

HISTORY OF SIND SERIES VOL-I

# SIND

A GENERAL INTRODUCTION

H.T. LAMBRICK



**SIND**  
**A GENERAL INTRODUCTION**





## PUBLISHERS' NOTE

This book is published in the History of Sind Series planned by the Sindhi Adabi Board, which was established in 1951 by the Sind Provincial Government to foster the language and literature of Sind. The aim was to produce a definitive history of the country from prehistoric times till the birth of Pakistan in 1947. The original plan, for eight volumes, was subsequently amended by dividing the fourth of these into two. Thus the complete history will now be published in nine volumes, in three languages, Sindhi, Urdu and English, in the following order:-

### Volume I.

A general introduction, giving a full description of the geographical and climatic features of the country, and tracing their influence on its history throughout the period. The behaviour of the river Indus is examined, with the effects of the changes of its course; and also accounts of the seats of culture, the composition of the population, and the local languages, recorded by observers at different times.

### Volume II.

The Indus Civilization. Persian occupations. Alexander the Great's invasion. The Scythians and their successors. The Buddhist period. The Brahman dynasty and its fall.

### Volume III.

The Arab period, preceded by a brief account of the advent of Islam.

### Volume IV.

The Ghaznavis, Ghoris, and their successors. The Sumras.

**Volume V.**

**The Sammas.**

**Volume VI.**

**The Arghuns, Tarkhans and Moghals.**

**Volume VII.**

**The Kalhoras and the Daudpotras.**

**Volume VIII.**

**The Talpurs.**

**Volume IX.**

**The British period, the Separation of Sind, and the birth of Pakistan.**

The work of writing these nine volumes was assigned to different scholars; the first two to Dr. H.T. Lambrick, the well-known author of 'Sir Charles Napier and Sind' and 'John Jacob of Jacobabad'. The first volume written by Dr. Lambrick appeared in 1964 and the second now stands published. Of the remaining volumes No. III is under print, while research and the collection of data for volumes IV, V, and VI are in progress. Volume VII written by Maulana Ghulam Rasool Mihr in Urdu was published in the year 1958, its Sindhi translation appeared in 1963. Volumes VIII and IX are yet to be written.

The Publishers acknowledge with thanks the cooperation and help extended by Mr. Aijaz Mohammed Siddiqui, Manager, Sind University Press, Hyderabad Sind, in bringing out this volume.



HISTORY OF SIND SERIES - VOLUME 1

# **SIND**

## **A GENERAL INTRODUCTION**

BY

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**SINDHI ADABI BOARD**  
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**PAKISTAN**

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## PREFACE

### TO THE SECOND EDITION

This work was first published in 1964, and had been extant for nearly two years before I became aware, through the pages of *Scientific American*, (issue for May 1966), of a theory propounded in explanation of the decline and fall of Mohenjo Daro which differed completely from that suggested in my book: though in both a physical calamity was postulated. Deeming this 'other' theory to be fundamentally — indeed, demonstrably — erroneous, I entered into correspondence on the subject with the late Sir Claude Inglis, the eminent hydraulic scientist and expert on the behaviour of rivers; and finding that he concurred in my views, urged him to deploy his unrivalled authority in elucidation of the problem. However Sir Claude, deeply engaged as ever in his own research, and reluctant to involve himself in controversy, encouraged me to argue my case in person. This I attempted in a paper entitled "The Indus flood-plain and the 'Indus' Civilization", which appeared in *The Geographical Journal* at the end of 1967.

Within a year Mr. D.A. Holmes, a soil surveyor who had been employed on the Lower Indus Project for several years before and after the publication of this first volume of the History of Sind series, produced, also in *The Geographical Journal*, a paper which may be considered to confirm substantially the probability of the theory advanced by me. It bears the title "The Recent History of the Indus". Mr. Holmes's object was to outline the probable courses of the river Indus through Sind over the past two thousand years, using the evidence obtained from aerial photographs at a scale of 1: 40,000, which were extensively used in the mapping of land-forms and soils during the investigations of the Lower Indus



Project. "The additional evidence obtained from aerial photographs", Mr. Holmes observes, "in general gives further support to Lambrick's theories". That can best be gauged by comparing four of the maps in this volume with the four in his paper which relate to broadly the same periods as mine. Mr. Holmes's Fig. 2, "showing former courses of the River Indus" will be found to confirm the existence and alignment of many of the "probable ancient courses and branches of the Indus", a comprehensive view of which appears in my map No. 1. I had delineated these by inference from the ascertained contours of the flood-plain and a few surface traces without any assistance from the air, by means of which Mr. Holmes determined the "former courses". As to the periods during which particular courses were active, my maps Nos. 3, 7, and 11 may be compared with his Figs. 3, 4, and 5 (the invasion of Alexander the Great, the early Arab epoch, and the sixteenth century A.D.).

Mr. Holmes states: "Aerial photographs have yielded no direct evidence for the location of the Indus at the time when the Indus Civilization flourished"; but adds significantly: "Our knowledge of the later vagaries of the Indus shows that the prosperity of any one district is somewhat transient."

If anything has been published since 1968 in reasoned controversy of Mr. Holmes's views and mine, I have unfortunately remained unaware of it; and accordingly re-stated my own theory in the second volume of this series, *Sind before the Muslim Conquest*, published in 1973, in the chapter entitled "The Indus Civilization: zenith and decline". I have likewise to plead ignorance of any work describing Alexander the Great's withdrawal from India, published within the last ten years, which should cause me to modify my own account, particularly the interpretation of the early stages of Nearchus' voyage, as given in this volume.

Thus apart from a few small corrections, the text of this Second Edition of *Sind: a General Introduction* is identical with that first published.

## PREFACE

In this volume an attempt is made to trace the influence of Sind's geographical and climatic features on the country's history through the ages.

Such a survey involves recourse to authorities in a variety of fields; to geologists and hydrographers as well as archaeologists, geographers and historians. Those consulted are mentioned in footnotes and references. Generally speaking, in descriptions, criticisms and other statements for which no authority is quoted, I have depended upon personal observation and on knowledge of the country and people acquired during many years' residence, largely itinerant. Official duty fortunately afforded me the opportunity of voyaging up and down the Indus between Sukkur and the Delta before the Lloyd Barrage was completed; and I was able to extend my acquaintance with the Province to many unfrequented parts when in charge of the Census of 1941.

I am indebted to so many persons during so long a period for information on particular details about Sind that I can now only express my thanks comprehensively to them all. For the use made of such information I am solely responsible.

I acknowledge gratefully my obligations to the late Doctor U.M. Daudpota and to Professor N.A. Baloch for their careful reading of the original text and the valuable criticisms, corrections and suggestions which enabled me to improve it in many respects.

My thanks are also due to Mr. K. E. Butler and other members of the Oxford University Press for the skill and care they applied to the reproduction of my maps: to Doctor A.G.M. Weddell, Fellow of Oriel College, for devoting much time and skill to the due preparation of my photographs for reproduction as plates: to Professor N.A. Baloch, of the University of Sind, for his assiduous labours on the proofs: and I am grateful to my wife for a great deal of assistance.

I am conscious of some inconsistency in the spelling of certain names, geographical and historical, both in the maps and the text—resulting from the varying preferences of different authorities consulted. While regretting such blemishes, I do not think they can cause any misunderstanding by the intelligent reader of what is illustrated or stated.

H. T. L.



**PUBLISHER'S NOTE TO 3rd. EDITION**  
**SIND-A GENERAL INTRODUCTION**

Research on Sind is notably lacking in studies dealing with the dynamics and development of Sind during pre-historic and historic times. This book, the first of 9-Volume series, initiated by the Board on History of Sind, is a modest attempt towards meeting that lack. The author presents systematic and comprehensive survey and a general sketch of the conditions of Sind prevailing during the period under study. The book has been well received by the general readers as well as the serious students. It is a valuable addition to the literature on Sind.

First published in 1964, its second Edition appeared in 1975. This Edition has been made possible due to the steps taken by the Government of Sind in strengthening the financial position of the Board. The Board acknowledges with gratitude the financial assistance made available by the Government of Sind.

Dated: 20th July 1986.

Mohammad Husain Turk  
Secretary  
Sindhi Adabi Board.

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## GLOSSARY

This is a book about Sind, and I have not hesitated to employ the ordinary Sindhi terms for characteristic natural features and agricultural procedures.

The more important such terms occurring in the text are given together with their meaning in the subjoined list.

- 
- Barani — Cultivation dependent on rain.  
Band, Bund — Embankment protecting land from floods.  
Buthi — Mound formed of remains from prehistoric settlement (lit.=tomb).  
Dhandh — Lake or marsh, not necessarily perennial.  
Dhoro — Bye-river, branch, or former bed of Indus.  
Jabal — Mountain.  
Kaccha — Unstable land within the regular limit of direct inundation from the Indus.  
Kharif — Autumn crop.  
Kohistan — Hill country of Sind.  
Lak — Mountain pass.  
Nai — Perennial stream in hill country.  
Nala, Nullah — Watercourse in alluvial plain, usually dry.  
Pish — Dried leaves of dwarf palm.  
Rabi — Spring crop.  
Registan — Sandy tract: particularly that westward of the Nara, south of the Rohri hills.  
Sailabi — Cultivation of ground previously inundated.  
Takar — Hill (e.g. Ganjo Takar).  
Taluka — Minor revenue and administrative unit in Sind.  
Wah — Irrigation canal.  
Wahi — Small irrigation channel.

I have in general referred to characteristic trees, shrubs, grasses and crops of the country by their Sindhi names. Those so mentioned, and the species of one or two given in English, may be identified from their proper botanical names appended in the following list.

---

Ak	—	<i>Calotropis procera.</i>
Babul	—	<i>Acacia arabica.</i>
Bahan	—	<i>Populus euphratica.</i>
Bajhri	—	<i>Penicillaria typhoideum.</i>
Ber	—	<i>Zizyphus jujuba.</i>
(Cactus)	—	<i>Euphorbia nereifolia.</i>
Kandi	—	<i>Prosopis spicigera.</i>
Khabbar	—	<i>Salvadora persica.</i>
Khip	—	<i>Leptadenia spartium.</i>
Kirir	—	<i>Capparis aphylla.</i>
Lani	—	<i>Salsola.</i>
Phog	—	<i>Calligonum polygonoides.</i>
Sar (grass)	—	<i>Phragmitis karka.</i>
Sissoo, or Tali	—	<i>Dalbergia sissoo.</i>
(Tamarisk)	—	<i>Tamarix gallica.</i>
		„ <i>dioica.</i>
		„ <i>articulata.</i>
Til	—	<i>Sesamum Indicum.</i>

## LIST OF ABBREVIATIONS

(in the order in which they occur)

- M.G.S.I.      **Memoirs of the Geological Survey of India.**
- S.R.B.G.      **Selections from the Records of the Bombay Govt.**
- J.S.H.S.      **Journal of the Sind Historical Society.**
- A.R.A.S.I.    **Annual Report of the Archaeological Survey of India.**
- M.A.S.I.      **Memoirs of the Archaeological Survey of India.**
- I.D.C.        **Indus Delta Country, by Major General M.R. Haig.**
- C.H.I.        **Cambridge History of India.**
- J.A.S. Bengal **Journal of the Asiatic Society of Bengal.**
- J.R.A.S.      **Journal of the Royal Asiatic Society.**
- R.A.S.        **Royal Asiatic Society.**
- A.G.I.        **Ancient Geography of India, by Major General  
Sir A. Cunningham.**



# 1

## GENERAL GEOGRAPHICAL OBSERVATIONS

SIND, properly rendered Sindhu, is primarily the indigenous name of the river known in the western world as the Indus. The erroneous form has prevailed because it was used by the companions of Alexander the Great in their narratives of his expedition, which achieved great popularity; and such a metathesis in the pronunciation of proper names is not uncommon in Oriental speech. We find a more correct version, Sinthos, in a Greek work produced in the first century after Christ.<sup>1</sup>

The name Sind was subsequently extended to the country watered by the lower Indus, that is below the confluence of the tributaries which similarly gave their collective name, the Panjab, to the country they traversed.

It is appropriate that this land should bear simply the name of the great river: for the river made it. The whole of this tract several hundreds of miles in length and up to one hundred in breadth, as we know it, has been carried and fixed in position, grain by grain, layer upon layer, by the water of the Indus. The soil trodden by the inhabitants of Mohen-jo-Daro, and by whatever predecessors they may have had, was indistinguishable from the soil we tread today; Indus silt, modified by the action of heat, water and vegetation, is etching away in seemingly boundless flat expanse to the confines of the valley. Only, the land they knew some fifty centuries ago lay many feet below the present level of the plain of today; it met the sea far inland of the present coastline; and the contours of its surface, its almost imperceptible falls in one or the other direction, may have differed somewhat from the well-ascertained profile of today, which itself is not apparent to the human eye. We shall make a closer examination of this plain of the Indus, the essential Sind, after taking a general view of the adjoining tracts.

The broad valley of the Indus is bounded on the left hand, or eastward, by the edge of the Thar, the great sandy desert of India which extends in almost unrelieved desolation for nearly three hundred miles of gradually rising ground up to Mount Abu and the Aravalli range. Southward of about the latitude of Jamrao Head down to the Rann of Cutch the boundary between the two regions is almost as distinct as a sea shore, the sandhills rising abruptly like a line of cliffs above the flat plain. Further to the north, sand dunes encroach upon the alluvial valley, and the Indus floods penetrate deep into the sandy country; thus the real boundary between the two tracts, of physically different origin, is very largely obscured. It may be assumed, generally speaking, to lie much further to the east in this region than is apparent. This variation between the southern and northern sectors of the sandy boundary is governed by the strength or weakness, the prevalence or absence, of the south west monsoon.

On its right or western side, the limits of Sind proper would appear to lie along the edge of the gravelly slopes leading up to hill country which extends into Baluchistan. But in fact the plain immediately adjoining this rising ground is formed of alluvium deposited from the hills, quite distinct from that deriving from the Indus. This tract, locally known as Kachho, and narrow for the most part, expands within the angle between the Suleiman range and the mountains running south from the Bolan pass to form a district of several thousand square miles. That part of it nearest to the Indus plain is a flat desert of clay-like soil, virtually devoid of vegetable life; a natural barrier almost as formidable as the mountains which form its other boundaries. To the existence of this desert is due the fact that this province of Kachhi has generally been associated politically with the countries to the north westward rather than with those to the south east.

The configuration of the mountainous tract west of the plain of Sind corresponds curiously with that of the eastern desert boundary, though in reverse order; that is to say, the northern sector from the edge of Kachhi down to the Manchar lake, forms a seemingly unbroken rampart: while from the Manchar southwards detached ranges occur with strips of plain between them, the whole gradually broadening and declining in height towards the south, and offering no obvious boundary to the westward. Advancing in this direction across the Hab river and some minor

hill ranges, we reach the plain of Las, which extends northwards from the sea coast about sixty miles, and measures half that distance at its greatest breadth. This tract is composed of alluvium deposited by the Porali river and some minor hill torrents; and like the above-mentioned plain of Kachhi, which it much resembles, has at times been united politically with Sind, but more often separated from it.

Such, in brief, are the regions varying portions of which have at different times been combined in the political entity known as Sind. It may be conceded that the sandy deserts belong physically to Rajputana, and the rugged hills to Baluchistan. In fact, the unlettered inhabitants of the Western Kohistan or the Kachho, of the eastern Registan or the Thar, will speak of "going down to Sind"—the name to them still conveys its original meaning, of the plain created and ever refreshed by the river Indus. The Province that we know today lies between  $28^{\circ} 30'$  and  $23^{\circ} 35'$  North Latitude, and  $66^{\circ} 42'$  and  $71^{\circ} 10'$  East Longitude.

Sind was dubbed "Young Egypt" by some of the earliest British visitors to the country; and though we may now take exception to the idea that it was far junior in civilisation, the similarity between the lower valleys of the Nile and of the Indus must always impress the observer. The same three parallel tracts, of arid hills, alluvial plain, and sandy desert, lie in the same order from right to left, the central valley in each owing its fertility not to rainfall but to the annual inundation of a great river. Climatically and geologically, in their characteristic flora and fauna, the affinities between the two countries are far more obvious than their differences. The traveller from Sind who goes by road from Suez to Cairo and thence through part of the Nile Delta into the Libyan desert, will be struck by the resemblance, stage by stage, to the country he has passed in a railway journey from Karachi by Hyderabad into Marwar. It may occur to him that the plain of the Nile above the Delta appears narrow in comparison with the Indus valley: and so in fact it is. The mean breadth of the latter, from several measurements at right angles to the general direction of the river, taken at intervals, is not less than sixty miles for a distance of three hundred miles above the latitude of Hyderabad.

The climate of Sind is distinguished by great extremes of temperature, and by the scantiness and capriciousness of the rainfall.

The atmosphere of the coastal regions is comparatively moist, and within the range of the sea breezes which prevail for about four months a softening and cooling influence is perceptible far inland. But the force of the south west monsoon is largely expended before it reaches these latitudes; it brings little rain in the clouds which sweep in over the coast from June till September. Were it otherwise, the south western hill country is not sufficiently elevated to interrupt the passage of these clouds, though the effect of the monsoon is to be observed in slightly modifying the aridity of the western slopes of the ranges. Rainfall during this season results usually from local atmospheric disturbance, in the opposition to the monsoon of other currents of air. For the most part the clouds are gradually evaporated in their flight over the heated land, with no more effect than to preserve the coolness of the wind. This is drawn with momentarily increased force across the southern part of the Thar desert, to supply the place of the intensely heated air rising above the sand. In the Indus plain, the last breath of the breeze reaches Pad Idan, a hundred miles north of Hyderabad, but it is hardly felt to the westward of a line drawn between this place and the southern end of the Lakki hills.

The region thus excluded partakes of the much severer climate of Upper Sind. Here the hot weather lasts for full seven months, mitigated only for a few days by occasional rainfall, generally violent and of short duration. After April the nights become close and stifling, and the thermometer may not fall below  $100^{\circ}$  until just before dawn; shade temperatures of  $120^{\circ}$  to  $125^{\circ}$  by day occur frequently, in May and June. The atmosphere is intensely dry, and a gust of wind strikes like the breath of a furnace.

While Sind considered physically falls into the three longitudinal tracts of hill country, riverain plain, and sandy desert, as already mentioned, the inhabitants reckon it to be divided latitudinally into three climatic regions, known as Siro, Vicholo and Lar, corresponding with Upper, Middle and Lower Sind. Persons other than Sindhis simplify the climatic distinction into Upper and Lower Sind, and with this the political division of the country has often corresponded.

The variation in climate between Upper and Lower Sind is not reflected in any difference in the flora of the two zones. The vegetation is characteristic of a rainless climate and a sandy soil,

largely impregnated with salt. A notable feature is the predominance of plants and trees with small leaves, or none at all, and the large proportion of thorny species. The apparent contrast between the verdure of the riverain and irrigated tracts on the one hand, and the hill and desert tracts on the other, is largely a matter of its relative intensity and distribution. Those familiar objects in the landscape of the Indus plains, *babul* and *kandi* trees, the tamarisk, the *ber*, with dozens of lesser shrubs, are equally characteristic of the desert and the hills. It is indeed a poor relation of the *babul* that we find in the desert: and the others tend to be stunted in comparison with well-watered examples in the Indus valley. But on ground favourable to a particular species it will occur, however sparsely, anywhere in the areas under consideration; likewise the typical leafless shrubs of the desert, such as the *kip* and the *phog*, will be found on occasional patches of sand isolated among miles of rich irrigated land.

The botanical region of which Sind is part extends over most of the Panjab, Western Rajputana, Kathiawar and Cutch; and though many plants common to other parts of India occur, the stronger affinities are with the countries to the west—Makran, the hotter parts of Persia along the Gulf, Iraq and, as already mentioned, Egypt, in which the climatic conditions are similar.

Much the same may be said of the animal kingdom, and particularly the birds, in Sind. Those classes which are most characteristic of the country are equally typical of the extensive regions to the westward. The fact is, that the Thar desert is a most effective physical barrier, isolating Sind from India proper; while the western hill country is no barrier at all, for all these important natural relationships. We shall see later that this is reflected in Sind's political history.

We may therefore begin our detailed examination of the geography of Sind with its Eastern Desert area.

## NOTES

1. *The Periplus of the Erythraean Sea*, by an unknown author.

## 2

### THE EASTERN DESERT

UNDER the action of the monsoon wind blowing in from the coast, as already described, the sand of the southwestern Thar has been heaped up and hollowed out into huge parallel ridges known as *bhit*, with valleys between them, having a general alignment from south west to north east—that is, in the same direction as the wind.<sup>1</sup> Transverse dunes connecting the longitudinal ridges occur as one travels further into the desert, and it is worthy of note that after about 150 miles, or beyond Barmer, the sandhills are all of this type—that is, at right angles to the wind.<sup>2</sup> I mention this feature of part of the desert well within Rajputana as it helps to explain the opposite and very characteristic configuration of the sand hills on the border of Sind. All the Thar sand is wind blown; but its behaviour varies with intensity of the wind which bears on it after it has come temporarily to rest. Sand hills start from accumulations against or in the lee of a solid object, and under light wind pressure tend to present a gently rounded profile towards it, and a steeper slope to leeward. Under a strong wind blowing steadily from one quarter the embryo sand dune forming in the open tends to take on a horse-shoe shape, open to leeward, and the two "tails" gradually increase in length as sand is deposited in the shelter they themselves give. The windward slope also is liable to be flattened and furrowed, by the removal of the lightest grains, and the crest is constantly cut away, the whole taking on an elongated form, with a tendency towards forming separate ridges parallel with the wind. This process can be most conveniently observed in the vicinity of Karachi during the monsoon season.

The same wind blows very strongly and steadily, particularly by night, over the south west of the Thar, and the regimentation of the dunes is accordingly longitudinal. The wind becomes concentrated in the intervening valleys, known as *tali* or *dahar*, and takes on an increased transporting and eroding

power.<sup>3</sup> Sand accumulating in these valleys as the monsoon slackens, or from casual winds at other times of the year, seldom becomes stabilised in transverse ridges, but is forced to conform to the general pattern under the scouring action of the monsoon. Along the talis its force is such that the hard alluvial soil underlying this part of the desert is frequently exposed along the bottom, though for the most part they have a shallow covering of sand.

Beyond Barmer the force of the south west wind is much reduced and on the open plain the sand forms dunes of the transverse type, presenting a broad gently sloping face to the south west, and a steep slope to the north east. Sand hills of this shape prevail as far north as Bikanir.

Thus seen from the air both the south west and the north east halves of the Thar have the appearance of a dun-coloured sea under the influence of a strong breeze; but the "waves" of the south west tract, which actually run parallel to the wind, are far longer and closer to each other than those of the north east, which are at right angles to it.

While the general configuration of this desert can be best observed from an aircraft, particularly when the sun is low, the impression so gained will be in some respects misleading. The remarkable height of the bhits in the south western or Sind desert, relative to the talis between them, will not be apparent; nor, from the respectable altitude which aircraft are wont to keep above this tract, owing to the capricious up-and-down draughts, will the degree of vegetation which the sand supports be appreciated.

To one standing on the highest point of a lofty bhiti, perhaps 150 feet above the adjoining talis, this will be plain. The grey-white sand is blotched all over with bushes—like spots on a panther's hide, as Pliny described the Nubian desert and its oases seen from a hill. They are as thick on the crests of the bhits as on their flanks and in the talis. These grey-green or grey-brown blotches are composed of the leafless khip and phog, the *booh*, *lani* and the *ak*: superior to these in size and usefulness, but less common, are the *kirir* and the *khabbar*—the latter, a salvadora, preferring salty ground: and on harder soil in the talis, the *kandi* and the *ber*. Round the wells, the *kandi* trees may attain a respectable size, but for the most part this vegetation is

stunted. Nevertheless it affords grazing for large numbers of camels and goats, and the desert is unrivalled for the excellence and variety of its grasses. These are scarcely perceptible for many months together, but as soon as rain falls start up in sudden luxuriance. The sand is then covered with a tenuous veil of green, and the desert is at once beautiful and prosperous. The grass is so superior to that of the irrigated plains that large herds of cattle are driven into the desert to be fattened.

Even in the most favourable season, however, water for man and beast has to be drawn from the wells sunk as deep as two or three hundred feet beneath the surface of the talis.

Cultivation is naturally confined to small areas in the talis which are embanked to preserve the rain. Fair crops of bajhri are grown if there are several good falls at the favourable season; but the inhabitants are, and must always have been, primarily herdsmen, accustomed to procure grain from the plains where they sell their animals or their produce—ghee, hides and skins.

The above description will serve for the greater part of the Thar desert associated with Sind. But there are certain features peculiar to the central and northern tracts, where the "strike" of the bhits and talis changes from SW and NE to nearly S and N and transverse dunes begin to be more common. About latitude  $26^{\circ}30'$ , and between  $69^{\circ}$  and  $70^{\circ}$  longitude the bhit and tali—ridge and valley—formation gives place to amorphous masses of sand piled up to a great height and covering altogether several hundred square miles.<sup>4</sup> These plateaux of deep soft sand, known as Drarens, change their shape with every breeze, and owing to their instability are devoid of vegetation, and practically impassable. Since to the north of the Drarens we find the surface of the desert resuming the general configuration of ridge and valley as in the south, parallel to the wind, how should we account for the occurrence of these huge accumulations? I think the comparative softness of the sand supplies the answer. This region must be at the extreme limit of the carrying power of the monsoon in an average season, in this the western sector of the wind's range. The heavier grains of sand are deposited earlier; only the lighter are propelled thus far. If this theory is correct, it follows that the monsoon was formerly stronger than it now is, since it has shaped the desert for many miles to the northward in much the same forms as the south; thus the Drarens must be considered as a



recent formation, probably superimposed on the older one. In fact we find a narrow belt of ridge and tali running on between two of the Drarens.

It must seem strange that in the vicinity of these forbidding tracts of utter desolation occur the few lakes, or rather ponds, of sweet water that are to be found in the interior of the Thar; while salt and alkaline lakes are numerous. They occupy hollows known locally as *gochars*, the water resting on the original alluvial clay which has remained free from the sand which surrounds them on all sides. Shallower depressions in the very midst of the vast billowy waste of the Drarens also contain verdure, and sometimes a little water or a damp quicksand, in the bottom. The occurrence of water in these places is due to percolation from rain falling over the huge expanse of soft sand, the lower layers of which, resting on impervious clays, must be in a constant state of saturation. Where the water rests directly on the alluvium, as in the majority of the *dhandhs* along the fringes of the Drarens, it is usually alkaline or salt; but while in suspension in the sand, at a slightly higher level, it is generally sweet.

Many of the alkaline *dhandhs* deposit *trona*, a sesquicarbonate of soda, as the water evaporates in the hot season, and there is considerable production for export in a favourable year. The majority of these lakes are found in a sort of valley between the two Drarens known as Pur Chandar and Samoi, where as already mentioned the ridge and tali formation is perceptible. The *dhandhs* in fact occupy the talis, and are thus for the most part of an elongated shape, aligned south by west to north by east; on the other hand the *gochars* within the Drarens are quite irregular.

The third tract of the Thar associated with Sind extends northward of the belt of Drarens and lakes. Here the sandhills being subject only to comparatively light winds are less sharply defined than the ridges south of the Draren country; and as one proceeds seem to lie almost at haphazard. When studied more closely a double alignment is often perceptible, in that large expanses of sand are often separated one from another by bands of alluvial waste land running roughly east and west; while the dunes formed on or within the sandy belts strike nearly north and south.

The most remarkable features of the tract are the ancient river beds which wind their way through the midst of the waste.

These, as belonging physically to the central valley of Sind, will be examined in detail hereafter. The encroachment over them of the sandy desert is due to the cessation of the waterways to carry a perennial or strong seasonal flow, which must formerly have swept away much of the sand as soon as it was deposited. Travelling over this area we find additional support for the theory already mentioned, that in all probability these southerly winds were formerly more powerful and persistent than they now are, when we observe the effect produced, for instance at Drib Dethri, where an ancient town has been overwhelmed by huge sand drifts.

The soil underlying the sandy desert associated with Sind, both in this former riverain area of the north, under the Drarens, and in the talis between the long lofty bhits of the south, is for the most part hard alluvium. It is probable that the low range of limestone hills running southward from Rohri, which will be described when we deal with the other hill country of Sind, may run on for some distance under the sand in which its southern end disappears; and we find rock of similar formation emerging from the sand hills about one hundred miles to the east, not far from Ramgarh in Jaisalmir. Up to a line drawn at roughly this distance from the valley of the Indus the general level of the desert rises steadily, and extensive outcrops of rock occur near Jaisalmir itself, and about Barmer and Chotan. These rocky wastes, and the hills which rise like precipitous islands from the sea of sand, are of entirely different origin from the limestone ranges of Sind, as is also the Karunjhar hill near Nagar Parkar overlooking the Rann of Cutch. On the other hand, the rocks of Cutch itself are mostly of limestone formation.

Analysis of the sand far in the interior of the Thar, in Western Rajputana, reveals that it is to a great extent derived from degradation of the local rocks; for grains of quartz predominate, and hornblends and felspar are also common. All these minerals occur in the lavas and granites which compose the majority of these hills. The process, almost coeval with the appearance of these rocks, results from the very great alternation of temperature, causing regular expansion and contraction of their outer layers, aided by violent wind action. But La Touche found also, in specimens of sand collected from widely separated areas, particles of carbonate of lime, many of them fossilised foraminifera, which he is satisfied derived from the Tertiary limestones

of Cutch. These must have been borne by the prevailing wind as far as 500 miles, in one instance noticed by him, north of Bikanir.<sup>5</sup>

Whence then the vast deposits of sand in the Sind section of the Thar, between the valley of the Indus and the Rajputana rocks? It is perhaps worthy of note that the sand of the desert adjoining the valley of the Indus is much lighter in colour than that of the dunes between Barmer and Jaisalmir. I am not aware that the former has been scientifically analysed; but on the analogy of La Touche's investigations, it may be assumed to derive largely from denudation of the limestone hills in Lower Sind over which the same monsoon wind passes, lying south east of a line drawn from Karachi to about Manjhand, and including the Ganjo Takar south of Hyderabad. These are subject to at least equal alternations of temperature and powerful winds with those operating on the hills of Cutch. But there is a much more obvious source, and in the view of Blanford the main one: from the deposits of sand left by the gradual recession of the sea which even in historical times covered part of the lower Indus valley, particularly what is now the Delta country, and in all probability, much of the Rann of Cutch. Each successive coastline exposed, during a very long period, and acted upon by the south west monsoon, contributed its sand to the overwhelming of the country to the north eastward,<sup>6</sup> where the rainfall was scanty, and there were no large streams to carry off the sand to the sea again.

The movements of this sand, at least, can be readily observed at many places on the existing coast, and along the lower reaches of the Indus where large banks of silt are exposed, whenever the south west wind is blowing violently. From a distance smoke appears to be sweeping close over the ground, as if from a heath fire; at closer quarters the sky is darkened by the flying sand. Some of it will not travel far; an obstruction close at hand may become the nucleus of a dune destined for many years of existence, whether on the same spot, or slowly-creeping forward without disintegrating. We are however concerned with that sand which finds only temporary resting places, from which the renewal of the monsoon wind in its full strength will drive it onwards, flying over the Indus, over canals, trees and cultivation; till after years, perhaps, it reaches the Thar and, where at last the wind loses the power to disturb it, is added to the waste.

The former bed of the Indus north and east of Hyderabad must be the source of a good deal of this seasonally travelling sand; and at many points between it and the Thar we find isolated masses which may be considered as halted on their journey from one to the other. The development of irrigation, and consequent intensifying of vegetation in the plains of Sind, must have slowed up this process very greatly. When sand dunes attain a considerable height, and attract vegetation, they tend to be stabilised. In considering how the enormous quantities of sand now forming the Thar came to be deposited we have to call up a picture of vast areas of the plain as mainly bare, with thin scrub, as it must have remained for thousands of years, presenting few obstacles to the drift of sand. And we are irresistably reminded of the Sindhi proverb *ٽڙي ٽڙي ٽڙي ٽڙي* (Drop by drop a pond).

The manner of life of the inhabitants of the great sandy desert can have changed little since the earliest times. They are for the most part graziers, shepherds and goatherds; with these occupations are associated tanning and wool weaving. Agriculture is only undertaken when adequate rain falls at the appropriate season, and is confined to patches of low ground between the sand hills. The ploughs are often drawn by camels. In the southern part of the desert there are extensive deposits of salt, precipitated by evaporation in dhandhs fed by rain and percolation, in much the same manner as the soda in the alkaline dhandhs of the north. These, from supplying the local demand for ages, in all probability, have in the last century or more been exploited for large scale production.

The pastoral people of the Thar live in huts built from the local brushwood in the form of a beehive of the old fashioned rounded sort. This form of construction does not require any large timber, and we may safely presume that it has been characteristic of the country since the earliest times.

As the economy of the Thar is dependent mainly on grazing a complete failure of the rains in one year, or partial failures in two successive years, will cause a famine. The mortality will be mainly among the cattle and sheep which the herdsmen are reluctant to drive out of the desert so long as there is some hope of rain; so, in the end, the animals are often found not to have the strength to make the arduous journey into the irrigated country, and have to be abandoned. Camels and goats, being able to pick

up a living on the desert shrubs, suffer less; but all animals have to be watered from the wells by human agency, and if the people when they themselves move out of the desert are unable to drive them, they too must perish. At such times the principal tracks through the Thar will also be thronged with people migrating from Marwar, if the rains have failed there also. The wells, many of which are two or three hundred feet deep, do not usually dry up from a single season's failure of rain, but the labour of drawing water from them becomes extreme in such conditions.

In normal times a fair amount of trade proceeds by camel caravan between the Sind portion of the desert and Marwar, Gujerat and Cutch; and the tracks from Rohri and Khipro to Jaisalmir were formerly more frequented than they now are. The opening up of a railway through the desert has lessened the importance of some of the old trade routes, and brought new ones into being.

After allowing for all such intercourse the fact remains that the desert is an effective barrier between Sind and the countries to the eastward. It was found so by Mahmud of Ghazni and Muhammad bin Tughlak when they crossed it from Gujerat with their armies. The fugitive Emperor Humayun, with a small entourage, passed through it from Jaisalmir to Umarkot at the height of the hot season, in confidence that his enemies would not follow him. Tradition relates that when he regained his throne he had a tank of cut stone built at Ranak Dahar, now just within the limits of Sind, in gratitude for the inhabitants having brought him water when he was in extremity.

But apart from a few such romantic incidents the Thar has been of little importance in the history of Sind. Except for the chance by which the Emperor Akbar first saw the light at Umarkot, it has produced no distinguished men. Its pastoral people have generally remained aloof from affairs on either side of their inhospitable country, and have been little concerned whether their overlords belonged to Rajputana or the Indus valley.

## NOTES

1. *Memoirs of the Geological Survey of India*, XXXV: La Touche, *Geology of Western Rajputana*, p. 13.
2. *M. G. S. I.*, XXXV: La Touche, *Geology of Western Rajputana*, p. 37.
3. R.D. Oldham, *Geology of India*, (1893), p. 457.
4. *M.G.S.I.*, XLVII, Part 2: Cotter, *The Alkaline Lakes and the Soda Industry of Sind*.
5. *M.G.S.I.*, XXXV: La Touche, *Geology of Western Rajputana*, p. 10.
6. Blanford notes (*Geology of Western Sind*, *M.G.S.I.*, XVII (1880), p. 155). "The upper surface of the limestone on Ganja Hill is worn into conspicuous grooves having a general direction of east—25°—north. These striae are evidently due to the scouring action of sand transported by the wind."

### 3

## THE PLAINS OF SIND AND THE RIVER INDUS

If at the outset of Sind's cold season, in this second half of the twentieth century, we take up a position in the midst of that part of the lower valley of the Indus which is irrigated from perennial canals, and look around us, the impression received is apt to be of the boundless productivity of the country. Our eyes turn from the fresh dark green of young wheat to the golden stubble of a newly reaped field of millet, and on to a cotton crop awaiting its last picking, the open pods dazzling like snow flakes; following the line of a water course we note the frequent homesteads and threshing floors, the vigorous growth of babul plantations, the noble trees overshadowing the canals; and may call to mind that such scenes extend almost unbroken over an area little short of three hundred miles in length, with a breadth varying between thirty and eighty miles. Some mental effort is required to picture the same area in its natural state, untouched by human skill.

There are indeed desert islands in this sea of cultivation: sandhills, patches of waste land above irrigation level, jungle-covered broken ground below it. But to obtain the actual aspect of old Sind we should pass beyond the boundary of the Barrage areas, when we can yet traverse those vast open expanses, whether of land or water, which from time immemorial have been peculiarly characteristic of the Sind scene. Across the Jati salt flats or, at the opposite extremity of the Province, the "Pat" of Shahdadkot, which are almost devoid of vegetation, the curvature of the earth is as perceptible as on a calm sea. Elsewhere too the prospect is bounded by a dead level horizon all round: such trees or other objects as may intercept this straight ruled line only emphasise its omnipresence. So also the Indus in full flood, ten miles wide between the man-made

embankments, and submerging the greater part of the Delta, still serves its ancient title of Mitho Darya, the fresh water sea. Equally characteristic are the rough grass lands of the Rohri Division, the endless riverain jungles of tamarisk, the dhandhs with their dense covering of reeds. Indeed the essence of our Sind of yesterday lay in the sudden contrast between crude luxuriance and utter desolation: both are being tamed under the scientific net of irrigation channels.

The prevailing uniformity is of course modified by differences in the natural vegetation, deriving from variations in the soil. There is the "paki", old alluvium in tracts once watered by river channels or overflows which have long since ceased to reach them: hard compact ground which rings under a horse's hoofs, and is distinguished only by its comparatively light colour from the soil of the Kachho which derives from the hills, as shall be noticed hereafter. Here we may see the untidy, thorny kandi tree, the kirir or leafless caper, and the ber, which can survive on the scanty rainfall alone.

At the other end of the scale is the "wariasi", loose grey sand, and the allied light soils, almost white and of a texture so fine that they disintegrate virtually to powder, producing the notorious Sind dust, which causes so much discomfort. The most characteristic shrubs of the sandy tracts are the khip, twiggy and almost leafless, and somewhat resembling the broom of North-West Europe, the phog, a plant producing a delicate tracery of leafless branches, and the ak bush, with broad leaves on spreading fibrous stems. The light soils sustain a great variety of vegetation, abundant where there is water.

Very characteristic of Sind is the "kalar", soil which contains an excessive proportion of salts. Its composition has been known to include nearly forty per cent of sodium sulphate. In such ground, almost black in colour, and glutinous, no vegetation can subsist, but in the darkish brown medium kalar several species of salvadora, the Sindhi "khabar", flourish, particularly in Lower Sind. In the north we find wild indigo and a few other small plants in kalar of similar composition. These tracts present a depressing appearance. Often the subsoil water, rising by capillarity to the surface of alkaline soil carries the salts with it, and these become concentrated by evaporation, producing a crystalline efflorescence highly prejudicial to plant growth. Professor



Piggott has aptly described this feature as "a Satanic mockery of snow": yet in fact it often announces the stage when by leaching with canal water the land may soon be made fit for rice cultivation. It is when the salts are present to a great depth that there is no prospect of reclamation.

It is a relief to turn from the kalar to the kacho, a light loam resulting from recent inundation. This soil is amazingly fertile; a month or two after subsidence of the waters the banks of alluvium so named, exposed beside the Indus, will be green with countless sprays of tamarisk seeded from the adjoining jungles; and if these are not washed away in the following flood season, there will be a dense growth of low bushes in a year's time. Even the best land in the canal-irrigated area, which is perennially refreshed with a modicum of Indus silt, is seldom equal in productivity to the best riverain kacho; all except the highest class of rice land is liable to deterioration by constant annual cropping.

Such are the principal soils of the Indus plain. That plain, to all appearance a dead level throughout its twenty thousand square miles, has in reality a compound slope: the longitudinal fall in accordance with the general direction of the Indus and from the same axis, a double declination, less regular, to either side roughly at right angles to the former. This profile is typical of "alluvial" rivers in the third main division of their course. It results from two characteristics of such rivers: the insufficiency of their channel to carry the largest flood discharges, and the vast quantity of silt suspended in their water.

At no very remote geological epoch, the sea extended over the greater part of what are now the plains of North West India and the basin of the Ganges. On the emergence of the surrounding hills, in the Tertiary period, new rivers joined with those antecedent to reclaim the ground from which the sea was in retreat. That old sea bed is now filled with a mass of alluvium several thousand feet in thickness, entirely fluvial in origin. The rivers debouching from the hills through which they take an impetuous course cut deep into the sub-montane plain which is formed partly of detritus from their outer flanks, and run for many miles below its general level. This is the second phase of the rivers' course, in which the gradient is still sufficient to cause a rapid flow at all seasons, and by erosion they have carved out beds, known as khadir, many miles wide, within which they constantly

meander, while between one such river and the next remains a long tongue of high land, the "bhangar" or "bar". The North East half of the Panjab is of this conformation. The scour and lateral erosion, mixing vast quantities of silt with the water, reduces the rivers' speed, raises their beds, and thus lessens their avulsive tendency; and in the third phase they run as in Sind not far below the level of the surrounding country, in the fair season.

During the maximum flood in these rivers, due to the partial melting of the Himalayan snows and to rain in the lower ranges, their discharge becomes greater by as much as twenty to forty times that of the lowest fair weather period; similarly their width increases ten to twenty-fold, and their velocity may be double and their silt burden infinitely greater than that of the cold weather. The *khadirs* may be filled almost from side to side; but the highest flood will not surmount, though it may sometimes erode, the high banks of the bars. Lower down the bed is quite incapable of containing the flood; the river tops its banks and the turbid water pours over the country on either side. Its velocity is now greatly reduced, and the silt drops; first, the heaviest and most angular particles, and so on to the most minute, the quantity deposited gradually lessens as the overflow advances further from the river. As this process continues, the surface of the country is gradually formed with very gentle slopes downward from the river, which thus runs along a broad ridge instead of in the lowest part of the valley like a non-alluvial river. Sooner or later, the river will work itself off the ridge and will take a new course. Along this again the same slow process of bed-raising and ridge-forming will take place; a valley will be left between the old and the new raised channels; and eventually the river will break into this and begin to raise it also.

Thus with the lapse of many thousands of years the whole surface of the country has been raised in accordance with the course taken from time to time by the Indus: the hollows which regularly receive silt-bearing water gradually tend to level up, by the precipitation of its content when the flow is arrested, while those more distant will be filled by water which has already shed its burden. The general tendency is for irregularities produced to be partially smoothed out again. Nevertheless a level line taken transversely across the plain of Sind will record a succession of these flattened "ridges" with flattened "valleys" between,

though to the eye they are all but imperceptible. Longitudinally, the slope to the sea will be found virtually uniform.

The great bulk of the silt suspended in the Indus water is, of course, carried forward down the channel. Large quantities are deposited on the bed as bars that lead to the formation of overflow side escapes, as already mentioned: these, during the inundation season, may develop into new main channels, while the old ones are obstructed, thus altering in detail the course and regime of the river. Similarly, the soil conditions of the bed and banks are constantly changing the whole way down the course. The river has to adjust its velocity to what these can endure, and where the soil is particularly friable will do so by flattening its own gradient. This it effects by lengthening its course in the only way practicable—increasing its tortuosity.

In contrast to these continuous local changes and adjustments—whenever the river cuts off a horseshoe bend, it will make a new bend of equivalent length, to maintain its length—the Indus has a strong tendency to maintain its general direction and regime. For long periods its meanderings might not extend more than five or six miles to either side of its axis; the throwing off of a vast quantity of flood water laterally was a normal feature of the river in its natural state, and very seldom induced a complete alteration of its course. Owing to these spills, in fact, the Indus formerly had a continuously diminishing discharge as it approached the sea.

Much the most remarkable feature of the existing course of the Indus in Sind is its passage through the low limestone range which from a point a mile or two north west of Sukkur runs past Rohri for some forty miles nearly due southward. The river makes its way through the range by a gorge at the mouth of which lies the rocky island of Bukkur. Below Bukkur and above the smaller island of Sadhbela the breadth of the channel from shore to shore is a mere six hundred yards. In the plain upstream of the gap the bed of the river attains its maximum width, permitting a swing of twelve miles.<sup>1</sup> At first sight it may seem inexplicable that the river should elect to confine itself to a narrow passage through the rock when only two miles to the northward the alluvial plain offers it an unimpeded path many miles broad, at a relatively low level, by which it could rejoin its existing course down stream. Alternatively, by extending its left hand swing above the gorge, the Indus could flow on to

ground sloping down into the Nara valley, and so pass the Rohri range on the east. It has frequently dispatched immense volumes of flood water in both these directions: yet for the past seven centuries (according to positive historical evidence) and perhaps for a much longer period, it has maintained its course through the Bukkur gap.

The explanation of the river's faithfulness to this narrow bed lies in the attractive power of the gorge itself. Its bottom lies some sixty feet below flood level, and thus much deeper than the bed a little way up stream; we should here regard the natural capillarity of the water as an unbreakable chain pulled relentlessly down into it. The question remains, how the Indus ever came to adopt such a path. The geologist R.D. Oldham thus explains it: "In former times the Indus wandered over the plain which surrounds the Khairpur Hills, 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"<sup>2</sup>—i.e., by scouring the bottom of the gorge.

