divided into three periods instead of the different dynasties;

- (1) Period of a resettlement of affairs at home, of carving out native kingdoms and sub-kingdoms after a haphazard foreign conquest. *e.g.* Bakkar till the last was more or less detached.
- (2) Period of empire-building, at first, by the natives as far as Kashmir and then by foreign rulers *viz.*, Arabs, Afghans, Mughals, Baluchas and others who tried to subjugate Sindh and exact tribute; or when the foreigners became weak, the local rulers became strong and tried to conquer neighbouring lands, Cutch, Kathiawar and Gujrat, but failed.
- (3) Period of a struggle for separation and independence.

Sindh was not an easy country to achieve all that. It was not a uniformly habitable or cultivable tract, but had patches of desert land, pools of shallow water or swamps or barren Kohistan here and there. It had no great lines of communication, no easy contacts of all its parts with the capital town, no uniform climate throughout the province and no regular distribution of water supply. Floods for droughts were its

characteristic. It had three or four important political centres coinciding with the chief physiographic divisions, on which the central government had constantly to rely, but which often failed to give succour or shelter to the ruling prince – Bukkar, Sehvan, Umerkot and Tatta, at first, and Shikarpur, Hyderabad and Karachi later on, all near and yet far enough for Sindh. The capital towns had to be shifted from north to south and south to north, as the occasions demanded. When a tribe had to hide itself from another more powerful one, which had occupied the central Indus valley, it sought the desert and the secluded parts of Sindh for its existence and self preservation. They too sought opportunities to rule again by chance. With the changes in the main artery of the river Indus, settlements had to be shifted, with the growth of the delta new ports had to be established and old but rich towns had to be set aside. Battles were hard to fight on land, in the rivers or in the desert. The desert had its geographical value changed from time to time, – it gave shelter to the weaker tribes driven away from the main valley or to fugitive kings both Sindhi and Indian, or was completely deserted for a time.

Whenever the geographical factor of a powerful human personality was procurable and leadership was sought in him, peace was restored for a time and critical situations were saved. But he, too, was at the mercy of the mercenary armies, which was a constant feature of Sindh's political history. A powerful general of the State army invariably succeeded the king and a whole dynasty was changed.

Sindh was at the mercy also of the neighbouring lands – Afghanistan, Kalat, Delhi, Rajputana and Cutch, the rulers of which made occasional inroads into this province, exacted tribute and retired. The Moghul at Delhi, being nearer and in the upper Indus basin, were the most successful invaders of all, [downstream] but they, too, at first left their own governors behind or accepted native ones whenever outsiders could not be tolerated. What Kandahar was chiefly concerned with was the annual tribute. When the Moghul empire came to an end, Afghanistan once again tried to vanquish Sindh and to exact tribute from the rulers, who were no better than Zamindar princes or farmers-general. The land was no doubt fertile and even the Arab geographers waxed eloquent on the Mihran and its tributaries. Prosperity in Sindh meant ultimate stagnation and indifference to any outside attacks. The history of Sindh is full of patricidal wars, civil wars, revolts and foreign invasions. It took Sindh to recover from such shocks always a long time. There was no prolonged peace and hence there was no great architecture or even art developed. Everything was like the shifting sand-hills. The rulers as well as the ruled indulged in poetry, philosophy and music and neglected the State.

The destiny of Sindh was largely linked with Iran, Baluchistan and Afghanistan, and although the Sindh coast was uninviting and Sindh climate unsuitable to foreigners, it was to vanquish the Amir of Kabul, that the British subjugated Sindh by trying to fight an inland "naval" battle.

Sindh is destined to be a separate province physically as well as politically. A strong and supreme government is needed to rule it from its centre. Minority communities in such a region are bound to be strong. There is also a likelihood of mingling of ideals, of cultures and religions, in such a land.

Despite the great river, the most ancient canal system and rich soil, which got more and more enriched by its own silt every season, the State was not exceedingly rich in the past. The revenue was not therefore very great. Even the Arab conquerors of Hindu Sindh were not able to secure much; it was hardly sufficient to maintain themselves. It required a central and organised irrigation system with strict laws of canal distribution of water throughout the valley. Then Sindh would easily come into its own and bloom like a rose. With the recent separation of Sindh from the shackles of the Bombay Presidency, with the more or less perfect system of perennial irrigation system of the Sukkur Barrage and with the introduction of provincial autonomy, Sindh is expected to see better days. This is a lesson, which an impartial survey of Sindh's history and its co-ordination with the regional geography of its past, can teach.

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I have read through Part III (Climatic Conditions) from beginning to end and I congratulate you on the publication. It has a mass of very useful information and it represents immense amount of careful abstraction of data from all the different sources. — C. G. Hawes, M.C., B.S.C. (Lond.), A.C.G.T., P.W.D., Sindh.

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I have just glanced through it ("Climatic Conditions") and I think it will be interesting in a detailed perusal.* – V. V. Sohoni, B.A. (Hons.), M.S.C., Meteorologist, Karachi.

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It is really most interesting and instructive like all your publications, which show what an amount of very valuable time you must have devoted to the collection of mass of information from various sources and in presenting the same in such lucid, interesting and readable form – Khan Bahadur J. R. Colabawala, M.I.E., (Ind.), M.S.C., (Lond.), State Engineer, Khairpur State.