Oldham does not suggest what course the Indus took to reach the sea before it adopted the Bukkur gap—a question which I shall attempt to answer hereafter. Meanwhile we may transfer our attention to the lower reaches of the river.

In a scientific sense, the third main division of alluvial rivers' courses is Deltaic, and the whole of the Sind plain naturally falls within this category. It is still physically possible for the Indus to proceed to the sea by two branches separating far above the latitude of the northern boundary of the province; and in a remote period when, of course, the sea occupied a great portion of the existing plain, it doubtless did so. When we come down to historical times we shall find the river dividing into two branches a hundred miles or more above the modern point of separation, and apparently at not less than that distance from the then coast. The Delta of an alluvial river like the Indus is formed, generally

speaking, where its waters feel the retarding effect of contact with the ocean. This influence could not possibly have extended up to the dividing point of these hundred-mile arms. They exemplify the persistence of the old pattern long after the prime formative influence has withdrawn and is actually operating lower down, towards the mouth probably of both branches. Thus a large superannuated Delta and one or more smaller active Deltas were liable to co-exist.

As it does not seem practicable to distinguish the old and the new formations by name, I must ask the reader to bear in mind the important difference between them: the land between the arms of the old large Delta would in no wise differ from the plain above or on either side, while that within the new or active Delta would be liable to constant flooding, and to be totally submerged during the inundation season.

The Delta proper, then, is a theatre of conflict between the river and the sea, resulting in the creation of new land. The river water, meeting with resistance from the sea, spreads out more or less in a fan-like shape and deposits the mud which it carries, until land is formed; which gradually rises above sea level.<sup>3</sup> As the Delta advances, the slope of the bed and of the surface of the river must gradually become less and less, since the length of its channel increases, while the mean level of the sea is constant. The alluvium which forms this new land is particularly soft, being formed of the minutest particles of silt which have remained in suspension at the end of the river's course, the heavier material having already been shed at earlier stages. For these reasons, and in the case of the Indus owing also to the increased resistance at high tides, the stream will throw off branches and these again are likely themselves to bifurcate, all throwing silt into the sea, and extending the dimensions of the fan-like submarine mound, more and more of which gradually emerges.

The river channels in the Indus Delta all tend to raise themselves on "ridges", by the same silting process as has been explained in respect of the lower courses of alluvial rivers generally, and the accretion is comparatively rapid; for whenever they are running fairly full, and not only during the flood season, the high tides will cause them to overflow their banks and submerge the adjoining land. The low ground between these branches of the river forms natural reservoirs which are drained during the

succeeding ebb tides, a portion of the water impounded returning to the channels and increasing their scouring power. These channels are nevertheless extremely unstable, and a map of the Delta is liable to be found inaccurate within a year or two from its making.

Vegetation plays a useful part in reinforcing the soft soil of the Delta against the erosive attacks of Indus floods and monsoon seas. In the upper part, the country is covered with tamarisk jungle; lower down the elephant grass binds the earth together with its far-reaching roots; and nearer the coast, in the tidal creeks and salt marshes, the mangrove is ubiquitous. The natural fertility of this region surpasses all else in Sind, but the country is unhealthy, and habitation and agriculture alike precarious. The lack of variety in the perpetual jungle and the dead level of the ground invest this region with a peculiar monotony to the view.

Much interest attaches to the rate of growth of river deltas; the amount by which in a given period the land will encroach on the sea. Investigation of this subject<sup>4</sup> may be said to have begun on the Nile, and it will be instructive to compare its statistics with those of the Indus as both are alluvial rivers, and very alike in their working, though with significant variations.

The valley of the Nile, from the First Cataract at Assuan to the head of the Delta at Cairo, measures about 525 miles in length, but its width averages a mere four miles, with a maximum of fifteen, between the "cliffs" of the desert. Within this narrow corridor the river oscillates, running like the Indus on a ridge formed from its own seasonal overspill. The annual flood of the Nile is much more steady and deliberate than that of the Indus. Its average maximum discharge is much less: 300,000 as against 400,000 cubic feet per second, and the disparity is even more marked in the silt content of its water in the flood season, the proportion by weight of silt to water being one part in 237 in the Indus, and only one part in 666 in the Nile.<sup>5</sup>

It has been estimated that the Indus, during the hundred days of the inundation, carries about 179 millions of cubic yards of silt to the sea, while for the Nile calculations produced a figure for the whole year of roughly 40 millions of cubic yards. These quantities would be sufficient to cover 38 square miles and 13 square miles respectively, to a depth of one yard.<sup>6</sup> It is evident therefore that were other factors governing the growth of the two

deltas equal the Indus delta would increase at more than thrice the speed of that of the Nile. Actually, the difference must be somewhat modified by the relatively powerful action of the Arabian Sea, particularly in the monsoon season which coincides with the Indus flood period; while the Mediterranean is tideless.

The Nile Delta can be shown to have grown longitudinally by 38 miles in the space of 2300 years, that is by 29 yards per annum: but the rate of advance is found to have been very much slower during the past century. Surveys of the Indus Delta only began in this latter period: and the first comparison revealed that in ten years the banks at the main embouchure of the river had advanced  $3\frac{1}{8}$  miles.<sup>7</sup> On the other hand, a marked diminution was found to have taken place in banks at the front of channels which at the time of the first survey had been active, but subsequently ceased to discharge any appreciable volume. The growth of the Indus Delta must therefore not be conceived as an equal if small advance all along the convex face which it presents to the sea, but as a very rapid accretion in front of the main branch of the river, and proportionately less before the minor outlets; while along the rest of the face—much the greatest part—the shore line may be virtually stationary for a long period, and may even recede locally. Then the river elects to discharge its main volume by another mouth, and the theatre of rapid advance shifts also.

Evidence for exceptionally large encroachments by land on sea within a comparatively short period is available; but there is little to demonstrate the extent of the opposite process. We know, for instance, that about 97 square miles of new land was formed at the mouths of the Indus between 1873 and 1904.<sup>8</sup> This was near the centre of the Delta's seaward face, and here still are the channels which carry the main discharge. The land projects appreciably beyond the regular arc described by the coast of the Delta between the Ghara and Kori creeks, its limits on either side. There can be no doubt that the rate of extension has been enhanced by the progressive embanking of the river above the Delta, which was almost complete for many years before the last few flood passages were closed, about 1930.<sup>8a</sup> We know that the river's main outlets have been in much the same sector of the Delta, near the centre, for more than a century; before that they were further to the north west. Nearly two hundred years may have elapsed

since the Indus discharged a large body of water with any regularity down channels of the south eastern part of the Delta; yet it does not appear that the sea has reversed the process, and gained on the land, to any marked extent in this area. It is difficult to avoid the conclusion that the action of the sea, tidal though it is, is not solely destructive; the battering of its waves must help also to consolidate the soft deposits from the river.<sup>9</sup>

An allied question of great interest is the rate at which the surface of the plain of Sind as a whole has been raised by the work of the Indus.

For this purpose we may again take note of the calculations made in respect of the Nile; these arrive at figures varying from a little over three inches to nearly five inches rise per century.<sup>10</sup> The area of the alluvial valley of the Nile, from the First Cataract to the head of the Delta, measures a little more than 2100 square miles, and is only about a quarter of the area of the Delta itself. The alluvial plain of the lower Indus, reckoning from the junction of the Panjnad near Mithankot, must occupy at least 20,000 square miles exclusive of the Delta which is far smaller than that of the Nile. Very roughly, the area of land formed of alluvium from the lower Indus may be counted as double that deriving from the action of the river Nile.

As the silt content of the Indus water is three times greater than that of the Nile, and its average flood discharge greater by one third, we should expect the surface of the plain of Sind, though at least double the area of alluvial Egypt, to have risen by more than Egypt's four inches a century, at least in the areas close to the beds which the Indus has occupied during the last two or three thousand years. As it happens, a valuable check to these rough calculations was provided by the excavation of the ruins of Mohen-jo-daro: and it is now assumed that the central portion of the plain, in which the Indus has chiefly run during the last 5000 years, has risen by thirty feet, or over seven inches in a century. It is estimated that close to the river, where this has kept a fairly constant course for a century, the rise may have been of the order of one foot; at a distance the average would be correspondingly less.<sup>11</sup>

It has to be borne in mind that the present regime of the lower Indus is very different from that adopted by it in its natural state. The overflows of the flood season are prevented



from spreading as of old across the country by the protective embankments which are now continuous on either side of the river down to the head of the Delta. The effect is to increase the flood discharge of the river downstream, and to raise the narrowed marginal land between the two lines of embankments to a height which actually increases the danger of a complete change of course, whenever serious breaches occur.

The land beyond the embankments now receives its water from the Indus indirectly, through the medium of canals which may have brought it two hundred miles to a spot from which the river itself may be distant only two hundred yards. The canals in the Barrage zone have been aligned along the parallel flattened ridges<sup>12</sup> which represent the remains of ancient courses of the Indus; and by this means all the intervening land is readily within command. The gradient of the canals, again, is that which will allow the water to bear along its burden of silt till it deposits it in the fields. Thus artificial irrigation is performing for the country, most regularly and thoroughly, what the unrestricted overspill did partially and erratically; and year by year the traces of old river beds and channels are becoming obliterated. Their course is still usually well known to the country people to whom the difference of a foot or two in the level of the ground is of no little importance for their cultivation. The experienced observer passing through the fields will come to recognize these shallow depressions for what they are, though the eye is distracted by artificial watercourses and banks running across them. They can best be seen on an extended scale from the air. The plain which when traversed on horseback appeared so featureless, with its rectangled fields and straight water channels, may from five thousand feet up be found to be diversified with shadowy ghosts of rivers, winding on majestically mile after mile, their outline often made clear by the superiority of the crops standing in their beds.

Though the Indus has been deprived by the continuous embankment lines of its natural flood escapes, their want is to some extent supplied by the very heavy withdrawals of the canals at Sukkur; but we are liable to be reminded that the canals cannot take more than their full supply, while the Indus discharge at Sukkur in high flood has been known to exceed its average maximum by almost hundred per cent.<sup>13</sup> In such circum-

stances something must give way; and in 1942 we saw the 'bunds' above Sukkur breached on either hand, and the high drama of the old time inundation re-enacted. An immense body of water invaded the low-lying country north of Sukkur and Shikarpur, and advanced steadily westward on a front some three or four miles broad, turning south west and then south, till after a course of about 180 miles it reached the Manchar Lake.<sup>14</sup> This was the identical path periodically taken by floods before the Sukkur Begari bund was completed, of which one used to hear from old men in Larkana district, and never expected would occur again. From Saro dhandh onwards, that is for the second half of its course, this flood follows the lowest valley line on the west, where alluvium from the Indus meets alluvium from the hills.

Somewhat similar was the path taken occasionally in former days by floods leaving the right bank of the Indus further to the north, below Kashmor; these flowed nearly due west through the Frontier district, again more or less along the meeting line of river and hill alluvium, bending a little southward near Mohmal and uniting with the track of the flood first mentioned between Bagodero and Dostali. The depression which marks the second half of this flood's course was formerly well known as the "Sind Hollow".<sup>15</sup>

Both these great local inundations of north west Sind were liable to be augmented by flood water from torrents of the hills to north and west, heavy rain often coinciding with the greatest discharges of the Indus.

The exceptionally high river of 1942 also breached the Kasimpur bunds on the left bank above Rohri, flooding the country towards the upper reaches of the Nara; this area too was frequently subject to overspill in former times. But it is sufficiently obvious from the appearance of the country that the whole of the Rohri Division between the river and the desert<sup>16</sup> has been constantly traversed by floods. The most notable and the most regular, perhaps, was that which left the Indus in the depression at Ghauspur,<sup>17</sup> in Bahawalpur State, the water of which after a course of about 120 miles would frequently pass some distance down the Nara; however, the whole of this country is seamed with channels and depressions, connected with old beds of the Indus, and with the river running at a high level most of these would contribute their quota to the general inundation.

It would nevertheless be a mistake to suppose that the overflow in the flood season habitually passed across the country in broad sheets of water. Much more often it would concentrate into defined flood channels which would scour out their beds;<sup>18</sup> these again when filled to excess would overflow, and perhaps throw off branches. Here we may recognize the origin, centuries ago, of the main arteries of irrigation under the Kalhoras, the Talpurs and the British; such "canals" as the Ghar and the Western Nara. The absence of spoil banks and remarkable tortuosity of these great waterways sufficiently declares their natural origin.<sup>19</sup> Their great age could be judged from the fact that their courses had ceased to coincide, as they must once have done, with continuous valley lines or depressions; they have evidently reclaimed land in the same manner as the Indus itself.<sup>20</sup> In contrast with these, the majority of the old inundation canals on the left bank which could be presumed to have been flood channels of the Indus took a devious course along the lowest lines of the country, and may be reckoned as much later in date.<sup>21</sup>

The main canals in the former delta region beginning a little south of Hyderabad, such as the Kalri, Baghar, Pinyari and Sata, are well known to have been at various periods main outfalls of the Indus to the sea.

We can proceed to sketch the general aspect of Sind as it appeared a thousand or more years ago, with fair confidence in the accuracy of our impressions. The contrast which is noticeable today between extreme fertility and utter desolation was far more abrupt, and the proportion of verdant to waste or desert land very much smaller. But the wooded or jungle-covered tract along each bank of the river was actually larger than at the present time, extending far off along the channels and flood tracks which at short intervals broke away from the Indus, like branches from the trunk of a tree. These jungles probably included less heavy timber than the riverain forests of today, in which the high water level of the inundation season, due to the embanking of the river, favours the growth of the bahan and babul in particular. But we may be sure that thickets of tamarisk and kandi overspread every hollow where water regularly passed or stood, the height and density of the jungle revealing the ordinary duration of the flooding.<sup>22</sup> Along the regular inundation channels, as the Indus was left further and further behind, the vegetation would grow

progressively thinner as the average period of watering declined from four months in every year to a few days in every second year, or even less often. At length the channel can be recognized as a shallow depression, with a little clay in it; and only a few stunted kandi and ber trees, capable of surviving long periods of drought, indicate that water sometimes reaches a spot in the midst of a thirsty desert waste.

These expanses of dun coloured soil, much of it devoid of all vegetation, in places noisome with salt efflorescence, elsewhere supporting a sparse and thin scrub, occupied a very large proportion of the plain of Sind; but it is as tedious to linger over these in the description as in physical fact.

Approaching the river again, we may notice masses of grey sand thrusting out from the jungle belt, and spreading fan-like over perhaps several square miles of country beyond, indicative of a new, it may be ephemeral, eruption of flood water; similarly changes in the various channels' course will have left behind huge accumulations of coarse unfertile silt. By contrast, broad stretches of lowland adjoining these will be dotted all over with tussocks of sar-grass; and the deep-scoured beds of the deserted bye-rivers will remain as lakes, fringed with rich and varied vegetation. The great number and size of these "dhands", including other hollows in which spill water stands almost throughout the year, was indeed a characteristic feature of old Sind. Pride of place among them must for ages have belonged, as now, to the Manchar Lake, which occupies a deep basin between the western hills and the Indus, in Central Sind. It receives the drainage of a large area of the hill country and is the receptacle also of the exceptional overflows from the river's right bank in Upper Sind. A more regular feeder was the Western Nara, already mentioned as a very ancient flood-channel from the Indus. Its waters used to reach the lake during the inundation season after a winding course of almost 150 miles, the direct distance being little more than 80. The excess water of the lake drained off through the Aral river into the Indus; but only after the latter had fallen appreciably below its inundation level. While in flood the Indus also fed the Manchar through the Aral, which thus presented the curious phenomenon of a river forced to flow backwards up its bed.<sup>33</sup>

We have become accustomed to think of the Indus as flowing down to the bifurcation of its delta in a single stream, save for minor and ephemeral loops and side channels not diverging far from the main bed. This idea of the river's behaviour has probably gained strength from the absence of anything in the descriptions of Alexander the Great's companions to suggest that it was otherwise when they sailed on it, twenty-two centuries ago. Yet even without the direct evidence of Arabian geographers, that in their time the river in Central Sind divided and reunited, after insulating an extensive district,<sup>24</sup> we should expect such developments occasionally in the "natural conditions" which we have been considering. It may be accepted incidentally that the greater the length of such a double channel, the less likelihood that both branches would carry a perennial flow; and this might apply to the branches of the "matured" Deltas.

Mention must here be made of a great flood channel or ancient river bed, which may fairly be considered as independent of the Indus, though it has frequently received overspill from the latter. This is none other than the "Lost river of India", best known as the Ghaggar or Hakra, and less frequently as the Sankra or Nala Sankra, which for nearly half its course passes through Sind. Here particular portions of the channel bear different names: Raini, Wahinda, Nara, and Hakra. Its general direction conforms curiously to that of the Indus, at a distance varying between twenty and seventy miles to the eastward.

It can be traced as a continuous depression, the upper part within the skirts of the Thar Desert and the lower part adjoining its edge. Whatever the Hakra's claims to be considered a regular river of former times (which we shall proceed to examine) it has long been a most important relief-channel for floods from other rivers; during recent times, certainly, for heavy overspills from the Indus by way of the Ghauspur depression to which I have already referred, and probably from the channel known as Hariari, or "the fertiliser", which runs parallel to the Panjnad, below the junction of the Sutlej and Chenab.<sup>25</sup>

A feeder cut from the Indus close above Rohri, just over a century ago, has canalised about 200 miles of the Hakra (this section being known as the Nara);<sup>26</sup> and it has subsequently been given a new head from the Sukkur Barrage. The Nara preserves all the appearance of a natural river, meandering down a shallow

valley some two or three miles wide in places, but much encroached upon by sandhills. Exceptional floods from overspills have been known almost to fill this valley from side to side, but passed off very rapidly.<sup>27</sup> Emerging into the open plains, the Nara-Hakra keeps close to the edge of the Thar, which is much more clearly defined from this point southwards.

The upper part of the Hakra bed in Sind is comparatively little known and has probably been visited by floods less frequently than the lower "Nara" reaches, during the last few centuries; though it evidently received a copious, if an erratic, supply in former times. The source of that supply is a matter of great interest, as it involves the behaviour of the existing rivers of Upper India from a remote period, and has occasioned much controversy.<sup>28</sup>

The most obvious contributor is the Indus itself, by way of the Ghauspur depression. The descendants of the Talpur rulers of Upper Sind, whose estates lie about Januji on the Nara, have no tradition of any remoter source.<sup>29</sup> Yet the Hakra bed can be traced back continuously through Bahawalpur and Bikanir States, and to all appearance derives ultimately from the union of several petty rivers notably the Ghaggar, the Markanda, the Sarsuti and the Chitang, rising in the Siwalik hills between the outfalls of the Sutlej on the west and the Jumna on the east. The catchment areas of these rivulets are small and depend upon rain, so it is idle to suppose that they can ever have despatched a mighty stream some eight hundred miles to the sea.<sup>30</sup> The great width of the Hakra bed in Bikanir and Bahawalpur territory—not less than two miles, for a distance of more than 150—must be due to flooding from one or other of the great snow-fed rivers of the Himalaya.

It becomes fairly clear that the Jumna was at one time a contributor, by way of an ancient bed of the Chitang, itself a mile wide.<sup>31</sup> The low watershed between the Indus-Hakra and the Ganges basins at the present time runs between the Chitang and the Jumna; but the latter, an "alluvial" river from the High Himalaya, formerly ran along this ridge, and overspilled indifferently to either hand, later slipping off the ridge to the eastward. The Chitang unites with the Ghaggar or Hakra at Bhawar. On the opposite, that is the right, bank there are traces of flood channels from old beds of the Sutlej, or it may

sometimes have been the entire Sutlej river, joining the Hakra in three widely separated places. The furthest upstream and least distinct of these seems to have come in at Bhatnir, some twenty five miles above the junction of the Chitang.<sup>32</sup> The next in order, an ancient winding bed of the Sutlej, unites with the Hakra at Walhar, just within the border of Bahawalpur. This appears to derive from an old course of the Sutlej which flowed past Bhatinda and Malot, and its general alignment has been followed by the Hakra branch canal.<sup>33</sup> The third of these connecting channels runs down from about 20 miles ENE of Bahawalpur City, and meets the Hakra near Kudwala. Its general direction has been followed by another irrigation canal, the Desert Branch; but we are told that it was previously "a large natural dry channel, called the Vahind, a feeder of the Sankra".<sup>34</sup> Thirty miles or so below this junction, in the neighbourhood of Derawal, the single wide bed of the Hakra seems to develop into a sort of delta of smaller channels.

From this point to within twenty miles of the existing northern boundary of Sind the same confusion of river beds meeting and dividing continues,<sup>35</sup> but below the depression by which the Ghauspur flood used to enter the Hakra, the channel of the latter becomes more distinct. At Vinjrot, an ancient site just within the Sind boundary, the Hakra divides and loses its name for a distance of more than 300 miles. The main branch known as the Wahinda takes a winding course, at first with a generally southerly direction, as far as a place called Mithrahu, on the caravan track between Rohri and Jaisalmir. It then bends more to the west, thereafter south west and finally south again when it approaches the low hills south of Rohri. Meanwhile it has been joined by the second branch, called the Raini Nullah, which takes a comparatively direct course, about south west by south, from Vinjrot.

The Raini on the whole deserves its title of "Nullah", for it is a deep water course, not more than forty yards wide in places, with steep banks some fifteen or twenty feet high. The country on either side—hard alluvium with sand hills—slopes down to it perceptibly from either side.<sup>36</sup> The bed of the Wahinda on the other hand is wide and flat, and in many places difficult to recognize amid the drift sand. One has the impression that the great floods occasionally rolled down the

Wahinda, filling up all the open places between the sand hills for miles, and not perhaps progressing to a very great distance southward; but that more often the spill water kept to the Raini—far exceeding its capacity for a while, but flowing down the steeper declivity, and scouring out the central nullah.

The transverse slope of this country is to the south east; thus the Raini flows along a lower level than the Indus, and the Wahinda lower than the Raini; beyond the Wahinda, about the present border of Jaisalmir State, there are hollows lower still but not, so far as I am aware, a continuous lower valley line.

Some thirty miles southward from Rohri, and not far from the eastern side of the small range of hills that extends in that direction, the Raini, Wahinda, and other branch flood channels gradually blend in the Nara. Shortly after the Khairpur border is passed, the lime stone gives place to sand hills; and thence for about sixty miles the Nara winds along in a valley some two miles wide, hemmed in by sand hills on either hand, with a direction very slightly west of south. Emerging into the plains, the Nara continues to skirt the Eastern Desert, bending south east or south south east until at latitude  $25^{\circ} 30'$  the sand hills recede abruptly due east, enclosing an extension of the alluvial plain. The Nara crosses the mouth of this bay, and meeting the edge of the desert again to the southward, resumes its close parallel course, inclining south south west, until it falls into the Rann of Cutch. It is for the last portion of its course that we find the river called by the name it parted with nearly four hundred miles above—the Hakra.

The last two hundred and fifty miles of the Nara-Hakra valley are identical with the lowest valley-line east of the Indus, with the exception of its reach across the mouth of the "bay" at Umarmot, where the land eastward falls still further. It is to be noted also that when water was first regularly introduced into the Nara, in 1859, much of it went to fill a vast number of hollows of varying depth along its left bank in the talukas of Sanghar and Khipro. These lie parallel to one another in the valleys between the characteristic sand ridges of this part of the Thar,<sup>37</sup> and into some of them water would penetrate as far as ten miles from the bed of the Nara itself. We may fairly suppose that the Nara would have adopted a course several miles further to the east, but for the repeated interruption of this lower level by the sand ridges.



With these few reservations, we may regard the Hakra-Nara as occupying the lowest valley-line on the left side, first of the Sutlej, and thereafter of the Indus, where the alluvium from these rivers meets the gently rising ground, also alluvial but of different or at least far older origin, underlying the western skirts of the Thar desert. This is a fact of immense significance for our interpretation of the ancient hydrography of Sind. Its plain meaning is this; that while we may assume that the main or the whole stream of the Sutlej has at times flowed down the bed of the Hakra, from various points of entry; and, again, that the Indus, after gathering all its active tributaries, has at times poured its main or its entire discharge into the Hakra and Nara bed, and thereby gained the sea—these conditions must either have obtained in a very remote period, or in the alternative have been of comparatively short duration.

The proof is in the relative levels of the alluvial plain, and is irrefutable. We may allow tenancies by the great rivers of part only of the Hakra or the Nara beds for longer periods or in more recent times: but the conception of the Mihran of Sind, as we find it in Raverty, flowing from dim ages in the Hakra bed and leaving it only about 950 A.D., is undoubtedly false. The contours of the country tell us plainly that the main terminal stream of the great snow-fed rivers must have flowed for much the greatest part of say, the last five thousand years—a trifling period in a river's life—on varying axes all well within the outermost valley-lines on east and west of the plain. For an overwhelmingly large proportion of that or any longer period, the Hakra-Nara must have been a seasonal flood channel down which enormous discharges indeed passed, it may be with fair regularity; but not a continuous perennial flow.<sup>38</sup>

Nevertheless, we ought to look back to the time before the Indus found and was captured by the gap at Bukkur, an epoch which may not have been particularly remote even in a historical sense. The so-called permanence of the river in the gorge results from the latter's great depth, compared with the level of the rock floor of other gaps in the hills northward and southward of it; but this peculiar feature is almost certainly due only to the river's own incessant scouring since first finding its way through. It must appear as a virtually recent incident in the life of the river, in comparison with what the contour lines over the alluvial plain<sup>39</sup>

tell us of the general axis of the river; where it has been and where it has not been, stretching back to an immeasurably earlier period.

As to the river's course upstream of Bukkur, the contour lines suggest that the Indus has flowed at different times to the north and west of Sukkur and to the east and south of Rohri. The two courses appear to have approximated to those now followed respectively by the Sind Dhoru and Sind-Wah, to the northward of the Lakhri depression; and by the Dahar Wah past Yaro Lund, north west of the Raini valley line. The indications are stronger for the course last mentioned, which may date either a later period or a longer occupation, or any combination of the two. If the Indus in fact flowed for a while through Upper Sind by this easterly course, it must necessarily have taken its onward way east of the Rohri hills, in the same direction as the Nara, but not, probably, in the existing Nara valley. From about the point where the latter emerges on to the plains, the contours show that the terminal stream of the river must have proceeded on a line some miles westward of the Nara-Hakra valley, and very probably in a single bed: or at least that if it bifurcated, both branches took a direction east of south. For the general slope of the whole country between the 26th and 25th parallels of latitude, eastward of longitude approximately  $68^{\circ} 40'$  (a line drawn north and south about eighteen miles east of Hyderabad) is considerably eastward of south. We are here in the lefthand half of an old deltaic region of the Indus which spreads out like a fan from a point in the region of Sakrand and Nawabshah.

Thus the idea that in early historical times a river which followed approximately the line of the Nara could have thrown out a branch flowing south-south west from Jamrao Head or Jakhrao towards Hala is plainly contradicted by the contours. It would have had to proceed nearly at right angles to the fall of the ground which, being general over so vast a tract, must date from a very remote period.

The significance of these features will become apparent in later chapters. As we reach historical times, we shall have occasion to consider the changing courses of the Indus, and the contemporary condition of the Hakra, as far as evidence of these emerges. The general state and aspect of the plains of Sind, as already described, would only be altered locally by such changes; a thriving, well-watered tract might be reduced to a desert waste,

and a desert waste be converted into dense jungle, by the silting of an old channel or the scouring of a new one.

In such conditions we may be certain that the prevailing occupation of the inhabitants of the Sind plain was pastoral, and their way of life nomadic; that fishing and fowling provided livelihood to another large class of the population; and that agriculture was precarious and erratic. This is the general background to several thousand years of history and pre-history. But it is with the appearance of agriculture and of settled habitation—human activity on the next and higher planes of culture—that we shall be concerned when we re-visit the valley of the Indus.

### NOTES

1. "Where a river is controlled by a fixed exit the full meander belt tends to occur on both sides of the axis of the river, and hence tends to be twice that where the exit is not fixed." Sir Claude Inglis, *The Behaviour and Control of Rivers and Canals* (Poona, 1949), Part I, p. 168.
2. *Journal of the Asiatic Society of Bengal*, Vol. LV, Part 2 (1887), On *Probable Changes in the Geography of the Panjab and its Rivers* etc., by R. D. Oldham, p. 325. For Oldham's "south" and "on the north side", we should understand "downstream" and "upstream" The course of the Indus past Rohri is from east to west.
3. R. B. Buckley, *Irrigation Works in India and Egypt*, (London, 1893), p. 94.
4. That is, outside Europe. The Po and to a less degree the Rhone have been studied for centuries.
5. R. B. Buckley, *Irrigation Works in India and Egypt*, (London, 1893), pp. 36-7.
6. R. B. Buckley, *Irrigation Works in India and Egypt*, p. 37. Haig's erroneous figure for the Nile, of 240 million cubic yards, naturally vitiates his argument. (Major General M. R. Haig, *The Indus Delta Country*, p. 7).
7. Report on the Survey of the Mouth of the Indus in March 1877, by Lieut. Stiffe, late Indian Navy. Quoted by Haig, loc. cit.
8. *Sind Gazetteer*, 1907, p. 11.
- 8a. *A Manual of the Geology of India and Burma*, 3rd Edition, 1950, by Sir E. H. Pascoe, p. 28.
9. Elisee Reclus, *The Earth*, London, 1877, p. 402.
10. Reclus, *The Earth*, p. 412.
11. Sir Claude Inglis, op. cit., p. 172.
12. p. 18, supra.
13. W. L. Strange gives 900,000 cubic feet per second as the maximum recording at Sukkur. (*Indian Engineering*, p. 144). Sir Claude Inglis writes, "The maximum recorded flood (after correcting early data for errors due to meter suspension) was 730,000 cusecs" and he gives 900,000 cusecs as the maximum anticipated discharge. Discharge records have

only been observed continuously from 1921. (*The Behaviour and Control of Rivers and Canals*, pp. 167, 183).

14. The discharge through this breach was estimated to amount to 90,000 cusecs, and 2600 square miles of country were flooded. (Sir Claude Inglis, op. cit., p. 177).

15. See *Journal of the Asiatic Society of Bengal*, Vol. LXI, Part I (1892): *The Mihran of Sind and Its Tributaries*, by Major H.G. Raverty, p. 307, note 307, for the Sind Hollow; and pp. 311-2 for the great flood of 1874. So far as I am aware this flood has not taken its full course since that date.

16. About 2000 square miles.

17. Ghauspur is about 50 miles from the boundary of Sind and a little more from Bahawalpur City, almost exactly opposite Mithankot. See also *Selections from the Records of the Bombay Government*, No. XLV, Report on the Upper Portion of the Eastern Nara, by Lieut. J.G. Fife and others, pp. 12, 26, 37.

18. Strange, op. cit., p. 149.

19. *Gazetteer of Sind*, pp. 283, 286. See also Haig, *Indus Delta Country*, Appendix C, p. 131.

20. The traveller Masson observed, with reference to the 'Western Nara' in the year 1831-2: "It would appear that during late years a far greater supply of water enters the canal than formerly, and even causes it, like the parent stream, to inundate" (Narrative of various journeys in Balochistan, Afghanistan and the Panjab, 1842, Vol. II, p. 139).

21. *Sind-Gazetteer*, 1907, p. 303.

22. Cf. *Sind Gazetteer*, p. 40.

23. *Sind Gazetteer*, pp. 286, 288.

24. Ibn Hauqal and others, excerpts from whose works appear in *The History of India told by its own Historians*, Vol. I, by Sir H. M. Elliot. It should be borne in mind that Pliny, on the authority of Megasthenes, states that the Indus divided to form a very large island, 'Prasiane' (see Chap. VIII infra).

25. See R. B. Buckley, *Irrigation Works of India*, (W. H. Allen, 1880), p. 157; *Mihran*, p. 300.

26. S.R.B.G., XLV (New Series), Report on the Upper Portion of the Eastern Nara; S.R.B.G., LX (New Series), Report on the Eastern Nara by Capt. Fife.

27. Captain Baker, the first engineer to examine the Nara channel, found clear traces of a flood rise of 18 feet. (*Mihran*, p. 461).

28. Vide the following:—

*Calcutta Review*, Vol. 59, No. CXVII (1874), Art. I, *Notes on the Lost River of the Indian Desert*, (Anon.); *Ibid.*, Vol. 60, No. CXXC (1875), Art. V, *The Lost River of the Indian Desert*; a comment, by 'Nearchus'; *J. A. S. Bengal*, Vol. LV, Part II, (1887), Art. XVIII, *On Probable Changes in the Geography of the Panjab and Its Rivers*, by R. D. Oldham; *Ibid.*, Vol. LXI, Part I, (1892), *The Mihran of Sind and its Tributaries* by Major H. G. Raverty. See Appendix I to this Volume.

29. *J.S.H.S.*, Vol. VIII, p. 51.

30. In one hymn of the Rig Veda, the Saraswati is described as "chief and purest of rivers, flowing from the mountains to the ocean". Tr. H. H. Wilson, Vol. IV, p. 189. Cf.

Sir Aurel Stein in *Geographical Journal*, Vol. XCIX, No. 4, p. 176.

31. H. W. Nicholson, quoted by R. B. Whitehead, *The River Courses of the Panjab and Sind*, *Indian Antiquary*, Vol. 61, p. 168. Cf. *Mihran*, p. 419.
32. *Mihran*, pp. 411-2.
33. *Mihran*, pp. 410-411, 412-3. Sir Aurel Stein, *A Survey of Ancient Sites along the 'Lost' Saraswati River*, *Geographical Journal*, Vol. XCIX, No. 4, p. 179.
34. R. B. Buckley, *The Irrigation Works of India*, p. 156; Stein, loc. cit.
35. *Mihran*, pp. 428, 430.
36. *J.S.H.S.*, Vol. VIII, p. 52.
37. *Vide supra* chap. 2. These lakes are for the most part long and narrow, with a S. W. to N. E. axis. Embankments have long prevented the Nara water flowing into them direct, but several of them are generally full from percolation.
38. *Mihran*, pp. 478-9. Major Raverty was not altogether unaware of the behaviour of "working rivers" for he quotes Fife's *Report on the Eastern Nara*, on the subject, (p. 415, note 446).
39. *Vide* the contour map of Sind at p. 165, *The Behaviour and Control of Rivers and Canals* by Sir Claude Inglis, on which was based Map 2 in this volume.

## 4

### THE SIND HILL COUNTRY

THE Western hill country of Sind,<sup>1</sup> together with the minor detached elevations which crop up in the midst of the Indus plain, is formed almost entirely of rocks of the Tertiary Geological period. The vast majority are of sedimentary, that is marine, origin, being limestones composed of the accumulated shells of foraminifera, those minute organisms which swarmed in the primeval seas with inconceivable fecundity. While Peninsular India has remained dry land from a remote era, Sind and the country immediately to the west was mainly under the sea, with some important intervals of continental conditions, down to the end of the Eocene period. From the presence or absence of fossils of particular species, considered in relation to the stratification, geologists have established in outline the vicissitudes through which this part of the world has passed, from the end of the Cretaceous period down to that designated as Recent.

The marine beds, consisting of shells deposited among the ooze to a depth of several thousand feet, were converted into a land mass high above sea level by Earth movements of which the most characteristic was a lateral folding or warping in a general east-west direction. To this is due the prevailing north and south strike of the hill ranges in Sind; they are the anticlinals or convex upward folds of the corrugated strata, the shape of the intervening synclinals, concave downward folds, being usually modified by the presence superimposed of the more recent formations. These later marine, and some relatively small fluvial, strata have been removed by erosion from the roofs of the anticlinals, exposing the hard, compact limestone which consists largely of the fossilised remains of nummulites.

All the principal hill ranges of Sind are of this formation, which has been given the name of the highest and longest of them, the Khirthar.

The Khirthar range has a length of about 150 miles, and is a watershed throughout, save for one interruption at a point not far from the middle, where the Gaj Nai cuts its way through from the west by an impassable gorge. Thus the appearance of these mountains from the plains, as a continuous rampart wall, is very close to the reality. There are only about ten places in its entire length by which laden camels can cross the range, and half of them are close together. As far south as the latitude of the Manchar Lake the Khirthar, with an average height of about five thousand feet above sea level, is an obvious natural frontier for Sind.

One of the striking features of this range is the very pale colour of its rock, light grey, pale buff, or even "off white"; the stratum exposed by a rock fall, such as we see on a large scale at Gozbani above the Naig valley, shows up almost like chalk. The northern part of the Khirthar is in fact familiarly referred to by the hill people as "Achho Jabal".<sup>2</sup> Where the flanks of the range are overlaid with rocks of a later formation these are clearly differentiated by their darker colour. The Khirthar limestone is also remarkable for the solidity and smoothness of its bedding. This is beautifully displayed just south of the bold height of Miangun at the north end of the range, from which a minor ridge runs down on the east of and nearly parallel to the main axis, presenting (from east to west) a gently swelling anticlinal, a shallow synclinal and a steeper anticlinal rolling straight over into a far deeper synclinal on the Baluchistan side of the range; all this folding being perfectly regular and unbroken in profile, save by a slightly eroded channel down the shallow synclinal, which after rain gives the Khenji Nai its head waters. The contrasting scarped summit of the ridge, which begins a little to the south and continues with intervals for some ten miles past the next two high points, Machal and Rangu, on the other hand indicates a broken anticlinal arch, where the strata dipping to the west are exposed in section considerably above the surface of those running up from the east. Further south again the strata lie almost horizontal over the summit of the range, forming small plateaux at Lakhani and Daryaro, the latter affording about a square mile of level arable ground, enclosed by low ridges of rock, at a height of nearly six thousand feet. There are similar small patches of cultivated ground in slight hollows at other places along the summit of the range.

Immediately to the south of the Daryaro plateau the massive peak of Kute-ji-Qabar, the Dog's Tomb, rises to 6877 feet, nearly a thousand feet above the general level of this part of the range—a far-seen landmark in Upper Sind. The main ridge itself climbs steadily to within three hundred feet of this height at the sharp eminence of Kori-ji-Mut, some ten miles to the southward, after which it descends abruptly two thousand feet into the saddle of Harbab. Here is the northernmost of the camel paths across the range between Sind and Baluchistan, the route being usually known by the name of a defile nearer to the plains, Shah Godra.<sup>3</sup> On the southern side of Harbab the range rises steeply to 7112 feet, the highest point in Sind, at Bande-ji-Qabar. From hence to the next lofty point, named Kachrak, the Khirthar presents a double ridge, that to the east being nearly a thousand feet lower than the western main axis. The synclinal between them is largely covered with rock of the next Tertiary group, designated as Nari, which has been denuded from the anticlinals. A few miles further to the south the Gaj Nai cleaves a way eastward through the range, the section through the Khirthar limestone being a narrow cleft with vertical sides, and so blocked with immense rocks as to be impassable. There are passes over the range on either side of the gorge.

The northern half of the Khirthar range which has just been described is flanked on the eastward at an average distance of four miles by a chain of sharp hills belonging to the subsequent Tertiary formation already referred to as overlying the nummulitic limestone in places, and known as the Nari series. It consists itself partly of limestones, yellow and brown in colour, and in comparatively thin bands interstratified with shales and sandstones, the mass of the rocks generally consisting of the latter. The extreme asperity of these hills is due largely to their composite formation, the different rocks weathering irregularly; and there are many slips and fractures, with some faulting. They are also deeply eroded with watercourses running to join the "Nais" which, having received the drainage of the eastern slopes of the Khirthar, intersect this outer chain. The highest of these hills attains about three thousand feet. Almost coalescing with them on their eastern side are rocks of the "Gaj" group, which comes next in order of time in the Sind series. The Gaj beds are conspicuous from bands of hard dark brown limestone which first emerge just



north of the Khenji Nai, dipping at a high angle to the west. The bulk of the formation, however, is made up of shales and clays. Further south this series develops into an individual range, with peaks such as Amru and Hashim attaining a height of over 2700 feet.

The outermost of the hilly fringes of the Khirthar range belongs to the most recent of the rock formations of Sind, designated the Manchar series. It is made up of clays, sandstones and conglomerate, containing large pebbles of limestone, and over a large area has been degraded into mere gravelly uplands, cut up by torrent beds. The uppermost strata, rising steeply from under the alluvium of the Indus plain, form a ridge distinguished rather by sharpness than by height; though between the Mazarani and Daddar Nais there is a conspicuous peak, Kakario, which attains nearly 1800 feet. It rises from the inner (western) of the two parallel outcrops of the "Manchar" formation, the synclinal between them being overlaid with alluvium.

These hills known as "Ban", are cut through at intervals by the Nais, here carrying all the drainage of the higher ranges. After rain an immense volume of water passes through the gorges, sometimes spreading devastation far into the plains beyond; but ordinarily the Nais, with the exception of the Gaj, are not found flowing outside the last line of hills. Within them, along the dozen or so miles of their perennial course, these little streams present a beautiful variety of scenery. There are waterfalls, deep pools, rapids, lakes in miniature overhung by precipitous cliffs and, where the valley broadens for a space, reaches from which tiny channels are led by a gentler gradient along the bank, seeming to climb steadily above the stream, till they swing away to irrigate an acre or two of cultivation on the rare patches of alluvium. The Nais that take their rise in the high Khirthar north of the Gaj are nine or ten in number, and the internal communications of the hill country by footpath run mainly along their valleys and those of their tributaries.

For about sixty miles to the south of the dividing chasm of the Gaj, the general character of the Khirthar and the subsidiary ranges is maintained much as described in the northern section, though the average height becomes steadily less. Immediately south of the gorge the watershed is over 4000 feet, but about three miles further south it drops to a saddle some 500 feet lower, known

as the Shakloi Khand, over which there is a pass practicable for camels. The ridge then rises to over 5600 feet at Gorag, the highest summit south of the Gaj, and for many miles onward the Khirthar has a broad top, the strata lying almost horizontally across it, with scarped sides for some distance. At Phusi the eastern approach to the summit of the range, here little more than 3500 feet high, becomes much easier, with a wide, sloping ascent from the upper valley of the Nari Nai. Within a distance of about fifteen miles there are five crossing places, the best known being Rohel. Having dropped near here to just under 3000 feet the Khirthar rises again to the point known as Suleimani, flanked by another prominent summit, by name Guru, at the top of a broad offshoot of the range sloping down to the north eastward; and hereabouts the Khirthar range begins to run south south east to its termination. A little south of Suleimani there is another much frequented pass, the Garre Lak, approached from Sind up the Angai Nai. We have now reached the latitude of the Manchar Lake, to the south of which the hill system of Sind becomes more complex. It can most conveniently be considered in accordance with its drainage, to north and south respectively, for here at last we find a watershed running east and west.

Looking due eastward, then, from Suleimani across the complicated brown medley of hills and valleys through which the Angai flows, the end of a massive ridge of pale Khirthar limestone catches the eye, at about twelve miles' distance. This is the Bhit range, a broad anticlinal saddle, almost level along the summit, the highest point being a little over 2700 feet. It runs some twenty miles due south, and unites with the Khirthar. Transferring ourselves to the eastern edge of the Bhit, we look down on the valley of the Naig Nai, the upper part exceedingly stony, and the lower alluvial, and running up on the opposite side to low hills of the "Manchar" series, round which the Nai after a northward course of some thirty miles turns south to find the lake from which these rocks take their name.

The upper part of the Naig valley is bounded on the eastward by the Badro range, extending some thirty miles north and south, and about 2400 feet high. It consists of a very broad anticlinal roll of nummulitic limestone, which with its remarkable whale-back profile, scored by transverse watercourses, bears a close resemblance to Sartaf in the Marri-Bugti country. The

Badro range is joined to the Khirthar, about ten miles from the latter's termination, by a narrow neck crossed by the Darang pass.

Moving eastward once more from a point half way along the Badro we descend into the broad valley of the Bandhani, another large Nai flowing northward to the Manchar lake. A considerable area in this valley is alluvial, but it is cut up by outcrops of rock and low hills. Along its further side run the foothills and outlying spurs of yet another anticlinal of "Khirthar" limestone, running north and south, the Lakhi range. The watershed between the north-flowing Bandhini Nai and those running south is at Maliri; there is also a short range of hills called by this name running parallel with its neighbours on either side.

Returning to the Khirthar range itself, for our examination of the southward declining country, we observe a somewhat sharp anticlinal, the Mehi hill, with a strike a little west of south, breaking away from a point some six miles south of the junction of the Bhit range with the Khirthar on the opposite side. The line of the Mehi is prolonged to the south of a valley by the lower and broader Gaz and Dumbar range, of the same formation. Between the Mehi and the Khirthar the Baran Nai begins its course of some 90 miles, with a generally south south east direction, turning due east round the end of the Khirthar range where this is a massive anticlinal, very steep sided and reaching a height of nearly 3300 feet. To the east of this southern end of the Khirthar is a broad but irregular gravelly valley, drained by torrent beds which fall into the Baran. Following two of these upstream we come to the Darang pass and the Maliri watershed, already mentioned. The eastern side of this valley runs up to the Daphro range, a broken anticlinal of Khirthar limestone with the usual north and south strike. This short range of hills, about 2000 feet in height, is closely connected with the Lakhi range immediately to the eastward. It can be crossed by a pass from Pokhran to Ranikot, a remarkable fortress of the Talpur rulers situated above a chasm in the Lakhi hills. At this point, almost exactly half way along its length, the Lakhi range is cut through by the Mohan Nai, presenting a marked resemblance on a smaller scale to the gorge of the Gaj Nai through the Khirthar.

East of the Lakhi range—which it should be noted is the name applied by the country people only to the northern portion, the other parts being known each by its own name—there is an

extensive tract of broken ground presenting no prominent features, beyond which, with only a narrow belt of alluvium intervening, runs the river Indus.

The Lakhi hills are by far the most interesting in Sind from the geological point of view. The lateral thrust of the earth movement has not only broken the anticlinal arch, but forced the eastern side back into a vertical and in places a reversed dip, and extruded between it and the uplifted western side a mass of rock belonging to formations underlying the Khirthar series. The oldest of these belongs to the Cretaceous period, and the most curious is a thin bed of Deccan Trap, of volcanic origin. This lava flow saw the beginning of a period of "continental" conditions, when the lower "Ranikot" beds, of fluvial origin, were deposited. There are large expanses of the last-named series northwest of Kotri round Leilan, where a bed of lignite was discovered about a century ago, and again further to the south.

The highest point on the Lakhi range, about 2300 feet, occurs not far from its northern end; there are at intervals several summits exceeding 2000 feet much further south. On the west side of the southern half of these hills the Baran Nai flows south down a broad valley, turning south east and cutting through them, or rather between them and the Sarjano hill which bends away to the south west, by the Darwat pass. The Baran reaches the Indus after a further course through the gravelly uplands of some thirty miles; but it does not flow outside the hills except when in spate.

Facing the Lakhi hills across the Baran valley is the Kambu range, another massive anticlinal of Khirthar limestone, twenty miles long and about 2300 feet high. A chain of lower detached hills of the same formation extend south by west from the end of Kambu to culminate at the peak called Kara, about half way between Karachi and Hyderabad as the crow flies.

The hills of the western part of this tract, adjoining the valley of the Hab, consist of rock of the later Tertiary series, the most remarkable being the two plateaux of Mol and Mehar, which have a breadth of several miles, and rise abruptly over a thousand feet above the country surrounding them on east, north and west, to which they present steep scarps, while to the south they fall away with a very gentle slope. These two elevations are simply "Gaj" beds lying horizontal on the "Nari", and eroded on three sides. Each has a slight syncline in the middle, drained by a south-

flowing Nai; that from the Mehar hill, 1500 feet in height, soon turns north and runs between the two plateaux, falling into the Hab. The Mol, starting from a height of 2,000 feet, continues to flow southward till it unites with the Khadiji, and the combined stream, well known as the Malir, falls into the sea by way of the Ghizri creek, a little east of Karachi.

This extensive tract of hilly country draining southward is much more open than that with a northern declination. The hill ranges maintain the usual north and south strike, though in the south west they tend to bear south south west or south west; their general elevation becomes lower as one proceeds in this direction. Between them are broad undulating plains of gravel with rocky outcrops, and there and here large patches of alluvium. Beyond the Hab river, in Las Bela, the ranges are very much higher, steeper and longer than on the Sind side, but are of similar formation, and run parallel to them. Of these ranges the most important is the Pab.

The configuration of the south-eastern outskirts of the Sind Kohistan is less regular than towards the south-west, and the rocky elevations crop up much at haphazard. This country is formed from the "Ranikot" series, containing many bright coloured shales, some black ferruginous sandstone, and red ironstone. In hollows along the skirts of this country are several large perennial dhands, the Sonahri, Khinjar, and Haleji, fed mainly by Nais from the hills, but also in some instances from the Indus.

Taking a comprehensive view of the hill country we shall notice two characteristic features. The first is the development of gravel slopes, sometimes two to four miles in breadth, at the base of each range and covering much of the intervening valleys. The deposit is thickest about the points of issue of the Nais, which often run far below its surface. Such agglomerations of gravel are even seen capping isolated hills and ridges, near the Gaj Nai. The great development of these deposits is in all probability the effect of the paucity of rainfall, which has not sufficient force to wash away detritus beyond the end of the steeper slopes.

The second widespread feature of note is the prevalence of hot sulphur springs. One of the best known pair, at Mango Pir near Karachi, has a temperature of 127° Fahr. Other important springs occur at Lakhi, Taung, Naig, Ghazi Shah, and beyond the

existing northern frontier of Sind at Pir Lakha. There is a small sulphur spring only a few feet above the high water mark at Waghodar, near the mouth of the Gharo creek. Many of these springs deposit calcareous tufa in large quantities.

Before we proceed to examine the detached hills in the Indus plain, which are directly related to the main hills of Western Sind, mention must be made of one in the extreme south eastern corner of the existing Province, which has no affinity with them whatsoever. This is the Korunjhar hill near Nagar Parkar,<sup>5</sup> which rises abruptly from the sandy plain to a height of 1200 feet, and overlooks the Rann of Cutch. It consists of coarse red granite belonging to the Archaean series, the oldest rocks of the earth's crust; these are well represented in Rajputana, to which physically this region belongs.

The detached elevations of the Eocene series in the Indus plains present several features of interest. The largest of these hilly tracts extends from about three miles north west of Sukkur to more than forty miles south of Rohri, with a greatest breadth of about fifteen miles. It consists of nummulitic limestone lying nearly horizontal, scarped on the west side, and rising only about 200 feet above the plain. The river Indus has cut through these hills near their northern end, leaving Bukkur and two smaller rock masses as islands. There is ground for believing that the present channel is not the only one that it has cut through these hills. There is a gap between the hill on which Old Sukkur is built and that immediately to the northward, which has the appearance of a river bed levelled up with alluvium. The old Sukkur canal was led through this gap. Much more striking is the Aror gap, some four miles south of Rohri. There is a well-known tradition that it was traversed by the main stream of the river prior to the middle of the tenth century after Christ. It is doubtful, however, whether the whole volume of the Indus could have passed through this gap. It was utilised for a small canal from the Nara supply channel before the Barrage was constructed; since when the huge new feeder to the Nara passes through it in the reverse direction, that is from west to east.

The uppermost beds of the limestone near Sukkur and Rohri are remarkable for the large masses of flint that they contain. These weather out, and cover the surface in some places; they have naturally attracted knappers, and cores

together with flakes split from them are found in abundance in some places.

The hill on which Hyderabad City is built, and the Ganjo Takar immediately to the south of it, are very similar to the Sukkur-Rohri hills, on a smaller scale.<sup>6</sup> They are flat topped and scarped on all sides, especially to the southward, where the Ganjo Takar rises abruptly to 200 feet above the alluvial plain. There is a stratum of Fuller's earth under the uppermost bed of white limestone; the latter is worn into conspicuous grooves having a general direction of east—25°—north, due evidently to the scouring action of wind-borne sand.

Another isolated tract of raised ground surrounded by alluvium is the Makli hill near Tatta, which has about the same dimensions as the Hyderabad group, and presents much the same profile, though its formation is somewhat different and its elevation less. There is a small detached hill, Pir Patho, at the south end of Makli, divided from it by the Baghar canal.

Eleven miles south south east of Pir Patho is a group of small hillocks in a space about  $1\frac{1}{2}$  miles long and half a mile broad, the loftiest, known as Aban Shah, rising some 75 feet above the plain. It is notable as the southernmost outcrop of rock in Sind,<sup>7</sup> and consists of coarse gritty sandstone. For more than a century the river Indus has flowed between Pir Patho and Aban Shah, and its effective Delta begins within a few miles of the latter. It is curious that there are rocks actually in the river channel, about half way between the two places named; there is moreover another example of this, in the bed of the Indus about two miles above Jherrak. Here again there is an isolated hill, Budh-jo-Takar, separated by the river from the main rocky area on the west.

The rugged and desolate aspect of the Sind hill country is accentuated by the extreme sparseness of its vegetation. From a distance the mountains appear utterly bare, and it is only on a closer view that one becomes aware of the variety of small scrub that they support, and the general prevalence of grass. The latter quickly dries up and fades to much the same colour as the rock from which it springs, a few sprays in any crevice where it can take a hold. It affords excellent grazing to sheep and goats, and to the wild ibex and urial which frequent the ranges. The dwarf palm is commonly found on the western flanks of the Khirthar and at a higher level, more rarely, the wild olive. In

the south western portion of the hill country the cactus is prominent.

Along the Nais many of the characteristic trees and plants of the plains may be seen, in particular the tamarisk, kandi and pampas grass. The ber is not uncommon on hard patches of alluvium, and the khabbar where there is salt in the soil from occasional flooding. Babul trees occur among some of the small patches of cultivation watered by channels from the Nais. The verdure of these spots—Lakhan-ji-Khand on the Khenji is a good example—makes a delightful contrast with the surrounding aridity. More extensive tillage is irrigated from springs which emerge from the flanks of the hills, or from high ground in some of the broader valleys of the Kohistan, particularly at Taung and Naig. The crops grown here and there on the lofty plateaux of the Khirthar range, already mentioned, are of course dependent on rain. There are many more such fields on the lower ground along the outskirts of the southern hill country, embanked to retain water draining off the slopes.

The entire area under cultivation in the seven thousand square miles of the Sind Kohistan may not amount to more than two thousand acres in an average year, and the economy of the tract is of course in no way dependent on it. Breeding and grazing of sheep and goats, of cattle in the lower and more open country of the south, and of camels in the Kachho east of the Khirthar, are the regular occupations of the people. A large proportion of the inhabitants are nomadic, setting up their blanket tents or pishmat shelters at any spot where water is conveniently obtained, and moving on with their flocks and herds when the grazing in the surrounding area is exhausted. Others, in the northern Kohistan particularly, have their winter homes in sheltered valleys close to the Nais, and move for the summer to the high ranges, where their circular stone-built huts may be discerned close to their fields. There are but few permanent villages in the Kohistan. In these are found the traders in wool and goats' hair, who make their rounds of the shepherds' camps at the shearing season. But should there be a serious failure of rain, virtually the whole population of the hills migrates to those areas in the adjoining plains with which they are connected through their dealings in animals.

Apart from the paths along which such local intercourse proceeds, there are two "through" trade routes, which diverge



from the neighbourhood of the Manchar lake. One leads westward up the valleys of the Nari and Angai Nais to the main group of passes over the Khirthar range,<sup>8</sup> thereafter linking with the Pathani Wat and other routes through Jhalawan; and the other runs due south between the Lakhi range and its neighbours, until from the valley of the Baran branches strike off in various directions through the lower hill country.<sup>9</sup> The traffic which passes by camel caravan over these paths is transit trade; there is no market within the hills themselves. These routes have no doubt been subject to chronic interruption by predatory tribes, and by petty warfare between the local tribes themselves, the cairns commemorating which can be seen at many places. No events of importance in the recorded history of Sind have taken place in the Kohistan; and the general pattern of its economy, dictated as in the Eastern Desert by its physical character and the climate, might well be assumed to have altered little since the dawn of civilisation, were there not archaeological evidence to the contrary.

## NOTES

1. This chapter is drawn in the main from: W. T. Blanford, *The Geology of Western Sind*, M.G.S.I., Vol. XVII (1880).
2. 'White Mountain'. It is rightly observed in the *Gazetteer of the Province of Sind* "B" Volume I, p. 3, (Karachi District), that the country people give names not to ranges but to peaks and localities. Thus to them 'Khirthar' denotes particularly the southern end of that range. On the other hand, the whole chain "from Sehwan to Siwi" was known as "the Kahtar range" to Abu-l-Fazl (Ain-i-Akbari, quoted by Raverty, *Notes on Afghanistan and parts of Baluchistan* 1888, p. 558). The British, in the early years of their connection with Sind, used to refer to the Khirthar and the Lakhi range indifferently as "the Hala Mountains."
3. *Jhalawan Gazetteer*, p. 336.
4. This range runs for about 70 miles from Bhagotoro to Darwat, with a nearly due north and south strike.
5. Sir. E. Pascoe, *A Manual of the Geology of India and Burma*, 3rd Edition, 1950, Vol. I, p. 424.
6. They measure about 21 miles in extreme length with a maximum breadth of 6 miles.
7. Not counting the Korunjhar hill near Nagar Parkar.
8. *Jhalawan Gazetteer*, pp. 322-3.
9. Described in S.R.B.G., XVII, New Series, Vol. II (1855); vide Routes X and XVI in the appendix after p. 775.

## 5

### THE EARLIER PREHISTORIC CIVILIZATIONS IN SIND

THE earliest human habitation of which traces have been observed in Sind, in the shape of rude stone implements, may date from the late Pleistocene age. No skeletal or other fossil remains have as yet been found in conjunction with the rough tools, and it is only by analogy that we can assume that they are the handwork of Palaeolithic man. They were first noticed on the low limestone hills near Rohri, which abound in flint, and have also been tentatively identified<sup>1</sup> some 250 miles to the southward at Waghodar, on the coast east of Karachi, and in the vicinity. A superior type of instrument, thin sharp-edged flakes or blades of chert and flint struck off a parent core, has a much wider distribution; there are flint-knapping sites near Rohri and Kōt Diji, several in the central Kohistan, and others along the southern foothills not far from the coast. In a large number of places instruments of this type are found in direct association with ceramic remains of cultures belonging to the Chalcolithic, or Bronze age, and the knapping sites where flakes and cores are found in isolation may in most instances belong to this civilization rather than to Neolithic times.

A distinct culture producing stone blade tools of very small dimensions also existed in South-West Sind.<sup>2</sup> These microliths are often lunate in shape, and may be assumed to be the heads of fish spears, or possibly arrows, the wooden shafts having perished. Other types may have been fitted into bone handles. Stone industries of this type were widely spread over southern and western India, and it is believed that they may have been introduced by peoples immigrating from the north west. There is nothing to show whether these people in general were purely hunters, or whether they knew the arts of agriculture and stock raising. It is not possible to date the Sind microlithic culture by

its analogues in Europe. There is on the contrary a strong probability that it overlapped the relatively advanced civilizations of the Bronze Age, in which, it must be remembered, flint and chert tools of the flake type were still in use. In Pakistan and India it is to this day a commonplace to the experienced observer, if a shock to the new-comer, to find living side by side communities whose standards of civilization are a thousand years or more apart. Similarly in 325 B.C. Nearchus and his men, having become accustomed to the respectable attainment of culture among the "Barbarian" kingdoms in North West India, which apparently extended to the Oreitai, were startled by the primitive manner of life of the Ichthyophagi, neighbours of the latter.<sup>3</sup>

They noticed that these uncouth fish-eaters used "sharp stones" for cutting things, as they had no iron. We may not be far from the truth in supposing them to be the poor, perhaps degenerate, relations of the people who had formerly occupied the interior of this country. The inaccessibility and utter barrenness of the coast to which they clung had allowed them to live on in obscurity, escaping the fate which overtook the inland people. What that fate was we can only conjecture. The irruption of a hardier race, moving on in one of the great dispersals of peoples from the region of the Caucasus, may have obliterated or expelled them; or, if they emigrated, the cause may have been the progressive dessication of the country.

It is evident, at least, that when Alexander passed this way the climate of Gedrosia (Makran) was as severe, and its natural resources as scanty, as in our own time. His historians' account of this part of his route is full of interesting and significant detail; the sufferings experienced by the army evoke an unusually full description of the peculiarities of the country to which they were due.<sup>4</sup> That no mention is made of the occurrence about the line of march of numerous vestiges of former settlement<sup>5</sup> is the less strange, when we read of the oppression of want, thirst and anxiety which relaxed the bonds of discipline, till the survival of the army, with no enemy near, depended as never before on the resolution and judgment of its leader.<sup>6</sup> Their concern was with the existing inhabitants, however few and poor, as guides and as purveyors from their scanty agriculture; not with the mockery of a long dead prosperity. And if indomitable Greek curiosity inquired from the guides whether these mounds were remains of

towns destroyed by Semiramis in her invasion, and whether the works of cyclopean masonry were ascribed locally to Heracles, we may fairly presume the reply, "According to our tradition these objects were built by an ancient race who once possessed this land, but who they were and what became of them no man can say."

Mounds covering the remains of prehistoric settlements and great dams of hewn stone are to be found co-adjacent in many parts of the hill country of Baluchistan and Sind. The question whether they are to be attributed to the same civilization or local cultures is one that has not as yet been determined. Exploratory excavation of the former has disclosed that they date from various periods in the third and second millennia before Christ.

There is no direct evidence of the age of the cyclopean works. They are built across water courses and between rocky outcrops in the valleys, evidently with the object of controlling rain water for agricultural purposes. In many instances these structures are disposed so as to contain and consolidate the alluvium washed down from the hill sides, and thus convert stony slopes into level fields of soil. It is in the tract adjoining the modern boundary of Sind that the most elaborate examples occur. Their builders, skilfully adapting their plan to topographical circumstances, clearly possessed first-rate engineering knowledge, far beyond the capacity of the present inhabitants. They—the nomadic shepherds, the unlettered tribal chiefs, the bigoted men of religion—call these ponderous vestiges of a superior civilization Gabarbands, or Goharbands, ascribing them to Ghebers, or Zoroastrians, probably because their traditions in general do not tell of any other possessors of the land before the advent of Islam.<sup>7</sup>

There is nothing inherently improbable in the idea that some of the Achaemenian rulers of Persia, or the Sassanians, should have attempted to improve by public works a part of their dominions so little favoured by nature as this eastern Satrapy. The late Mr. R. Hughes Buller, who was among the first to consider the problem of the Gabarbands, points to the "bands" at Shustar and other places on the Karun river in Western Persia, as showing that the ancient Persians constructed similar works for the conservation of water.<sup>8</sup> It must be conceded nevertheless that their characteristic method for extending agriculture was the karez: and works of this kind, common in northern Baluchistan,

are also found in the tracts in which Gabarbands are prominent. There are several karezes in the north of Las Bela, and others in Makran; one of the latter is still named after Cyrus (Khusru)<sup>9</sup>.

Hughes Buller was also impressed by the absence, according to his observation, of graves older than Muslim times, in a tract of Baluchistan which must have been comparatively densely populated when the Gabarbands were in use; and he was inclined to identify certain circular structures in the same area, which had a central flooring of separate stone slabs, as "dakhmas" or towers of silence.<sup>10</sup> But between inhumation on the one hand and exposition on the other, there are variant funerary methods which leave little superficial trace—fractional burial and cremation; and these, we have good reason to believe, were in vogue to some extent among the prehistoric peoples of this region.

The circumstantial evidence for the belief that the Gabarbands antedated the Persian monarchy is on the whole stronger. In the first place, it is obvious that there must have been some connection between them and the numerous remains of settlements in their vicinity. These works enabled agriculture on a scale sufficient to support a population far larger and more stable than that of the present time. Many of the mounds indicate by their very height a long period of probably continuous habitation. Excavation of them, up to the time of writing, has not proceeded beyond experimental trenching except in a few instances; but the relics recovered all belong to one or other of the Bronze Age peasant cultures which were scattered throughout Western Asia between B.C. 3000 and 1000. Are we to assume that these communities, who built their villages largely of stone, enjoyed a climate in which the extensive cultivation required by their numbers could be raised without the aid of soil conservation works; that it then deteriorated to such a degree that a people who came after them were obliged to build the most elaborate dams, barrages and terraces to secure subsistence—and yet left practically no other trace of their presence? Were the men capable of designing and building the magnificent Ahmed Band, and Pir Munaghara dam,<sup>11</sup> content to house themselves in mud huts or brushwood shelters? These postulates seem far more improbable than the alternative theory, that the same prehistoric people who long inhabited the numerous village sites in this region were skilful agricultural engineers, and devoted much labour to

adapting the neighbouring terrain so as to secure the maximum possible cultivation.

Hargreaves, who made a careful examination of Nal and its vicinity in central Jhalawan, took this latter view;<sup>12</sup> Sir Aurel Stein was of opinion that at Toji in Kharan, in particular, there was a close relation in origin and date between the Gabarbands and the village sites.<sup>13</sup>

Direct evidence that the Gabarbands were built by Chalcolithic peoples may yet be forthcoming; but its continuing absence should not invalidate the assumption. Here were fields and not dwelling places; characteristic objects dropped near them by reapers, boys grazing cattle in the stubble, watchers on the dams in days of dangerous pressure of water, and workmen repairing them, would be relatively few in number. If any such relics hereafter recovered in the vicinity are found to belong to the periods of Achaemenian or Sassanian sovereignty, we should not too hastily assign the building of the Gabarbands to the Zoroastrians. For it is likely that the latter maintained and used the agricultural works of their predecessors. Even the modern inhabitants, to whom cultivation is a secondary means of livelihood, have the commonsense to make use of some of the dams which can still be made to serve their purpose with little expense of labour—roughly closing breaches in the masonry with earth embankments.

The same pattern, of prehistoric sites with Gabarbands in fairly easy reach of them, is to be observed in parts of the hill country of modern Sind. Perhaps the most interesting group of dams is that round about the southern end of the Khirthar range and in the vicinity of Kotarash. Among them is a particularly massive example built across a deep ravine with the object, probably, of forming a reservoir.<sup>14</sup> Another fine specimen of this type occurs some thirty miles to the northward in the sequestered vale of Gozbani, between the Khirthar and the upper valley of the Naig Nai. The remains of skilful terracing of a steep slope for cultivation may be seen on the eastern flanks of Nighand, one of the peaks of the "middle range" about one hundred miles further north, between the Sita and Trapan Nais.

All these works are derelict, and are pointed out with a somewhat grudging admiration by the present day inhabitants as the inexplicable edifices of the infidels who possessed the land

before Islam. As Stein remarks, such construction is quite beyond the capacity of these rough herdsmen: they cannot understand why so much labour should have been expended for so little apparent gain. Of course, such elaborate schemes would not have been undertaken unless to meet the needs of a population far denser and more settled than that of any period in historical times.<sup>15</sup>

Contemplation of these structures suggests another inference, that they were designed to take advantages of a rainfall more copious or at least more regular than that we know. But this supposition is not free from doubt. In the Deccan the Maratha peasant may often be seen closing the mouth of a small valley or re-entrant on the edge of a rocky outcrop by similar but more roughly constructed stone dams, to induce the deposit of alluvium within. He builds with the assurance of a regular monsoon, with over twenty inches of rainfall on the average. In the Kohistan of Sind, the annual average may be no more than seven inches, and it is an average of extremes; perhaps twenty inches in one out of ten years, including two with three inches or less. The later Eocene rocks of Sind and Baluchistan are degraded much more rapidly by the great extremes of temperature than is the Trap in the comparatively temperate Deccan; and the storms which burst with tremendous if brief violence over the Khirthar will set every hillside streaming down in a brown flood, depositing substantial alluvium against any obstacle solid enough to hold up the water. Thus the great massiveness of the Gabarbands, especially those closing watercourses and diverting the flow down steep declivities, would be fully warranted by existing conditions. The substantial earth "bands" which enclose fields along the southern skirts of the Sind hill country are almost invariably breached by such storms.

We may pose ourselves the question: were the Gabarbands restored by modern engineers to their pristine state, so far as this can be judged, and thereafter maintained, granting a due allowance of time for the renewed deposit of alluvium—could a community of industrious agriculturists raise cultivation, under existing climatic conditions, to the extent which would have been adequate for the needs of the static population of prehistoric times? I think the plain answer must be, "No": and that our provisional conclusion must be as stated by Wheeler, "that the

rainfall was somewhat more abundant there than today, and on the other hand that it was sufficiently precarious to necessitate careful hoarding and control."<sup>16</sup>

The evidence afforded on this subject by the prehistoric sites in the Sind Kohistan is ambiguous. In the first place, Gabarbands are relatively few, while the number of settlements which have been identified within a comparatively narrow compass proves that the inhabitants were more numerous and more stable in the Bronze Age than in modern times. But the terrain in the neighbourhood of most of these places is so rough and confined that cultivation without dams and terracing would be severely limited, even were the rainfall far heavier and more uniform than that we know. We are driven to assume that the ancient races in this region were primarily pastoral, though not nomadic, and that they may have drawn a considerable proportion of their cereal supplies from elsewhere. Several of their main centres were in the vicinity of copious natural springs, affording at the present day irrigation for several hundred acres of land. Almost all the others are close to running water. The pioneer investigator, the late Mr. N. G. Majumdar, proceeding along the "trade route" already mentioned as running nearly due south through the Kohistan from the Manchar lake to the point where the Baran Nai enters the plain, a distance of about seventy miles, found a prehistoric settlement close to each of the halting places, twelve or fifteen miles apart, at which the British Government built "landhis" when they improved the hill road in the '50's of the last century.<sup>17</sup> The modern stages had to be located where a constant water supply was available. The ancient people had occupied these sites for the same reason—as also a number of other places close to small springs and perennial reaches of the "nais". Only one of these settlements, Kotarash Buthi, is more than a few yards distant from running water.

This site is exceptional, in that it appears to have been chosen on account of its adaptability for defence, to guard an important route between Baluchistan and Sind of which some account will be given later. It is conceivable that a well, such as Majumdar discovered at Ali Murad, a somewhat similar prehistoric defence position, remains to be revealed at Kotarash: or perhaps the people derived their water supply from a tank between two of the Gabarbands which connect the fortified hill with other rising



ground.<sup>18</sup> The virtually invariable location of the prehistoric sites in this region near perennial water moreover suggests that there may formerly have been a spring here, which has long since dried up. Such failures have occurred elsewhere in the Sind hill-country as the result of earthquakes.<sup>19</sup> Be this as it may, there appears to have been a fair sized settlement at Kotarash, close about the "citadel" within which we may imagine the inhabitants gathering with their cattle in times of danger. There are extensive traces of dwellings in the open ground below the main site, close to the long Gabarbands which obviously once embanked fields on a gentle slope beneath the end of the Khirthar range.<sup>20</sup>

Majumdar's exploration of the hill-country and other parts of Sind was undertaken primarily to discover the extent of the Indus or Harappa Civilization, at that time known only to exist at Harappa, Mohen-jo-daro, and one or two sites in the plains of Sind not far from the latter. The recurrence in many of the hill sites of a variety of characteristic objects excavated in quantities at Mohen-jo-daro proved a close connection, possibly identity of culture: but many of the settlements in and near the hills yielded ceramic remains of an entirely distinct type. That these belonged to an earlier culture seemed to be proved by the stratification at Amri, a site close to the Indus and to the foothills of the Lakhri range: here the "strange" pottery was excavated from a much deeper level in the mound than the "Indus" types. Shortly after making this discovery, Majumdar found "Amri" and "Indus" pottery<sup>21</sup> mingled together at other sites in and near the hills, and at others again only "Amri" or only "Indus" wares: the location *inter se* of the sites where one, the other, or both types occurred appearing quite haphazard. From the material available after a single season's work, Majumdar felt justified only in suggesting that the characteristic Indus black-on-red ware seemed to have had a very long currency in the area, and that the radically different Amri types might have been contemporaneous with the earlier period of the Indus culture. The Amri ware, he thought, "must be reckoned as an intrusive element in the Indus valley"; and he pointed out its strong family likeness to the pottery discovered by Sir Aurel Stein at Kulli and Mehi, in Makran and western Jhalawan respectively, and to some extent, to the wares of Nal and Nundara, also in Jhalawan.<sup>22</sup>

Since Majumdar wrote, comparative study of the ceramic remains collected from Baluchistan and Sind sites has produced a reclassification, according to which the affinities of the Amri ware are definitely with the pottery of Nal-Nundara, and not in the Kulli-Mehi group. Examples of the latter have however been identified at sites in Western Sind;<sup>23</sup> and also sherds of a style differentiated as Togau ware, which is reported to have had a wide currency from Quetta to central Makran and down the Gaj valley into Sind as far as Amri.<sup>24</sup> Thus gradually accrue materials for assessing the character of the peasant communities of Baluchistan and the borders of Sind. The refinement of modern archaeological perception will doubtless distinguish other cultural types, whether among the spoil already available, or from further discoveries; new and remoter affinities, perhaps, will be recognized, and it would be premature to base any but the most general conclusions upon the evidence available in 1961.

The following description of the prehistoric civilization of the hilly regions west of the Indus has reference mainly to sites on either side of the Sind-Baluchistan border, and rather to their general characteristics than to details of their ceramic remains. Where these latter seem to possess particular significance, I shall venture to suggest some tentative inferences—well aware that they may be superseded almost as soon as written, on the evidence of fresh discoveries.

The great majority of the settlements of the prehistoric people who inhabited the Sind Baluchistan border country appear to have been small villages of a predominantly pastoral community. They consisted of small rectangular houses, the foundations and usually the first few courses of the walls being of good stone masonry. The superstructure may have been of rubble consolidated with gypsum or sun-dried mud, and the roofs of "pish" matting, possibly covered with mud, over a wooden framework; but our "reconstruction" of the upper part depends on inferences from the availability at present of these materials in the area. The sites of houses are almost always distinguished by the amount of dark shingle lying over and around them.

In some of the villages the houses were huddled together, often on a slight natural eminence which by prolonged habitation has been gradually raised, and during the still longer subsequent

period of desertion eroded down into a conical mound of debris. In other instances, the settlement consisted of separate houses scattered over a fairly extensive area, giving the impression of a peaceful pastoral community. Of this type Kandhi Wahi is a good example. Here, in an upland valley close under the Khirthar range, we first notice a prominent though small central inhabited area, in a mound raised on a natural hillock. It is red with disintegrated terra cotta dust and pot sherds; here we may imagine were the houses of the head man and his family. Within a quarter of a mile, in various directions, are the remains of single houses and groups of houses, much denuded and covered with pottery fragments and flint flakes. The latter were doubtless produced at a flint knapping site on a broad shelf of rock a little way up the mountain side, and here among the accumulated debris of their craft the stone foundations of the knappers' huts are traceable. Through the midst of the settlement runs a small artificial channel carrying water from a spring not far from the knapping site to a patch of cultivation in the plain below. The geologist, Mr. Fedden, who visited this place some eighty years ago, reported that the spring was formerly much more copious than it is now.<sup>25</sup> Certainly, the wheat cultivation on the Kandhi Wahi that I saw would not support a single family, and there was no permanent habitation there, in December 1942.<sup>26</sup>

A more extensive settlement of this scattered type lies along the Bandhni Nai: it too has its "headquarters" mound, and its flint knapping site. The irrigation facilities are here far superior to those of Kandhi Wahi, and the place is in every way more attractive. The site of Lalan ji Mari is similar.<sup>27</sup>

At the other end of the scale we have the "townships" where the great majority of dwellings are clustered together in a single compact area. The largest places of this type are Damb Buthi, Taung, Naig and Kai, near each of which there is a copious spring, affording at the present day two or three hundred acres of cultivation. At Taung and Naig the spring-head is enclosed by defensive works, and there are remains of subsidiary inhabited areas. At Kai a flat-topped hill with scarped sides, a few hundred yards from the "township", has been adapted as a fortification with perimeter walls, much in the style of Kotarash Buthi; it appears to have been resorted to in times of trouble by the

inhabitants of the Kai valley during historical times, but Bronze age potsherds are also present in quantities.

The "headquarter" mounds at all these four places exhibit similar characteristics. The 'Miri' at Taung, 'Lakhshmir-ji-Mari' at Naig, and Damb Buthi all attain a height of about sixty feet above the plain. The 'Buthi' at Kai is much lower, but its superficial area is quite as great as the others. The most obviously artificial are Taung and Naig; here courses of masonry in position can be discerned amongst the confused mass of large weathered stones which covers the surface at each of these places. It is difficult not to feel sympathy with the local tradition, that the Miri and Lakhshmir-ji-Mari were in fact the palace-citadels of the kings, or rather chiefs, of those remote times; towering above the guard-room, servants' quarters and stables grouped round the foot of the hill.

Such, up till the earthquake of 1935, was the picturesque 'Miri' at Kelat. There is another prehistoric site, known as Lundi Buthi, about a mile to the south east of Naig, the original conformation of which is much clearer. This conical mound is girt by three stone walls or terraces one above the other, and on the top are traces of a building. This suggests rather the remains of a ziggurat than of a citadel and it may be that the Taung Miri and Lakhshmir-ji-Mari at Naig were also buildings of this type, though from the great quantity and variety of objects on their slopes it seems more probable that they, at any rate, represent the central complex of houses at these places. At Lundi a broad shelf of rock below the Buthi seems to have been the main inhabited area, being covered with dark shingle, pottery fragments and worked flints;<sup>28</sup> so the general disposition of the site resembles that of Damb Buthi.

The local belief is that the walls on Lundi Buthi were built for defence and that similar places were resorted to as rallying points in times of trouble, by generations of the inhabitants of the Naig valley.

The degree of civilization of the prehistoric people of the Sind-Baluchistan border can only be roughly gauged from the artefacts so far recovered from these sites. They were acquainted with the use of copper, but seem to have employed it more for articles of personal adornment—pins, rings and beads—than for tools.<sup>29</sup> It may be that excavation may yet reveal copper axes and other

implements such as Hargreaves found in two hoards at Nal. But the great majority of tools requiring a cutting edge or a strong sharp point were fashioned out of chert and flint. The workmanship of many of these knives, reamers, scrapers and the like is superb.<sup>30</sup> The artificers of these people also worked semi-precious stones—cornelian, agate, chalcedony—as well as steatite, all of which occur in the hill country, polishing and drilling them with great skill.

But the culture is best displayed in its ceramic remains. The potters of the "Amri" people used a wonderfully fine and soft paste, buff or pinkish in colour, the surface often taking on a dull cream and occasionally a green tinge. A thin slip, of buff or light red colour, was applied, often as a band about the mouth or shoulders of the vessel: and over this the ornamentation in black or chocolate. The designs were almost exclusively geometric; panels filled with chequer work are peculiarly characteristic of the Amri wares, and other common motifs are solid diamonds placed corner to corner, chevrons and sigmas. Rounded forms such as loops and scales also occur. Up to date no "Amri" sherds bearing representations of animals or human beings have been recovered; and the resemblance of certain forms to stylised leaves and trees is probably fortuitous. The potters of this people evolved their distinctive style without drawing upon animate nature for their inspiration. There are however a number of sites interspersed among those yielding Amri ware at which the pottery belongs to other cultural types, and includes representations of ibexes, as well as leaves and floral motifs.<sup>31</sup> The ibex is to this day common on the Khirthar and its subsidiary ranges; and equally so in Jhalawan and Makran, where these other peasant cultures of the Bronze age existed. There are sites in the hill country of the Sind-Baluchistan border at which potsherds referable to Nal, the Kulli-Mahi group, or the Indus civilization are found along with Amri sherds, sometimes in distinct inhabited areas,<sup>32</sup> and elsewhere mingled together.<sup>33</sup> On most of these duplex sites plain pottery with incised patterns is also present. The significance of such "intrusions" will be discussed later.

Of the funerary customs of the Amri people all we know is from Majumdar's discoveries at Damb Buthi.<sup>34</sup> Burials appear to have been "fractional", the remains being interred in shallow stone-lined chambers, accompanied by pottery and articles of

adornment. The general character of this cemetery and its contents bears so marked a resemblance to that previously excavated by Hargreaves at Nal<sup>35</sup> that we can safely assume that the Amri and Nal peoples were culturally closely akin.

Nothing has yet been found to indicate what were the objects of worship of the Amri people. At a site of the Indus culture, Lakhiyo, in the plains just north of the Manchar Lake, and so on the north east boundary of the Amri region, figurines of the Mother Goddess<sup>36</sup> were recovered. Similar figurines are characteristic of the Kulli-Mehi culture,<sup>37</sup> the main area of which, in south west Jhalawan and east Makran, containing also a number of "Nal" sites, may be said to march with the western limits of the Amri people. We may perhaps assume, pending the production of direct evidence, that the latter worshipped as did their neighbours.

Had the Amri people a headquarters, and if so where was it? I do not envisage a metropolis such as Mohen-jo-daro, but rather a village or group of villages superior in size to the majority, and more favoured in their surroundings, to which we may suppose the people of settlements all over the countryside resorted from time to time, for their marketing and similar purposes. The Amri country is obviously not well adapted for centralized community life, consisting as it does of upland valleys divided from each other by rough mountain ranges, together with part of the Kachho adjoining the Indus plain. It is generally thought that the peopling of this and the neighbouring regions was by gradual movement from the west, due in all probability to increasing pressure of population on the land behind them, perhaps made more acute by climatic changes. It has also been assumed that the Amri culture did not extend into the alluvial plain of the Indus. No distinct trace of it has yet been found there,<sup>38</sup> whether in isolation or in the lower levels of such sites as Chanhudaro. It is in fact very natural that a pastoral people advancing from the west should have been repelled by the sight of the huge dusty plain of Sind; to them the 'Mitho Darya', with its annual vagaries, must have seemed destructive rather than bounteous. Thus they clung to the foothills and the Kachho, building their settlements out of reach of the Indus water, turning in among the friendly hills to find again the springs and sheltered valleys with which they were familiar. Thousands of years later the Baluchis, a pastoral race

on the move eastward, also tended to halt in the Kachho, where the grazing and water for flocks and herds was far better than the seeming luxuriance of the inundated plains. It was only with the transition from pasture to agriculture that the Baluchis established themselves all over Sind.

Viewed in this context, the "chain" of settlements of the Amri people along the north-to-south valleys about the Sind-Baluchistan border will not be held to indicate anything more than the virtually complete occupation of the country; whereafter, of course, the lines must have become important routes for internal communication, and later still of transit trade.

When the ancient remains in the Kohistan of Sind first attracted the attention of British officers, more than a century ago, it was found that local tradition attributed their construction to the "Wudwas"—a name variously explained to Bartle Frere as "Great" or the "Old" people, the last of whom were said to have been "rooted out by Mahomed bin Qassim when he conquered Sind". Frere was told that the capital of this ancient race was "Hubb Saronā", that their "city" was older than Bela, "which boasts a history of 3000 years", and that they worked the lead mines at "Kundraj".<sup>39</sup>

Now it was in the plain of Saruna, which lies immediately to the west of the valley of the Hab river, and between latitude 26° 10' and 26° 20', that Hughes Buller found, some fifty years after the date of Frere's report, the most elaborate of the Gabarbands which are so characteristic of the country about the middle course of the Hab. The southern portion of the Saruna valley, which is about seven miles wide, affords by far the largest compact expanse of cultivable land in South Jhalawan; perhaps fifty thousand acres, richly covered with grass, small trees and shrubs.<sup>40</sup> Granted the slightly heavier rainfall that we have assumed as prevailing during prehistoric times, the plain of Saruna could have been a flourishing agricultural centre. And the ancient inhabitants improved its natural capabilities by such magnificent works as the Ahmed Band, nearly half a mile in length, and the Pir Munaghara dam: the deposit of silt against the latter was found by Hughes Buller to be 30 feet deep. At various places in the valley and its vicinity Hughes Buller noticed the sites of "ancient towns", the buildings evidently corresponding in style with the "stone enclosures" so characteristic of the southern

Kohistan of Sind. Distinguished from these were some circular buildings which the same observer thought likely to have been the remains of *dakhmas*, or Towers of Silence. It may have been mainly this association which inclined Hughes Buller to ascribe the origin of the Gabarbands to the ancient (Zoroastrian) Persians. At the time when he wrote, more than half a century ago, nothing was known of a prehistoric civilization in this region (beyond the local traditions recorded by Frere's officers) and to Hughes Buller it seemed that the choice lay between the Persian Zoroastrians, the Indian Buddhists and the Arabs, as the only people capable of conceiving and executing such scientific works. It is only natural that he was content with a brief notice of less prominent remains—"On several of the mounds a quantity of ceramic ware was seen, but it has not necessarily any connection with the earlier inhabitants, for, in former times when the country was exposed to raids and forays a single elevated site appears to have been built over again and again, owing to the security which its position afforded."<sup>41</sup> These mounds would now naturally be the first object of an investigator "standing on the shoulders of" Stein, Hargreaves and Majumdar, whose researches into the prehistoric cultures of Baluchistan and the Sind hill country only began more than twenty years after Hughes Buller wrote his articles.<sup>42</sup> Until the pottery on these sites is examined and classified, we can only note that the brief description would fit dozens in these regions which have been found to belong to one or other of the Bronze Age peasant cultures: and the occurrence of the remains in the plain of Saruna tends to support the tradition recorded by Frere, that the headquarters of the prehistoric people of the hills was at "Hubb Sarona".

Assuming that this ancient race built the great irrigation and soil conservation works at Ahmed Band and Pir Munaghara, we may fairly picture the plain covered with cornfields interspersed with homesteads, and having a market to which the inhabitants of less favoured settlements in the surrounding country resorted for supplies of grain. There were minor centres of cultivation to the eastward; Hughes Buller mentions Gabarbands near Kotiro and elsewhere along the Hab; and also to the east of that river at the outlet of the broad valley of Bahlur, which lies under the Khirthar range and the modern boundary of Sind.



The term Kotiro is constantly applied by the existing inhabitants of the hill country to the remains of buildings of their ancient predecessors; and in this instance the word has received the significant addition 'Warkelok'<sup>43</sup>—Wad-ka-log, the Great or the Old people, the Wudwas of Frere's report.

The lead mines which the "Wudwas" are said to have worked are in the valley of Kanrach, some thirty miles to the westward of the Saruna Valley. The Gazetteer of Las Bela specifies the place where lead is found, and also makes mention of an ancient town at Kanrach Kot.<sup>44</sup> This locality acquires an additional interest, with reference to the prehistoric civilizations of the hill country and the Indus plains, in that copper has also been found there in considerable quantities. The Kanrach valley is not easy of access, being hemmed in by high rough hills on all sides; but there are two routes, difficult and circuitous but practicable for lightly laden camels, which lead to Saruna, crossing the Pab range by the Zai and Baror passes respectively. By these paths, in all probability, was transported much of the metal used by the inhabitants of the hill settlements, and it may well have passed on to the cities of the Indus plain.

Communications between the Saruna valley and the hill country of modern Sind were comparatively good. In considering the circumstances of the prehistoric civilization in this region, it is of course necessary to discard the notions connected with modern political frontiers. To the inhabitants of the plains, the Khirthar range may well appear a forbidding natural frontier. To the inhabitant of Jhalawan it is no more than the easternmost of a succession of mountain chains—and among the lowest and least difficult to cross. Especially is this so in the sector roughly opposite the Manchar Lake, where a number of passes occur close together, as already mentioned, at a height of less than 3000 feet above the sea. The plain of Saruna itself is at an altitude of nearly 1000 feet above sea level. There are two main routes from it into the "Sind" hill country.

That on the north crosses the Khude range by the low and easy Treporei Lak into the valley of the Hab, on the opposite side of which it climbs by the Musefari Lak over a low offshoot of the Khirthar. The way then leads up the valley of the Loi Nai to the Garre pass across the main Khirthar range, from which it descends towards the Manchar by the Angai Nai. This route is

much used at the present day for the transport of *pish* and for the seasonal migration into and out of Sind by the nomad Brahuis.

The second route connects with the southern portion of the Sind Kohistan and is considerably easier and more direct. It passes out of the Saruna valley along the river of that name, emerging at Ari Pir; crosses the Hab, and runs down its left bank past Divana to Durreji. Thence it strikes up a small tributary of the Hab to Beli Thap, crosses a low broad hill known as Gaz, and at Tating enters the upper valley of the Baran Nai. Like the northern route, this is much frequented by camel caravans bringing *pish* from Jhalawan into lower Sind; it is in fact known in Sind as the 'Pish Wat'.<sup>45</sup>

If there is one commodity, of the importance of which in the prehistoric economy of these regions we may feel certain, it is the *pish*.<sup>44</sup> There is no substance to compare with these dried leaves of the dwarf palm for making strong clean and long-lasting floor coverings, and such mats are a virtually essential component in the flat mud-plastered roofs of modern Sind houses. The inferiority for these purposes of the grasses and reeds of the plains is very marked. Assuredly the best houses in Mohen-jo-daro and the other "Indus" towns in Sind were full of *pish* matting—woven perhaps locally, from the leaves brought across the hills from Jhalawan.<sup>46</sup>

Thus the whole of the country in which Amri settlements have hitherto been identified is accessible by relatively easy routes for camel or other pack transport; in addition it can be traversed in most directions by a large number of minor tracks. Communications with the country west and south west of Saruna are relatively difficult.

On the whole, then, the picture that emerges is that of a quiet practical people, devoted to this harsh homeland and applying first rate skill to solve the problem how to wring a livelihood from it: accustomed to trading with their neighbours, particularly those of the plains, but unwilling to copy anything of their culture—in fact, self-sufficient morally, though not altogether so materially. They must have obtained part of their corn supply from the plains—probably from the Manchar region—and for this they would have bartered wool and goat hair and the *pish*, only obtainable in the higher hills.

Thus while the great skill and diligence of the prehistoric people of the hills in building dams and similar works, and the stability of their habitation on the villages, distinguishes their way of life from that of the existing nomadic inhabitants, their means of livelihood must have been essentially the same; for after all, no change or developments in the natural productions of the hill country or in the methods of transport through it would appear to have taken place during a period of five thousand years. The climate may have been somewhat more moist in prehistoric times; but the same contrast must have existed as now between the keen air, pure water and nutritious grasses of the hill country, and their inferior counterparts in the Indus plain.

What became of the Amri people? Our investigation of this problem must begin with an attempt to find the meaning of the peculiar interlocation of sites of this and of the Harappa culture within the hills, and again of the "duplex" sites in their three different forms: the distinct stratification at Amri and Lohri; the separate areas of occupation at Damb Buthi and Dhal; and the inextricable mingling as at Pai-jo-Kotiro, Taung and Naig. It is necessary first to take a glance at the Harappa civilization in the Indus plains.