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I can boldly congratulate you on having set an excellent model of regional studies, which others will follow for their home region. – N. Subrahmanyam, M.A., L.T., F.R.G.S., Lecturer in Geography, Teachers' College, Saidapet (Mad.)

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Mr. M. B. Pithawala is continuing his researches in the geography of Sindh, and has recently published the first two parts of "A Geographical analysis of the lower Indus basin (Sindh)". These monographs are a comprehensive attempt to apply modern methods of regional survey to an Indian province in order that its individual problems may be approached with a sound understanding of their physical basis. It is natural that an inhabitant of the Indus valley, which owes so much to the existence of the river and many of its difficulties to its divagations, should be impressed with the weight of geographical factors in history

Mr. Pithawala's work, and the literature he quotes, are evidence that the problems of Sindh are receiving due attention. – "The Geographical Journal", London, Vol. XC, No. 3, September, 1937.

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Professor Pithawala is to be heartily congratulated on having struck a new field in his publications of great interest and written scientifically after a good deal of research. His books are of immense value to all interested in geographical factors in India in general and in Sindh in particular and they cannot but appeal to research workers and intelligent laymen alike. Few Indians have done, so far, such research work in geography and physiography as the author, who deserves felicitations on his valuable

work, which should receive a warm welcome. — "The Hindustan Review." November 1937.

* * * * *

We have much pleasure in welcoming the first systematic attempt at a full geographical analysis of a region in India. It is hoped that the publication of this book will induce others qualified to do so to analyse and work the detailed geography of their home regions in a similar scientific way. — "The Journal of the Madras Geographical Association" Vol. 12, No. 3, October 1937.

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No other region in India has ever been subjected to such a close study as the Indus basin, and no research worker has ever done it in as scholarly a manner as Mr. Pithawalla, who is undoubtedly an eminently suitable man to undertake such a laborious task. The publication is therefore unique. — "New Book Digest," Bombay,, Vol. 2 No. 6, December 1937.

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I have read through Part III (Climatic Conditions) from beginning to end and I congratulate you on the publication. It has a mass of very useful information and it

represents immense amount of careful abstraction of data from all the different sources.
– C. G. Hawes, M.C., B.S.C. (Lond.), A.C.G.T., P.W.D., Sindh.

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I have just glanced through it ("Climatic Conditions") and I think it will be interesting in a detailed perusal.* – V. V. Sohoni, B.A. (Hons.), M.S.C., Meteorologist, Karachi.

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It is really most interesting and instructive like all your publications, which show what an amount of very valuable time you must have devoted to the collection of mass of information from various sources and in presenting the same in such lucid, interesting and readable form – Khan Bahadur J. R. Colabawala, M.I.E., (Ind.), M.S.C., (Lond.), State Engineer, Khairpur State.

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I can boldly congratulate you on having set an excellent model of regional studies, which others will follow for their home region. – N. Subrahmanyam, M.A., L.T., F.R.G.S., Lecturer in Geography, Teachers' College, Saidapet (Mad.)

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Mr. M. B. Pithawala is continuing his researches in the geography of Sindh, and has recently published the first two parts of "A Geographical analysis of the lower Indus basin (Sindh)". These monographs are a comprehensive attempt to apply modern methods of regional survey to an Indian province in order that its individual problems may be approached with a sound understanding of their physical basis. It is natural that an inhabitant of the Indus valley, which owes so much to the existence of the river and many of its difficulties to its divagations, should be impressed with the weight of geographical factors in history

Mr. Pithawala's work, and the literature he quotes, are evidence that the problems of Sindh are receiving due attention. – "The Geographical Journal", London, Vol. XC, No. 3, September, 1937.

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Professor Pithawala is to be heartily congratulated on having struck a new field in his publications of great interest and written scientifically after a good deal of research. His books are of immense value to all interested in geographical factors in India in general and in Sindh in particular and they cannot but appeal to research workers and

intelligent laymen alike. Few Indians have done, so far, such research work in geography and physiography as the author, who deserves felicitations on his valuable work, which should receive a warm welcome. — "The Hindustan Review." November 1937.

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We have much pleasure in welcoming the first systematic attempt at a full geographical analysis of a region in India. It is hoped that the publication of this book will induce others qualified to do so to analyse and work the detailed geography of their home regions in a similar scientific way. — "The Journal of the Madras Geographical Association" Vol. 12, No. 3, October 1937.

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No other region in India has ever been subjected to such a close study as the Indus basin, and no research worker has ever done it in as scholarly a manner as Mr. Pithawalla, who is undoubtedly an eminently suitable man to undertake such a laborious task. The publication is therefore unique. — "New Book Digest," Bombay,, Vol. 2 No. 6, December 1937.

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The work is, on the whole, thoroughly done and is the first of its type on an Indian province. — "Calcutta Geographical Review" Vol. I No. 2, 1937.

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The publications are valuable and contain useful information on Geographical Features of Sindh. They are suitable as library and prize books. — Director of Public Instruction, Sindh, No, S— 150 (a) — 8022-E., 23rd October, 1937.