## NOTES

1. E.g., by the present writer in 1941, vide *Journal of the Sind Historical Society*, Vol. VI, No. 2, p. 107.
2. I was first made aware of these in 1941 by Captain Reid Dick who recovered examples from the banks of a "nullah" south of Drigh road. Vide *J.S.H.S.*, Vol. VI, No. 2, p. 108. Cf. *The Stone Industries of the Holocene in India and Pakistan*, by Col. D. H. Gordon, *Ancient India*, 1950, p. 64.
3. Arrian: *Indike*, Chaps. XXIV, XXIX: *Anabasis*, VI, 23.
4. E.g., Arrian: *Anabasis*, VI, 22-26.
5. Alexander's route through Makran must be considered as determined by Sir Aurel Stein in *Geographical Journal*, CII Nov.-Dec. 1943, p. 193, et seq. For prehistoric antiquities in the Kolwa tract, see *Memoirs of the Geological Survey of India*, No. 43, *An Archaeological Tour in Gedrosia*, 1928.
6. Arrian: *Anabasis*, VI, 25-26.
7. It would appear that in Bartle Frere's time the hill-people attributed these works to the "Wudwas". Vide *infra* p. 63.
8. Annual Report of the Archaeological Survey of India, 1903-4 (Calcutta 1906), *Gabarlands in Baluchistan* by R. Hughes Buller. Cf. Sir P. Sykes, *History of Persia*, Vol. I, p. 178, footnote.

9. *Las Bela Gazetteer*, pp. 44, 176. *Makran Gazetteer*, p. 304.
10. It is to be noted that the Oreitai are said to have exposed their dead. Diodorus Siculus, CV.
11. *A.R.A.S.I.*, 1903-4, *Gabarbands in Baluchistan* by Hughes Buller.
12. *M.A.S.I.*, No. 35: *Excavations in Baluchistan*, 1925 (Calcutta 1929).
13. *M.A.S.I.*, No. 43: *An Archaeological Tour in Gedrosia*, 1928 by Sir Aurel Stein (Calcutta 1931). Cf. Piggott, *Prehistoric India*, pp. 69-70 (Pelican, 1950).
14. *J.S.H.S.*, Vol. VII, pp. 3, 61.
15. *M.A.S.I.*, No. 43: *An Archaeological Tour in Gedrosia*, 1928 by Sir Aurel Stein pp. 24, 25.
16. Sir Mortimer Wheeler, *The Indus Civilization*, p. 7.
17. *M.A.S.I.*, No. 48: *Explorations in Sind*, by N. G. Majumdar, Chaps. VII and VIII.
18. *M.A.S.I.*, No. 48: *Explorations in Sind*, by N.G. Majumdar, p. 134 and Plate XLVI.
19. Blanford: *Geology of Western Sind*, p. 114, footnote 2.
20. *J.S.H.S.*, Vol. VII, Part 3, pp. 60-61.
21. It may be that later investigators would assign to some other culture some of the black-on-red pottery types recovered by Majumdar on the Sind hill sites, and by him identified as "Indus".
22. Majumdar, p. 150.
23. *E.g.*, at Naig: *Ancient India*, Jan. 1949, *Further explorations in Sind*, 1938.
24. *Art and Letters* (Royal India, Pakistan and Ceylon Society, London), XXIV, 1950, p. 54.
25. Blanford: *Geology of Western Sind*, p. 114.
26. *J.S.H.S.*, Vol. VII, part 3, p. 63.
27. Majumdar, pp. 120-2. For Lalan ji Mari, see *J.S.H.S.*, Vol V, p. 93.
28. *J.S.H.S.*, Vol. VII, part 3, pp. 64-5.
29. Copper chisels were recovered at Arabjo Thanu and Othman Buthi. Majumdar, pp. 136-7, 140-141.
30. From Chauro I recovered a flint knife over five inches in length. (Museum of the Sind Hist. Soc.).
31. *E.g.*, at Karchat and Shah-jo-Kotiro. Majumdar, pp. 129-131, 137-9.
32. *E.g.*, at Damb Buthi. Majumdar, p. 115.
33. *E.g.*, at Naig and Taung. *J.S.H.S.*, Vol. V, part 2, Vol. VII, Part 3.
34. Majumdar, pp. 115-7.
35. *M.A.S.I.*, No. 35: *Excavations in Baluchistan*, 1925, by H. Hargreaves.
36. Majumdar, p. 68, and Plate XXXIV fig. 6.
37. *M.A.S.I.*, No. 43: *An Archaeological Tour in Gedrosia*, by Sir Aurel Stein.
38. Tharri Gujo is not to be counted as in the alluvial plains. It was in all probability on the sea coast in "Amri" times.
39. *Journal of the Bombay Branch of the Royal Asiatic Society*, Vol. V (1857), pp. 349-362.
40. *Jhalawan Gazetteer*, p. 227.
41. *A.R.A.S.I.*, 1903-4; *Gabarbands in Baluchistan*, by Hughes Buller, p. 300.
42. It is noteworthy that Hughes Buller was responsible for the first finds at Nal (Sohr Darab). Vide *A.R.A.S.I.*, 1904-5, *A new type of pottery from Baluchistan*.

43. Vide *Survey of India Map*, Sheet 368 (one inch to two miles).
44. *Gazetteer of Las Bela*, p. 175.
45. *Jhalawan Gazetteer*, p. 322. *Las Bela Gazetteer*, pp. 225-7. *J.S.H.S.*, Vol. V, pp. 102-3.
46. Majumdar, p. 153. *J.S.H.S.*, Vol. V, No. 2, p. 102. *Jhalawan Gazetteer*, pp. 13, 323, 335. *Las Bela Gazetteer*, pp. 128, 129, 133, 226.

## 6

# THE INDUS CIVILIZATION: SETTING AND THE CLIMATE

Before embarking on a study of the great prehistoric civilization of the Indus valley, it is necessary to review its contemporary geographical setting, for in regard to this some serious misconceptions exist.

We may start with a few statistics. Within an area of some 300,000 square miles, about one half of it consisting of the alluvial basin of the Indus and that of the small rivers between it and the Ganges basin,<sup>1</sup> a civilization remarkable for the uniformity of its remains flourished for approximately one thousand years till about half way through the second millennium B.C. The culture of this people was mainly urban in character, and their "Empire" was probably ruled from two cities 350 miles apart, each of which covered nearly a square mile of ground. Smaller towns and villages were scattered over the plains. In the first thirty-three years which elapsed after this prehistoric civilization was originally identified, nearly ninety of its sites were discovered;<sup>2</sup> that is roughly one for every three thousand square miles of the presumed area under occupation.

It must of course be assumed that many other inhabited places existed, some of which probably lie concealed under existing towns and villages; others may have been obliterated by floods or sand-drifts, or eroded by rivers; and yet others simply overlooked in the absence of thorough "field" surveys. Again, we may well suppose that in addition to the dwellers in towns and villages there was a considerable population of subject, perhaps nomadic, people who lived in brushwood huts or mat shelters. But before we take into consideration circumstances for the computation of which no materials remain, we should see what can be learned by comparison of some ascertained facts, of the Indus epoch and of modern times respectively.

It has been possible to estimate that both the "cities" of Harappa and Mohen-jodaro were 'upwards of three miles n

circuit';<sup>3</sup> and excavation of the last named has shown that it was densely populated, particularly in its latest phase, when houses were to a large extent subdivided into small tenements.<sup>4</sup> The average dimensions of the ground floor of a small house in the previous levels had been 27 x 30 feet, and Dr. MacKay was of opinion that dwellings and other buildings were very generally two or more stories in height.<sup>5</sup>

Allowing for a reasonable proportion of public buildings, what figure should we estimate for the population of Mohen-jo-daro, prior to the latest phase when the congestion was abnormal?

We have to hand statistics of modern times for a "city" in North West Sind which in dimensions and lay-out may be reckoned as approaching the conditions of Mohen-jo-daro as nearly as possible—Shikarpur.

Postans tells us that its walls made a circuit of nearly three miles; that the large covered bazar was half a mile long; and that it contained 22,000 inhabitants according to an "accurate census" taken by himself;—in 1840-41. He proceeds to describe the characteristics of the interior of a Sindhi city; we may note particularly that the dwellings are "upper roomed", the apartments small and ill-ventilated, the passages between the houses narrow, "scarcely admitting a laden camel".<sup>6</sup> Any one familiar with the older parts of Shikarpur or Larkana as they were a century after Postans' time will agree that they afford as remarkable an example of congested living conditions as could well be found.

Let us, however, assume that Postans' enumeration fell short of the reality—owing possibly to reluctance of respectable persons to speak of what touched on the haram<sup>7</sup>—and that the population of Shikarpur in 1841 was in fact nearer 30,000. Let us also suppose that more persons lived within the three mile circumference of Mohen-jo-daro than in that of Shikarpur, and allow the former 35,000.

We may thus base our broad estimate of the population of the prehistoric Indus State upon 70,000 souls in the two cities, Harappa and Mohen-jo-daro. What proportion did their inhabitants bear to the total population of the country? In 1941 the city of Hyderabad accounted for about one thirtieth of the population of Sind, excluding Karachi,<sup>8</sup> and the city of Lahore about one fiftieth of the Panjab totals. In view of the very highly

developed irrigation and agriculture in both the modern Provinces we should allow the Indus cities a higher proportion to the total. If we are entitled to reckon them at one twenty-fifth, the population of that empire in the plains would have been about one and three quarter millions or nearly ten persons to the square mile on the average.

Some such round figure may, I suggest, be adopted for the purposes of calculation, with reference to the means of livelihood available in the area.<sup>9</sup>

It is with regard to natural conditions in the Indus valley that recent writers entertain grave misconceptions, and, with one endorsing the statements of the other, have conferred an unfortunate appearance of authority on a number of old and some new errors. Alluvial Sind figures as the "Sind Desert", a sandy waste but for its modern irrigation;<sup>10</sup> reference to the "dreary country round Larkana" is followed by an impressive description of ka ar plains as if these were the dominant feature of that region.<sup>11</sup> Anyone who lived in Larkana *before* the advent of the Barrage canals will preserve as one of his memories the almost intolerable greenness of the rice fields extending as far as the eye could reach. That picture, however, belongs to the month of August.<sup>12</sup> As to the revolution produced by modern irrigation, the Barrage canals brought virtually no improvement to the great rice-growing tract of the Ghar area; for it was hardly susceptible of improvement. This 'Garden of Sind' is not a thing of yesterday; it was well established long before Licut. Hugh James wrote in praise of it in 1847.<sup>13</sup>

One can hardly recognize the majestic seasonal swell of the Indus, attaining between mid-June and mid-September a volume from twenty- to nearly forty-fold that of the cold weather, when described as an "annual increase in the flow of the river in spring."<sup>14</sup> Again, when "primitive conditions" are referred to it is misleading to represent Sukkur and Kotri as fixed points where the channel cannot vary its position; the Indus is well known to have flowed some fifteen miles to the east of Hyderabad, and thus nearly twenty miles from its existing course, just before 1758 A.D., and it is most improbable that it adopted the channel between Sukkur and Rohri until long after the Indus epoch.<sup>15</sup> What is remarkable, in view of what we know of the movements of the Indus during the last twenty centuries, is not that part of the site of



Mohen-jo-daro was flooded out on more than one occasion, and rebuilt on almost the same plan as before, as is duly mentioned: but that the city could have flourished almost continuously through so long a period as a thousand years. For it is the local withdrawal of the waters of the Indus, and not their temporary excess, that brings calamity in Sind; and with the exception of Sehwan\* it is doubtful if any of its living towns have achieved an unbroken period of existence as long as that of Mohen-jo-daro. All the other places mentioned by the Arab geographers of the tenth century A.D. are unidentifiable, or lie in ruins; changes in the course of the Indus have been the most important cause of the abandonment, as of the foundation, of these and most other towns in Sind before and since, up till the nineteenth century.<sup>16</sup>

Here, probably, is latent a stronger argument for the prevalence of relatively favourable climatic conditions during Indus times than most of those usually adduced. The people were perhaps able to raise sufficient food crops on the rains alone to carry them through a few years when the waters of the Indus failed them. To this extent one can agree with Professor Piggott's remark, "Under the present climatic conditions of Sind the Harappa state as we can infer it from the tangible remains could hardly have been achieved."<sup>17</sup>

The virtually universal use by the Indus people of burnt brick for all their building in the plains may also fairly be claimed as evidence that they lived under a wetter climate than their successors.<sup>18</sup> On the other hand it is difficult to discuss with patience the suggestion that the production of such quantities of burnt bricks "must imply far greater timber resources for firing the kilns than the present vegetation of tamarisk and scrub would afford."<sup>19</sup> Wood adequate for the firing of billions of burnt bricks is available in present climatic conditions in Sind, in the dense riverain jungles and forests, which extend from the Panjab boundary to the modern delta. Ten million cubic feet of wood fuel from these forests were used for "firing" locomotives on the Sind Railways in the year 1903-4, apart from seven millions to meet "local demands".<sup>20</sup> Production of building timber on the other hand amounted to only 220,000 cubic feet in the same year; and

\*Aror survives as a village.

we may well suppose that in the days of Mohen-jo-daro, as in modern times, a considerable amount of timber for building was floated down from the sub-Himalaya.<sup>21</sup>

Another argument for the moister climate theory is based on the representations of certain animals on the pictographic seals of the Indus people, coupled with the identification of their bones recovered in the excavation of one or other site. "From these we see", observes Professor Piggott, "that the climatic conditions were such as to favour a suitable habitat for the rhinoceros and the tiger as well as the water buffalo and the elephant, none of which survives as wild species in the region today (except the tiger sometimes found in Sind)."<sup>22</sup> Now among the factors governing the habitat of animals, not the least important is the attitude to them of Man in the same region. The last tiger was shot in Sind in 1886. They had been fairly common in Upper Sind when the British first began to live in those regions, less than fifty years earlier.<sup>23</sup> As to the rhinoceros, this animal was no rarity in Sind as late as 1333 A.D. The Moorish traveller Ibn Batuta encountered two in his journey through the country, the first in a marsh overgrown with reeds close to the Indus. His description of it leaves no doubt as to the identification,<sup>24</sup> and it is equally clear that at that period the climate of Sind was much the same as in modern times. While he was at Sehwan at the end of September or the beginning of October his companions kept draping wet cloths over their naked shoulders, to cool themselves by the rapid evaporation in the intense dry heat.<sup>25</sup>

Alberuni, writing some three centuries earlier, observed that the rhinoceros was very common in India, particularly along the Ganges. He noted also that the species was different from the African rhinoceros.<sup>26</sup>

The water buffalo—domesticated it is true—flourishes exceedingly in Sind at the present time in the wet jungles along the Indus, in the Delta and throughout the rice-growing tracts.<sup>27</sup>

Granted that the wild elephant could not pick up a living from the existing vegetation of Sind (except what is cultivated) are we entitled to assume that if the climate were somewhat more moist the flora would correspond with that of the regions where wild elephants do live? Is it not more reasonable to suppose that the appearance of this animal accurately delineated on Mohen-jo-daro seals indicates rather familiarity with

domesticated elephants? The beast on the best known seal appears to be caparisoned.<sup>28</sup>

Thus the evidence of the animals, when carefully examined, is worth very little; and the supposition that the climate of the Indus valley was more moist in prehistoric than in historic times, will be seen to rest mainly on inferences from the building materials used for the Indus cities and towns, and from the duration, almost unparalleled in Sind at least, of the occupation of Mohenjo-daro. We should perhaps be justified in postulating a somewhat similar climate for the plains as for the hill country during the same epoch.<sup>29</sup> At the same time, we shall emphatically reject the implication of Sir M. Wheeler's assertion that "the mere existence of the cities is indeed conditional upon a local fertility out of all relation to the present landscape."<sup>30</sup> We may simply oppose to this the existence of Larkana with a population of 12,000,<sup>31</sup> and Shikarpur with 22,000, prior to the British annexation, when the Province was in its "unimproved" state, but with the climate no more favourable than now.

We may proceed to consider what is likely to have been the agricultural economy of the Indus State in the light of our knowledge of the behaviour of the Indus, before taking account of presumptions that the climate was different.

The general appearance and conditions in prehistoric times of the lower Indus valley, as these are to be inferred from the observations of men who have made a life's study of the physics of large alluvial Indian rivers, have already been described in chapter 3.<sup>32</sup> It may be accepted that not only the vicinity of the Indus, but the wide paths followed by the seasonal overspill into the plains on either side of its channel, were covered with forest growth of varying size and density.<sup>33</sup> These tracts, probably the most fertile, were not the most eligible for cultivation for two reasons—the tendency of the flooding here to be excessive and beyond human control, and the virtual impossibility of eradicating the vigorous and hardy natural vegetation without adequate tools. It would be in the zones immediately adjoining the riparian jungles, and all along the regular spill channels, that we should suppose agriculture to have been carried on in Harappa times; and, of course, in the "kachhas" of the Indus itself.

It follows that the most important season for cultivation in prehistoric times must have been the *rabi*, and that the method

most extensively used must have been *sailabi*—lands which have been submerged by spill from the river or from a natural or (nowadays) artificial channel, being sown at the end of the inundation and reaped in March or April.<sup>34</sup> In the river “kachhas” the soil is not even ploughed, (I speak of modern practice), and here and elsewhere manure is not given, nor any further watering. Rabi cultivation is, however, often helped on by the rain which in modern conditions tends to fall early in January.

Thus the whole operation involves an absolute minimum of skill, labour, and aid of implements; and it is not surprising that the food-grains which have been identified in the remains of the Harappa cities are wheat and barley, both of them rabi crops.<sup>35</sup>

There is however evidence of *kharif* produce, the most interesting to us being cotton, the cultivation of which is deduced from relics of cotton cloth found at Mohen-jo-daro.<sup>36</sup> We may also fairly assume that sesame was grown in Sind as well as near Harappa, where alone remains of it have been identified. This crop is of course well known in modern Sind under the name *Til*. The prehistoric method of *kharif* cultivation can be confidently inferred from the practice as we have actually seen it on the old inundation canals and near the Indus. A suitable piece of land is surrounded with an earth embankment, leaving an opening through which water is admitted as soon as the first rise in the Indus occurs. The opening is then blocked, the land ploughed, and the seed sown. By this time the general inundation is in progress, the “bund” has to be kept secure, and water let in only when required. If all goes well the crop will be flourishing when the water finally subsides and a month later will be ready for the harvest. It will be appreciated how precarious such cultivation must be; the inundation may be excessive, overtopping or sweeping away the field “bund”, or it may desert it on account of a concentration of the spill water in some different path. The best prospects of raising a *kharif* crop would be in the vicinity of such regular flood channels, where the cultivators could exercise some slight measure of control of the water, excavating water courses from them, which could be blocked or opened for distribution to the fields. A linear representation apparently of a man operating a *shadoof* suggests that the Indus people may have

been acquainted with this method of lifting water to a height, but it is not likely to have been of importance for cultivation.

The only metal implements used in Indus agriculture, according to our present knowledge, were the celt-axe and, less certainly, the sickle. Dr. MacKay was inclined to identify some large roughly chipped objects of chert, with double sloped edges, as plough shares.<sup>38</sup> The all-important spade or digging hoe<sup>39</sup> must have been a wooden tool. With their only axes made of the soft copper, the people must have depended mainly on burning for jungle clearance; and without digging implements made of anything better than wood, they could not have excavated elaborate canals. Any feeling of regret that no trace of the Indus field system in the plains can have survived should be tempered by our certainty of the effect in practice of these limitations, from ordinary District experience in Sind.

Some light has been thrown on the economy of the Indus State by Sir Mortimer Wheeler's discovery at Mohen-jo-daro on the citadel mound of a large granary closely resembling that previously identified at Harappa. Obvious inferences are that the land-tax at least, took the form of a share of the produce, and that the wages of State functionaries were paid in this medium.<sup>40</sup> Such arrangements, inevitable in a money-less age, were also a feature of the Talpurs' administration of Sind, and actually persisted to some extent through the first decade of British rule.<sup>41</sup>

We may also fairly suppose that the State granary was important as maintaining a large reserve of food for distribution in seasons when the river failed or destroyed crops. The floor space of that at Mohen-jo-daro, after enlargement, was nearly 12,000 square feet: if we may assume a depth of ten feet, the entire capacity of the granary would have been sufficient for over 95,000 bushels of grain. Assuming as we have done the population of Mohen-jo-daro to have been 35,000 souls, this granary when full could have provided over two hundred pounds of grain per head.<sup>42</sup>

At Harappa the great granary is outside the Citadel area and at a distance of more than 200 yards from it. It may well be that at both the cities granaries other than those already known await discovery in the very large areas which remain unexcavated. Meanwhile we may take note of the fact that Dr. MacKay considered the "apparent lack of any preparation for dry seasons" an

argument in favour of a heavier rainfall in Indus times than now. He was actually referring to the absence of any traces of canals dating from that period: Sir M. Wheeler has however rightly pointed out that these would in any case have been obliterated by the characteristic aggradation of the Indus plain during the past three or four thousand years;<sup>43</sup> moreover as we have seen there is good ground for holding that the Indus people lacked the means of large scale excavation. May we then adopt the converse of Dr. MacKay's argument, and claim that the existence of these large granaries, which had not been identified at the time he wrote, tends to rebut the theory of more abundant rainfall in prehistoric times? Such a view must be offset in some degree by the probable importance of food-grains as a medium of local exchange and credit; yet we can hardly suppose that the granary at Harappa, which is not within the Citadel nor within a bow- or sling-shot of its walls, was the State Bank or Treasury of that city. The place for such institutions, under such a government as we conceive to have existed in the Indus valley, was obviously within the Citadel—as at Mohen-jo-daro. Such a granary may well have existed on the Harappa Citadel, where constant brick plundering has made identification of the former buildings impossible.<sup>44</sup> That by the old bed of the Ravi may have been a civic or communal granary, where the citizens could deposit their surplus grain, whether produce or earnings, for their own future consumption. The processes of weighing in, issue of receipts by Municipal Tally-clerks, and subsequent maintenance of the individual accounts, are in no way inconsistent with the other pictures that we have been able to form of life in the 'Indus' cities.<sup>45</sup>

The population of the districts remote from the cities must have made shift with home grown grain, or grain received in barter for other produce. A good deal of this corn was probably grown without the aid of Indus water. A necessary consequence of any appreciable increase in the amount and regularity of rainfall in Eastern Baluchistan and the Sind border would be a greater and steadier flow in the Nais of the Western Hills. The greatest of them, the Gaj, provides even now a little water for irrigation in the "Kachho" adjoining the outer ranges, and after one of its characteristic spates, which sweeps away the field-bunds, sailabi cultivation is often undertaken. In this area, as was to be expected, a number of prehistoric sites have been identified.

Again, the site of Lalan-ji-Mari, on the Khenji Nai within the outer range, suggests from its very size far more cultivation of the neighbouring levels than is now possible.<sup>46</sup>

It is often forgotten that at the present day in Sind considerable cultivation is undertaken on rain alone. In the Thar, a tract totally devoid of artificial irrigation, crops are raised almost every year, their extent and quality of course varying with the quantity and distribution of the rainfall, which is usually heavier and more regular there than in the Indus valley and western Hills. Yet in the "Kachho" between the two tracts last mentioned, and along the skirts of the southern Kohistan, permanent arrangements for "barani" cultivation exist in the shape of solid earthen bunds.<sup>47</sup> A newcomer to Sind whose stay happened to coincide with a succession of two or three years of less than average rainfall might well consider these numerous bunds as proof that the climate had changed for the worse since they were built. In reality, the variation of rainfall in Sind, as observed for rather more than a century, appears to follow a cycle not less than twenty-five years in length. In this long period there may be six or seven individual years in which it is worth the owner's while to cultivate these bunded fields, and if two or three of them fall in succession he may raise fine crops.

Thus only a moderate increase in the overall quantity of rain if accompanied by greater regularity and particularly timeliness within the season, would enable a considerable extension of cultivation—of "barani" *kharij* crops. No *rabi* crops can be raised from rain alone in the plains of Sind, though on the high ranges of the border country and in Baluchistan wheat is grown. In both cases the methods of cultivation are of the simplest and can hardly vary from the practice in Indus times.

The theory that the Indus valley formerly enjoyed a comparatively moist climate, evolved by *a posteriori* reasoning from the evidence here reviewed, has received some countenance from meteorologists. One hypothesis, that the North Atlantic rain-belt took a more southerly course, over North Africa as far as North-West India, seems to be contradicted as regards the areas of prehistoric civilization by archaeological evidence in Egypt and Mesopotamia.<sup>48</sup> More plausible, perhaps, is the idea that the area affected by the South-West monsoon from the Arabian Sea used to extend further to the north and west than it now does.

I have already shown that the configuration of the sandhills in the northern tract of the Thar desert in Sind seems to indicate that the monsoon was formerly stronger than in modern times.<sup>49</sup> With greater strength its outward verge on the left hand may have tended somewhat west of the present line,<sup>50</sup> and a probable, though not a certain, consequence would be more rainfall in the area covered. On the other hand I have failed to find in the historical references cited by Sir John Marshall from Raverty's "Mihran of Sind" any mention of greater or less rainfall. They deal with changes produced in particular tracts by the movements of river channels and by earthquakes.

Sir Mortimer Wheeler mentions the meteorological suppositions with the reserve which, in my opinion, they merit; he seems more disposed to ascribe such deterioration as has taken place in the climate to the improvident actions of man.<sup>51</sup> His instance, quoted from R. B. Whitehead, of the deforestation of the Siwaliks, could be amplified by a mass of tradition, almost universal among the people of the North-West border country, that there was formerly far more vegetation in these hills than now. A comparison of the description of certain areas by the earliest British travellers with their present state goes far to support this opinion. The devastation is probably due to a general increase, extensive and intensive, of grazing by goats with growth of population in these regions.

It has been suggested that the operations of the brickmakers of the "Indus" cities may have contributed towards excessive deforestation in the plains, and thereby to a reduction in the precipitation of moisture. This factor may be dismissed as trivial.<sup>52</sup> Should not the key to a climatic deterioration, as to other local calamities in Sind, be sought in a change in the course of the Indus? The alteration would have to have been more drastic than any of which we have actual experience, but there is nothing inherently improbable in this.

The very existence of the Indus settlements of Mohen-jo-daro, Lohum-jo-daro, Chanhudaro, and again those of Kotasur and Diji-ji-Takri indicates that in their time the main stream of the Indus flowed—not necessarily in a single channel—somewhere in its present valley, that is, between the Rohri hills and the Khirthar range. To enter this section of its course the river need not have run, as now, through the Bukkur gap, but may have passed



northward of the Sukkur hills. But if the Indus slipped off its axial "ridge" above this point, to the left hand, what would be the inevitable consequence? The river would get on the eastern side of the Rohri hills and would not be able to regain the main valley till a point lower down it than the latitude of Chanhudaro. Thus about one hundred and fifty miles, reckoning axially, of the Indus valley that we know would be deprived of its river.

Such a revolution would spell ruin for the country around and between the two places mentioned; but the prosperity of Mohen-jo-daro, at least, could have been practically destroyed by a much less drastic change of course. We believe that the Indus was flowing not much if at all further from Mohen-jo-daro in its great days than it is now, and the long duration of the city's life implies a similar tenure of its general course by the river. This would have produced the characteristic raising of the bed, very probably to the point where major avulsions occur.<sup>53</sup> If the consequent movement, beginning considerably upstream of Mohen-jo-daro, took the river only so far eastwards as to approximately the line of the Khairpur Mir Wah, the lateral distance of the swing opposite the city would be thirty miles. I do not mean to suggest that thereafter not a drop of water would pass down the "old" course; in the annual swell at least it would probably carry water for some distance. But a minor stream running at the bottom of a bed too large for it would be worthless in comparison with the fertilizing spill from the main river, on which the agriculture of Mohen-jo-daro must have mainly depended; and if the Indus had moved more than twenty miles to an appreciably lower bed, the overflow thereafter could not have extended to the plains around the city.

It has already been pointed out that as a result of this annual inundation, when the Indus was flowing in natural conditions, the land so overflowed supported woodland and jungles varying in density with the incidence of the waters; this natural vegetation in all probability covering a considerably greater area than the riverain forests of modern days. In primitive times human activity could do little to curtail these luxuriant jungles, fed by the fertilizing river silt. They were independent of rainfall, as now; but their very presence may have contributed to maintain the somewhat greater and more regular rainfall which on other evidence we believe prevailed in those times. If we adopt

the hypothesis that the Indus abandoned a large tract of northwest Sind for a course much further to the east, absence of inundations on anything like the former scale would soon have reduced the vegetation of that region to semi-desert scrub. If such conditions lasted (as may be fairly supposed) for several centuries, the rainfall over the area might well tend to diminish slightly, or to become more erratic. However, such a local influence on climate would be unimportant in comparison with the weakening of the south west monsoon, for which we have evidence in the configuration of the sandhills of the Thar, but with nothing to indicate the period during which this occurred.

Reverting to the aspect which the country may be supposed to have presented in Indus times, we should expect to find an important agricultural area about the Manchar lake, which has already been described as the repository of water passing down some of the largest flood channels from the Indus on its right bank, as well as of the drainage of a substantial area of the hill country. Under this double accession, which often coincides in July and August, the waters of the lake are now liable to expand over many square miles of the plain to the north and east. These receding by way of the Aral river, when the level of the Indus falls, a large tract becomes available for rabi cultivation. Here were several sites of the Indus culture—Lakhiyo, Lohri, and perhaps Bubak<sup>54</sup>—and hereabouts we may suppose was the main contact between the “Indus” people and their neighbours of the hills. The latter in all probability supplemented their own grain supply from the relative abundance of the environs of the Manchar.

A noteworthy feature of the prehistoric sites in the environs of the lake is their extremely low elevation. Majumdar found that the mound of Lal Chatto (Trihni) rose only eight feet above the level of the Manchar on 8th December, and Pir Mashak (Shah Hassan) about the same height. During the inundation the greater part of these sites would be under water, and Rohindo and Madi But totally so. Pir Lohri and Pir Lakhiyo, some four miles from the present cold-weather boundary of the lake, are even lower in relation to the surrounding plain and the former at least is liable to be totally submerged in the inundation season.<sup>55</sup>

Majumdar considers it likely that in the Chalcolithic age the Indus flowed further to the east than it now does in this latitude;

that the Manchar depended for its water almost entirely on the Nais from the hill country, and that it must therefore have been smaller than in modern times.<sup>56</sup> If this were so, then these sites which now seem so unsuitable for habitation would probably have been comfortably above the highest flood level. It is likely also that they were protected by earthen "bunds" which have long since been swept away by the constant visitation of river-fed floods, the inhabited area also being degraded to nearly the level of the surrounding land, which may now be submerged for much of the year.

An interesting possibility is that suggested by Majumdar, that the prehistoric Lal Chatto and Mashak, at least, were villages of huts raised above the water level on wooden piles, in the manner of the present Mohanas, the fishermen and fowlers of the lake.<sup>57</sup> This theory is consistent with the absence of any trace of the usual building materials, bricks or stones, in his excavations on these sites, the pottery and other household objects having been recovered from beds of pure silt. It may be added that even such dwellings could hardly be maintained on these sites in present conditions. At Lohri, on the other hand, the houses with stone foundations found on the site would never have been built unless the flood level of the lake were much lower than nowadays.

It is noteworthy that the "island" sites of Lal Chatto and Mashak yielded a type of pottery broadly equivalent with that recovered from Jhukar and Lohum-jo-daro, belonging in the opinion of the excavator to a late phase in the Indus civilization.<sup>58</sup> In the light of subsequent investigations at Chanhudaro in particular, it would appear rather to have been produced by the people who occupied sites of the Indus culture after its decay. Its style is summed up by Professor Piggott as combining "a variety of elements in which Kulli and probably Harappa motifs predominate, with an underlying Amri strain."<sup>59</sup> Other objects recovered from the "Jhukar" levels of Chanhudaro are utterly unlike anything produced by the prehistoric peoples of the Indus valley and Eastern Baluchistan, but can be matched further westward; the finds as a whole suggest occupation by a people traveling light, probably as conquerors.

When we assemble the evidence it seems to fall into a pattern somewhat as follows: Mohen-jo-daro in its last years was an overcrowded city; the increase in population was very probably due

to an influx of refugees, whether from the centre of Baluchistan<sup>60</sup> or from the smaller and less defensible 'Indus' towns of Sind. Some of these latter were occupied by invaders from Western Baluchistan or still further west. These new people seem to have appropriated such of the arts and crafts of Amri and the Indus valley as caught their fancy,<sup>61</sup> very probably by conscription of the local artists and craftsmen. We visualize a facile conquest by "barbarians" who did not contemn the achievements of those they subdued.

But what was the prime cause of the decline of the Mohen-jo-daro State on the lower Indus, which enabled this revolution? Is it to be sought simply in these western barbarians' superiority in vigour and weapons,<sup>62</sup> before which the town dwellers' numbers and arts were unavailing? While this may be an adequate explanation, I submit that a more convincing picture can be drawn if we postulate another reason for the ultimate weakness of the Indus people.

Suppose that the calamitous alteration of the river's course near Sukkur, as already suggested, has taken place. Instead of the full annual inundation of the plains between that point and Sehwan, the country receives merely an erratic and temporary flow down the abandoned bed. The people in the south of this area, which suffers the worst, throng into the capital which they believe (from the sanctity of its priest-king, perhaps) will still provide for them. Prodigious efforts are made to save the city by increasing cultivation dependent on the Nais and on rains, by summoning consignments of grain from all quarters—not to mention incessant prayers to the river-God to relent: but all in vain. A new value attaches to the springs and Nais of the hill country and the Kachho; lucky are those who can find room there, and be independent of the Indus and its vagaries. The news spreads across the hills: the pastures of Sind will be the prize of a race that will dare: and the opportunity is taken. The western barbarians move in by forced marches and erect their rude shelters on deserted sites; the land which seemed untenable to the Harappa agriculturists will afford ample livelihood to a pastoral race, accustomed to live hard. Meanwhile the myriads of Mohen-jo-daro are streaming away reluctantly to the north east, where their river is yet to be found flowing as of old. Only a feeble remnant remain when the hardy newcomers,

hungry for loot, gather for the assault; and the walls of Jericho soon fall.

There is much of conjecture in this reconstruction of a turning point in the pre-history of the lower Indus valley, but I hope it will be conceded that there is nothing in it inconsistent with the scanty archaeological evidence, or with our knowledge of the physics of the Indus. The subversion of the well integrated Indus civilization in Sind by people who themselves left so few traces acquires a certain inevitability if it was preceded by the great natural calamity.

Other facts fall into place. The village sites discovered well within the modern verge of the Manchar lake<sup>63</sup> seem to belong to the period of or immediately following the decline of the Indus State in Sind. Fishing must have been the principal occupation of the local people from the earliest times: but the "Amri" and Harappa sites are at a respectful distance from the ordinary modern water line. The obvious interpretation is that the lake had shrunk considerably at the time when the "late" people fished it; the most likely cause would be its deprivation of the Indus flood water, the natural consequence of a change of course upstream.<sup>64</sup>

Again, if we premise this physical catastrophe in the Indus valley we arrive at a satisfactory explanation of a remarkable feature in the archaeology of the Kachho and Kohistan to the west and south of the Manchar—the occurrence of settlements of the Indus people<sup>65</sup> in the outskirts of "Amri" villages,<sup>66</sup> interspersed between them<sup>67</sup> and inextricably mingled with them.<sup>68</sup>

At Amri itself, at Lohri, and at Ghazi Shah, distinct stratification proves that the Indus people occupied these sites after—probably long after—they had been abandoned by the Amri people. It is on this latter evidence that archaeologists base the view that the Amri culture flourished before the great civilization of the plains. Granting this, how should we interpret the instances of contact between the two, in other places? Did the future builders of Mohen-jo-daro enter the Indus valley by way of southern Baluchistan, and were these their halting places during a transition stage of their development? Or if the Indus people originated elsewhere, did they subsequently colonize the foothills from headquarters in the plains? In either case, the two people seem to have co-existed for a period, but we can only guess at the relations between them. On the whole the evidence, or lack

of evidence to the contrary,<sup>69</sup> suggests that there was mutual tolerance, but not such intimacy as to influence each other's culture; no doubt there was barter between them, and in view of the superior power of the Indus State the Amri folk may well have been tributary.<sup>70</sup>

It appears that the Indus people built the fortress of Ali Murad to guard the outlet from the Phusi pass, an important route between central Baluchistan and Sind; but their settlements in the hills to the southward seem to be mere open villages, not the strongholds of overlords. What induced them to share this upland country with the Amri people—or indeed to inhabit it at all? The Indus settlements of Karchat and Shah-jo-Kotiro fill as it were gaps in the chain of Amri settlements along the north to south "highway" through the hill country. From this we may infer that they co-existed. This route must always have been a convenient line of communication between Upper and Lower Sind, west of the Indus. Should we assume that in Indus times the communication extended to a sea port, or linked up with an important overland trade route to the west? Desvi, a small Indus site south of those named, would be at about the junction of the way to Tharro Gujo and that leading past Amilano<sup>71</sup> towards the Paboni Naka, the plains of Las Bela, and beyond.

The places named may thus have been called into existence by transit trade. But there is an alternative explanation which would account not only for these, but all the small Indus settlements in the border hill country of Sind, with the varying nature of their association with the Amri settlements there. It is that the former date from the decline of the Indus valley State; that a portion of the people deprived of their livelihood in the plains entered the hills as refugees and sought the hospitality of their Amri neighbours. At Damb Buthi and Dhal they built their houses alongside an Amri settlement. At Taung and Naig they seem to have been accepted within the existing inhabited area.<sup>72</sup> At Karchat and Shah-jo-Kotiro they established their own villages in intervals between those of the Amri people. At all these places there is perennial water and a little cultivation, even today; a bare living, at least, could have been picked up there by a handful of immigrants who were prepared to work and to accept their new position vis a vis the established inhabitants.

The same movement into the hills might, of course, have been produced by an invasion of Upper Sind from the north, without the supposed calamity of the river's desertion; or the Indus sites mingled with those of the Amri people may be merely examples of colonization on a restricted scale, undertaken perhaps at a much earlier period. Evidence may yet be found to indicate where it was that the people who seem to have sprung up in the Indus plains fully armed with civilization had in fact developed their technique. But I do not believe that these places in the skirts of the hills will then appear as the last stages on their route to Sind.<sup>72</sup>

In the conjectural drama of the last days of Mohen-jo-daro which I have ventured to evoke, the penultimate scene was of the bulk of the inhabitants migrating to the north east to regain the river which had deserted their city. Whatever may be thought of such an idea, we have at least to consider what became of the numerous inhabitants of Mohen-jo-daro—whether the ruin of their State was gradual or sudden, and caused by a natural calamity or invasion by a human enemy. The victims of the "final massacre" so far revealed by excavation<sup>73</sup> are just as likely to have been the miserable remnant who clung to their homes after a general migration from the city, as of a huge population that defied an invading army till the last. While direct evidence of emigration from Mohen-jo-daro, according to the hypothesis suggested, is lacking, abundant traces of occupation by people who used flint or chert instruments have been found in just the quarter in which I conceive the main stream of the Indus to have run if it abandoned North West Sind. The fact that most of these sites have all the appearance of temporary encampments on a very large scale could perhaps be invoked in support of the theory, though the vast quantity of pottery fragments may also indicate intermittent resort by the country people for refuge during any period when the Raini Nullah was wont to inundate this tract. At least the frequent occurrence of flint flakes among the potsherds spread over acres of sandhill and other slight elevations along these ancient waterways proves that prehistoric people were among those who camped there. Most of these sites are fifty miles distant from the nearest flint-bearing rock formations.<sup>74</sup>

A place in the same area which was evidently a more stable settlement is Dribh Dethri.<sup>75</sup> It has the appearance of an isolated

sandhill rising nearly a hundred feet above the plain, the surface of which, extending perhaps to half a square mile, is covered with pottery fragments. On the western side these have been partially overwhelmed with recent deposits of sand. It may be suspected that Dribh Dethri is a sandhill only in its superficial strata, and that beneath them a large town is buried. In the plain immediately to the south east a burnt-brick-lined well was discovered some four feet below the existing level of the ground. The well is about five feet in diameter, but each course of the lining consists only of nine bricks, not all of the same size, laid not radially but along the circumference, presenting a curved profile—an entirely different method of construction from that used for the numerous wells in Mohen-jo-daro.

Without more evidence it is not possible to date Dribh Dethri, and one must hope that eventually some excavation will be undertaken there. Some fifty miles lower down the Raini valley to the south west is a site referable to the Indus civilization. It is a low mound, about an acre in extent, with characteristic surface relics, including flint flakes and perforated pottery; digging has exposed the burnt brick wall of a building. This place, known as Ther, is about three miles east of Mamro, beside a nullah leading down to the Raini.<sup>76</sup> Closer to Mamro, are two large areas of elevated ground covered with potsherds. Hereabouts the ancient waterways, branches of the Hakra, which have wandered widespread through the waste, begin to converge upon the Nara in its narrower valley.

There is another site in Upper Sind east of the Indus, which must have been a place of some importance, and in all probability belonged to the Harappa civilization. It lies about two and a half miles south east of Rohri, and was discovered during the excavation of the Nara Supply Channel a century ago, ten or twelve feet below the surface of the ground. The burnt brick foundations of numerous houses were exposed in a longitudinal distance of over five hundred yards; one large well, over four feet in breadth, was excavated down to a further depth of twelve feet. A stone-lined wall was found, and among the movable objects were earthenware vessels, a large number of children's toys of the same materials, and stone weights.<sup>77</sup>

About two hundred and fifty miles down the Nara valley to the south, where the channel is again known as the Hakra, we



come upon a Harappa site called Garho Bhiro, near Nohto in Mithi Taluka. I have previously described<sup>78</sup> the sandhills along the western edge of the Thar in Lower Sind as rising abruptly from the level plain, to which they present very much the appearance of cliffs along a coast line. Close to Nohto village are two mounds, one on a sand "bhit" projecting into the plain, in which the other stands about a furlong "off shore", like an island in a sea of jungle.

The mound connected with the sand dunes shows clear traces of fortification maintained in comparatively modern times, but among the potsherds covering it are types characteristic of the prehistoric cultures of Western Sind. A "bi-chrome" piece observed here may have been Jhukar ware. The "island" site, G rho Bhiro, rises to about twenty five feet above the plain and extends over five or six acres. As its name indicates, it is red with terra cotta dust and pottery fragments.

The surface relics appear to be Harappan for the most part. Particularly notable is the great profusion and variety of perforated pottery; there are also terra-cotta bangles, flint flakes, chippings of semi-precious stones, and the remains of copper pins as well as small lumps of the smelted but unworked metal. The designs on the sherds of painted pottery include a characteristic palm-leaf pattern; and there is also a considerable quantity of incised ware. This latter is also prominent on the adjoining "peninsula" site; much of it is dark grey in colour, and seems to correspond with the Jhangar pottery.<sup>79</sup>

The evidence so far observed suggests that at Nohto we have a Indus settlement which like Chanhudaro was subsequently occupied by the Jhukar and Jhangar people. Its topographical situation is interesting. If we were able to accept Major Raverty's theory, we should suppose the place to have been on the eastern shore of an arm of the sea which extended considerably to the northward in Indus times. Even now it is only 25 feet above sea level, though distant not less than fifty miles from the Rann of Cutch, and twice as far from the open sea of today. As to the prehistoric coast line, and Nohto's position in relation to it, it would be rash to theorise at least until we can be certain that no other Chalcolithic sites exist in the plains lower down the Hakra. It is worth mention that at Naokot, eight miles below Nohto, there are ruins probably referable to Buddhist times on the right

bank of this channel, *i.e.*, in the alluvial plain.<sup>80</sup> A few miles lower still we come to the junction of the Dhoru Puran with the Hakra.

If the Nohto settlement belongs to a period when the Hakra channel was regularly discharging the main, or at least a considerable volume of the waters of the Indus, the place may have had some importance as a river port for the Mohen-jo-daro State. In view of the probability that the main internal communications were by water it is curious that so few representations of boats have been found among the remains of this civilization. Those which we have depict craft which cannot have been sea-going; they would have been suitable only for plying on lakes and rivers. Pending further discoveries it seems reasonable to assume that the Indus people were not a sea-faring race, and that their trade by sea, if any, was in the hands of others.<sup>80A</sup> Such water ways as the Nara-Hakra, flowing in a comparatively stable channel, called for a minimum of skill in navigation. We should have little doubt that the flint flakes now found at Garho Bhiri, or the materials from which they were fashioned, were floated down from the vicinity of Rohri some 250 miles to the northward, rather than transported by land from the nearest source of supply less than half that distance to the west. There is evidence for the use of the Nara-Hakra for transport of building stone from the same quarter in the eighteenth century A.D., though this may have been possible only in a year of exceptional inundation.<sup>81</sup>

Another place which we may feel assured was on or very close to the sea in Indus times is the fortified site of Tharro Gujo, ten miles west of Tatta. It is however primarily an "Amri" settlement, and the Indus relics, if such they are, are relatively insignificant.<sup>82</sup>

Our survey of the southern division of the Indus "Empire" suggests a number of inferences, leaving an immense void which for the present can only be filled by conjecture. So long as such speculations are consistent with collateral evidence, they are perhaps worth setting down; though in hazarding certain ideas I am well aware that alternative theories may be generally preferred, and that my views may be overturned by fresh discoveries.

It appears, then, that the monsoon winds from the south west were stronger in prehistoric times than now; that they may have extended over the west and north west of Sind; and that rainfall

in the lower Indus valley was probably somewhat heavier and more regular, though the difference was not as great as has sometimes been represented. Storage of grain on a grand scale reflects in some degree the characteristic undependability of the Indus inundations. The main stream of the river during the hey day of the "Empire" must have flowed through the plains of north west Sind, more or less as in modern times. The people knew better than to build their capital in its immediate vicinity, where it would have been in constant danger of destruction by erosion; on the other hand they were not deterred by periodical flooding of the city from heavy overspill. The attraction of the sites on which Mohen-jo-daro and other towns were built, and repeatedly rebuilt after such visitations, must have been their proximity to bye-rivers or regular flood channels which in most years provided sufficient water but not a dangerous excess.

This is clearly demonstrated in the chain of Indus settlements along the Ghaggar and the Upper Hakra; but since many of these lie above the uppermost spot where water from the snow-fed Sutlej could have found its way via a spill-channel into the Ghaggar,<sup>83</sup> we may suppose that the Jumna may still have thrown off some of its surplus water into the valley of the Chitang: alternatively the rainfall in the catchment area of these minor rivers must have been greater than it is now. The Hakra doubtless linked up this large group of sites with those about the Raini in north eastern Sind; but between them is the area, well described by Raverty, in which the chronic instability of the "Mihran" has left the clearest traces on the face of the country.

This is the tract in which a comparatively slight swing of the Indus to the left hand would be likely to produce that drastic change of course which, in my view, may well have been the prime cause of the ruin of the Indus State in north west Sind: the diversion of the main volume of Indus water down the Nara and Lower Hakra. Perhaps settlements such as Nohto on the last named channel came into being in consequence of such a change; though it is likely that even when the Indus ran in its western bed, spill water flowed down the Nara with such regularity that this extreme south eastern corner of the plain of Sind was a flourishing tract.

We should by no means exclude the possibility that the Indus discharged its water down two widely separated branches

for part of its course through Sind, though it is unlikely that both would be flowing throughout the year.

In conclusion: we must depend upon further excavation of the sites of the Indus civilization to add to our knowledge of this long vanished people, in their domestic life, their institutions and their arts and industries. But for a broad view, for an imaginative reconstruction of the economic existence of people and State in Sind, everything that we know of the working of the Indus in natural conditions, as a great alluvial river, becomes relevant. The lessons taught by scientific observation and practical experience, if applied with due discrimination, should at least reduce the amount of error in our tentative pictures of the age and scene.

## NOTES

1. If lines are drawn on a map to connect the 'outermost' sites of the culture so far identified in the Panjab, Baluchistan, Sind, Kathiawar, Gujerat and Uttar Pradesh, the area enclosed in the resulting polygon will be more of the order of half a million square miles. But Sutkagen-Dor was in all probability a trading post beyond the administrative boundary of the 'Indus' State, and it seems most unlikely that the Thar desert of Western Rajputana and Eastern Sind—roughly 100,000 square miles in extent—was occupied by the Indus people.

2. The number is increasing year by year. Sir Mortimer Wheeler's 1953 list (*The Indus Civilization*, pp. 95-6) enumerated 62 sites, including some twenty-five which had then recently been identified in North Bikanit, of which he names only two. The list is said to be based mainly on ceramic evidence, and to exclude doubtful sites.

Among the Sind sites omitted are, the very characteristic Lakhio (Majumdar, pp. 67-8): Amilano (*Ibid.*, p. 143; cf. Piggott, pp. 172-3, 212)—unless the site called 'Allahdino', third on Wheeler's list, which in his map at p. 3 appears to occupy Amilano's actual position, is a perversion of that name? (It may be noted in passing that Diji-ji-Takri—Takri=hillock in Sindhi—figures as Diji-ji-Takvi); Pai-jo-Kotiro, Rajodero, and Naig (*Ancient India* No. 5, January 1949); to which may be added Taung, Ther, Nohto and other sites described in *J.S.H.S.*, Vol. V, No. 2 (1941), Vol. VII, pp. 59-69 (1944) and Vol. VIII, No. 1 (1946).

Since the appearance in 1953 of *The Indus Civilization* a number of sites of this culture have been discovered in Kathiawar. That at Rangpur had been identified as 'Indus' by M.S. Vats as long ago as 1934 (*M.A.S.I.*, 1934-5, pp. 34-8) and was duly included in McCown's list of Harappan sites in *Ancient India*, No. 3, pp. 129 ff. (Appendix B to Wheeler's report on Harappa, 1946). In view, presumably, of H.G. Dakshit's report on his excavations at Rangpur in 1947 (*Bulletin of the Deccan College Research Institute*, Vol. XI, pp. 2-55) this site is omitted from Wheeler's 1953 list, though it was mentioned by Piggott in 1950 (*Prehistoric India*, p. 137). Its 'Indus' character was conclusively rehabilitated by S. R. Rao in 1953-4 (*Indian Archaeology*, 1953-4, p. 7).

Other sites of the Indus culture have been found near the mouths of the Tapti and Narbada in Gujerat and one, Ukhliina, in Uttar Pradesh, nine miles west of Meerut. In Sind and Baluchistan we have to add Judcir-jo-daro, about 18 miles north by west from Jacobabad; a small site immediately west of Kot Diji fort (distinct from Diji-ji-Takri); and those discovered by Miss B. de Cardi in 1957, viz., in the foothills below the Harbab Pass, near Kotra in Kachhi close to the mouth of the Mula Pass, the site of Jahan, halfway up the Mula Pass, and two near Ornach in Jhalawan.

(*Indian Archaeology*, 1957-8, pp. 13-14; Sir M. Wheeler, *Early India and Pakistan*, pp. 94-8; *Illustrated London News*, May 24th, 1958; *Pakistan News*, October 26th, 1957, March 11th, 1958).

3. Sir Mortimer Wheeler, *The Indus Civilization* (1953), p. 15.
4. Dr. E. Mackay, *Early Indus Civilizations* (2nd edition, 1948), Plate XXXIV.
5. Mackay, *Early Indus Civilizations*, pp. 25-26. It may be doubtful whether this is a valid inference from the thickness of the walls, the object of which may have been to provide coolness in the hot weather.
6. *Personal Observations on Sindh* by Capt. T. Postans, pp. 32-34. Richard Burton writing in 1851 estimated Shikarpur's population as "about 24,000 inhabitants" (*Sind and the races that inhabit the valley of the Indus*, p. 10).
7. This factor might have had some local influence; but the proportion of females to males in the population of Sind was higher according to the Census held in 1851 than in that of 1931. See *Census of India*, 1941, Vol. XII, Sind, p. 27, also Table II, p. 7.
8. Sind with Khairpur State. I have arbitrarily omitted Karachi City from consideration altogether, as being essentially Extra-Provincial in character. *Census of India*, 1941, Vols. V and XII. I have not used the 1951 census figures for this comparison as they are distorted by the unprecedented immigration from India in and after 1947.
9. The population of the Province of Sind before its annexation by the British was roughly estimated at one million, equivalent to about twenty to the square mile. (*Personal Observations on Sindh*, by Capt. T. Postans, p. 69).
10. Stuart Piggott, *Prehistoric India*, 1950; pp. 66, 67, 133; Wheeler, op. cit., p. 5. Professor Piggott's antithesis (p. 133) "Today the Punjab is one of the greatest corn-growing areas of Asia, but Sind is a desert reclaimed only by the elaborate irrigation works...." etc., is most misleading. The Panjab has become a great corn-growing area because of, and only because of, "elaborate irrigation works"—as in Sind. The "Sind Desert" misrepresentation, which can only be attributed to defective observation, or to some strange conception of a 'desert', seems destined for immortality despite every effort to correct it. See *Early Canal Irrigation in Sind* (1937), *J.S.H.S.*, Vol. III, Part I, p. 14.
11. Piggott, op. cit., p. 67; Wheeler, op. cit., p. 5, Sir John Marshall shows (*Mohenjodaro and the Indus Civilization* Vol. I, p. 1) that Mohenjodaro is situated in a "small patch of barren land" among the "richest grain lands of Sind".
12. The present author was Assistant Collector of Larkana from 1928 to 1930.
13. *S.R.B.G.*, Vol. XVII, (New Series) 1855, Part II, *Report on the Purgina of Chandookah in Upper Sind*, pp. 713-4. Cf. Maason, *Narrative of Various Journeys etc.*, I, p. 461.
14. Piggott, op. cit., p. 70. The observed minimum flow of the Indus in Sind is under

20,000 cubic feet per second. Sir Claude Inglis gives 730,000 cuisees as the maximum recorded. *Gazetteer of Sind*, p. 12; *The Behaviour and Control of Rivers and Canals* by Sir Claude Inglis, p. 183.

15. Piggott, loc. cit., Cf. Haig, *I.D.C.*, map opposite p. 30, and pp. 118-9. For the course of the Indus in relation to Sukkur, etc., vide ante, chap. 3, pp. 33-4; post, chap. 7, p. 108.

16. E.g., the town of Nasarpur, the principal mart in middle Sind in the first half of the eighteenth century, never recovered from its abandonment by the Indus in 1758.

17. Piggott, op. cit., p. 134.

18. But note Sir John Marshall's caution even in regard to this (op. cit., Vol. I, p. 2). We find the same inferences drawn by the *Bombay Times* in respect of the (probably) Harappan site accidentally discovered by Captain Kirby in 1855 or thereabouts near Rohri, *Journal of the Bombay Branch of the Royal Asiatic Society*, Vol. V (1857), p. 473.

19. Piggott, loc. cit. Sir M. Wheeler, while apparently endorsing this idea, adds that "sites on or near the great rivers could be supplied in part by timber floated down, then as today, from the Himalayan forests." (*The Indus Civilization*, p. 5). But in any case, this timber from upcountry is far too valuable for use in the Sind brick kilns, which are fired by the local babul, kandi and tamarisk, and would naturally have been so in Indus Times.

20. *Gazetteer of Sind*, 1907, p. 47. This was only what the Sind Government forests produced, leaving out of account all the woodland and vast areas of jungle not included in them.

21. Professor Piggott observes, (op. cit., p. 135), "Sissoo still grows in Sind". Though this tree was mentioned by Assistant Surgeon J. E. Stocks in 1848, as "the finest wood in Sind: grows very large in the I arkana and Sehwan districts" (*S.R.B.G.*, No. XVII (New Series) Part II, p. 596) it is generally regarded as not indigenous. (*Gazetteer of Sind*, 1907, p. 45).

22. Piggott, op. cit., p. 134. Cf. Wheeler, "As a whole the fauna is a varied one and implies in part the proximity of jungle or marsh such as no longer varies this arid region." (*The Indus Civilization*, p. 63). There is ample marsh and jungle in present-day Sind: near Mohen-jo-daro as elsewhere.

23. *Gazetteer of Sind*, p. 48. *Dry Leaves from Young Egypt* by 'Ex-Political' (E.B. Eastwick) (Ed. 1849), p. 165.

24. *Voyages d'Ibn Batoutah*, trs. C. Defremery et B.R. Sanguinetti, (Paris 1855), Vol. III, p. 100. He uses the ordinary Arabic word for rhinoceros, viz., كركدن

25. *Ibid.*, p. 104. Haig in his article "Ibnu Batuta in Sindh" remarks justly that this description "reads like the conditions of the Chaliho, forty days, beginning about 10th May." But short 'heat waves' are liable to occur in Sind at the season I mention. Sehwan is notorious and the traveller had only lately arrived from comparatively temperate regions.

26. M. Reinaud, *Fragments Arabes et Persans inédits relatifs à l'Inde* (Paris, 1845), pp. 86, 109. Alberuni calls the Indian rhinoceros كركدن, borrowing the name from the Sanskrit कर्कट and distinguishing the animal from the كركدن.

27. *Gazetteer of Sind*, p. 254.

28. Mackay, *Early Indus Civilizations*, Plate XVII, No. 7; also pp. 63, 107. Cf. Piggott, p. 157, Sir J. Marshall, (op. cit., Vol. I, p. 2) is again cautious in regard to the value of this evidence.

29. *Supra*, pp. 55-6 (*The Earlier Prehistoric Civilizations in Sind*). Cf. Sir J. Marshall, op. cit., Vol. I, pp. 2-3.
30. Wheeler, *The Indus Civilization*, p. 6. In this tract, the richness of the July to September landscape can hardly be imagined from a view of the same landscape between October and June.
31. James, Report on the Purguna of Chandookah etc., S.R.B.G., XVII, New Series, Part II, p. 720.
32. *Vide supra*, *The Plains of Sind*, pp. 27-8.
33. *Indian Engineering*, by W. L. Strange, p. 149.
34. For cultivation methods in modern Sind, see *Gazetteer*, 1907, pp. 236-7. For those in vogue at the time of the British "conquest" see *Blue Book Report on the Administration of Sindh*, 1857, pp. 79-83.
35. Wheeler, *The Indus Civilization*, p. 62.
36. Mackay, *Early Indus Civilizations*, p. 82; Piggott, *Prehistoric India*, p. 155.
37. Wheeler, *The Indus Civilization*, p. 79.
38. Mackay, *Early Indus Civilizations*, p. 132. I must say that I find it difficult to believe in such a use. Cf. Marshall, op. cit., Vol. I, p. 27. D.D. Kosambi has most justly pointed out that the Harappa rural economy was probably based on dam, not canal, irrigation and on harrow, not plough, cultivation. (*An introduction to the study of Indian History*, Bombay, 1956: *vide* 'Antiquity', Vol. XXXII, No. 125, March 1958).
39. The blade of a Sindhi "spade" (ڪوڙو) is set at an angle between 60° and 70° to its handle.
40. Wheeler, op. cit., pp. 21-24, 31-33.
41. *Parliamentary Papers relating to Sind*, 1854, pp. 68, 70, 71, 72-3, 102.
42. The calculation, a rough one, is as follows: 110,000 cubic feet = space for 95,708 bushels; for 35,000 people = 2.73 bushels per head = 218.4 pounds per head.
43. Mackay, *Early Indus Civilizations*, p. 133. Wheeler, *The Indus Civilization*, p. 62. Also *Vide supra*, chapter 1, p. 1.
44. Wheeler, op. cit., p. 20.
45. The pounding-pits at Harappa are about half way between the Granary and the Citadel, so they could have served for a second granary in the latter (N. end).
46. *Gazetteer of Sind*, pp. 6, 231. For Lalan ji Mari, see p. 59.
47. Sir M. Wheeler cites the traditional American Indian system as an example of flood-water farming. (*The Indus Civilization*, p. 7). It can be conveniently studied in Sind: here the banded fields are often open on the side facing up the slope, to receive the surface drainage.
48. Sir John Marshall, *Mohenjodaro and the Indus Civilization*, Vol. I, pp. 3-5, and footnote.
49. *Supra*, chap. 2, pp. 8-9.
50. *Supra*, chap. 1, p. 4.
51. Wheeler, *The Indus Civilization*, pp. 6-8.
52. Wheeler, *The Indus Civilization*, pp. 7-8. *Vide Supra*, p. 73 of this chapter. Sir Mortimer Wheeler has elaborated the argument to which allusion is here made, in his

*Early India and Pakistan* (1959), pp. 112-3. This would seem to make no allowance for the well-ascertained regenerative influence of the Indus, which in a wonderfully short space of time repairs the destruction it wreaks itself—far more drastic than any operations of Man—on the riverain forests and jungles. (Vide *Supra*, chap. 3, p. 17). The case is completely different from man's (and goat's) devastation of verdure in the hills N.W. of the Indus valley, which natural regeneration under a scanty rainfall has been insufficient to repair.

So long as the Indus maintained its general course within easy reach of Mohenjodaro, wood sufficient for all fuel requirements of the city must always have been easily available without recourse to distant sources.

53. It is axiomatic of alluvial rivers like the Indus that the longer they continue in a particular course, the greater the danger of a major avulsion. The confinement of the Indus between continuous bund-lines greatly accelerates the raising of the country enclosed, and our chief authority on the Indus, Sir Claude Inglis, states that there is the threat, indeed the certainty, that an avulsion will occur in Sind at no far distant date, unless adequate measures are taken to prevent it. (*The Behaviour and Control of Rivers and Canals*, p. 204). For such a change of course by the Indus, and its effects, Vide *infra*, chap. 7, p. 104, where Aristobulus' description, *apud* Strabo, is quoted.

54. A town of some importance, which from its elevation above the surrounding plain seems likely to overlie a prehistoric site.

55. Majumdar, pp. 60-68, Plate VI (a), (b), (c), Plate XLV.

56. *Ibid*, p. 64.

57. *Ibid*, p. 65. *The Khulasat-ul-Tarikh*, written at the end of the 17th century A.D. says of the Manchar Lake, "Many fishermen, having made a platform of earth on it, live there and catch fish every day" etc. Cf. *Araish-i-Mahfil*, trs. H. Court, p. 118. (Calcutta, 1882).

58. Majumdar, pp. 62-63.

59. Piggott, *op. cit.*, p. 223.

60. Piggott, *op. cit.*, pp. 221, 223.

61. *E.g.*, motifs in the decoration of their pottery and faience. Piggott, *op. cit.*, pp. 223, 226.

62. The shaft-hole axe from the Jhukar levels of Chanhudaro, and the axe-adze from a late stratum of Mohenjodaro, are far superior to the characteristic axes and spades of the Indus people. Piggott, *op. cit.*, pp. 224-5, 228.

63. *Supra*, p. 82. The "Late" pottery recovered at Mashak and Lal Chatto has obvious "Anuri" affinities, and it is reasonable to assume that the Lake dwellers in prehistoric times were connected with the people who occupied the surrounding country.

64. Probably a long distance up stream, because the main flood channels feeding the Manchar take off between Kashmor and Larkana, *Vide* chap. 3, p. 26.

65. *Vide* chap. 5, p. 61, *supra*. The argument here assumes that Majumdar's original classification of certain ceramic and other remains at the places named, as 'Indus', holds good after their re-assessment by Piggott and others.

66. Damb Buthi, Dhal.

67. Karchat, Shah-jo-Kotiro,

68. Naig, Taung, Pai-jo-Kotiro.



69. The main site at Kandhi Wahi seems to have been destroyed by fire. But there is no reason for holding the Indus people responsible.
70. Cf. Wheeler, *The Indus Civilization*, p. 52.
71. For Amilano, see Majumdar, p. 143; *J.S.H.S.*, VI, No. 2, p. 109; Piggott, op. cit., p. 173.
72. Similarly in the villages of the Kachho at the outfall of the Gaj Nai. *Ancient India*, No. 5 (Jan., 1949).
- 72-A. I have allowed the text here to stand as originally written in 1953-4.

Since that time a number of discoveries have been made (cf. note 2 above) without elucidating materially the problem of the Indus Civilization's origin. In view of the identification of a number of its sites in Kathiawar and Gujerat close to the sea "one's thoughts" (to quote Sir Mortimer Wheeler) "turn naturally to Mesopotamia as a source". But he observes, "Neither in its ceramic industry nor in its tools and armoury does the Indus Civilization suggest a remotely foreign origin. Its pottery, though specifically individual, is as generally akin to that of some of the village communities in or below the Baluch hills as to that of Sumer", and he proceeds to cite other features distinguishing the Indus from the Mesopotamian cultures.

At Kot Diji in Sind, which it may be well to mention is situated on an outcrop of the low Rohri range of hills east of the Indus, Dr. F. A. Khan discovered beneath a small Indus settlement a fortified town of an earlier culture. It had evidently been destroyed by fire before the Indus people built over it. The characteristic ceramic remains of the earlier occupation showed no affinities with the Amri, Kulli or other south Baluchistan wares, but recall those of Periano Ghundai in Zhob. It is noteworthy that sherds of Periano type were also excavated beneath the citadel of Harappa in 1946. Along with those approximating to that style at Kot Diji were others with Harappan motifs. In Dr. Khan's words, "either the Kot Dijians were already evolving some of the elements of the Indus Civilization . . . or, as seems more likely, they were already in contact with the growing civilization and were borrowing certain elements from it."

In its general character, the Kot Diji site exhibits a close relationship to that of Mundigak, in a valley parallel to the Arghandab river, in the Kandahar province of Afghanistan. M. Jean-Marie Casal's excavations here revealed, at the tenth occupation level of the site, a sudden development from a village in which the ceramic wares resembled those of the Quetta culture; to a walled town, the rampart built of roughly squared stones in mud mortar, with mud bricks above and square bastions—a style of fortification practically identical with that of the early Kot Diji. There were similarities also between the commoner ceramic remains in these two towns, apart from the fact that at each a few 'Indus' motifs appear. A stone head discovered in the upper levels at Mundigak has a strong resemblance to the famous bust of the "King-Priest" found at Mohenjodaro. Other articles have their closest counterparts among the Zhob cultures, but M. Casal also draws attention to similarities with finds at Susa and other Persian sites.

While it appears, then, that there was a close connection between the peoples of Mundigak and Kot Diji, and one more ambiguous between both of them and the Indus people, it is to be noted that the two places are at least 350 miles apart as the crow flies; and, so far from having such a convenient connection as Harappa and Mohenjodaro enjoyed by

river, are separated not only by rivers but ranges of mountains. It may be that close archaeological investigation along the routes between Kandahar and Upper Sind will reveal other sites of the Mundigak-Kot Diji people. At the time of writing the cultures identified in the areas traversed by these routes have been those known as Zhob, Quetta and Togau; and it is not about the Bolan route that they have so far been found, but along that, which leads from Quetta to Kelat and thence by the Mula Pass down to Kachhi. It is on this route, about half way down the pass and where it debouches into the plains, that 'Indus' sites have recently been discovered; but it does not follow that the Indus people should be deemed to have entered upon colonization of the plains by this route. Examination of the numerous old mounds in northern, western and central Kachhi, including re-examination of those at Chhalgiri, together with investigation within the Bolan Pass itself (the neighbourhood of Bibi Nani, for instance) may lead to other inferences.

I would however hazard the conjecture that the Indus folk spread into Sind from the north, *i.e.* by way of Kachhi, and not from the west; and that their settlements in Jhalawan such as Ornach—the provenance of the intervening Saruna sites remains to be established—indicate rather colonization from Sind than the reverse process.

(Sir M. Wheeler, *Early India and Pakistan*, pp. 1100-107; *Arts Asiatiques*, 1954, I, 3, pp. 163-178; *Journal of the Asiatic Society of Pakistan*, Vol. II, Dacca 1957, p. 1; *Illustrated London News*, May 7th, 1955, May 24th, 1958, *Pakistan News*, Oct. 26th, 1957, March 11th and July 1st, 1958. For Saruna, *vide supra*, Chap. 5, pp. 63-4).

73. Wheeler, *The Indus Civilization*, pp. 91-92, Plate XXIVa.

74. *J.S.H.S.*, Vol. VIII, Part I, pp. 52-53.

75. This place is between Yaro Lund and Saheb Khan Lund.

76. *J.S.H.S.*, Vol. VIII, pp. 50-51.

77. Captain J. H. Kirby, who reported this discovery, mentions a Khooza (Sindhi ڪوڙو) (flagon or jar) drinking cups and water spouts. *Journal of the Bombay Branch of the Royal Asiatic Society*, Vol. V (1857), pp. 471-3.

78. *Supra*, chap. 1, p. 2.

79. *J.S.H.S.*, Vol. VIII, pp. 59-60.

80. *Ibid.*, p. 61.

80-A. Here again I have allowed the text to stand as written in 1953-4. Subsequent discoveries of 'Indus' sites on or close to the sea coast in Kathiawad and Gujarat—and particularly the thorough excavation of one of the most important of these, Lothal—afford ample reason for believing that the people of that southern portion of the 'Indus' 'Empire', at any rate, built sea-going ships for their trade up the Persian Gulf and elsewhere.

Sir Mortimer Wheeler refers to 'that maritime enterprise which characterised ancient Indian trade in many ages'; and in *Indian Shipping* Dr. R.K. Mookerji has marshalled and ably discussed the various evidence for this. The *Supparaka Jataka*, in Book X, No. 463 (Ed. E.B. Cowell, Vol. IV, pp. 87-8) gives an interesting account of a master mariner of Bharukaccha (equivalent to Strabo's Bargoa, the modern Broach) in the vicinity of which lies one of the recently discovered 'Indus' sites.

Lothal can hardly have been the sea port serving Sind itself; and no remains of such an establishment have yet been found in Sind. But this latter negative fact may only be due to the same reason why no trace of Barbarikon has been found—the eroding and obliterating power of the river Indus.

It is nevertheless possible that the rulers of the 'Indus' state, at least of Sind, were in much the same position as the Zamorin of Calicut and other rulers on the Malabar coast at the time when Vasco da Gama reached them: patrons of sea-borne trade, and owing much of their prosperity to it, though the carriers were almost exclusively foreigners—like the (15th century) Arabs, Malays and Moplahs—the latter descendants of the other 'foreign' seamen who settled near Calicut and other entrepôts of Eastern and Western trade.

(For Lothal, see *Illustrated London News*, Vol. 238, Nos. 6343 & 6344 (February 25th & March 4th, 1961) "New Light on the Indus Valley Civilization").

81. *J.S.H.S.*, Vol. VIII, pp. 58-9.

82. Majumdar, pp. 20-22. *J.S.H.S.*, Vol. VI, pp. 109-110. Figgott, pp. 77-8.

83. See Stein, in the *Geographical Journal*, Vol. XCIX, No. 4 (April 1942), Cf. Wheeler, *Indus Civilization*, p. 96.

## 7

### SIND IN ANCIENT HISTORICAL TIMES

THE face of Sind, with any changes that may have taken place upon it, is hidden from us for about a thousand years succeeding the Harappa civilization. The hymns of the Rigveda make mention frequently of the Indus, and the names of the other rivers of the Panjab all occur,<sup>1</sup> but nothing is stated from which contemporary conditions in the lower Indus valley could be deduced. It is even doubtful whether the Aryans of the Rigveda epoch were acquainted with the sea.<sup>2</sup> As to the later classics, in the Mahabharata Draupadi speaks of Sindhu as a rich country, but in view of the context the statement is of little significance.<sup>3</sup> In the "Dialogues of the Buddha" an old mnemonic jingle is quoted in which the capital of Sovira-land is given as Roruka;<sup>4</sup> in the Jatakas the name is given as Roruva.<sup>5</sup> It may reasonably be assumed to indicate Alor, which is commonly spoken of as Aror. Sovira is frequently coupled with Sindhu or Saindhara in Sanskrit classics, for instance in the Vishnu Purana: provinces being usually named after the principal tribe or tribes inhabiting them.<sup>6</sup> These two are included in the list given in the Matsya-Purana of the regions through which the Indus flowed, but it does not seem to be arranged geographically.<sup>7</sup>

There are a few references to Sind in old Persian literature; it is curious to find that according to the Bundahish the terminal stream of the Indus was known locally by the same name as is given to it by the early Muslim geographers — "The Veh (good) river passes on in the east, goes through the land of Sind and flows to the sea in Hindustan, and they call it there the Mehra."<sup>8</sup>

The sum of the geographical information about Sind in the Sanskrit, Pali and Pahlavi writings is thus disappointingly small.

The country reappears, with tantalising indistinctness, in the pages of early Greek geographers and of the historians of Alexander's campaigns. The veil was lifted by one Skylax, a native of Asia Minor who was in the service of the Persian

monarch Darius Hystaspes. He set out with a fleet of boats from a place known as Kaspatyros on the Kabul river,<sup>9</sup> sailed down the Indus, and after a voyage of two and a half years reached Egypt. This remarkable exploration would seem to have taken place about the years 518-516 B.C., more probably just after than just before the extension of Persian domination over the Indus valley.<sup>10</sup> Skylax' account of his voyage, now lost, seems to have been used by the contemporary Greek geographer Hekataeus, whose works only survive in fragments. He speaks of a tribe called the Opiai dwelling by the Indus river, having a royal fort, and beyond them was a desert "as far as the Indians".<sup>11</sup> The voyage is mentioned also by Herodotus, who records that "India" became the twentieth satrapy of the Persian Empire, and was by far the wealthiest and most populous of all.<sup>12</sup> Though this satrapy may have included the upper as well as the lower valley of the Indus, a comparison of the extant inscriptions of Darius indicates that "India" (Hindu) referred to the region now known as Sind: that this was his own conquest, while Gandhara and the western Panjab, under the name of Thatagush, were provinces of the empire in the time of his predecessor Cambyses.<sup>13</sup> Dr. Vincent Smith, following Raverty, assumes that owing to the different courses then taken by the Indus and its tributaries "vast tracts in Sind and the Panjab now desolate were then rich and prosperous."<sup>15</sup>

The first Greek author whose descriptions of India deserve to be examined is Ktesias. He has, indeed, been widely condemned by other Classical writers, and in modern times, for his uncritical retailing of the most preposterous "travellers' tales"—and this predilection for the fantastic and marvellous seems the more reprehensible since he was himself a man of science.<sup>15</sup> Ktesias has probably suffered in that his work survives only in abridgments and extracts, which may contain an unfairly large proportion of his absurdities. But as Lassen and others have shown, an element of truth can be traced beneath many of the statements which at first sight appear to be pure falsehood. We must also bear in mind that almost everything Ktesias reports of India was derived at second hand from the Persians; and that mercurial race has an inveterate tendency to boast and exaggerate.

Thus discarding the obvious fictions, we find that the Indus was of enormous breadth, that huge reeds grew along it, that

crocodiles lived in it and preyed upon cattle and camels coming down to drink. The country was rainless, but was watered by its river. We are told of the violent (dust) storms, and of the phenomenon which occasionally occurs, of myriads of fish being cast up dead upon the sea shore. Ktesias was correctly informed that the red "lak" occurs on the same tree (the babul) as produces amber (gum arabic); he speaks also of cotton. Among characteristic animals, he notices the fat-tailed sheep, the "dumba" of Upper Sind. The unicorn "Wild Ass" of which he speaks would seem to have been the rhinoceros.

As to mankind, his fabulous races with their various monstrosities are mostly to be found in the Mahabharata and other Sanskrit sources, and in this respect he cannot be accused of much actual invention. On the other hand, such a remark as that there are Indians of fair complexion, though they were in the minority, is obviously just. And when we read of a people living about a lake "in the middle of India"—India being the Indus basin—on which they ply their rafts, having great skill in archery, and also hunting with hawks, may we not suppose that he is describing what he had heard of the forefathers of the Mohanas of the Manchar lake in Sind? The extremely minute stature of these Pygmies, and the oil produced by the lake, are no doubt misconceptions; the oil was probably extracted from fish, which we are told existed in the lake.

Again, the people to the northward whose diet was exclusively milk, have their counterpart in the Jats of the Indus Delta region today, who subsist almost entirely on the milk of their camels.<sup>23</sup>

Thus we may discern, among the fanciful absurdities of Ktesias, some of the most characteristic features of the Sind scene.

First hand information about India was given to the West in accounts written by generals and others serving under Alexander the Great during his invasion of the country. These works, the best of which were by Aristobulus, Ptolemy 'Soter' and Nearchus, survive like those of Hekataeus and Ktesias, in fragments embodied in the writings of later Greek and Latin authors. The picture they give of the country and people, though vivid and detailed in many respects, leaves large gaps in our knowledge of the geography, in particular; and the reconstruction of what is missing has exercised the ingenuity of many modern scholars.

The most satisfactory of the earlier geographical works is that of Strabo, written in the first or second decade of the Christian era. He relies on the best authorities, while making judicious use of the statements of others, and adding his own comments.

Particularly interesting are his remarks on the climate. He quotes Aristobulus—perhaps the most dependable of all his sources—as having been impressed by the sharp difference between the climate of the sub-montane tract and that of the plains. The summer of 326 B.C. which Alexander passed in the former region may have been particularly wet, as Aristobulus declares that it rained continuously after they left Taxila, where the first showers fell, until “the rising of Arcturus”, about the middle of September. On the other hand he states that the plains, meaning the lower Panjab and Sind, receive no rain “but are overflowed only by the rise of the waters of the rivers.” He states positively that during the voyage down the Jhelum, Chenab and Indus, which lasted with several lengthy interruptions ten months from about October to July “they did not experience rain at any place, not even when the Etesian winds were at their height, when the rivers were full and the plains overflowed.”<sup>24</sup> Nearchus, in remarking that rain falls also in the plains during the summer, though not in the winter, was probably generalising from local information of what usually took place, and not recording his own observations, for Strabo says that with this exception he gave the same account as Aristobulus.<sup>25</sup>

The resemblance between the lower Indus valley and Egypt was noticed by these early writers. Nearchus recognized that the plains of North West India were formed from alluvium deposited in the inundation, and were therefore “the offspring of the rivers.”<sup>26</sup> They concluded that without the rivers the country would be virtually uninhabitable,<sup>27</sup> from which again we should infer that the lower country was without regular rainfall.

The two principal authorities agree in their pictures of the inundation and its aftermath. We have seen it reproduced exactly in recent times, as for instance the year 1942, when the Indus breached the protective embankments above Sukkur on the right bank, and flooded a vast tract of country: “the cities placed upon mounds become islands. . . . the ground when half dried is sowed, after having been prepared by the commonest labourer,

yet the plant comes to perfection and the produce is good."<sup>28</sup> Nearchus gives us another glimpse of Sind in the inundation season which fully agrees with modern experience; the settlements on elevated ground invaded by snakes and other reptiles in retreat from the advancing waters—"for this reason the inhabitants raise their beds at some height from the ground."<sup>29</sup>

The Greeks were particularly interested in rivers, and were fascinated by the size of the Indus and its tributaries when in flood; their estimates, both for length and breadth, generally require to be substantially reduced.<sup>30</sup> Strabo censures the companions of Alexander for habitually exaggerating, and himself adopts for the breadth of the Indus after it has received all its tributaries the "more moderate estimate" of "50 stadia at the utmost, and at the least to seven."<sup>31</sup> This would seem to be near the truth, if we allot the figures to the peak of the swell and to the slack season respectively.

The best of the Greek authorities place the confluence of the rivers of the Panjab in the same order as that obtaining today, which confirms our confidence in the accuracy of their observation.<sup>32</sup> The actual position of each such junction would of course have shifted. In most cases it would be considerably lower now than in Alexander's time, owing to the raising of the level of the country along the lower part of these rivers' courses, and the consequent lengthening of the Indus itself by the extension of its Delta. The courses of all these rivers below their entry into the open plain must have changed incessantly.

The most interesting of all the statements of Aristobulus quoted by Strabo describes the effect of a violent change of course by the Indus. "He says that when he was despatched upon some business into the country, he saw a tract of land deserted, which contained more than a thousand cities with their dependent villages; the Indus, having left its proper channel, was diverted into another on the left hand, much deeper, and precipitated itself into it like a cataract, so that it no longer watered the country by the (former) inundation on the right hand, from which it had receded; and this was elevated above the level not only of the new channel of the river, but above that of the (new) inundation."<sup>33</sup> Unfortunately we are not informed of the whereabouts of this disaster, nor whether it appeared to be of recent or of ancient date. It may have been immediately below the junction of the



Indus and the Panjnad (Acesines), as here Alexander transferred Craterus to the left bank of the Indus "because it seemed easier for a heavy armed force to march along."<sup>34</sup> The section of the river's course between this confluence and Rohri, about 150 miles as the crow flies, is particularly subject to violent alterations and below Kashmor we find former channels diverging to a considerable distance to the right of the modern one, through the talukas of Kashmor, Kandhkot, eastern Shikarpur and Sukkur. That area, however, was probably in the dominions of Musicanus, which are represented as exceptionally prosperous: apart from which there are general grounds for believing that the Indus could not have been flowing much to the east of its present course in the reach beginning opposite Kashmor. As will be seen hereafter, comparison between the Greek description of the Indus delta and the contours of lower Sind practically proves that the river could not have been flowing to the east of the Rohri hills at that time, as has so often been supposed.

The ruined country observed by Aristobulus, then, most probably lay above the existing frontier of Upper Sind;<sup>35</sup> and to the east and north east of this region the modern traveller may see a tract which must present much the same aspect, in the waste along the dry bed of the Hakra in Bahawalpur, studded with the remains of former flourishing towns. Its depopulation was doubtless due to a similar cause—desertion by the Sutlej of the channel which flowed into the Hakra, for a course further to the west.<sup>36</sup>

The Sutlej is not mentioned by the companions of Alexander, whose advance to the eastward ended on the banks of the Beas. The king is said to have obtained much information regarding the country beyond it from Porus and others, and must have known that he would have to cross at least one more large river before he could reach his objective—the valley of the Ganges. However, in his speech exhorting the army to follow him in a further career of conquest he was perhaps concerned to belittle physical difficulties, and merely represented that the Ganges was not far away.<sup>37</sup> When we come to the point on the subsequent voyage of the fleet down the rivers where we might expect to hear of the Sutlej coming in, on the left hand, we find instead the name of the Beas, as joining the lower Chenab after that river had absorbed the Jhelum and the Ravi, and before its union with

the Indus.<sup>38</sup> We know that at one time the course of the Beas was independent of that of the Sutlej, and that the two joined the Chenab separately. Since no mention whatsoever is made of the Sutlej by Alexander's historians we can only assume, either that this river pursued a course independent of the Indus, that is down the bed of the Hakra; or that it united with the Beas somewhere below the point where the army halted on the banks of the latter, the united stream taking the name of the Beas down to its confluence with the Chenab, mentioned by the Greeks.

The second alternative seems the more likely. Though it is unsafe to build too much on negative evidence, it is difficult to believe that Alexander would not have come to know of a great river flowing independently to the sea by a course parallel with the terminal stream of the Indus, and in places less than fifty miles distant from it—had such a river existed. There was ample opportunity in the course of the Sind campaigns to have investigated the matter, and his historians would certainly have mentioned it.

Objection to the theory that the Hyphasis at its confluence with the Akesines was actually the combined stream of the Sutlej and Beas has been raised on the ground that the name given to such a river is unlikely to have been that of the smaller of the two. But this does not take into account the actual circumstances of their union and their movements in recent historical times. The Beas did not join the Sutlej: the Sutlej appropriated the lower part of a former independent course of the Beas. The union has been anything but stable, and to this day the country people along the banks of the united stream call it the Ghara and not the Sutlej.<sup>39</sup>

Alexander himself sailed down the Indus from above this last confluence to the sea, and there is nothing in the narratives of the campaign to suggest that it flowed otherwise than as a single stream as far down as the head of the Delta. Thus Arrian remarks, "From this point (the junction of the Panjnad with the Indus) I have no doubt that the Indus extends to 100 stades (in width)<sup>40</sup> and perhaps more, before it is divided so as to form the Delta; and there it spreads out more like a lake than a river." It is necessary to bear in mind that the king's progress down the river was spasmodic,<sup>41</sup> so that the fleet was halted for long intervals while detachments of the army were campaigning against local rulers, or building cities or naval stations. The voyage down the

Jhelum, Chenab and Indus to the head of the Delta occupied no less than nine months.<sup>42</sup> Alexander set out in the late autumn of B.C. 326, when the volume of the rivers would have been on the decrease: his campaign against the Malli must have been carried out in the winter, and those against Oxykanus and Sambus during the ensuing spring. It was only during the last stage of the voyage, from the country of Musicanus down to Patala, that the fleet sailed on the full flood of the Indus.

It is unfortunate for our purpose that the contemporary accounts of Alexander's expedition, as they have come down to us, are virtually devoid of geographical information on this stage and the next, that is through upper and middle Sind. There seem however to be several reasons why their narratives should have been scanty in this respect. First, the featureless aspect of the plains of the Lower Indus, in comparison with the country already traversed. This would actually be enhanced for all who passed through it on the river: they would see little, day after day, beyond the huge expanse of water except a continuous line of jungle and forest trees half submerged, and beyond them a dust-haze cutting off any distant view. It should not be forgotten also that navigation of the Indus in country boats when it is in flood, even proceeding down stream, requires considerable skill and vigilance. Not only are there dangerous whirlpools, but whole trees are swept down half submerged, and coming to rest on sand banks become formidable obstacles. Nearchus and the other literary companions of the king may well have retained no very precise topographical ideas from this risky voyage.

The detachments which marched down either bank would doubtless have seen more, but during the inundation season their route must have been circuitous and much interrupted by channels and flooded ground. With these difficulties enhancing their anxiety to conform to the movements of the king, the generals probably failed to record for him more than the most summary impressions of the style of country through which they had passed.

We cannot but feel aggrieved, however, that more is not recorded of the country and capital of Musicanus,<sup>43</sup> somewhere in Upper Sind, where the whole army made a prolonged halt. This was the most prosperous region in "India": the king had been told it was so before he reached it, and Arrian expressly

states that he had admired both the country and its city. The latter possessed a citadel which Alexander fortified and garrisoned, because he thought it a suitable position for overawing the surrounding tribes. It was apparently from this place that he despatched Craterus with a division of the army, and the elephants, to Persia "by the route through the lands of the Arachosians and Zarangians"—that is, via Kachhi, the Bolan or the Mullah Pass, and the Helmand.<sup>44</sup>

We may adopt, in default of positive evidence, the generally assumed identification of Musicanus' capital with Alor.<sup>45</sup> The ruins of this place lie on the eastern edge of the low limestone range some five miles south east of the present town of Rohri, and appear also to have extended into the plain below. They overlook a gap in the hills through which a branch of the Indus has obviously run, and may be presumed to have been flowing at the time, protecting the city from the north.<sup>46</sup> The remarkable prosperity of the kingdom of Musicanus indicates that it was exceptionally well watered. We may fairly assume that the Wahinda, Raini and other flood channels, the dry beds of which intersect the country north eastward of Alor, were flowing regularly at this period, and distributing the inundation over a wide area.

Inevitably we ask ourselves the question, where we should suppose the main channel of the Indus, navigated by the Macedonian fleet, to have been running at this time? It is hardly conceivable that those of Alexander's companions who described the Indian campaign could have omitted to mention the unexpected passage of the river through the narrow gap between the hills on which Sukkur and Rohri now stand, had this been its course when they sailed upon it. We are left with the alternatives, that it flowed either north of the Sukkur hills, or east of the Rohri range. As already remarked, the latter is most improbable: and this will be clearer when we come to consider the whereabouts of Patala.

We may however infer that the Indus did not run very far to the west from the point at which (according to the hypothesis preferred) it passed north of the Sukkur hills. The provinces of the recalcitrant governors Oxykanus and Sambus, whom Alexander chastised, must have been west of Musicanus' capital, because Alexander had appointed Sambus "satrap of the Indian Mountaineers."<sup>47</sup> Had it been possible to advance against them

by water the king would doubtless have adopted this, the speediest and most convenient means of transport; but we are clearly told that he marched against Oxykanus and after capturing him and his cities proceeded directly to attack Sambus. It should not be inferred that no branch of the Indus flowed through the country of these two chiefs, but rather that any such branch was not navigable at that season—probably the spring of the year 325 B.C.

As it happens, we have some authority for believing that the Indus did throw out lateral branches. Megasthenes, who visited India only twenty or thirty years after Alexander's invasion, and collected much information during a long residence at the Court of Chandragupta, states clearly that the river "forms an extremely large island which is called Prasiene, and a smaller one called Patale."<sup>48</sup> Quintus Curtius helps us to locate the whereabouts of the larger of these two "islands". He says: "Having thereafter reduced the Musicani, Alexander put a garrison into their capital and marched thence into the country of the Praesti, another Indian tribe. Their king was Porticanus. . . ."<sup>49</sup> This is obviously the provincial governor Oxycanus: and the name of the tribe has been taken to represent the Sanskrit word Prastha, meaning a level expanse. The tract may be identified with the Prarjuna of the inscription on the Allahabad column; Pliny refers<sup>50</sup> to the island as Prasiake. Ptolemy gives details of several branches<sup>51</sup> thrown off by the Indus, one of them proceeding in the direction of the Arbita mountains, by which as we shall see he means the western hills of Sind.

Though the descriptions of these later writers must have been based in part on contemporary information, their main dependence was still on Megasthenes and on the companions of Alexander. If such branches of the Lower Indus above the Delta existed at the time the latter navigated the river, how is it that they find no mention in the narrative of Arrian and others? The answer is, that any lateral channels that parted from the main stream higher up than the capital of Musicanus would be liable to escape notice, for at the season when the fleet sailed past them they would have been dry. It is well known to anyone who sailed in the cold weather up and down the Indus, before the Sukkur Barrage and canals had come into operation, that such 'canals'—formerly natural branches—as the Ghar and Western Nara took off from "wahurs" or loops which constantly leave and rejoin

the navigable channel, and their 'heads' were by no means conspicuous. The next part of the voyage, from the camp on the river to which Alexander returned from his operations against Oxykanus and Sambus, was performed on the seasonal flood, and it is not surprising that no mention should be made of any channels breaking off to the right hand, into the country which the king had already traversed. According to Arrian, the fleet proceeded for three stages, which may be presumed to have been short to allow the columns marching on either hand to keep up with it. Then news was received which caused Alexander to increase the speed of his advance on Patala.<sup>52</sup> I think it fair to assume that this final stage was not more than a single day's faster sailing.

According to Arrian, the city of Patala was near the point of separation of the two great branches of the Delta, "both of which retain the name of Indus as far as the sea."<sup>53</sup> But the surrounding country seems to have been much inferior to the flourishing land of Musicanus. Alexander after giving orders for the fortification of the citadel sent men into the adjacent country "which was waterless", to dig wells and render the land fit for habitation. These parties were attacked by some of the native "barbarians" who on being repulsed "fled into the desert". We must accept the statement of Aristobulus quoted by Strabo, that the fleet reached Patala about the month of July,<sup>54</sup> when the volume of the Indus would be approaching its maximum; at first sight it must seem strange that the country round the city was "waterless." We should however bear in mind that the river would not, in its natural state, overflow its banks throughout its length; in fact the overflows would tend to be greater in the upper part of its terminal stream, resulting in a reduction of its volume lower down.

It has been argued<sup>55</sup> that the circumstances quoted by Arrian would best apply if we assume the Indus to have followed approximately the line of the Nara, and the great bifurcation to have taken place about Jamrao Head or Mithrao; the lower Nara and Hakra representing Arrian's left hand branch, and that to the right hand proceeding roughly south south-west towards Hyderabad. Patala would thus have been close to the Thar desert itself, with only a limited amount of cultivated land in its immediate vicinity.

But this theory is refuted by the contour lines of middle and lower Sind. Assuming the Indus to have taken a course broadly

like that of the Nara through Middle Sind, and to have divided into two branches at any point after clearing the desert, the right hand branch, just as that to the left hand, must inevitably have flowed into the Rann of Cutch.<sup>56</sup> The fall of this part of the country, as already mentioned, is throughout eastward of south, and while local undulations would permit in a natural channel short bends to the west, its general axis was bound to have corresponded with that of the ground-slope.

This conformation of the plains of south-eastern Sind, as disclosed by the contour lines, must far antedate the epoch of Alexander. It is also evident from the contours that the point of bifurcation of the branches described by Arrian—that to the right hand bending nearly southwest, and thus directly in the teeth of the monsoon—could not have been east of Shahdadpur, and was more probably somewhat to the north west of that place.<sup>57</sup> That portion of the Registan, or sandy desert, which lies westward of the Nara valley is within twenty miles of the position I would assign to Patala, in the south of Nawabshah Taluka; but in fact the word ἐρημος which we naturally translate as 'desert' does not necessarily mean a sandy waste. Arrian applies it to the 'Bhungars' between the Panjab rivers, which are mainly of hard alluvium, now reclaimed by irrigation. Such a waste of land not reached by overspill from the Indus, could well have existed near Patala.

There is another reason for believing that the division of the river into two branches was relatively far up the country as we know it. The western branch, of which we have the more detailed account, seems to have been of considerable length. Curtius describes the king's voyage down it fairly fully.<sup>58</sup> He is said to have sailed some forty five miles when he learned from some natives that he would come to salt water "on the third day"; and it was on the third day that the effect of the tide was felt. We have to bear in mind that this voyage was made during the flood season of the Indus, when the current may be running at eight feet per second, or more than five miles per hour. Thus, a passage of three days (tying up by night) might cover as much as 200 miles. Our data for laying down the probable position of the coast line of the Indus Delta in 325 B.C. are slender, though I hope to show that Arrian's text supplies some indications for part of it. Meanwhile, it must be admitted that all we know of the working of the

Indus goes to show that it must have been many miles inland of the present one.

The size of the Delta was variously estimated by the contemporary observers who wrote accounts of the campaign. Aristobulus thought that the two mouths of the Indus were about 1000 stadia apart. Nearchus increased the distance to 1800 stadia, while Onesicritus declares that the two branches and the coast between them all measured about 2000 stadia.<sup>59</sup> Of the three, the first estimate is to be preferred, as it corresponds fairly well with the maximum breadth of the lower Indus valley across its axis between the western hill country and the rising ground under the eastern desert.

But it should be emphasised that the calculations of the distance between the two mouths seem to rest on no firmer basis than the Greeks' idea of what they were told by the country people. They could compare the lengths of the two branches by their own or their companions' observations, but it does not appear that any of them passed either by sea or by land from one mouth to the other. We know, on the other hand, that Alexander understood from what the ruler of the Patalians told him, that the Delta formed by the Indus was even larger than the Egyptian Delta.<sup>60</sup>

We may assume with confidence that not only the left hand branch, but that to the right hand, flowed east of the present site of Hyderabad and the Ganjo Takar.<sup>61</sup> The general direction of the right hand branch must have been roughly south west from a considerable distance inland, as Arrian tells us that the wind which caught the fleet on the day after the start blew directly against the stream.<sup>62</sup> This must have been the south west monsoon, and they felt the full force of it further down where the river widened and they entered tidal waters. The "canal" in which they moored to escape the rough water must have been a creek or bye river.

Alexander was informed by the natives whom he had impressed to pilot the fleet that he would have to moor again at an island before he came to the actual mouth of the river, and his own men sent on to reconnoitre reported that this island, called Killuta, was large, had water in it, and provided harbourage, so he followed the pilots' advice. He then went on himself with the best sailing ships to explore beyond, "and after advancing



about 200 stades from the first island they descried another which was quite out in the sea". The king returned, brought the fleet down to the extremity of Killuta island, and on the following day sailed down and landed on the other which, we are again told, "was in the deep sea". This detail, to my mind, gives a definite clue to the whereabouts of these proceedings.

An island well out in the open sea beyond one of the mouths of the Indus must have been something more substantial than the mud and sandbanks separated from the "mainland" by creeks which make up the sea face of the present Delta. In the second place, the coast of the western portion of the Delta in Alexander's time, according to our best authority, could not have extended much if at all south of the Makli hills and Pir Patho. Now about eleven miles south east of Pir Patho, almost on the 68th parallel of longitude, is an isolated rocky hill about a mile and a half long and half a mile broad, rising some 75 feet above the plain, known as Aban Shah.<sup>64</sup> This I believe to have been the island in the deep sea on which Alexander landed.

Killuta would have lain to the north-east of this place, somewhat to the south of Mirpur Bathoro; there is nothing in the text to suggest that it was other than a flat expanse of land insulated by the division of the river; the "harbours" in it would be no more than creeks sheltered from the wind and having no strong current; as for fresh water, during the inundation season this would be readily available.

Alexander returned to Patala, and then explored the left hand or eastern branch. The description of this is more summary. We are told that after sailing some distance<sup>65</sup> they came to a large lake in the outlet of the river, formed by its spreading out, "or perhaps the waters of the surrounding district draining into it make it large, so that it very much resembles a gulf of the sea." There were in fact sea fish in it, larger than those known in the Aegean. Alexander ordered the fleet to moor in the lake where the pilots directed, and went on himself with the galleys into the open sea. We are not told whether the river contracted in width at all beyond the lake, or whether the water in the latter was fresh or salt: but as already noticed, the discharge of the Indus at the height of its inundation is so great that the surface water even beyond its outfall continues fresh for some distance.

Arrian inserts a curious detail, that the king landed and with some cavalry went three days' journey along the coast to ascertain what sort of country it was for a coasting voyage, and ordering wells to be dug "so that the sailors might have water to drink". He is also said to have sent part of his army, after returning to Patala, to carry out these orders. General Haig scouts this as an absurd fiction, such a journey by land across the face of the Delta being impracticable during the inundation. The digging of wells would seem also to have been a superfluous precaution at that season, while it is most unlikely that they would have remained fresh after the river fell. The story may have been fabricated as an instance of Alexander's all-embracing foresight; yet Arrian is not given to flattery of this kind.<sup>66</sup>

Onesicritus, according to Strabo, describes the sea shore as swampy, particularly near the mouths of the rivers, on account of the mud, tides, and the force of the winds blowing from the sea.<sup>67</sup>

We are fortunate in possessing, in Nearchus' account of his voyage as rendered by Arrian, a description of the coast of Sind and Baluchistan full of topographical detail: but its interpretation raises many difficulties. The first is in regard to the point of departure.

The whole of the king's preparations were made with a view to beginning the voyage from the eastern mouth of the Indus, as he had satisfied himself that it was the easier of the two to navigate. He had constructed a naval station on the shore of the lake, had organized a magazine, and installed a garrison. Yet though Nearchus tells us that he started from a naval station it does not seem that this could have been that prepared for the purpose by the king. Nearchus himself estimated that the distance between the eastern and the western mouths was 1800 stades,<sup>68</sup> which may be accepted, if for nothing else, as proof that he did not sail from one to the other; and this he must have done, had he started his coasting voyage from the eastern mouth.

We know with what a keen sense of responsibility Nearchus accepted the independent command of the fleet,<sup>69</sup> and also how great was Alexander's solicitude for the success of his enterprise, not only in preparation but during its progress, when he was himself involved in great difficulties. If the admiral took upon

himself to alter the king's arrangements, it must have been for some compelling reason.

Strabo tells us that the departure of Nearchus, by his own account, was expedited by symptoms of hostility among the country people who, "taking courage at the departure of the king became daring, . . . attacked them, and endeavoured to drive them out of the country."<sup>70</sup> It seems that Nearchus with the fleet could not have been at the latest-constructed naval station on the lake of the eastern branch when this occurred, or he would have set sail from there, leaving the viceroy Peithon to deal with the revolt.<sup>71</sup> It would have been hazardous to work back up the Indus against a diminishing stream, and put his hand in a hornet's nest. His orders were to explore the coast thoroughly, with a view, obviously, to the establishment of regular communication by sea between the maritime provinces of the empire. He was not to take undue risks.<sup>72</sup>

We must assume then that Nearchus was at Patala at the time. Before exploring the eastern branch, the king had ordered Hephaestion "to prepare what was needful for the fortification of a naval station and the construction of dockyards; for he resolved to leave behind here a fleet of many ships near the city of Patala, where the river Indus divides itself into two streams." The probability seems to me, that the organisation of the station on the lake was not complete, and the ships were still concentrated at Patala, when something occurred to cause a complete change of plan. Were this nothing more than the hostile attitude of the people, we should expect Nearchus to have dropped down the eastern branch again—this being the route for which Alexander had made his preparations.

We can only conclude that the imperious caprice of the Indus had rendered the eastern branch unnavigable after the fall of the inundation. The end of the flood season is the period when the Indus may be said to "decide" which channels it will leave, and which adopt, for the ensuing slack season, when it is not given to flowing in more than one channel at a time.<sup>73</sup> We recall that Alexander's reconnaissances took place during the swell, and Nearchus' departure after its subsidence. Within this short time considerable changes commonly occur. We may even picture to ourselves a situation, not unknown in modern Sind; Alexander having marched away, the men who had piloted him

down the two branches deferentially approach Nearchus somewhat after this fashion: "We could not say anything to your king, who is as one of the Gods. But to you we venture to say, lest we should otherwise be blamed, that the eastern branch on which you are preparing to sail will be nearly dry in a month's time."

Nearchus, according to the account of his voyage rendered by Arrian, "started from the naval station down the river Indus":<sup>74</sup> and reached the sea in three short stages. It seems probable that this naval station had been improvised by himself some way down the western branch, but that out of loyalty to Alexander who had taken such pains for the success of the voyage and reposed such trust in him, he did not disclose the fact.

This theory would explain the omission in Nearchus' account of any mention of Killuta or of the island in the deep sea visited by Alexander during his own navigation of the western branch, though several new names appear. But it is hardly necessary to stretch conjecture so far. We have to remember that Nearchus sailed during a delusive lull in the monsoon,<sup>75</sup> when the inundation was nearly over. It seems that he made for the sea, not by the channel down which the king had sailed, but by another, presumably because the former had become in some way more difficult or dangerous.<sup>76</sup> In the event he found the channel he had chosen obstructed by a bar at its very mouth and the sailors had to cut a canal<sup>77</sup> through it which, widened no doubt by the scour of the tide, enabled them to float the ships into the sea. I think it not unreasonable to suppose that this channel may have been the one along the side of the large island of Killuta opposite to that by which Alexander had gained the sea; and for reasons that will shortly appear, I suggest that it passed to the left hand, bearing south, while the king had taken that to the right, with a westerly or south westerly direction.

We may now examine the voyage as described in Arrian's text. The fleet left the 'roadstead' and proceeded towards the sea in short stages. At the second of these, a mere fifteen miles from the start, the tide was noticed, the water in the river remaining salt even after the ebb. This place is said to have been little more than three miles from the sea itself: we should expect the influence of the tide, at least, to have been felt higher up, though if the discharge of the river was still considerable the surface water

might possibly have remained fresh thus far. The names of the three places at which the fleet moored are recorded—Stoura, Kaumara, and Koreestis. It is idle to attempt to identify them. Nearchus speaks of a large 'canal' on the first day's sail from his starting place, and another at the next stage, where the influence of the tide was perceived. He—or his editor Arrian—uses a word<sup>78</sup> which connotes digging; but he may well have been deceived by the regular appearance of what were in fact natural channels of the Delta. There are no artificial canals in the Delta proper at the present day, and it is most unlikely that there ever were, as the annual inundation covers almost the whole surface of the ground. But the waterways are numerous and we may perhaps suppose that Nearchus missed the best of them, since that which he took was obstructed at the very outlet, as already mentioned. The total sailing distance from the roadstead to the open sea amounts to a mere eighteen miles.

This first day's voyage in the sea itself, "sailing out and right round",<sup>79</sup> was estimated at 150 stades, or 17½ miles, after which they moored at a sandy island called Krokala. The similarity of this name with that current in the eighteenth century of a district on the western part of the Delta was noticed with satisfaction by the earlier commentators on Arrian,<sup>80</sup> but is probably no more than a coincidence.

The next stage affords better hopes of topographical identification. "Thence they sailed, having on their right the heights they called Eiros, and on their left an island lying level with the sea. The island stretching along the shore makes a narrow gulf. Having passed through this they moored in a harbour affording a good anchorage. Nearchus thought the harbour so large and good that he named it Alexander's harbour. There is an island towards the mouth of the harbour, about two stades off, which is called Bibakta; but the whole district is called Sangada. The island lying towards the sea had formed the harbour."

The Port of Alexander has been generally held to correspond with Karachi; Eiros being the Ghizri and Clifton hills, the island level with the sea Kiamari, and Bibakta, Manora.<sup>81</sup> These identifications are in my view wholly erroneous, as I hope to demonstrate from Arrian's text, by reference to such topographical details as may reasonably be presumed scarcely altered since the

fourth century before Christ, and by paying due regard to the distances recorded by Nearchus.

We should start by considering what features deserving the name of 'heights' can reasonably be supposed to have been close to the Sind coast line and adjoining the west side of the Indus Delta in 325 B.C. If we consult a geological map of the country, the eye is at once caught by the Makli hills, considerably to the south of and detached from the main rock masses of Western Sind, and adjoining the head of the modern Delta.<sup>82</sup> At some stage in the voyage, these would have been well within the sight of Nearchus and his men.

At the present time, the northern extremity of the Makli range is separated by about three miles of alluvial plain from the rising rocky ground which continues in a generally westerly direction to Karachi and Cape Monze. The most westerly channel by which the Indus can reach the sea has passed through this gap, and the next in order past the southern end of the Makli or Pir Patho hills. These heights, and the rising ground about them, I conceive to have been situated not far to the north west of the 'island' of Killuta, and to have abutted on the coast, with a sand bank off shore in much the same relative position as Krokala. Krokala, according to this theory, may be supposed to have lain off the south coast of the island of Killuta, between the channel by which Nearchus emerged and that navigated by Alexander, but nearer to the latter. After weighing from the anchorage at Krokala, the fleet would have crossed the river mouth whence the king had sailed to the island in the deep sea, which I have assumed to be Aban Shah: this would have lain several miles to the left of their coasting course round the western end of Krokala. There was no occasion for Nearchus to visit it as Alexander had done so.

I suggest, then, that Nearchus took the fleet into a strait running north west, having on his right the south west face of Pir Patho and the Makli hills and on his left hand a mud bank lying parallel with them, to a point not far from the modern village of Gujo. Here, probably, another small creek from the western branch of the Indus came out round the north end of Eiros, the embouchure forming a large and fine anchorage, in the mouth of which lay the island of Bibakta which I should suppose to be one of the small rocky elevations which occur

hereabouts, perhaps that called Tharri Gujo. This, in my view, was the position of "Alexander's harbour". The alluvial plain about here is only slightly elevated above sea level, and we may reasonably suppose it to have been formed within the last twenty-two centuries.

I shall proceed on the assumption that Alexander's harbour was not far from the present village of Gujo. From this place to Gharo, ten miles to the west, the same flat alluvial plain extends at the present time, dotted over with clay mounds and sand hills, and having an average height above sea level of only about twenty feet. Before Gharo is reached, the modern high road turns north across the tidal creek which with the line of the Kalri canal represents the most westerly of the old channels of the Indus Delta, and immediately encounters rising ground, gravel with limestone outcrops, the foothills of the Kohistan. From this point the right bank of the Gharo creek is generally rocky and consists in many places of abrupt cliffs. On the left hand the low plain of alluvium extending southward by Mirpur Sakro and beyond soon gives place to a maze of sand banks and mangrove swamps within the influence of the tide.

This western portion of the existing Delta is held by Raverty to be of very recent formation, and there can be little doubt that the high bank on the right of the Gharo-Kudro creeks, for a distance of thirty miles as the crow flies between Gharo and the outlet at Ibrahim Hydari, is identical with the sea coast in Nearchus' time. Between Gujo and Gharo the sea probably occupied part of the plain to the north of the modern road connecting these places. To the south west all must have been open sea.

Thus the general direction of the coast line would have been nearly east and west for some fifty miles onward, which sufficiently accounts for Nearchus' detention in Alexander's harbour for so long as the south west monsoon was blowing.

The first stage out of the Port of Alexander was a short one—60 stades, which according to my calculations would have brought the fleet to a point some three miles short of Gharo. Here the coast was sandy, and near it was an uninhabited island named Domai, which was useful as a breakwater (the sea no doubt was running high as the monsoon had only just ended). There was no water on the shore, but they found some about 20 stades

inland. This agrees with the present character of the country which I assume it to describe. The next stage, to Saranga, is calculated as 300 stades; the fleet anchored near the shore, and it was necessary to go about eight stades inland for water. Thence they sailed to Sakala, an uninhabited spot, "and sailing between two cliffs so near each other that the oars of the ships touched the rocks on both sides, they anchored at Morontobara, having advanced 300 stades."

Saranga and Sakala I should place roughly at Wateji and Ibrahim Hydari respectively, the last named being at the extremity of this barren rocky shore overlooking the existing creek, which is here joined by the Ghizri creek, the estuary of the Malir river.

Morontobara must have been Karachi harbour.

The actual distance along the line indicated, from Gujo to the mouth of Karachi harbour, works out at a little over fifty miles, and we may allow a small addition for following the indentations of the coast. Nearchus' estimate for the distance from Alexander's harbour to Morontobara is 660 stades, or about 73 miles, accomplished as we have seen in three stages. In the circumstances this overestimate by perhaps 38% should not be considered unnatural; it recurs on some of the stages on which we can identify the points of departure and arrival with greater confidence.

The identification of Morontobara with Karachi harbour seems first to have been suggested a century ago by the geographer Henry Kiepert, a pioneer cartographer of Ancient India.<sup>83</sup> I give below the reasons which led me to the same conclusion.

In considering how far the coast line of twenty two centuries ago may have corresponded with or differed from that we know, we have to concentrate attention on rocky elevations, not being volcanic, which are certain to have existed virtually unchanged, though the level of the sea in relation to them may have altered.

Arrian tells us that just before anchoring at Morontobara the ships sailed "between two cliffs so near each other that the oars of the ships touched the rocks on both sides", and "while they were sailing between the rocks they met with great waves and the sea had a swift current: so that it appeared a great undertaking to sail out beyond the rocks."



Now to a fleet sailing westward along a coast line stretching from Ibrahîm Hydari past Ghizri—two such stable features as are alluded to above—the small sandstone islands now known as the Oyster rocks would stand directly athwart the course. One of them has a flat top extending to two or three acres, bounded by cliffs rising sheer from the sea some fifty feet; another of pyramid shape is higher still. It has been suggested that they represent the remains of a ridge which at some period connected Clifton with Manora, and was separated into islands by erosion.<sup>84</sup> Little alteration seems to have taken place since the first scientific survey of Karachi harbour by Lieut. Carless in 1836, but in view of the nature of the rock it is reasonable to suppose that the passages between the islets must have widened since Alexander's time.

The Greeks after a long day's course—estimated at 35 miles—were looking for a harbour. They would wish to keep inside the high bluff of Manora, and rowed straight at one of the narrow gaps through the line of islands, probably in the hope of finding a sheltered anchorage immediately beyond them. Emerging on the west side the fleet soon felt the tide in the channel leading to the extensive sheet of water beyond. Nearchus thus describes it: "the harbour was large, circular, deep, and sheltered from the waves; and the entrance into it was narrow." It will be agreed that the above tallies with the existing natural features of Karachi harbour as approached from the east. What follows adds strikingly to the resemblance. Arrian continues: "On the next day they sailed, having an island on their left, towards the sea, and so connected with the shore that one might liken (the channel) to a canal between the island and the shore. The channel extends to seventy stades. Upon the shore there were many and leafy trees, and the island was over-shaded with all sorts of brushwood. Just after dawn they cleared the island, through the surf of the narrows, for they were sailing down on the ebb."

This passage clearly indicates that Nearchus did not sail out of Morontobara by the way he entered it, but that he pushed on into the upper reaches of the harbour and found another outlet.

We have a description here which, with trifling modifications, might have been written of the upper harbour, or as it is sometimes called the western backwater, of Karachi as it is today.

The rocky "island" of Manora is connected with the mainland by a narrow sandspit some eight miles long, with a direction nearly north west. Within these are dense mangrove swamps, penetrated by channels which at low tide expose smooth mud banks. The main creek extends almost to the landward extremity of the sandspit, encircling, at nearly six miles' distance from Manora, a rocky island called Shamspir which rises more than twenty feet above sea level. A little further on, the channel curves round another island, by name Nawa Nar;<sup>85</sup> and at this point, up to the middle of the eighteenth century A.D., was another entrance to this "upper harbour".

Obviously, the eight mile long sandspit with the mangrove-covered backwater behind it cannot be reckoned as permanent features of the sea coast, like Manora and the Oyster rocks: yet the islands of Shamspir and Nawa Nar are rock, though comparatively low, and the creeks about them are deep. As to the vegetation, Pliny records that Nearchus or his officers made particular mention of a marine tree, "the leaves of which are green while in water, but which as soon as they are taken out are dried into salt."<sup>86</sup> This is clearly the mangrove, which they must first have seen among the creeks of the Delta: the "many and leafy trees"<sup>87</sup> growing on the shore, on this first stage out of Morontobara, can hardly have been anything else, though tamarisk and date palms are still to be seen on Shamspir.

The similarity of the existing scene with Nearchus' description is so close that objection may be taken to the identification, on the ground that these features could not have remained unchanged for so long a period. It is not suggested that no change has taken place, but rather that within the 'permanent' framework of the rocky points, the interplay of natural causes would tend to produce variations which in course of time repeat themselves. The forces at work here do not, at least, include the constant accretions of a great alluvial river.

It so happens that we can conclusively identify the next station on Nearchus' voyage: and working back from this it becomes evident that Morontobara must have been about the position of Karachi harbour. Nearchus incidentally tells us that Morontobara was called in the native tongue the Woman's Harbour, "because a woman first ruled over the place." Under this name it is mentioned by Ptolemy, Marcian of Heraclea and

Ammianus Marcellinus as a principal harbour on the coast to the exclusion of almost all the other places on Nearchus' long list.<sup>88</sup>

I have suggested that the "surfy narrows" through which Nearchus emerged, seventy stades beyond his anchorage in Morontobara, probably correspond with the old Nawa Nar entrance to the upper harbour or western backwater of Karachi. The next stage was 120 stades, at the end of which the fleet anchored "in the mouth of the river Arabis. There was a large and fine harbour near the mouth. The water was not drinkable: for the water discharged by the river had been mixed with that of the sea." They obtained drinking water from a pond forty stades inland. "Near the harbour is a lofty uninhabited island round which oysters and every kind of fish are caught. As far as this lived the Arabiti, who are the most westward of the Indian nations; beyond this the Oreiti possessed the land."

The river Arabis is undoubtedly the Hab, which enters the sea on the further side of Cape Monze, and forms the modern frontier of Sind. The width of this river at low water is half a mile at the mouth, and for a mile upwards. Its own water is notoriously brackish many miles above the influence of the tide; and it is noteworthy that the latest map marks "sweet water" at, and no nearer than, a distance of four miles from the anchorage.

There is said to have been a port at the river mouth, known as Kharakbander, at the beginning of the eighteenth century, which was abandoned because it silted up.<sup>90</sup>

About five miles from the mouth of the river is the small island of Churna, which rises almost sheer to 609 feet above high water mark. The island at the mouth of the Arabis is the first topographical feature encountered on the voyage which Arrian has distinguished as lofty;<sup>91</sup> he did not apply the word to Eiros, or to the rocks at the entrance to Morontobara. We must evidently be on the look out for a remarkable elevation; and nowhere else upon this coast is there such an island, in conjunction with a river in the mouth of which the fleet could take shelter.

It may be thought strange, when Nearchus must have doubled Cape Monze, that he should have made no mention of this bold promontory, or of the change in the trend of the coast from westerly to northerly after passing it. But we have to

remember that our text is Arrian's recension of that of Nearchus; we cannot tell what may have been in his log.

The distance from the passage out from Morontobara to the anchorage in the mouth of the river Arabis is given as 120 stades, or about fourteen miles. A course set from the old Nawa Nar entrance of the Karachi backwater round Cape Monze to the mouth of the Hab river would be about twenty miles. Thus we have here, according to the identification proposed, a rare instance of underestimation of a stage by Nearchus.

The fleet made 200 stades from the mouth of the Arabis before anchoring near a beach suitable for the purpose called Pagala, where some men were landed to obtain water. Next day they encountered a strong wind from the sea; two ships of war and one light vessel were lost though the crews were able to swim ashore as they had been sailing close in. At the end of the day's sail, reckoned at 400 stades, they found the beach still lashed with surf, and anchored in deep water. This place they called Kabana; they left it at midnight and sailed 200 stades to Kokala.

These three stages as recorded total 800 stades, or about 94 miles; more than double the actual sailing distance from the mouth of the Hab to Son Miani, the entry to which is the next convenient position for taking stock, though unlike the former it should not be considered as a permanent feature of the coast.

The shore trending northward from the Hab outlet is rocky and backed by hills for some twenty miles; and at about half this distance the islet of Kaio rises to 123 feet above sea level, about a mile and a quarter off shore. This unimportant feature seems to have been ignored by Nearchus, or his editor Arrian, as unworthy of mention.

The accidents of the stage between Pagala and Kabana obviously resulted from sailing too close to a lee shore, in mistaken confidence that there would be no revival of wind from the monsoon quarter; they also support the assumption that the fleet was hugging a coast which runs, as this does, northward or north westward.

According to the modern topography, the next stage, of 23 miles, to Kokala, would have taken the fleet half way round Son Miani bay, or deep into Miani Hor. Neither proposition is tenable. From the text we infer a featureless coast, and at Kokala we are told the ships rode at anchor on the sea, which implies a

mere roadstead and not a harbour. Now the Miani Hor, though comparatively little known, is much the largest natural harbour for small country craft on this coast for a long distance in either direction. From an entrance two miles wide, which is obstructed by a sand bar, it broadens out, winding round to the westward for over thirty miles parallel with the open sea, from which it is protected by a sandy peninsula varying in width from one to five miles, known as Birar. If this feature, in anything like its existing shape, had existed in Nearchus' time, it would certainly have found mention in Arrian's text.<sup>92</sup>

The land here is all alluvium, and the Birar peninsula appears to be composed of nothing more solid than sand dunes. Though these are piled up to a height in one place of 35 feet above sea level, they may be a comparatively recent accretion. The mainland along the Hor to the northward is covered for several miles inland by a mass of sandhills, indicative probably of a former sea coast, and the open country behind them is low; as far north as Liari we find levels only 28 feet above the sea.<sup>93</sup> A geologist's classification of ground as "very recent" may have little bearing upon the geography of historical times, and Vredenburg assigns the old sea beaches represented by a line of cliffs standing back from the present coast further south, near Gadani, to late Pleistocene times.<sup>94</sup> But in my view we are fairly safe in assuming that the formation of the sandy Birar is modern in an historical sense, and that the sea coast of 325 B.C. followed the northern shore of Miani Hor. Somewhere in this region we must suppose Kokala to have been situated. It may have been a little west of Gagu where, according to the Gazetteer of Las Bela, there is said to be the site of an ancient town lying near the banks of the Hor.<sup>95</sup>

Even so, the aggregate of Arrian's three stages from the mouth of the Arabis to Kokala—eight hundred stades—exceeds by nearly one third the actual distance of sixty miles between the mouth of the Hab river and the site mentioned above.

Kokala seems to have been within easy reach of the capital of the country of the Oreiti, which was probably at or near the present Las Bela, where Alexander had left Leonnatus with a garrison, and orders to colonise a new city and collect supplies for the fleet. We may be confident that Kokala was somewhere at the head of the then coast line of Son Miani bay, and not in the narrow, sandy, waterless tract beyond the Phor estuary,

hemmed in between the mountains west of the Haro range and the sea. It has been suggested that it was an already existing port<sup>96</sup> but the reason adduced, that Nearchus was able to repair some of his damaged vessels there, does not seem adequate. The depot had been formed by Leonnatus as ordered, and Nearchus landed his men and entrenched a camp for them on the shore.

Besides refitting and victualling he left with Leonnatus men worn out or disgusted with the toil already experienced, exchanging them for fresh hands, and set sail. The wind had now shifted into the cold weather quarter, the north east, and blew them merrily along for five hundred stades, when they came to the mouth of "a river swollen by winter rain, the name of which was Tomerus."

It will be observed from the modern map that Miani Hor at its western extremity is separated from the sea and the Phor estuary by a low isthmus bearing traces of a former connection. If, as assumed, the Birar peninsula did not exist in 325 B.C. and Kokala was situated on or near the northern shore of the Hor, some twenty five miles from its mouth, or sixty five from the Arabis (Hab), the sailing distance "over" this isthmus and westward along the coast to the mouth of the Hingol would be approximately fifty seven miles, which corresponds very closely with the five hundred stades between Kokala and Tomerus.

The Hingol now reaches the sea through a salt water creek some two miles long, running parallel to the coast.<sup>97</sup> Here were situated the "stifling huts" of the fish-eating savages who attempted to dispute the landing of Nearchus' men, but were put to flight. The Greeks hauled their ships up on the beach for repairs, halting for six days.

The next stage brought them to the one place on the coast that has retained its name unchanged; Malana, now known as Ras (Cape) Malan, a bold headland backed by mountains rising rapidly to over 2000 feet above the sea. The course is given as 300 stades, approximating to 35 miles. The coast line as far as the Cape winds considerably; yet even if all the indentations were followed, the distance stated would have carried the fleet some miles beyond the Cape. The high land westward of Ras Malan is intersected seven miles from the point by the Hor Batt, a salt water lagoon, into which a great watercourse runs through

a gorge in the mountains. This is likely to have been the place where the fleet came to anchor, though anchorage could also have been obtained in the bay eastward of the Cape, about a mile off shore.<sup>98</sup>

Arrian reckons the Oreiti country to have extended as far as Malana, and at this point in his narrative inserts a computation of the distance so far accomplished. The length of the voyage along the coast of the Arabiti is stated to have been "about 1000 stades": This agrees with the sum of the separate stages as recorded, though the distances from Krokala to Alexander's harbour, and from Saranga to Sakala are not given. At nine stades to the mile, we arrive at 111 miles, from the mouth of the Indus by which the fleet started to the mouth of the Arabis, the boundary of the Arabiti.

Adopting the positions suggested for Krokala, a few miles south east of Pir Patho, and Alexander's harbour near Gujo, and adhering to Arrian's figure of 17 miles (150 stades) for the first stage in the sea, the course traced approximately on the map will be, 17 to the vicinity of Pir Patho: 24 thence to Gujo: and then about 50 to the lower part of Karachi harbour. Thence to Nawa Nar through the harbour creeks, about 8 miles: and from the old Nawa Nar outlet round Cape Monze to the mouth of the Hab 20 miles, making a total of 119 miles.

The coast of the Oreiti, Arrian tells us, extended to 1600 stades, which tallies with the sum of the stages from the Arabis to Malana. Assuming the position of Kokala to have been on the north west shore of Miani Hor, it would be about 65 miles from the Hab. Thence to the Hingol mouth, by the course I have suggested, is about 57 miles; and to a little beyond the Malan headland 25 more, amounting to 147 miles in all. Arrian's total works out at 177 miles.

Allowing for the absence of scientific means of measurement, and the Greeks' inexperience of navigation in tidal waters, the discrepancies between Nearchus' estimates and the distances between the positions which may be assumed to correspond with the places he mentions will not be held to detract from the general accuracy of his account of the coast. It seems probable, incidentally, that the "stadion" used by him (in Arrian's version) was the ordinary measure of approximately 606 English feet.<sup>99</sup>

Thus, for a small strip of the Sind coast we possess a detailed topographical record, as it was in the year 325 B.C., and for the remainder of the country little beyond vague generalities. It is a curious freak of fortune that the place which receives the fullest description is apparently that which after 2168 years was destined to become the capital of Sind.

## NOTES

1. *Rigveda Samhita*, 8th Ashtaka, 3rd Adhyaya Sukta VII (also referred to as hymn 75 of Book X). Trs. H. H. Wilson, Vol. VI, p. 204.
2. *Cambridge History of India*, Vol. I, pp. 79-80; cf. Macdonnell and Keith, *Vedic Index of Names and Subjects*, II, p. 432.
3. *Mahabharata*, Vana Parva CCLXV. Trs. P. C. Roy, Vol. II, p. 562.
4. *Sacred Books of the Buddhists*, Vol. III, Dialogues of the Buddha. Trs. T. W. Rhys Davids and C. A. F. Rhys Davids, pp. 269-270.
5. *Jataka*, Vol. III. Trs. H. T. Francis and R. A. Neil, p. 280.
6. *Vishnu Purana*. Trs. H. H. Wilson, Vol. II, p. 133. Cf. *Mahabharata*. Trs. P. C. Roy, Vol. IV, p. 23 (footnote).
7. Quoted by Alberuni, Trs. E. Sachau, Vol. I, p. 261.
8. *The Bundahish*, Chap. XX, Verse 9. Trs. E. W. West, *Sacred Books of the East*, Vol. V., p. 77.
9. Its exact position has not been identified for certain. It was said to be a city "της Πακτανίης γῆς"— "of the Pakhtan country".
10. *M. A. S. I.*, No. 34 (1928). A new inscription of Darius from Hamadan, by Prof. E. Hertzfeld.
11. *C. H. I.*, Vol. I, pp. 336-7.
12. Herodotus, IV, 44.
13. *M.A.S.I.*, No. 34, p. 3.
14. *Early History of India*, 1907, ed. by Vincent Smith, pp. 34-35.
15. *Ancient India as Described by Ktesias*, by J. W. McCrindle, Trubner, 1882.
16. McCrindle, op. cit., pp. 65-91.
17. *Ibid.*, pp. 7, 10, 57.
18. *Ibid.*, pp. 13, 33.
19. *Ibid.*, pp. 23, 54.
20. *Ibid.*, pp. 17, 26.
21. *Ibid.*, p. 13.
22. *Ibid.*, p. 16.
23. Cf. *Census of India*, 1941, XII, Sind, p. 39.
24. Strabo, XV, i. 17. The year 1917 A.D. was similar: vide *Indian Antiquary*, 1932, p. 169.
25. *Ibid.*, p. 18.
26. *Ibid.*, p. 16.



27. Alexander appears to have been influenced by information to this effect. *Vide Ibid.*, p. 26. Cf. p. 25.
28. *Ibid.*, p. 18.
29. Quoted by Strabo, XV, i. 45.
30. Arrian, *Anabasis*, VI, 4, 14. Arrian, *Indika*. Chaps. 3, 4.
31. Strabo, XV, i. 32.
32. *Anabasis* VI, Ch. 14. I take the Hyphasis to represent the combined stream of the Beas and the Sutlej, now known (locally) as the Ghara. But many authorities hold that at this time and for long afterwards the Sutlej flowed in an independent channel. *Vide infra*. Ch. 9, pp. 163-4.
33. Strabo, XV, i. 19.
34. *Anabasis*, XV, 15.
35. It is possible that the section along which this change took place was that between the modern Kalabagh and the confluence with the Jhelum. See *Mihran of Sind*, p. 472, note 544. Sir W. Tarn assumes (*Alexander the Great*, Vol. I, pp. 103-4) that this movement to the eastward had probably brought the Indus into the Hakra channel, and that it ran on (down the Nara valley) into the Rann of Cutch. See also *Ibid.*, Vol. II, Appendix 14, p. 285.
36. Sir Aurel Stein, in *Journal of the Royal Geographical Society*, CII, Nov.-Dec., 1943, p. 193.
37. *Anabasis*, VI, 26. Cf. Curtius, Book 9, Chap. 2. It is suggested that Alexander thought lightly of the enemies he would have to encounter, but was anxious on account of the impetuous rapidity of the rivers. Yet no mention is made of the Sutlej or Jumna. (McCrimdell, *The Invasion of India*, etc., p. 222).
38. *Anabasis*, VI, 14.
39. It is held by some that the union of the Sutlej and the Beas antedates Vedic times. But it does not seem certain whether the river which is described poetically as joining with the Beas in one hymn (III 33), is the same as that, obviously identical with the Sutlej, mentioned in the *Nadistuti* (X, 75, 5). The former is spelt Chhutudri ( कुतुद्री ) and the latter Sutudri ( सुतुद्री )—a considerable difference. (*Rigveda*, ed. Aufrecht, Vol. II, p. 249, and Vol. IV, p. 232). Cf. R. D. Oldham in *J.A.S. Bengal*, Vol. LV, Part II, p. 336. Cf. *Ancient India* (Ptolemy), ed., S. N. Majumdar, after McCrimdell, Calcutta, 1927, pp. 91-2. Tod remarks that throughout the chronicle of Jaisalmir, which ends at 1702 A.D., the combined stream (Ghara) is referred to as the Beyah. (*Annals and Antiquities of Rajasthan*, Vol. II, p. 262).
40. E. J. Chinnock in his translation of Arrian's *Anabasis* makes the length of the river between these two points 100 stades, which is absurd: though the width is of course exaggerated.
41. Bunbury, *History of Ancient Geography*, Vol. I, pp. 446-7.
42. Aristobulus, quoted by Strabo, XV, i. 17. Arrian mentions the high banks of the Jhelum, which shows that the water level at the time was comparatively low. (*Anabasis*, IV, 3).
43. We are told that this country was minutely described by Onesicritus: it produced the banyan tree, and (according to Aristobulus) a wild grain resembling wheat, and some kind of vine. Strabo, XV, i. 21, 22. For the rest, we are told of the manners and customs of the inhabitants by Onesicritus, who "expatiates in praise of the country". (*Ibid.*, 34).

44. *Anabasis*, VI, 17.
45. Cousens, *Antiquities of Sind*, pp. 76-79. Virtually no serious investigation of the site of Alor has been made.
46. The huge supply channel linking the Nara with the Sukkur Barrage has been excavated to flow *eastwards* through the Alor gap. Previously a small canal, the Aror Wah, antedating Fife's old (1859) Nara supply channel, ran *westwards* through the same gap. (*Gazetteer of Sind*, p. 276).
47. *Anabasis*, VI, 16.
48. Megasthenes, *Fragment*, LVI, in *Pliny Hist. Nat.* VI, 23.
49. Curtius, Book IX, Chap. 8. Cf. Strabo, XV, i. 33.
50. Pliny, Lib. VI, C. XX, 23.
51. The term used by Ptolemy is *ἐκτροπή*, which exactly expresses the nature of the flood channels of the Indus. (Ptolemy, ed., McCrindle, p. 94).
52. *Anabasis*, VI, 17.
53. *Ibid.*, 18.
54. Strabo, XV, i. 17.
55. The argument is implied rather than stated by Major Raverty in *Mihron*, p. 474, note 546 and p. 462, note 530. With regard to the position of Patala, he virtually agrees with the view of James McMurdo (*Dissertation on the River Indus*, J.R.A.S. Vol. II (1874), pp. 38-9) that it was at or near Bahmanabad. This I believe to be substantially correct, but it does not seem to have been physically possible that the Indus could have reached Bahmanabad by the course these writers suggest, down the valley of the Nara.
56. The western branch of the Puran (Nara) according to McMurdo separated from the other about 20 miles east of Bahmanabad and flowed towards Khudabad and Halakandi. (*Dissertations*, pp. 24-5). This I conceive to have been impossible.
57. Map in *The Behaviour and Control of Rivers and Canals* (Sir C. Inglis), p. 165.
58. Curtius, Book IX, Chap. 9. The account given by Arrian (*Anabasis*, VI, 18), also shows that the voyage took several days.
59. Strabo, XV, i. 33.
60. *Anabasis*, VI, 17.
61. Cf. Haig, *Indus Delta Country*, p. 18. Though I do not agree with his positions, his remarks on the general tendency of the Indus are just.
62. *Anabasis*, VI, 18.
63. *Ibid.*, 19. *κατέπλει ὡς ἐπὶ τὴν ἄλλην τὴν ἐν τῷ πόντῳ νήσου*
64. Blanford, *Geology of Western Sind*, p. 165.
65. Unfortunately unspecified, whether by time or estimate.
66. Haig, *Indus Delta Country*, pp. 22-23. Dean Vincent however supposed that the three days' journey was eastward, along the coast of Cutch, Alexander's object being to prepare for regular voyages from the Persian Gulf to India, should the passage be found feasible. But the general sense of the text is clearly that the preparation was for Nearchus' own voyage westward. Cf. Alexander Burnes, *A Supplementary Memoir of a Map of the Eastern Branch of the Indus*, Concluding Note, para 4. (Bombay Government file 763): Vincent, *The Voyage of Nearchus, etc.*, London, 1797, pp. 155-6.

67. Strabo, XV, i. 20 and 34.
68. Arrian, *Anabasis*, VI, 20. Strabo, XV, i. 33.
69. Arrian, *Indike*, Chap. XX.
70. Strabo, XV. ii. 5. Nothing of this is mentioned in Arrian's *Indika*.
71. For Peithon's appointment, see *Anabasis*, VI, 16.
72. For Nearchus' orders, see *Anabasis*, VII, 20; *Indika*, XX and XXXII.
73. Cf. Haig, *Indus Delta Country*, pp. 29-30 (footnote 44).
74. The word used is the usual *ναυστάθμος*. McCrindle asserts that it was from the "island" of Killuta that Nearchus "started on his memorable voyage" Vide *Ancient India* etc., p. 164, footnote. This is not unlikely but there is no authority for the statement. Pliny (*Nat. Hist.* VI, 23, (96)) says that Nearchus set sail from Xylinepolis (which merely means timber-town), "founded by Alexander, but what river it was near, or where it was, is not sufficiently explained." Sir W. Tarn states (op. cit., Vol. I, p. 106) that Nearchus "dropped down the eastern arm of the Indus to its mouth" and set sail from there. But this ignores the difficulties that have so exercised all previous commentators: the evidence of the sailing distances which do not include 1800 stadia (Nearchus' own estimate or guess) from one side of the face of the Delta to the other, and the appearance of the heights of Eiros on the second day's sail after clearing the bar.
75. Nearchus says (*Indike* XXI) that he started "as soon as the annual winds were lulled to rest". But it subsequently appears that there was still some spasmodic vigour in the monsoon.
76. Cf. Haig, *Indus Delta Country*, pp. 11-12. Once more, I think his theory is correct, though not agreeing with his suggestion of the locality.
77. *διώρυξ*. Alexander Burnes remarks that the Sindhis of his own time occasionally did likewise. (*Journal for Jan. 28, 1831* in Bombay Government file 790).
78. *διώρυξ* again.
79. *ἐκπεριπλωσαντες*
80. Henry Pottinger, *Travels in Baloochistan and Sindh*, p. 385; Alexander Burnes, *Journal for Jan. 30th, 1831*, Bombay Government file 790.
81. Haig, *Indus Delta Country*, pp. 12-3.
82. E.g., the map opposite p. 210 in *M.G.S.I.* Vol, XVII.
83. His map was drawn in illustration of Lassen's *Indische Alterthumskunde*.
84. Described by Blanford, *Geology of Western Sind*, p. 186. There is a tradition that the present entrance to Karachi harbour was impeded by a "ridge of hills" at the beginning of the 18th century A.D. (*Memoirs of Seth Naomal Hotchand*, p. 37). But cf. A. F. Baillie, *Kurrachee Past, Present and Future* (1890), pp. 15-8.
85. See maps at pp. 52-3 of *Kurrachee Past, Present and Future*, by A. F. Baillie.
86. Pliny, XIII, 25.
87. Arrian, *Indike*, Chap. XXII.
88. Arrian, *Indike*, loc. cit., see Ptolemy, vi. 21. 2; Ammianus Marcellinus, *History* Book XXIII.
89. *Survey of India*, half inch to the mile, No. 35 L-NE, second edition.
90. *Memoirs of Naomal Hotchand*, Ed., Sir Evan James, Exeter, 1915, p. 36.

91. νῆσος ὑψηλή

92. Miami Hor is described in *Las Bela Gazetteer*, pp. 10 and 187. *The Persian Gulf Pilot* (1942 Edition), p. 69. Sir W. Tarn relying on a confused passage in Diodorus, writes of Kōkala as if it had been a sheltered port ( λιμὴν ἀκλυστος ) but Nearchus' use of the word σαλεύω clearly implies that the fleet anchored off shore.

Tarn, *Alexander the Great*, Vol. II, p. 253; cf. Arrian, *Indika*, Chap. 23.

93. *Survey of India*, quarter inch map, 35 P.

94. Quoted in *Las Bela Gazetteer*, p. 27.

95. *Ibid.*, p. 198.

96. Tarn, *loc. cit.*

97. *Persian Gulf Pilot*, p. 71.

98. *Ibid.*

99. D'Anville suggested that Nearchus reckoned by a short 'stadion' of about fifteen to a mile, and this idea was adopted by Dr. Vincent. There is no mention of this "Aristotelian Stade" in any ancient author. Moreover, if we apply it for calculation of the distances recorded by Nearchus, it only suits those in the earlier parts of the voyage, while the discrepancies in the latter part become greater than ever. Obviously Nearchus must have reckoned by hours of rowing, or by rough calculations by eye from point to point along a frequently indented coast; the influence of favourable or adverse winds and tidal currents would be likely to make his estimates excessive for one stage and deficient for another. (Bunbury, *Ancient Geography* Vol. I, pp. 554-6).

Nevertheless, Sir W. Tarn has made out a case for a "Macedonian Stade" which he calculates as about three-quarters of the Attic Stade: the evidence in regard to the measure of a cubit is set forth in *Alexander the Great*, Vol. II, pp. 169-171.

But, as stated above, calculation by the shorter measure will not reconcile Nearchus' log, taken as a whole, with ascertained distances.

There is little to be said for Col. Holdich's Procrustean method of postulating a different coastline wherever the measurements will not tally. (*Journal of the Society of Arts*, Vol. 49 (1901), p. 418 seq.)

## 8

### SIND ACCORDING TO LATER CLASSICAL ACCOUNTS

STRABO had been content to compile his geography of India solely from authorities contemporary with, or but little later than, Alexander the Great, three centuries before his own time. Later sources, in his opinion, afforded no precise information, and even the merchants "who now sail from Egypt by the Nile and the Arabian Gulf to India" were ignorant persons and not qualified to give an account of places they visited.<sup>1</sup>

His successor in the line of Classical geographers, the elder Pliny, seems to have been unaware of Strabo's great work. He made far less judicious use of the standard authorities, but supplemented them with information from the sources which Strabo had disparaged. Within the sixty or seventy years since the latter had written, trade between Egypt (now part of the Roman Empire) and India had greatly developed, largely owing to the discovery by one Hippalus of the method of sailing thither direct from Southern Arabia with the aid of the south west monsoon,<sup>2</sup> which in all probability had long been practised by the Arabs. It seems that a treatise on the subject was current, which enabled Pliny to produce a useful account of ports on the Malabar coast, with the names of the capital cities inland which they served. He also retailed some recent but inaccurate information on Ceylon.

So far as the Indus valley is concerned, it is doubtful which if any of the details in which Pliny differs from his predecessor are derived from any source later than Megasthenes. His mention of the river Sulej, and the distances between it and the Beas, and onward by the "royal road" to Pataliputra,<sup>3</sup> are all drawn from Megasthenes, whom Strabo seems to have distrusted as an authority.

Like Strabo, Pliny preferred to depend on the most moderate estimates of the size of the Indus; he says it did not spread out

to a greater breadth than six miles, or rise in level more than forty five feet. He tells us also that this river in its course formed a very large island called Prasiane, and another smaller, by name Patale.<sup>4</sup> The latter, he says, was of the form of an equilateral triangle, with sides of about 200 miles.<sup>5</sup> In another passage he observes that the Prasii close to the Indus are those who were supposed to be the Pygmies. He remarks correctly that those Indians who are darkest in colour are to be found southward of the Ganges plain, and that those nearest to the Indus are of fair complexion.<sup>6</sup>

He gives the names of a large number of tribes said to inhabit the country on either side of the Indus, but their relative positions are not clear, and the names themselves do not agree with those we find in the earlier writers. We have also a summary and far from satisfactory account of the coast to the westward of the Indus delta, derived apparently from Onesicritus rather than from Nearchus. It includes the interesting information that the Oreiti did not speak an Indian language but one of their own; and the curious assertion that Alexander "forbade all the Ichthyophagi to live on fish."<sup>7</sup>

From Pliny's uncritical jumble of scraps of information we turn to a work of a very different character—"The Periplus of the Erythraean Sea" by an anonymous author. It is a compendium of information on trade in the Indian Ocean, combined with a navigator's guide to the coast from the head of the Red Sea to Zanzibar in the one direction, and to Cape Comorin in the other. This manual seems to have appeared only a few years after the death of Pliny, and embodies details from the smaller treatise which we must suppose to have existed and to have been drawn upon by that author. The Periplus is far more systematic, accurate and copious than the comparable portion of Pliny's work; and its account of the coast of Sind must certainly be accepted in preference to his, as giving the contemporary state of affairs.

The seaboard, he says, is very low and flat, and contains the mouths of the Sinthos (Indus), the volume discharged by which is so great "that while you are yet far off from the land at its mouth you find the sea turned a white colour by its waters." The river had seven mouths, all shallow, full of shoals and unnavigable except that in the middle. On this was situated a trading seaport having a small islet in front of it, and named Barbarikon. Here ships anchored, their cargoes being transhipped into small boats

which conveyed them up the river to the metropolis in the interior, Minnagar, where the king resided. The king at this period (about 50 A.D.) was a Parthian prince, though the country was known as Skythia.

The author specifies the imports and exports handled at the emporium of Barbarikon. The exports included precious stones, silk thread, and furs from China, and what we can recognize as local products—spices and gums, cottons and indigo.

Of the country we are told, "The interior part of it which borders on Skythia is called Aberia and its sea-board Surastrene. It is a region which produces abundantly corn and rice and the oil of sesamum, butter, muslins, and the coarser fabrics which are manufactured from Indian cotton. It has also numerous herds of cattle. The natives are men of large stature and coloured black. The metropolis of the district is Minnagar from which cotton cloth is exported in great quantity to Barygaza. In this part of the country there are preserved even to this very day memorials of the expedition of Alexander, of temples, foundations of camps, and large wells."<sup>7A</sup>

The Periplus passes on to Cutch and Kathiawar—and in the double gulf, known as the Great and the Little, we recognize the estuary leading into the Rann of Cutch and now called the Kori, and further on the Gulf of Cutch itself. Both were dangerous to navigators, who are advised to give them a wide berth.

The account of the coast to the westward of the Delta is far less clear. No mention is made of Morontobara or the Woman's Haven, but at some point which we may infer to be east of Ormara (the projecting cape of the text) was a river large enough to permit the entrance of ships, "with a small mart at its mouth called Oraia. Behind it in the interior at the distance of seven days' journey from the coast, is the city where the king resides, called Rhambakia." We are told that the inland district produced, in addition to corn, wine, rice and dates, but from the tract near the sea only the fragrant gum called bdellium.<sup>8</sup>

It has been suggested that the river on which the small port of Oraia was situated may well have been the Agor creek into which the Hingol falls—in other words the Tomerus of Nearchus' voyage. There is said to be a site of some antiquity close by.<sup>9</sup> Rhambakia is believed to have been close to Las Bela, or in the fertile Welpat *Niabat* to the north of it.<sup>10</sup> The two

places would be about seven days' journey apart. Yet it is difficult to see how Agor, hemmed in between the mountains and the sea, could ever have been more than a fishing village—as it was when Nearchus cast anchor there. The port which served Rhambakia would naturally have been further east, at the base of the plain of Las. It must be doubted whether the mouth of the Phor river could ever have been “large enough to permit the entrance of ships”; perhaps we may conjecture that by this period sand banks forming in front of the old coast line in the neighbourhood of the outlets of the Windur or the Purali had begun to enclose something of an estuary. Son Miani is about six ordinary marches from Welpat.

Returning to the Delta of the Indus, it must be recognized that there is no possibility of identifying the sites of Barbarikon and Minnagara.<sup>11</sup> It is conceivable that the latter was the Patala of Alexander's time, given a Skythian name; the place must be assumed to have been on or close to the river. But in the four hundred years since the passage of Alexander and his army through Sind, the course of the river above the Delta may have altered as drastically as the Delta itself is shown to have done.

Our next authority is the most celebrated in ancient Geography—Claudius Ptolemy of Alexandria, who wrote his great work about 150–160 A.D. His method was quite different from that of Strabo, who had given general descriptions of the countries of the world as then known. Ptolemy was chiefly concerned to reform the map of the world, and the greater part of his Geography consists of tables of reference to his maps. These latter were composed from only a very small number of astronomical observations taken within a relatively limited area, and depended mainly on rough calculation from *itineraria*,<sup>12</sup> pilots' guides, and similar information. Over the maps thus constructed Ptolemy imposed his lines of latitude and longitude, which he had worked out theoretically from his scanty astronomical data; he then laid down the positions of all important places by latitude and longitude in degrees and minutes as if they had been actually ascertained.<sup>13</sup>

The material available to Ptolemy was far more copious than that disposed of by his predecessors; and this is particularly so for India. Unfortunately, it is quite impossible to identify a large number of his place names, which occur in no other author. The



nature of the information by which he assigns to them positions on his maps, and thereby latitude and longitude, is unknown, and we cannot but feel sceptical as to its value.

Ptolemy has to be studied through his maps; and the fact that these have been drawn by other hands is of no consequence, provided that they are plotted in accordance with his notes of latitude and longitude. His presentation of North West India, though defective, is not vitiated by any such fundamental blunder as that which distorts the whole of the Deccan and Ceylon. But he falls into a curious error in his delineation of the Indus and its tributaries, making the combined Panjab rivers join the Indus only one degree below the confluence of the Kabul river, the actual distance being six degrees. Thus he makes the lower course of the Indus about twice its real length while the Panjab rivers are shortened by half.<sup>14</sup> The confluences of the main tributaries are however placed in their true order, and their general direction is also correctly shown. Noteworthy is the early junction of the Beas with the Sutlej, corresponding closely with their relationship today.

But the most interesting and characteristic feature of the lower Indus according to Ptolemy is the indication of branches breaking away from the main stream above the Delta. Two<sup>15</sup> such branches from the right bank are enumerated, and one from the left bank. The latter is represented as taking off upstream of the others. Ptolemy uses a curious expression<sup>16</sup> which seems to mean that tributaries flow into some of these branches. As Saint-Martin observes, it is doubtful whether he really distinguished the affluents from the branches. But confusion of this kind has lasted into our own time: even Major Raverty speaks of the Ghar running *into* the Ab-i-Sind (Indus) "a little over sixteen miles west of Bakkar"—to do which it would have to flow uphill!<sup>17</sup> The fact is that in Sind west of the Indus branch channels from the river run towards the hills and are met by watercourses descending from the hills in the direction of the river. After rain in the inundation season, water from the Indus and from the hills meets at many points along the "valley line" which runs from a point north of Jacobabad to the west south west, turning south west, and then south as far as the Manchar lake. Thus the Lahri river from the Bugti hills, the Nari and the Bolan, and all the numerous Nais from the hills west of Kachhi and Sind become at times tributaries of branches of the Indus.

The northernmost of Ptolemy's divarications of the Indus from the right bank is shown as running towards Arachosia, and in this instance it has been suggested that he is referring to some loop or side channel of the Indus into which the Gumal river flowed when in flood.<sup>18</sup> It is necessary, however, to point out that this branch to the west, according to Ptolemy, leaves the main stream at a considerable distance below the confluence of the Panjnad and the Indus—two and a half of his degrees of latitude—whereas the Gumal actually falls into the Indus about two and a half degrees of latitude *above* its junction with the Panjnad. Considering the great elongation of the lower Indus in Ptolemy's cartography, we may rather suppose this branch to be that ancient channel which, beginning from the "Sind Dhoru" below Kashmor, passes north of the present Jacobabad and runs past Mohmal into the "Sind Hollow" This depression also receives the flood water of the Bolan river, which descends from part of the country known to Ptolemy as Arachosia.<sup>19</sup>

Ptolemy's description of the hydrography of Arachosia suggests some confusion between the upper and the lower parts of the country, which he tells us extended on the east to a point close to the Indus valley, and may thus be deemed to have included Kachhi. He records a lake known as Arakhotos Krene which was formed by the river which flows through the country,<sup>20</sup> and it has naturally been supposed that this refers to the Hamun into which the river Helmand falls. But he says quite definitely that the river which flows through the country branches off from the Indus: and the positions assigned by him to this divarication, to the lake, and to the source of the tributary all agree with the theory above mentioned, that the "lake" was the great hollow now just beyond the north west frontier of Sind, and that it was fed from the Indus by an extension of the Sind Dhoru, and from the mountains by the Bolan, Nari and Mullah rivers.<sup>21</sup> It is curious that the great Hamun of Seistan, or Zarah, lake into which the Helmand falls, is not assigned by Ptolemy its real location in Drangiana, and we are left in doubt whether it is represented by his lake of Areia, by some confusion between the Hari Rud and the Helmand. He states Drangiana to have been watered by a branch of the river Arabis, which is a bad blunder.<sup>22</sup>

The next branch recorded by Ptolemy as taking off from the right bank of the Indus is stated by him to flow towards the

Arbita mountains.<sup>23</sup> The divarication occurs not far below the position he assigns to the town of Binagara, which is supposed to correspond with the Minnagar of the author of the "Periplus". We may confidently identify the Arbita mountains with the Khirthar and its offshoots, and the branch which flowed towards them must have been the Ghar, or perhaps the "Western Nara".<sup>24</sup>

Before we leave the right bank of the lower Indus, we may note that Ptolemy states that from the Arbita mountains some rivers join the Indus, and he gives the bearings of the source of one of these, which we may suppose to have been either the Aral, the Sann or the Baran.<sup>25</sup> As to the coast to the west of the Delta, he places the Woman's Haven (Gunaikon Limen) between the mouth of the river Arabis and the westernmost mouth of the Indus, but rather nearer the former, which is in accordance with the position of Morontobara in Arrian's 'Indike'; but the distances are made much too great. Ptolemy's Arabis falls into the sea so far to the west that its position relative to the Indus is almost that of the Dasht river in reality.<sup>26</sup> Similarly he places the city of Arbis, the headquarters of the Arabiti, on the borders of Karmania. The Parsidi are said to have possessed the coast of the latter, and to the east of them the Arabiti, though the parts towards the Indus river are assigned to the Rhamni.

No mention is made of the Oreiti, or of the port of Oraia on this coast, recorded in the "Periplus". We are naturally disposed to connect the Rhamni with Rhambakia, which we know to have been still in existence less than a century before Ptolemy.<sup>27</sup> It is to be noted that Ptolemy mentions a people called the Eoreiti as in possession of the southern part of Arachosia, and it is conceivable that the tribe which formerly occupied Las Bela had migrated thither, perhaps owing to pressure from the Parsidai and Arabiti.

Ptolemy's delineation of the Delta of the Indus confirms the description by the author of the "Periplus". There were seven mouths; all are named, and the course taken by each branch is clearly laid down. The westernmost mouth was called Sagapa, which reminds us of the name of this district, Sangada, recorded by Nearchus.<sup>28</sup> Next in order was the Sinthon mouth, which one is inclined to suppose carried the main stream, though at the time the "Periplus" was written the fourth or middle branch was the only one navigable. The third, reckoning from the west,

was Chryson (the golden) and then in order Kariphron, Sapara, Sabalssa, and the easternmost, Lonibare. This last seems to be a version of a Sanskrit name meaning "the salt one", and suggests that the branch may have been so called because its embouchure was shared by the Luni, properly Lavani, the salt river, which flows into the Rann of Cutch from the Aravali mountains.<sup>29</sup> Lassen, however, believed that Ptolemy's "divarication of the Indus running towards Mount Ouindion" (the Vindhya Mountains) which is stated to have had a tributary joining it, was a misapprehension of Luni river: "His error is without doubt occasioned by this, that the Lavani river, which has its source in the Aravali chain falls into the salt lake, the Rin or Eirina, into which also the eastern arm of the Indus discharges."<sup>30</sup> The Aravali mountains actually figure in Ptolemy's tables and map as the Apocopi, and of the correctness of the identification there can be little doubt.

I suggest that the identity of the "branch running towards the Vindhya mountains" should be sought with due attention to the general configuration of the Indus, its tributaries and branches, as laid down by Ptolemy. This branch is shown as taking off from the Indus below the confluence of the Panjnad and above the branch which leaves the right bank in the direction of Arachosia. I have suggested that the latter represents the old channel running into Kachhi from near Kashmor. If that is accepted, the branch leaving the left bank upstream of it would correspond with the channel which used to carry flood water from the bed of the Indus into the bed of the Hakra about Ghauspur, south east of Mithankot, and the branch may be supposed to have followed the course of the Wahinda. Needless to say, the idea of this branch reaching the Vindhya mountains<sup>31</sup> or receiving a tributary from them, is a complete misconception; but it may have been suggested by the southerly direction of the Wahinda as far as Mithrahu. We may take note also of Major Raverty's theory, that near the place last named the Hakra received a tributary from the neighbourhood of Jaisalmir. It is however improbable that this could ever have been a perennial stream.<sup>32</sup>

Thus when Ptolemy's hydrography of the Indus river system is considered in relation to evidence from other sources, we find good reason to believe it to have been essentially true. The faults are not in the general plan of its features, but in the distortion of

distances and sometimes in the direction of particular parts of the system.

While the course of the river and of its branches is clearly laid down by Ptolemy in his map, we have no data for determining its position relative to the actual permanent geographical features of Sind, such as the Rohri hills, the Lakhi range, or the Ganjo Takar. We should willingly sacrifice a number of his unidentifiable place names in exchange for such information. In default of it, any theory as to the course of the Indus during this period must rest on circumstantial data. We should not lose sight of Pliny's positive statement that the Indus made a very large island above that of the Delta (Patalc). This can be reconciled with Ptolemy's hydrography if we assume that his branch running towards the Arabita mountains and one of the tributaries he mentions as flowing from the same mountains into the Indus were actually connected in the same manner as the "Western Nara" and the Aral river have been in modern times through the Manchar lake. In order that the island so formed should have been larger than that formed by the Delta, as it was stated by Pliny to be, the Indus would have had to run considerably to the east of its modern channel; but it must be inferred from the configuration of the Delta as laid down by Ptolemy that its course was west of the Rohri hills.

Ptolemy includes the greater part of the valley of the Indus and part at least of Kathiawar in his region called Indo Skythia, which he thus divides: "the insular portion formed by the bifurcation of the river towards its mouth is Patalene, the region above this is Abiria, and the region about the mouths of the Indus and Gulf of Kanthi is Surastrene."

The name Abiria bears witness to the prominence of the Abhiras, a tribe which appears to have moved into the lower Indus valley from the north within a century or two after Alexander's invasion. In the Mahabhasya of Patanjali, which probably dates from the second century B.C., they are associated with the Sudras. Some five hundred years later they are mentioned as one of the semi-independent peoples of Western India who paid homage to Samudragupta.<sup>33</sup> Surastrene represents Surashtra, the Kathiawar peninsula, to which this old Sanskrit name has recently been officially restored. The Saurashtras are mentioned together with the Abhiras among the nations of the

west in the Vishnu Purana, and also in the south western division of the Brihat Samhita.<sup>34</sup>

Ptolemy lays down the position of a considerable number of cities and towns in Indo Skythia.<sup>35</sup> It is hardly necessary to point out the hopelessness of positive identification of the sites of this area with, perhaps, a very few exceptions. The existence of any place built within the reach of the inundations of the Indus must be precarious; changes of the river's course may obliterate it by erosion, or ruin it by withdrawing the water on which its life depends. Moreover, the nomenclature is as unstable as the river, in a province so frequently conquered by foreigners as Sind has been.

We may first consider the places which have been mentioned by earlier authors. The position allotted by Ptolemy to Patala suggests that if it be not altogether erroneous, this must be an entirely different Patala from that known to Alexander and his companions. For it is placed far down within the Delta, between the Sapara and the Sabalessa mouths—the two smallest of the branches. Ptolemy locates Barbarei, which must be presumed to be the same as the Barbarikon of the Periplus, much further inland, and within the bifurcation of the extreme western and extreme eastern branches of the Delta. We are tempted to suppose that by a slip of the pen Ptolemy may have exchanged the positions he meant to allot to the two places. It may be recalled also that the author of the Periplus makes no mention of Patala at all, nor does he refer to the Delta region as Patalene. General Haig is of opinion that Alexander's Patala had probably disappeared, owing to changes in the course of the Indus, before the middle of the first century A.D., but that Ptolemy, with his vast appetite for place names, thought it necessary to find a position for one which had been mentioned by such reputable authorities as Aristobulus and Nearchus.<sup>36</sup>

Minnagar, which the author of the Periplus had mentioned as lying "behind Barabarikon and inland", is probably represented in Ptolemy's tables and map by the town of Binagara. This is one of a series stated to lie along the river Indus, on the left bank; and with relation to features on the opposite side, it is clear that it lay below the "divarication towards Arachosia" and above the "divarication towards the Arbita mountains". According to my identification of these two branches, Binagara would have been in

the direction of Alor, and if so there is a strong probability that the two places were one and the same. If the former capital of *Musicanus* retained after three centuries those advantages which had attracted Alexander, the Skythian invaders and later the Parthian princes would also be inclined to rule from there.<sup>37</sup>

Kamigara, the next place upstream from Binagara according to Ptolemy, and also on the left bank, has been thought to correspond with Alor by some authorities,<sup>38</sup> who consider Binagara to have been more in the position of Bahmanabad. Mention is made of a place called Min Nagar in that neighbourhood in a chronicle of the early thirteenth century A.D. It was then the headquarters of a Hindu Rana, feudatory of Sultan Nasir-ud-din Kabajah.<sup>39</sup>

Attempts have been made to collate the other towns located in Ptolemy's Indo Skythia with those of earlier and subsequent eras. *Sousikana* has been considered a corrupt reading for *Musikana*, but it could not possibly be Alor, being placed by Ptolemy on the right hand main branch of his Delta of the Indus. *Kolaka*, on the *Sagapa* branch, has been thought to represent *Arrian's Krokala*, *Bonis* to correspond with the modern *Bano* on the *Pinyari*, *Pasipeda* with the *Basmeid* of the early Arab geographers, and so on. It is hardly necessary to point out that such similarities between names require to be treated with the greatest reserve, even when they are not contradicted by other evidence.

I submit that any attempt to locate Ptolemy's towns should give due consideration to his outline of the courses of the Indus, its branches and tributaries on the one hand, and on the other to the actual sites in the area which can be shown by direct evidence to have existed in the first and second centuries A.D. The majority of these sites are distinguishable by Buddhist remains, and there are about ten such in Central and Lower Sind, and half that number in Upper Sind.

The pattern which emerges seems to suggest that the course of the Indus was at this time west of the Rohri hills, perhaps about the line of the Lohano Dhoro. Ptolemy's regular phrase "along the river" should be taken to mean "within a few miles of the river", since in any age it would be courting disaster to build on the actual bank of the main stream, save where it is rocky. On this basis, we might suggest a number of correspondences; but the existence of a Stupa surrounded by monastic buildings,

the remains of which exist at Dhamrao near Badah,<sup>40</sup> Mirpur Khas,<sup>41</sup> and Sudheran jo Daro,<sup>42</sup> does not necessarily connote a town. In fact, however conscientiously attempted, 'identification' on such terms remains pure conjecture; and we must once more remind ourselves that the towns along the lower Indus which were flourishing in Ptolemy's time may almost all have been swept away by subsequent destructive changes in the river's course.

## NOTES

1. Strabo, VI, 3, 4.
2. Pliny, *Nat. Hist.*, Ed. C. Mayhoff, VI, 23. Cf. *The Periplus of the Erythraean Sea*, ed. McCrindle, para 57 (p. 138).
3. Pliny, *op. cit.*, VI, 17, 63.
4. *Ibid.*, VI, 20, 71.
5. *Ibid.*, VI, 21, 80. (220,000 Roman paces).
6. *Ibid.*, VI, 19, 70.
- 6-a. M. Vivien de Saint Martin reckoned that out of 53 names of tribes given by Pliny between the Junna and Indus, and up the Indus valley, he had identified 26 "avec une certitude à peu près absolue": and fourteen others "avec une assez grande probabilité". (*Histoire de la Géographie et des Découvertes Géographiques*, Paris, 1873, pp. 213-4).  
But we find him (*vide* p. 207) equating names in Pliny with those of Baluch tribes—Suhrianis, Umranis and Nobatis—whose first appearance in the Indus valley cannot have been earlier than the 14th century A.D.
- On the other hand Lassen observes, "Da ihre namen unbekannt sind, brüchen sie hier nicht angeführt zu werden". (*Indische Alterthumskunde* II 690) (1852 edition), and again, "Nomina harum gentium fere solo Plinio memorari, et Indis aequè ignota esse ac Graecis". (*Pentapotamia Indica*, p. 32).
- Vivien de St Martin thought he "despaired too soon"; but Lassen was right.
7. Pliny, VI, 23, 95.
- 7-a. *Periplus*, ed. McCrindle, para 41.
8. *Ibid.*, para 37.
9. *Ibid.*, p. 106, footnote. For the Agor creek, and the old site there, see *Las Bela Gazetteer*, pp. 191, 198.
10. Stein, *Geographical Journal*, CII (Nov. 1943), p. 215. Rice is cultivated in Welpat Niabat, north of Bela. (*Las Bela Gazetteer*, p. 207).
11. Cf. Haig, *Indus Delta Country*, pp. 30-32.
12. See for instance the computations of Alexander's *βηματομετρηταίς* (measurers by paces, recorded by Pliny (VI, 17, 61).
13. Buhbury, *Ancient Geography*, Vol. II, pp. 548-550; 642-643.
14. *Ancient India as described by Ptolemy*, Ed., I. W. McCrindle (1885), p. 84.
15. I omit the "divarication towards the Paropanisadai" as this seems obviously to be a tributary, (the Kabul river).



16. ἡ πηγὴ τῆς ἐκτροπῆς lit. "The source of the turning aside".
17. Cf. Cunningham. *Ancient Geography*, p. 261. But see also *Mihran*, p. 307 (footnote 307). Raverty says the Gaj or Ghar 'the river which runs down the Mullah pass' falls into the Sind Hollow.
18. Lassen, *Indische Alterthumskunde*, Vol. III, p. 129.
19. *Mihran*, p. 300, note 293; p. 307, note 307; and pp. 309-310. The Sargonla dhandh (according to my recollection of its name) in Nasirabad Tahsil, N. W. from Garhi Khairo, is part of the Sind Hollow.
20. Ptolemy, Cap. 20 (McCrindle, p. 316). Cf. Ammianus Marcellinus, Book XXIII, referred to in *Ibid.*, p. 329.
21. Alternatively, it is conceivable that Ptolemy had heard of the Manchar lake, as fed both by the Indus and by rivers from the hills, and assigned to it a position much too far north.
22. Ptolemy, Book VII, Caps. 17, 19, 20. McCrindle's Commentary, pp. 309, 314, 317-8.
23. Ptolemy, Book VII, Cap. 1. 28.
24. It is stated by McCrindle that the Indus "receives a tributary called the Gandava" from the north of the Hala (Khirthar) range. But in fact the Indus itself receives no "tributaries" between Kashmir and Schwan. The hill torrents all fall into branches of the Indus, or the western valley-line, draining to the Manchar lake.
25. Ptolemy, Book VII, 2, 1. 3. (McCrindle, p. 295).
26. By Ptolemy's degrees of longitude, the mouth of the Arabis was 105°, Woman's Haven was 107°, Sagapa mouth of the Indus was 110° 20': Book VII, Cap. 21. 2.; Cap. 1, 2. McCrindle, pp. 33, 319.
27. *Periplus*, Ptolemy VI, 20. 3.
28. Arrian, *Indike*, Chap. XXI.
29. Haig, *Indus Delta Country*, p. 33, and Appendix A (p. 124).
30. Lassen, *Ind. Alt.*, Vol. III, pp. 121, 129.
31. Mt. Ouindion. The coincidence of the names has no significance.
32. Raverty, *Mihran of Sind*, pp. 450-454 and Plate VI.
33. B. C. Law, *Tribes in Ancient India*, (Poona, 1943), p. 78. See note 15 in Chapter XI, *infra*.
34. *Vishnu Purana*, Trs. H. H. Wilson, Vol. II, p. 133; *Brihat Sanhita*, Trs. H. Kern, Chap. XIV; *J.R.A.S.*, New Series, Vol. V.
35. Ptolemy, VII 1. 55-61. (McCrindle. *op. cit.*, pp. 136-152).
36. Haig, *Indus Delta Country*, p. 30.
37. Cunningham thinks Alor may have been the Binagara of Ptolemy, but he distinguishes the latter from the Minnagar of the *Periplus*, which he locates at or near Tatta. *A.G.J.*, pp. 259, 289-294.
38. McCrindle, *op. cit.*, pp. 151-2.
39. McMurdo, *Dissertation on the River Indus*, *J.R.A.S.*, Vol. I, pp. 31-2 and footnote; *Mihran*, p. 202, note 105.
40. Majumdar, p. 48.
41. Cousens, pp. 82-97.
42. *Ibid.*, pp. 101-6.

## 9

### SIND IN THE SEVENTH AND EIGHTH CENTURIES A.D.

OUR next sight of Sind is through the eyes of a Chinese traveller, the celebrated "Master of the Law" Yuan Chwang, who visited the country about the year 641 A.D. The object of this Buddhist monk, in undertaking the arduous journey to India and spending some sixteen years there, was to visit the holy places of his religion, to collect manuscripts and relics, and to ascertain the state of the faith wherever it was or had been professed. And so, in his "Records of the Western World"<sup>1</sup> we are presented with a great deal of hagiology, but only the most summary notices of the topography along his routes. We may however be thankful to the pilgrim for invariably giving his estimates for the distances between his main halting places, together with the general bearing of the journey from one to another.

A large number of Yuan Chwang's place names can be identified with certainty, but this is not so in Sind and the provinces described by him as subject to that kingdom, and the reconstruction of this part of his itinerary must be partly conjectural. The matter is complicated by the fact that the order in which he visited these countries is given differently in the "Records" and in the Life of Yuan Chwang by Hœi-Li and Yen Tsong.<sup>2</sup>

Our main dependence must be on the former, in which we are given distances and bearings throughout. It has to be recognized that the pilgrim's measure of distance, the Li, may not be a constant; that is to say that he probably made his reckoning in days' journeys of 50 Li, or about ten English miles in average conditions.<sup>3</sup> Where the conditions were unusual, his

days' marches might be longer or shorter than this average, but in writing of them subsequently he would be liable to calculate his ordinary equivalent.

It appears that Yuan Chwang came to Sind from the Gurjara country, in South-West Rajputana.<sup>4</sup> He travelled north for 1900 Li through a wild rugged region, and then crossing the river Sin-tu entered the kingdom of Sind.<sup>5</sup> This he states to have measured about 7000 Li in circuit, and the capital, which he calls P'i-shan-p'o-pu-lo, thirty Li in circuit. The country produced wheat and millet, gold, silver, *t'u-shih* (thought to be bell metal) and had oxen, sheep, dromedaries and mules. It yielded also various kinds of salt, including a white rock salt. The lands along the Sin-tu were low and marshy.

The mention of rock-salt inclines us to suppose that this kingdom extended as far north as the Salt-range, which incidentally agrees fairly well with what we are told of it in the *Chachnama*. This assumption also helps to explain a problem in the itinerary immediately following. Yuan Chwang says that from Sind he went east about 900 Li and crossing to the east bank of the Indus came to the Mou-lo-san-pu-lu country. It has been held by some authorities that this could not be equivalent to Multan, for two reasons—because the Chinese syllables could hardly be a rendering of the Sanskrit *Mulasthanipura*, and because Multan is to the north-east of Sind and not to the east of it. But the pilgrim's description of the celebrated temple of the Sun with its golden image accords with what we are told of Multan by other authors,<sup>6</sup> and as to the location of the place in regard to Sind, it would lie to the east of the upper part of that kingdom, which at this period extended over the Dera Jat. But this may be one of the occasions, many of which occur in the text, when "east" appears by a copyist's mistake for "north east".<sup>7</sup>

Even if the 900 Li indicate only nine days' journey, such a journey made due east from the Upper Sind or lower Dera Jat of modern times would have taken the pilgrim back into the desert; but his description of Mou-lo-san-pu-lu shows clearly that it was in the riverain plains.

Another problem is Yuan Chwang's name for the capital of Sind—P'i-shan-p'o-pu-lo. Various attempts have been made to find the original of this Chinese rendering. It is generally assumed that the capital of Sind in 641-2 A.D. was at Alor, and if

this was so, and it was known by that name, the pilgrim would almost certainly have referred to it as A-lo-lo.<sup>8</sup> But apart from the possibility that Alor had some other name, it is to be noted that Yuan Chwang reached the capital only after crossing the Indus, which is not likely to have been flowing east of Alor at that time.<sup>9</sup>

While in Sind (which we may assume to mean modern Upper Sind) Yuan Chwang made an expedition to the south-west, arriving after a journey of some 1500 or 1600 Li in the country called A-tien-p' o-chih-lo. He describes it as away in the west on the Indus and near the sea, the land low and moist and the soil saltish. This is evidently the Indus Delta country. The province is said to have been more than 5000 Li in circuit. In the capital, called by our traveller Kie(ka)-chi-ssu-fa-lo, was a large handsomely ornamented Mahesvara temple. A-tien-p' o-chih-lo was thought by Cunningham and Haig to be Cutch, and its capital to be Koteshwar:<sup>10</sup> but the best authorities are clear that the Chinese characters could not have been a rendering of this name. From other sources we know that the principal city of the Delta country at this period was known as Debal: but as this is nothing more than the word "temple", it may well have been a nick-name instead of which the Chinese traveller tried to express its real but less popular name.

From this country, which is said to have been latterly without a sovereign, and at this time "under Sind", Yuan Chwang made a long journey to the west, about 2000 Li, which brought him to a country which he calls Lang-kie (ka)-lo. Since he says that it was near a bay of the sea, and was subject to Persia, there can be no doubt that it included the modern Las Bela, together probably with parts of Jhalawan and Eastern Makran. Yuan Chwang tells us also that the country had no supreme government, each valley having a separate government of its own; the spoken language differed a little from that of "India".<sup>11</sup> It is somewhat surprising to learn that this region had a fertile soil yielding good crops and a flourishing population; such conditions would normally be found only in limited areas such as the Welpat *niabat* of Las Bela. The explanation may be that the pilgrim saw the country in a year of exceptionally favourable rainfall. He gives the name of the capital as Su-t'u-li-ssu-fa-lo, which Watters renders as Stri-isvara, meaning "Woman Paramount". Yuan Chwang states that Lang-ka-lo was "the way to the 'West Woman

Country,'” which must correspond with the *Stri-rajya* or *Woman-Kingdom* in the north west division of the *Brihat Samhita*.<sup>12</sup> We are reminded of the fact that *Nearchus* was informed that *Morontobara* was also called *Woman's Harbour* because a woman once bore rule in those parts. This place I have indentified with *Karachi*, which in terms of physical geography belongs to *Baluchistan* and not *Sind*. *Ptolemy* lays it down more than three degrees west of his *Sagapa* mouth of the *Indus*.<sup>13</sup>

The pilgrim seems to have retraced his steps to the *Delta (A-tien-p'o-chih-lo)*, and thence to have proceeded northwards for over 700 *Li*, to the *Pi-to-shih-lo* country. This is described as having a rather brackish soil, and subject to fierce cold winds; much wheat and pulse was grown, but there was “little fruit and flowers”. *Yuan Chwang* mentions but does not name its capital; the region had no government of its own but was subject to *Sind*. *Pi-to-shih-lo* was thought by *Cunningham* to correspond with *Patala* and therefore (according to his theory) with the modern *Hyderabad*.<sup>14</sup> *General Haig*, being convinced that *A-tien-p'o-chih-lo* was *Cutch*, would place *Pi-to-shih-lo* in the region of *Nagar Parkar* or *Umarkot*. He assumes that as *Yuan Chwang* apparently did not cross the *Indus* on this journey (it being his practice to mention the crossing of large rivers) *Pi-to-shih-lo* must have been to the east of it.<sup>15</sup> In fact this very argument proves the exact contrary; the pilgrim had crossed from the left to the right bank of the *Indus* on entering *Sind (Upper Sind)*, journeyed to *A-tien-p'o-chih-lo* without recrossing it—at least the main stream—and after a trip to *Lang-ka-lo* and back would still have been to the west of the river when he went north to *Pi-to-shih-lo*.

We may therefore suppose that this region was round about *Schwan*, or possibly west of the *Khirthar* range, in *Jhalawan*. The former is more probable, as there is nothing in the pilgrim's description to suggest that the country was mountainous.

*Yuan Chwang* next went north east for more than 300 *Li* to the *A-fan-t'u* country,<sup>16</sup> which like *Pi-to-shih-lo* had no sovereign but was under *Sind*. No topographical details are given from which we could form an idea of the style of country and we are perhaps entitled to assume that it was much the same as that through which he had just passed. If *Pi-to-shih-lo* was in the vicinity of *Schwan*, *A-fan-t'u* would have been somewhat to the

south of Larkana, according to the distance given by Yuan Chwang, provided that we may take his bearing of north east to mean "east of north". Granted this, there seems fair ground for believing that at Badah we have the remains of the capital of this province; while the Asoka Tope, "not far to the north east of the capital", which was "still 100 feet high although the foundations had sunk out of sight", may have been no other than the Stupa at Mohen-jo-daro.<sup>17</sup>

From A-fan-t'u the pilgrim's route, according to this account, was still north east and brought him after 900 Li to a country abounding in hills and woods, having a cool climate with regular crops, and a fierce low-minded population. It was called Fa-la-na, and was subject to Kafirs. The latter is thought to correspond with Kafirstan, which lies north east of the Kabul river; and it is generally supposed that Fa-la-na lay about the middle part of the course of the Gumal river. From it Yuan Chwang says he went north west for about 2000 Li, to a country the capital of which evidently corresponds with Ghazni. The actual distance between Vaneh on the Gumal and Ghazni would be less than 200 miles. I am inclined to think that Fa-la-na was in the neighbourhood of Barkhan.

It is to be noted that according to the "Life" the pilgrim proceeded from A-fan-t'u eastward for 700 Li, which brought him to the kingdom of Sind; and that thence he went eastward about 900 Li, crossing the Indus, and so came to Meou-lo-san-pou-liu, that is Multan.<sup>18</sup> Turning back to the "Records" we find that Yuan Chwang while at Fa-la-na was informed by local report that adjoining this country in the west was the Ki-kiang-na country, among mountain valleys, with local chiefs and no supreme sovereign. This country abounded in sheep and horses, the latter including an excellent breed, very large and highly prized by other lands.

This gives a valuable clue, for in the *Tarikh-i-Hind wa Sind* (Chachnama) Kaikanan is mentioned several times. The mountains of Kaikanan are said to be the northern boundary of the kingdom of Sind in the time of Rai Sahiras son of Rai Sahasi; while in the edition of this chronicle which forms the first part of the *Tuhfat-ul-Kiram* the boundary is said to be Kandhar, Sistan, the Suleiman mountains and the Kaikanan hills.<sup>19</sup> As the Suleiman range adjoins the plains of the Indus, the Kaikanan hill

must be assumed to lie west of it, and we may suppose the tract to have corresponded with Loralai or Zhob. The Arabs penetrated hither after they had gained possession of Makran, and met with fierce resistance from the inhabitants. We are told that the Khalifa Muawiyeh on appointing Abdullah son of Sawad to the charge of these countries, still unsubdued, instructed him as follows: "In the country of Sind there is a mountain which is called Kaikanan. There are big and beautiful horses to be found there. . . . the people are very cunning, and in the shelter of those mountains have become refractory and rebellious."<sup>20</sup> Thus it is evident that the Chinese and the Arab writers are referring to the same country, and it would seem to have been located in the northern part of Baluchistan. A place with the name of Karkawan appears in the crude Arab maps of this region which illustrate the *Masalik-wa-Mamalik*, *Ashkalu-l-Bilad*, and other works, in a position which seems to agree with the above—considerably to the west of the Indus and to the north of Kusdar (a place that has retained its old name) and about opposite Multan; it may be a variant of the name Kaikanan. On the other hand it is right to point out that the name Kaikanan or Kaikan is still attached to an ancient place much further to the south, near Nal in northern Jhalawan; but that position would not fit in with the pilgrim's itinerary.<sup>21</sup>

Yuan Chwang's notices of Sind and the provinces adjoining have been considered one of the disappointing portions of his great work.<sup>22</sup> Certainly the unidentifiability of the names he gives to the capital and other cities is tantalising, and we must regret the extreme paucity of geographical detail. But there seems no real difficulty in fixing the broad locations of the various regions he mentions if we follow his distances and his bearings, and postulate no modification in them beyond some elasticity in the measure of the Li, according to the style of country traversed, and also the probability that at times he gave for the direction of a journey the cardinal point nearest to which it tended: as "north" instead of "north east by north".

His description of the organization of Sind in 642 A.D. as a metropolitan realm with dependent provinces, agrees with the account of it as it was under the rule of Sahiras son of Sahasi Rai, which is given in the "*Chachnama*" or *Tarikh-i-Hind wa Sind*. This portion of the Arab chronicle must have been drawn from local

that is Hindu or Buddhist, information; and local pride in past glories may have expanded somewhat the boundaries of the Sind kingdom. We are told that it extended on the east (north east) to the boundary of Kashmir, on the west to Makran, on the south to the sea and on the north (north west) to the mountains of Kurdistan and Kaikanan.<sup>23</sup> There were four "Governor's Provinces" and two of them occupied the whole of the lower courses of the Panjab rivers and included Multan. The last named region, according to Yuan Chwang, was a dependency of Cheh-ka, a country the capital of which seems to have been close to the modern Sialkot.<sup>24</sup> It is clear enough that it formed part of the Sind kingdom subverted by Muhammad bin Qasim about seventy years after the Chinese pilgrim's visit; and it is possible that it had been so earlier, but had become temporarily independent. At least Yuan Chwang does not mention a king of Cheh-ka, and as the attitude of royalty everywhere to Buddhism was a matter of much importance for him, and constantly finds mention in the "Records", there is fair ground for presuming that Cheh-ka was without a true sovereign at the time.<sup>25</sup>

But these are matters which have to be further examined in the subsequent volume.

The Chachnama contains considerable geographical information on Sind as it was at the beginning of the eighth century A.D., when it was invaded by the forces of the Khalifate under the command of Muhammad bin Qasim.

It is curious that the first reports on "Hind and Sind" obtained by the Khalifa Usman were as forbidding as those received by Alexander about the lower Indus valley when he was poised for his descent upon India.<sup>26</sup> The Khalifa was told, "Its water is dark and dirty; its fruit is bitter and poisonous; its land is stony and its earth is saltish." In the event the Arabs found, as Alexander had done, that it was a flourishing country; and only once in the course of a two years' campaign was the army put to any difficulty in obtaining supplies, when halted in one place for nearly two months; and then it appears that there was some local scarcity, as the merchants of that part of the country were importing corn from elsewhere.<sup>27</sup> We are also told that when the army first encamped near Nerun there was want of water, as "the floods of the Jihun, that is the Mehran, had not yet spread out to that



place." From another passage in the text it appears that the move on Nerun was in the month of May.<sup>28</sup> These difficulties obviously arose from inexperience of the country. A few months later, Muhammad bin Qasim found his choice of a position from which to attack Siwistan limited by floods of the rainy season, which seem almost to have reached the town on three sides<sup>29</sup>—a condition equally characteristic of Sind.

The Indus and connected waterways of course played an important part in the campaign. There is no further mention of widespread inundation of the country,<sup>30</sup> but a number of lakes or dhandhs are named, and it is clear that some of these were large. Muhammad bin Qasim sent his siege-train of balistas up country in boats via a mouth of the Indus called the Sakra Channel,<sup>31</sup> and used the Manjhal stream for transport in his advance on Bahmanabad. Similarly the Sindhis reinforced their advanced position near Bet with men and materials floated down a branch called Kotak.<sup>32</sup> Apart from these instances, the waterways figure mainly as defence lines.

The course of the Indus through Sind at the time of the Arab invasion can only be determined to a limited extent from the Chachnama, and mainly by reference to the few towns near it, the position of which is known. We can fill in the outline somewhat by drawing upon the accounts of some well known Arab geographers, but it must be borne in mind that the earliest of these was written about a century and a half after the conquest.

Our survey may begin from the sea.

The city of Debal (which doubtless bore some other name) was a port standing, according to Al-Baladhuri, on a creek or estuary to the west of the main outlet of the Indus.<sup>33</sup> There has been much controversy as to the probable position of Debal, with reference to the modern topography. It seems to me that it is very likely to have been at either of, or between, the sites suggested by Haig and Raverty, the one at Kakar Bukera on the Baghar, and the other a little south west from Pir Patho; but in view of the uncertainty as to the whereabouts of the coastline, or of the mouths of the Indus, at this period, it is not possible to be more precise. The Dewal or Diul known to the early British navigators can hardly have been the same as the ancient Hindu city.

The crude maps included in some of these early geographical works depict the great river as entering the sea in a single stream,

but the text of Al Masudi describes it as separating into two branches both falling into the sea near the town of Shagarah. Al Beruni, writing nearly a century later, also says that the river reaches the sea by two channels, the mouths of which were evidently far apart: one in the neighbourhood of the city of Luharani, "and the other branches off to the east to the borders of Kach, and is known by the name of Sind Sagar, *i.e.* Sea of Sind." The point of separation is by this authority stated to be at or near Mansura; but elsewhere he remarks that Alor was situated "between the two arms of the Indus".<sup>34</sup>

The only suggestion of a Delta of the Indus that we find in the Chachnama is in the name of a district, Bet ("the island") into which the Arabs passed on crossing the Mehran. At the crossing place the river was comparatively narrow, its channel apparently dividing so as to leave in midstream a small island; but the district must have obtained its name not from this but from the fact that it was bounded by another large branch of the Indus at a considerable distance to the east. The existence of such a branch is to be inferred from Al-Baladhuri's account of a naval battle in its estuary, between the Arabs and Jai Senha son of Rai Dahar, about ten years after Muhammad bin Qasim's campaign.<sup>35</sup> The latter had no occasion to penetrate as far east as this left-hand branch, and we cannot be certain at what point it separated from the other, which alone is referred to in the Chachnama as the Great Mihran. The crossing of this was effected from the district of Sagarah or Sakra, belonging to the district of Jhim.<sup>36</sup> The former name echoes Arrian's Sangala and Ptolemy's Sagapa and has been thought to survive in the modern Mirpur Sakro, which certainly lies across the path taken by the western outlet of the river in ancient times. It is also conceivable that the well-known Jhimpir preserves the old name of the district.

Before proceeding to the west bank of the Indus opposite Bet, the Arab general had received the capitulation of Nerun and had reduced a strong place called Ishbahar. It is not stated in which direction these places lay one from another. Of Nerun we know at least that it was situated on a hill; and this seems to have been more than a small eminence crowned with a single fort; rather, a range of hills. We are told that on his return from Siwistan Muhammad bin Qasim "halted by a fort which was situated on the hills of Nerun. . . There was a pond in its vicinity

the water of which was brighter than the eyes of lovers, and its meadow land more pleasant than the garden of Iram."<sup>87</sup> It was in a piece of grass land called Balbar near Nerun that the army had camped before the march on Siwistan.

Nerun is locally believed to have occupied the position of the existing Hyderabad, and we also have authority for the fact in the passage of the *Tuhfat-ul-Kiram*, according to which Mian Ghulam Shah in 1768 chose the site of the "city" of Nerunkot for his future capital, and at once began building a strong fort there.<sup>38</sup> It is difficult to understand how Raverty, in the face of this, can declare that "in the Sindhi accounts of the founding of Haiderabad there is no mention of its being founded on the site of Nirun." He himself, by paying indiscriminate respect to all that the Arab writers of the tenth and twelfth centuries A.D. have stated of its position, is led to locate Nerun in three different places in the course of his own work.<sup>39</sup> His objection to Hyderabad as the site of Nerun seems to be that it is too near to Mansurah (Bahmanabad), the position of which has been established, and too far from any possible position of Debal to be described (as it is by Al Istakhri) as half-way between these two places, which were reckoned as six days' journey apart.<sup>40</sup> Still, according to Ibn Haukal, the country of Nerun was rather nearer to Mansurah than to Debal; and Raverty himself reads one of this author's texts as stating that it was four days' journey from the latter, which would leave only two for the march from Nerun to Mansurah.<sup>41</sup> Hyderabad would certainly be reckoned nowadays as three rather than two days' march from Bahmanabad-Mansurah;<sup>42</sup> and we have to remember that at the time of the Muslim conquest and for more than 1000 years afterwards the main stream of the Indus flowed between the two, and the crossing of it must often have been equal to at least half a day's journey. No such obstacle seems to have intervened between Debal and Nerun; yet Ibn Haukal, (if Raverty's version is accepted) states that these were four days' journey apart;<sup>43</sup> while the invading Arab army, unopposed on its march so far as we know, took six days to cover the distance, which is described as 25 farsakhs, or about 90 miles.<sup>44</sup>

The identification of Nerun with the modern Hyderabad, then, may be accepted;<sup>45</sup> the Indus flowing at that time not less than sixteen miles to the east of it. From Nerun Muhammad

bin Qasim proceeded to Siwistan, the modern Sehwan, halting at a place called Moj, which appears to have been close to it, after covering a distance of 30 farsakhs or nearly 110 miles. Haig points out that the direct distance between the two places is only about 80 miles, and suggests that the Arab general probably took the longer route through the hills as strategically more secure.<sup>46</sup>

Siwistan is described as being a fortified town west of the Mihran and on the top of a hill. At the time that the Arabs reached it "the floods of the rainy season were flowing through the stream Sindhu Aral on the northern side of the fortress."<sup>47</sup> It seems legitimate to suppose that if the course of the Mihran was at a considerable distance to the eastward of Siwistan, these floods were mainly due to inundation from the Manchar lake, probably fed by a bye-river corresponding with the Western Nara of later times, as well as by the hill streams,<sup>48</sup> and that the Aral river carried off the excess water into the Indus at a distance to the south east. The Manchar is not, indeed, specifically mentioned by any of the Arab geographers who described Sind;<sup>49</sup> but it must be recognized that their main concern was with itineraries, and the Manchar was at some distance from contemporary routes. As to the bye-river, the Hindu governor of Siwistan fled to a place called Sisam, where the governor of the province of Budhiah resided, and this is stated to have been situated on the bank of the Kanbah. Muhammad in following him up halted at a place called Budhan, which was also on the bank of the Kanbah. Haig is of opinion that both these places were on the shore of the Manchar,<sup>50</sup> but there are strong objections to this. In the first place, the governorship of Siwistan must have extended over the fertile country immediately adjoining it to the northward; the chief town of the adjoining province would surely be more than a mere ten or twelve miles away. Again, as the governor fled with the intention of rallying opposition against the Arabs, it would have been useless to retire for so short a distance. The Kanbah may have been a lake, but if so it was not the Manchar; and it seems probable that it was a bye-river, corresponding if not identical with the Western Nara.<sup>51</sup> The banks of these lesser streams were, as has been pointed out before, the most eligible sites for large towns. I would suggest then that Sisam was probably at least as far north as Kakar.

Sisam was in its turn captured by Muhammad, and a number of the chiefs and people fled further up the country of Budhiah and some of them "to the fortified town of Bhatlor between Saluj and Qandabil". Of these names Qandabil is frequently mentioned by the later Arab geographers and appears on their maps. We are told by Ibn Haukal that Nudhiya (= Budhiah) was a flat open tract of country, situated between Turan and Makran on the one hand, and Multan and the town of Mansurah on the other, west of the Mihran; its bazar town was Qandabil. Evidently Nudhiya corresponds with the modern Kachhi and probably included also the north western portion of the plains of Sind. Qandabil has generally been supposed to correspond with Gandava,<sup>52</sup> and this agrees with the position of the place on the crude map which accompanies the *Kitab-i-Masalik wa Mamalik*, and the distances from it to Multan and Mansurah, ten and eight days' journey respectively.<sup>53</sup> In the text of the *Masalik wa Mamalik* however it is stated that Qandabil, the chief town of Budha, is a considerable place in a tract five farsakhs, or leagues, from Kusdar town, which would place well it within the mountainous country of Jhalawan. Raverty identifies it with Zihri, a place some fifteen miles south east of Kusdar.<sup>54</sup> But this is to make utter nonsense of the map above mentioned, to which he frequently appeals in support of his statements.<sup>55</sup> Kusdar and Qandabil are separated by a space which, though nothing is drawn to scale, could not represent a smaller distance than fifty miles; and Kirkanan is clearly shown to lie between the two places. When we turn to the early part of the *Chachnama* we find the identification with Gandava strongly supported in the description of the last of Rai Chach's expeditions; on his return from Makran he turned north from Armail, passed through Turan (the country round Kusdar) and then "came into the desert, and no one dared to fight with him till he arrived at Qandail, otherwise called Qandhar. From the valley extending to the open plain in the outskirts of that place, Chach prepared to make a sudden assault on the city" etc.<sup>56</sup> This accords perfectly with the approach to Gandava down the valley of the Mula river from Kusdar. The actual distance between these two places is about eighty miles, roughly five days' journey, or rather less than twenty-five farsakhs; and it seems possible that a wrong word or figure has crept into the text of the *Masalik wa Mamalik* at th point.

The Arab general did not advance into this country,<sup>57</sup> but counter marched from Sisam to Nerun, in accordance with orders received from Hajjaj, the Khalifa's Amir of the East. He told Hajjaj that he had conquered the country of Budhiah "up to the place opposite the fortified town of Aghror on the' Mihran."<sup>58</sup> We may assume that Aghror or Baghrur was somewhere in the vicinity of Rohri or Bakar, on the left bank of the Mihran. As to the course of the river in Upper Sind, we have "an indirect indication" from the same chronicle. When Rai Chach left Alor on his expedition to Budhiah and Siwistan, he crossed from the left to the right bank of the Mihran at a village called Dihayat "which forms the boundary between Sanmah and Alor". This as General Haig shows must be Dehat, on the northern boundary of Kandiaro Taluka, where the old river channel known as the Lohano Dhoro is well defined. This channel takes a course on the average about 17 miles to the east of the modern Indus.<sup>59</sup>

Probably strategic necessity as well as Hajjaj's orders caused Muhammad to make his crossing of the Indus in lower Sind, "in the district of Sagarah". The Arabs having passed the river secured the forts of Jhim and Bet, and then advanced towards Rawar near which Rai Dahar was encamped with the main army of Sind. This fortified place founded by Chach and completed by his elder son Daharsiah,<sup>60</sup> was in the same division of Sind as Bahmanabad, but must have been at a considerable distance south of it, as we are told that there were two strong fortresses, Bahrur and Dhalila, between the two places. Dahar after becoming sole ruler of Sind had been in the habit of passing the four months of summer in Rawar "as it was a very pleasant city with a salubrious climate<sup>61</sup> and with sweet water". The Arabs had to cross two lakes, or rivers, on their approach to Rawar, the second described as a stream, and named Dadhawah. If the Indus flowed into the sea at this period by a large Delta, as formerly and subsequently, the Dadhawah may have been the eastern branch. It is said to have run between Rawar and a town called Jaipur or Jaiwar. The battle which decided the fate of Sind, and in which Rai Dahar lost his life, took place between the Mihran and the Dadhawah, and it seems probable that the fort of Rawar was close to both of them.<sup>62</sup> Al Baladhuri states that the Arabs' crossing of the Mihran was effected at a place adjoining the dominions of Rasil, "Chief of Qassa in Hind". The place-name might be transliterated

as Kachch (Cutch) which seems to have been one of Rai Dahar's provinces, Rasil one of his governors; but we should not infer that the crossing place was close to the modern boundary of Cutch: and it seems impossible to identify Rawar. I do not think that Haig is justified in assuming it to have been as much as eighty miles from Bahmanabad or on the "Eastern Nara".<sup>63</sup>

Muhammad bin Qasim then successively reduced the forts of Bahrur and Dhalila, on the way to Bahmanabad. We are told that Dhalila was near a small river, the Manjhal, which had to be crossed by those of the people who fled by night towards Ramal and Hindustan.<sup>64</sup> This river was important; it was navigable at this season and boats were collected on it for the Arabs and taken upstream as far as Wadhatiah, about three miles from Bahmanabad. The general himself marched on to the banks of the Jalwali<sup>65</sup> channel which is stated to have been on the east of Bahmanabad, and there encamped.

The exact position of Bahmanabad has been the subject of much controversy, mainly owing to difficulties in reconciling the accounts of the Arab geographers who wrote about Mansurah, the Muslim city that replaced it. There are three main masses of ruins in this vicinity, two of them on the west or right bank of an ancient river bed, about half a mile apart and now known as "Brahminabad" and "Dalur"; and a third some five miles to the north east, on the east or left bank of a smaller dry water course, called "Depar Ghanghro". The name Mansurah has not survived in local tradition.

It is impossible to discuss the site of Bahmanabad without reference to the relative position of the successor city. Al Istakhari, the compiler of the *Masalik wa Mamalik* and Al Idrisi agree in stating that Mansurah covered a square mile of ground and that it was surrounded by the Mihran and a branch of that river. Al Idrisi says that it was at a distance from the Mihran and on the west of its principal branch.<sup>66</sup> The crude maps which accompany the *Masalik wa Mamalik* and the *Ashkalu-ul-Bilad*<sup>67</sup> both represent the Indus or Mihran of Sind as running through the middle of Sind and throwing out a bye-river or loop to the eastward, which rejoins the main stream after enclosing a substantial tract of country. But the position given to Mansurah within this "island" varies considerably. According to the *Masalik wa Mamalik* it was on the west or right bank of the

bye-river; the Ashkalu-ul-Bilad places it on the left or east bank of the main stream within the loop.

Obviously the actual situation of the large area of ruins immediately on the right bank of the large dry river bed above mentioned must incline us to accept the authority of the map in the *Masalik wa Mamalik*; this channel was the loop from the main river, which ran further to the west, about the line of the "Lohano Dhoro". As this square mile of ruins is to this day called locally "Brahmanabad" or "Bhambhra-jo-Thul", it is natural to assume *a priori* that Mansurah was built actually on the site of the older city.

A serious difficulty is presented by the account of Al Baladhuri who wrote about 270 A.H. (883-4 A.D.) — and was thus nearer in date to the end of Bahmanabad and the founding of Mansurah than the other geographers. He says "Muhammad son of Qasim went to old Bahmanabad, two farsakhs from Mansurah, which town indeed did not then exist, its site being a forest." The remnant of the army of Dahar rallied at Bahmanabad and was again defeated. The general left a governor there. "The place is now in ruins."<sup>68</sup> In another passage Al Baladhuri states that Mansurah was founded on one side of the estuary or lake facing Hind, and Mahfuzah on the opposite side. Mahfuzah was a small fortified place built by the Arabs for the protection of their garrison and Muslims generally not long after the conquest, when there was a vigorous Hindu resurgence in the country; Mansurah was founded some years later when the supremacy of Islam was assured.

The excavations of Cousens in the large site proved that a Hindu city underlay that of Muslim times, and we may confidently adopt his conclusion that the former was Bahmanabad itself: thus the local tradition is justified. We may also accept his argument that "Dalur" must be the site of Mahfuzah, and that Al Baladhuri's "estuary or lake facing Hind" can be traced in the open space some half a mile broad between these ruins and the greater mass of "Brahmanabad", having all the appearance of a tank or lake connecting with the old river bed.<sup>69</sup>

It remains to consider what weight should be given to Al Baladhuri's assertion that Mansurah was built some six miles from old Bahmanabad. This has caused Raverty and General Haig to conclude that Bahmanabad is represented by the ruins of Depar



Ghanghro, which are approximately this distance to the north east.<sup>70</sup> But this site is very small in comparison with that now called "Brahminabad" and cannot ever have been a substantial city. There are no traces of encircling walls. Moreover it stands on the left or east bank of the dry bed of the small river which once flowed past it, while the Chachnama states plainly that Bahmanabad was to the west of the small channel of Jalwali and that Muhammad bin Qasim fixed his camp on the bank of it.<sup>71</sup>

There can be little doubt then that the site of Bahmanabad is in the main mass of ruins which have retained its name (in an erroneous form) in spite of the later occupation of the same site by Mansurah. Bahmanabad was not destroyed by Muhammad bin Qasim, but at the time when the Muslims built Mahfuzah they probably expelled the inhabitants of the Hindu city, which then fell into decay. Some years later Mansurah was built over and out of the remains of Bahmanabad.<sup>72</sup> Al Baladhuri, who is not known to have visited Sind, probably confused what he heard about Mahfuzah and Mansurah. The *Mujmalu-t-Tawarikh*, which is professedly borrowed from an old Hindu book, after mentioning how Bahmanabad was founded by Bahman, remarks, "According to one account this is Mansuria: but God knows."<sup>73</sup>

I think we may safely assume that the Depar Ghanghro channel was the Jalwali, and that the much larger river bed which passes close to Brahminabad and Dalor was the Manjhal, a by-river from the Mihran, up which the Arabs had worked their boats from Dhalila as far as Wadhatiah. The reason why the general left the river at this point, a league short of Bahmanabad, and struck eastward across country to the Jalwali, was obviously to keep at a respectful distance from a city so strong and well garrisoned while he organized his army for the attack. The Manjhal river ran close under the walls of the city and by keeping on the opposite side of it the Arabs would be secure from sudden attacks. During the course of the investment, which is said to have lasted six months, we may suppose that the level of the water in the river went down and it ceased to be a serious obstacle. The final assaults appear to have been made from the landward side, *i.e.* the west, as the garrison are said to have fled by the eastern gate when the Muslims entered the city.

Cousens was of opinion that the ruins of Depar Ghanghro, the most notable feature of which is a stupa, may be the remains

of the Buddhist colony of Sawandi, near which Muhammad bin Qasim made his first camp on leaving Bahmanabad; and makes the interesting suggestion that this may have been the monastery of Budh Nohbahar, to which Rai Chach paid a visit shortly after taking possession of Bahmanabad.<sup>74</sup>

Muhammad bin Qasim's next move was on Bahrowar and he then received the submission successively of the Sammahs and the Sahtas, obtaining from the latter information of suitable camping places all the way up to Alor. The country immediately west of the sandy tract which extends to the south of the Rohri hills is still known as Sahiti; and we may reasonably conclude that the Arab line of march was not far from the river, that is a little eastward of the line of the Lohano Dhoru.

The theory of Major Raverty that the Mihran at this period (as before and for several centuries afterwards) flowed down the valley of the Nara, and divided into two great branches flowing roughly south east and south west from a point approximating to Jakhrao, has already been shown to be untenable, by the evidence which the contour survey lines disclose.<sup>75</sup> He himself draws attention to the fact that though the Arab army would have had to cross the Mihran—his right hand branch above mentioned—at an early stage on their march from Bahmanabad towards Alor, the Chachnama says nothing of such a crossing; and he falls back on the unlikely suggestion that they may have done so where the Karbhai Dhandh<sup>76</sup> is mentioned, near their first camp. In actual fact, it is clear that no such crossing would have been necessary, as both Bahmanabad and Alor lay on the same side of the Mihran; though it may well be that the Arabs, having crossed the main stream low down the country, had also to cross an eastern branch of the river, which may have been the stream called the Dadha Wah, before they could reach Bahmanabad.

The first description of Alor, in its relation to the Mihran, is that of Al Masudi in a work written about 944 A.D.; he states that at or near<sup>77</sup> the place the river separated into two branches, each of them retaining the name of Mihran till they fell into the sea near the town of Shakira "about two days' journey from the town of Debal". It seems impossible to reconcile this account with the physical geography of the country; for if we suppose his left hand branch to have been the Nara, and the right hand branch

to have taken in Lower Sind the line of the Puran, which would have brought the two together at their outfall into the Rann of Cutch, the distance from Debal would have been far greater than two days' journey. Moreover in a later work Al Masudi himself reduces that distance to two farsakhs.<sup>78</sup> Apart from this, he tells us that Alor lay on the western bank of the Mihran, which (if there is no error in the text) can only be explained by assuming him to have thought that spill water flowing past the town on the east side was the main stream of the river. The actual site of Alor has been described in a former chapter.<sup>79</sup> The author of the Chachnama states that in the time of Rai Sahiras it was "a town adorned with various kinds of royal buildings, villas, gardens, fountains, streams, meadows and trees, situated on the bank of a river called the Mehran."<sup>80</sup>

Al Baladhuri states that Alor was situated on a hill and twice mentions it together with Baghrur. The Chachnama also states that the fort of Baghrur was in the country of Aror on the Mihran and stood "just opposite to" the fort of Aror.<sup>81</sup>

Baghrur is not mentioned by Al Istakhri, who however states that Alor (Al Rur) approached Multan in size, had two walls, and was situated near the Mihran.<sup>82</sup> The Chachnama tells of Alor's lofty ramparts and of its idol temple, and states that Muhammad bin Qasim encamped within a mile of it; but on which side is not stated, nor the direction of his approach.

After the capitulation of Alor, the Muslims proceeded to the conquest of the two northern divisions of the Sind kingdom, in the Panjab. The description of this campaign throws some light on the courses of the Panjab rivers at that time. The Arabs first took possession of Batiyah,<sup>83</sup> a fort situated on the south or left bank of the Beas, which was then flowing in an independent channel to unite with the Chenab below Multan. It is to be noted that the Sutlej is not mentioned at all. It is possible that a considerable share of the water of the Sutlej, when in flood, was at this time discharged into the Hakra and so flowed on to the eastward of Alor, and for some distance at least down the Nara valley. But I am inclined to prefer the alternative solution, that the name Beas was applied to the combined terminal stream of that river and the Sutlej, because it followed the course formerly occupied by the Beas alone, the greater of the two rivers being an interloper. It is however unsafe to build too much on the

apparent omissions in the descriptions by the earlier chroniclers and geographers.

Muhammad bin Qasim then crossed over to the right bank of the Beas and engaged the Sindhis under the walls of Askandah.<sup>84</sup> After some fighting the commander of the fort escaped by night and retreated to another fort called Sikka-i-Multan, which was on the southern (left) bank of the Ravi. Here again we notice a considerable difference from the hydrography of modern times, when the Ravi flows into the Chenab nearly forty miles above Multan. The Ravi seems then to have united with the Chenab or perhaps with the Beas, at almost this distance below the city. The Sindhis again fought hard at Sikka-i-Multan, but were dislodged and fell back on Multan city to reach which they had to cross the Ravi.

Multan in turn fell and according to one account the general sent out governors for forts situated on the river Jhelum and elsewhere in the province,<sup>85</sup> and himself marched with the main army up to the place Panj Nahiyat where Chach had fixed a boundary mark for his frontier with Kashmir. Another of his lieutenants was dispatched to the frontier of Kinnauj, and from a place called Udhapur sent a summons to the king Rai Harchandar to submit to Islam. Raverty fixes this place on the Hakra within the modern Bikanir State at a spot which seems to correspond with Sohankot, not far from Sardargarh.<sup>86</sup> The text of the Chachnama makes no mention of a river here. As it happened, orders for the recall of Muhammad bin Qasim reached him at Udhapur and he countermanded the attack upon Kinnauj which he had ordered on receipt of the Raja's defiance.

We can glean a little more information as to the neighbouring countries from scattered passages in the Chachnama. I have already alluded to the problem arising from Yuan Chwang's observation that Mou-lo-san-pu-lu, which may be identified with Multan, was (in 642 A.D.) a dependency of the Che-ka country, and not of Sind. He tells us moreover that the Che-ka country was 10,000 Li in extent and lay below the hills and between the Indus and the Beas.<sup>87</sup> The province called Takiah, mentioned in the Chachnama as lying between the territories of Chitor and Kashmir, is probably Che-ka, much reduced in size.<sup>88</sup> The kingdom of Kinnauj, or Kanuj, is mentioned more than once, and appears to have included a country called Ramal. Some of

the people of Dhalila are said to have escaped towards Hindustan by way of Ramal, and Raverty believes this to be the tract inhabited by the Bhati tribe, *i.e.*, Jaisalmir.<sup>89</sup> These fugitives sought shelter in the territory of Shiro, of which Diu Rai, a cousin of Rai Dahar, was ruler. Then we are told of the territory of Jasam, the prince of which was on friendly terms with Dahar. Shiro and Jasam were both probably in northern Rajputana.<sup>90</sup>

Jaisiah, or Jaisenha, the son of Dahar, finding that he could not avert the fall of Bahmanabad, took refuge with his family in the territory of Chitor "after crossing the sandy desert".<sup>91</sup> It seems that he passed on from Chitor territory to that of Kairaj, the "king" of which was called Drohar Rai. Where this kingdom or principality was situated is uncertain; its ruler does not appear to have been subordinate to Sind. Yet we are told that after the capture of Bahmanabad "the country ruled by Drohar king of Kurij" was placed by the Arab general under the governorship of one of his officers.<sup>92</sup> From Kairaj Jaisiah moved to Kashmir and remained the guest of its king for some years.<sup>93</sup>

The impression left by most of these statements about the countries bordering on Sind is that the original compiler of the chronicle knew very little about them and was liable to confuse one with another. Yet the picture of Sind which emerges from the *Chachnama*, though incomplete and shadowy in its physical aspect, would seem to be essentially authentic.

## NOTES

1. For the *Si-yu-ki* I have relied mainly on Watters' work, "*On Yuan Chwang's Travels in India*", (*R.A.S.*, 1904-5), but have also referred to the translation by S. Beal (*Trubner*, 1884).

2. *Histoire de la Vie de Hiouen-Thsang*, tr. Stanislas Julien, (Paris, 1853).

3. *The Itinerary of Yuan-Chwang* compiled by Vincent Smith, *apud* Watters, *op. cit.*, Vol. II, p. 332 (footnote, 337). General Haig reckons a day's journey as 100 Li, on the ground that the distance between Mo-la-p'o and K'i-t'a appears in one manuscript of the Records as 300 Li and in another as 'three days' journey'. (Haig, *op. cit.*, p. 38 and note 54; Watters, *op. cit.*, Vol. II, p. 245; Beal, *op. cit.*, II, p. 265 (footnote); Julien, *op. cit.*, p. 206).

Haig considers an average day's journey to be sixteen miles, but we are given to understand that Yuan Chwang liked short marches and I am disposed to calculate by the smaller equivalent (one Li = 1-1/2 furlongs: 50 Li = nearly 10 miles = a day's march) since on this basis the pilgrim's figures for his journeys whether long or short, in Sind and the neighbouring countries correspond well with the geography, as will be apparent from my map (No. 7).

4. So according to the *Records*. The *Life* makes him enter Lower Sind from Surashtra Julien, p. 207.

5. Assuming that pilgrim started from the then capital of the Gurjara State, Bhilmal, his route would pass through the sandy and rocky wastes of Jaisalmir, and to reach the Indus in Upper Sind would be on a bearing nearly, N. W., the distance about 300 miles as the crow flies.

6. *Records*, tr. Beal, II. 274. Cf. Julien, p. 210; Al Istakhri in Elliot, *History of India as told by its own Historians*, Vol. I, p. 28; Alberuni, *India*, tr. Sachau, I. 16.

7. Cf. Haig, *Indus Delta Country*, p. 35.

8. Haig, *Indus Delta Country*, p. 35 and note. Cf. Vincent Smith, *Early History of India*, 2nd Edition, p. 328.

9. According to the *Mujmalu-t-Tawarikh*, the earliest capital city of Sind, or Upper Sind, was Askalandusa; but it does not seem possible that this is represented by the Chinese syllables. Reinaud, *Fragments*, p. 18. Elliot, I, p. 109. If Pi-shan-p'o-pu-lo was in the alluvial plain it may have been eroded by the Indus and its name (? Vichavapura) forgotten. At least two capitals of the Kalthora princes were destroyed by the river, and only then did Ghulam Shah build Hyderabad on the safe and ancient site of Nerun Kot. The Rai of Sind may have been compelled likewise to transfer his capital from the plain to the similarly safe and ancient site of Alor.

On this hypothesis, Pi-shan-p'o-pu-lo may have been somewhere between, roughly, Pano Akil and Kandhkot, on the right bank of the Indus. This position would fit in well with the pilgrim's journeys from 'Sin-tu'.

10. Haig, *Indus Delta Country*, pp. 36-7; Cunningham, *Ancient Geography of India*, pp. 302-304.

11. Cf. Arrian, *Indika*, XXV; Pliny, VI, 23. 95. (re the Oreitai).

12. Brihat Samhita, tr. H. Kern, *J.R.A.S.*, New Series, Vol. V, (1871), Chap. XVI, 22. Cf. Julien, *op. cit.*, p. 208; Watters, *op. cit.*, II, p. 257; Beal, *op. cit.*, I, pp. 24c, 279. The legend still invests the island of Astola with terrors for Med fishermen. Cf. T. H. Holdich, *The Indian Borderland* pp. 206-7.

13. *Vide Supra*, chap. VIII, note 26.

14. Cunningham, *A. G. I.*, pp. 281-2.

15. Haig, *Indus Delta Country*, pp. 37-39.

16. Called 'O-fan-tchsa (Avada) by Julien, p. 209.

17. It must be admitted that the bearing of Mohro-jo-daro from the Buddhist settlement of Dhamraho-jo-daro, near Badah, is east and not north-east.

18. Julien, p. 209.

The main reason for assuming Fa-la-na to have been in the Gurnal valley is that according to the *Life*, the pilgrim, during the early stages of his return journey to China, made a detour from Lan-p'o (Laghman) and after 15 days' march due south reached Fa-la-na. The Gurnal is over 150 miles due south from Laghman and the country being very mountainous this would be a fair rate of travelling. (Julien, *op. cit.*, p. 265; Watters, *op. cit.*, Vol. II, pp. 262-3).

But if Fa-la-na were on the Gumal it has to be recognized that the distance between it and A-fan-tu from which according to the *Records* the pilgrim came (900 Li) must be greatly underestimated, while the distance onwards to Tso-ku-t'a (above 2000 Li) is overestimated in almost the same proportion. On the other hand, if Fa-la-na was situated as I suggest, the two stages will be found to accord well with the actual distances along the routes through the hills.

19. Tr. T. Postars, *J. A. S. Bengal*, Vol. XVI (1845), p. 78.
20. *Chachnama*, ed. Kalichbeg, p. 61.
21. *Jhalawan Gazetteer*, p. 221.
22. E.g., by Haig, *op. cit.*, p. 34.
23. Kalichbeg, p. 11. In the *Tarikh-i-Masumi* and *Tuhfat-ul-Kiram*, which for this period seem to be based entirely on the *Chachnama*, the boundaries are made even more extensive to the north (north-west) and south.

It should be noted that the *Mujmal-ut-Tawarikh* also states that in the later period of Hindu rule in Sind the country was divided into four sub-kingdoms under a paramount ruler (Elliot, Vol. I, pp. 109-110).

24. Julien, *op. cit.*, pp. 96-7; Watters, *op. cit.*, II, p. 337.
25. Vincent Smith speaks of Cheh-ka as a 'kingdom'. *Early History of India*, pp. 327-8. Cf. Watters, I, p. 286; II, 254-5.
26. Kalichbeg, *Chachnama*, pp. 59-60. Cf. Strabo, XV, l. 26.
27. Kalichbeg, *Chachnama*, pp. 117-8.
28. *Mihran of Sind*, p. 231, note 183.
29. Kalichbeg, p. 94; *Mihran*, p. 233, note 164. I cannot see what ground Raverty has for his remark that the operations against Siwistan "must have been carried on in December 711 or January 712 A.D."—six months or more after the transactions at Nerun! July or August of 711 seems more probable.
30. *Mihrah*, p. 239, (end of note 187).
31. *Mihran*, p. 231, note 183 has "Sind Sahgar"; Kalichbeg, p. 90 translates "the lake of Sangrah".
32. Kalichbeg, p. 117.
33. The word used by Al Baladhuri is حور, mistranslated by M. Reinaud as 'baie'. This creek can hardly have been an outlet of the Indus, at least of any importance: the mouth of the river was two farsakhs to the east of it, according to the Muslim geographers of the immediately succeeding age. Al Masudi in his *Muruju-z-Zahab* indeed gives the distance as "two days' journey", but this seems to have been a slip, for elsewhere in the same work he says that the Mihran falls into the sea "about ed-Daibol" and in his later "*Kitabu-t-Tanbih*" he sets it at two farsakhs' distance, thus agreeing with Ibn Khurdudba. (Hodivala, *Studies in Indo-Muslim History*, p. IX). For Al Baladhuri see Elliot, Vol. I, p. 116. Ibn Khurdadba, *Ibid.* p. 15. Al Masudi, *Muruju-z-Zahab*, trs. Aloys Sprenger "*Meadows of Gold*" etc., (Oriental Translation Fund, 1841), pp. 234, 386.

Elliot's note at p. 37 of his *History*, that Ibn Haukal says Debal was to the east of the Mihran is incorrect: he says (*Ibid.*, p. 40) that the Mihran falls into the sea to the east of Debal.

For the approximate position of the place according to Haig and Raverty see *Indus*

*Delta Country*, pp. 42-50; *Mihran*, p. 322 (note 315). It is to be inferred from Raverty's note that he supposed the older and later Dewal to have occupied the same site; but there is a gap of nearly four centuries between the last mention of the former and the first mention of the latter. See also McMurdo in *R.A.S.*, Vol. I, p. 29; Cunningham, *A.G.I.*, p. 299.

34. See maps of the *Ashkali-l-Bilad* and the *Masalik-va-Manalik*; *Muruju-z-Zahab* of Al Masudi, trs. Sprenger, p. 385; *India of Al Beruni*, trs. Sachau, pp. 205, 206.

35. Kalichbeg, *Chachnama*, p. 100; *Mihran*, pp. 255-256.

36. Haig's version of this name is Jaham, (*Indus Delta Country*, p. 62). It is possibly the place mentioned by McMurdo, Himakot or Jhamkot, on or close to the Makli hills. *J.R.A.S.*, Vol. I, p. 31).

37. Kalichbeg, *Chachnama*, p. 99. As Muhammad bin Qasim in writing to Hajjaj from his camp here says that he is encamped on the bank of the Mihran, I infer that the river then passed close to the S.E. end of the Ganjo Takar. Raverty identifies the pond or lake with the Sonhari Dhandh. *vide* note 39 *infra*.

38. Kalichbeg, *History of Sind*, Vol. II, p. 162; McMurdo, *An Account of the Country of Sindh* etc., *J.R.A.S.*, Vol. I, pp. 234-5. See also Cunningham, *Ancient Geography of India*, pp. 279-281.

39. *Mihran*, pp. 226-7, note 173, "some 35 or 40 miles south of the modern Haider-abad and about the same distance east of Thathah". *Ibid.*, pp. 228-9, note 173—near the south end of the Ganjo Takar. *Ibid.*, pp. 234-5, note 187—(hills of Nirun) near the Sonhari Dhandh, west of Jierrak.

40. Al Istakhri, in Elliot, I, p. 29. Ibn Haukal, *Ibid.*, p. 39. Al Idrisi, *Ibid.*, p. 78.

41. *Mihran*, p. 218. Raverty reads Nirun here. Elliot renders the passage quite differently (I. p. 40). See also Raverty's note 173 in *Mihran*, p. 227.

42. Haig, in *J.R.A.S.*, VXI New Series, (1884) *On the Sites of Brahmanabad and Mansurah in Sind* etc., p. 285.

43. Raverty's reading. *Vide* note 33 *supra*.

44. Kalichbeg, *Chachnama*, p. 91.

45. Cf. also Cousens, *Antiquities of Sind*, pp. 124-5.

46. Haig, *Indus Delta Country*, p. 55.

47. I have adopted Haig's version in preference to Raverty's, "and from, or on, the north side the Ju'i Sind did not in former times flow"—because shortly afterwards the text is clear that the Governor Bajra, leaving by the north gate, "crossed the river" on his flight to Budhiyah. See also Hodivala, *op. cit.*, p. 88. He is inclined to read "the dhandh of Aral"—دهندہ ارل

48. It may be recalled that in modern times the Indus when in high flood discharges through the Aral into the Manchar lake (*Supra*, chap. III, p. 28). But when the course of the former was far to the east of Sehwan, the junction with it of the Aral would have been too far to the south for this process to have been possible.

49. But see Ibn Haukal (Elliot, I, p. 40). where the lakes west of the Indus are noticed.

50. Haig, *Indus Delta Country*, pp. 58-9. See also Hodivala, pp. 88-9.

51. Cf. Raverty, *Mihran*, p. 240, note 189.

52. Haig (*Indus Delta Country*, p. 59, note 82) thinks that it was possibly Gandava, and goes on to say that it was the chief town of the district of Kikanan.



53. It must be granted that these distances would probably serve also for Zihri, the place which Raverty would identify with Qandabil. See below.

54. Raverty, *Notes on Afghanistan*, pp. 566 and 558, footnote. But it does not appear, at least from the *Gazetteer of Jhalawan*, (p. 231) that there are any indications of any ancient remains there.

55. E.g. Raverty, *Notes on Afghanistan*, p. 564.

56. Kalichbeg, *Chachnama*, p. 39.

57. The province of Qandabil is said to have been subdued by the Arabs in the year 85 A.H. (704 A.D.) (Kalichbeg, *Chachnama*, p. 69). But their conquests in Northern Baluchistan do not appear to have had any stability till after the conquest of Sind.

Thus the *Chachnama* tells us also (Kalichbeg, p. 156) that after the fall of Rawar, Jaisiah or Jai Seaha, the son of Dahar, wrote to several of the provincial governors of the kingdom for help, and among them his cousin Dhal son of Chandar, "in the country of Budhia and Kikavan". Cf. Raverty, *Mihran*, p. 241, note 189.

When Bahmanabad capitulated Muhammad bin Qasim sent one of his officers, by name Malik, to be governor of Qandabil. Kalichbeg, *Chachnama*, p. 173.

58. Kalichbeg, *Chachnama*, p. 99. If, as is probable, this place Aghror was the same as Baghrur, which according to Al Baladhuri as well as the *Chachnama* was in the immediate vicinity of Alor, this passage supports the view expressed above, (p. 14), that Sisaur was much further north than the Manchar lake. Cf. note in Hodivala, p. 90.

59. Kalichbeg, *Chachnama*, p. 30. Haig, *Indus Delta Country*, p. 133 (Appendix). There is also a persistent tradition connecting the neighbouring place named Kotri, where the bed of the Lohano Dhoro is particularly well defined, with the semi-mythical ruler Dalurai. See *J.S.H.S.*, Vol. VIII, p. 49.

60. Kalichbeg, *Chachnama*, pp. 42-43, also 54.

61. This statement alone puts out of court Cousens' theory that Rawar was in Upper Sind. *Antiquities of Sind*, p. 23. Cf. Hodivala, p. 86.

62. For the place of Dahar's death, Elliot's rendering "between the Mihran and the stream called Wadhawah (or Dadhawah)" (I. 172) is to be preferred to Kalichbeg's "in the gulf of Dhawah, in the waters of the Mihran" (*op. cit.*, p. 153).

After the capture of Bahmanabad, Muhammad posted an officer at the fort of Rawar particularly to control the traffic of boats on the river, which would appear to have been the Mihran; perhaps a left-hand branch of it.

63. Haig, *Indus Delta Country*, pp. 63-4.

64. Kalichbeg, *Chachnama*, p. 157.

65. Kalichbeg, *Chachnama*, p. 158. The map in the *Ashkalu-l-Bilad* shows a *ماری* place (read by Elliot as Ballari) on the eastern channel which branches off from the Mihran above Mansurah. This may possibly represent the same name as occurs in this passage of the *Chachnama* (map in Elliot, I, opposite p. 32) Cf. *Mihran*, p. 215 and note 144.

66. For Mansurah, see Al Isakhri (Elliot, Vol. I, p. 27); Ibn Haukal (*Ibid.*, pp. 34-5); Al Idrisi (*Ibid.*, p. 78).

67. The map accompanying the *Ashkalu-l-Bilad* is reproduced opposite p. 32 in Elliot, Vol. I. That belonging to the *Masalik-wa-Manalik* appears as Plate XI at the end of Major Raverty's *Mihran of Sind*. For the former, see map No. 9 in this volume.

68. Al Baladhuri in Elliot, Vol. I, p. 122. Cf. *Mihran*, p. 200, note 105.
69. Cousens, *Antiquities of Sind*, pp. 69-70.
70. *Mihran*, p. 239; Haig, in *J.R.A.S.*, XVI New Series, (1884) *On the Sites of Brahmanabad and Mansurah in Sind* etc., pp. 281-294.
71. Kalichbeg, *Chachnama*, p. 158. Cf. map, Plate V, in Cousens, *Antiquities of Sind*, and text, pp. 59-60. The channel which Haig conjectures ran from N.E. to S.W. (*vide* his sketch map in *J.R.A.S.* XVI, art. XIII) does not exist. It would have been at right angles to the general fall of the country, here approximately N.W. to S.E.
72. Cousens, *Antiquities of Sind*, p. 67.
73. Elliot, Vol. I, p. 106.
- شهری بنا کرد و بہمن آباد نام نهاد و بروایتی گفتہ اند منصورہ است واللہ اعلم  
(Reinaud, *Fragments*, p. 15).
74. Cousens, *Antiquities of Sind*, pp. 59-60. Kalichbeg, *Chachnama*, pp. 33-36. Haig, in *J.R.A.S.*, XVI p. 292, suggests another neighbouring site for Sawandi. This is evidently that known as Dalurai-warō-Bhiro, briefly described in *J.S.H.S.*, Vol. VIII, p. 48.
75. *Supra*, Chap. 3, p. 34.
76. *Mihran*, p. 243, note 189; Kalichbeg, *Chachnama*, p. 173, reads "Dhandh Vikarbha". See also *Hodivala*, p. 96.
77. Elliot, Vol. I, pp. 23-4. Raverty notes that one manuscript of this work (*Muruj-uz-Zahab*) has "further on" instead of "there" (at Alor): *Mihran*, p. 110. The meaning of this passage is ambiguous; *vide* also translation by A. Sprenger, at p. 386.
78. See note 33 above. Hodivala suggests (*op. cit.*, p. ix) that Al Masudi must have borrowed the statement in his *Kitabu-t-Tanbih* from Khurdadba (*vide* Elliot, Vol. I, p. 15). Al Masudi indeed praises this author in the introduction to the *Muruj-uz-Zahab*, but he also mentions his own travels in Sind and elsewhere. Sprenger, *op. cit.*, pp. 3-4, 8-26.
79. Chap. 7, p. 108. Raverty's version of the passage in Al-Masudi's work is in *Mihran*, pp. 209-210. It should be noted that Al Idrisi places 'Dor' or 'Ror', by which he evidently means Alor, on the left bank of the river, which he says "flows west of that city; it compares with Multan in size". Raverty, *Mihran*, p. 209.
80. Kalichbeg, *Chachnama*, p. 11.
81. Al Baladhuri, in Elliot, Vol. I, pp. 122-3; *Chachnama*, *Ibid.*, p. 164. مقابل حصار اورو. Haig, *Indus Delta Country*, p. 62, was inclined to identify Baghrur with Bakhar; Raverty and Cousens do not think Bakhar was in existence at this time. I suggest that it may have corresponded with the modern Rohri.
82. Elliot, Vol. I, p. 28.
83. So in Kalichbeg, *Chachnama*, p. 187. Elliot gives "Yabiba" (يابيبه). He reads the name in the other manuscript he consulted as *باسه* (Basah); Raverty renders this as *السكه* (Al Sikah). Elliot, Vol. I, p. 202; *Mihran*, p. 244 and note 190.
84. Kalichbeg transliterates "Gholkandha" (*op. cit.*, p. 188). There are many variant readings, *vide* Appendix to Elliot, Vol. I, pp. 365-7. Raverty discusses very fully the theories which connect Askandah with Alexander the Great, the Oxydracae, and Uchh. (*Mihran*, pp. 244-52, note 192). Al Baladhuri's *السكه* (Elliot, Vol. I, p. 122) may indicate either

this place or that just mentioned, for which Kalichbeg prefers to read "Babiyah" (see preceding note). There is evidently confusion between the two.

Askandah would seem to be the same place as **عسقلان** Askaland, mentioned in the *Mujmal-ut-Tawarikh* as the first capital of Ancient Sind (Elliot, Vol. I, p. 104). This is given later in the same work as Askalandusa **عسقلانوسا** (Reinaud's *Fragments*, p. 18).

85. The *Tarikh-i-Maasumi* mentions the conquest of Debalpur, which was on the bank of the (old) Beas. Kalichbeg, *Chachnama*, p. 192, footnote. Cf. *Mihran*, pp. 253-4, note 194.

86. *Mihran*, p. 254, note 194. But Hodivala points out that there are several variant readings for the name. (*op. cit.*, p. 100).

87. Watters, *Yuan Chwang*, Vol. I, p. 286.

88. Kalichbeg, *Chachnama*, p. 160.

89. *Ibid.*, pp. 55, 157; *Mihran*, p. 241, note 189. Rumlā or Ruml is stated by Ibn Khurdadba to be one of the countries of Sind (Elliot, Vol. I, p. 14) and is referred to by Al Idrisi as in the interior on the borders of the deserts (reckoning from the coast about Broach). *Ibid.*, p. 86.

90. Kalichbeg, *Chachnama*, pp. 122, 157.

91. *Ibid.*, pp. 160-1; *Mihran*, p. 242, note 189.

92. Kalichbeg, *Chachnama*, pp. 172, 180.

93. Kalichbeg, *Chachnama*, p. 185.

# 10

## SIND IN MUSLIM TIMES

THE extensive realm of the Brahman Rajs of Sind was divided into two provinces under the Abbaside Khalifate, with capitals at Multan and Mansurah; an arrangement corresponding, as Sir Mortimer Wheeler points out, with the organization of the prehistoric "Indus" state, with its centres at Harappa and Mohen-jo-daro.<sup>1</sup>

Alor, no longer central but near the common frontier of these two provinces, gradually declined in importance, but continues to be mentioned down to the beginning of the thirteenth century A.D.<sup>2</sup>

Al Beruni, who wrote about ninety years after Al Masudi, describes Alor as about fifteen farsakhs south west of a place called Bhatia and situated between the two branches of the Sind river.<sup>3</sup> In another passage in his "India", however, Al Beruni gives quite a different picture. After describing the huge stream of the united rivers of the Panjab, he mentions that it became known as the Mihran, "after it has passed the city of Aror as a united stream", and says that further on it encloses in its course places like islands until it reaches Mansurah, situated among the branches; and then flows into the sea by two channels, one near the town of Loharani and the other more to the eastward in Cutch, at a place called Sindhu-sagarah,<sup>4</sup> that is, the sea of Sind.

Al Masudi had stated that *both* branches of the Mihran fell into the sea "at the town of Shakirah",<sup>5</sup> and his immediate successors Al Istakhri and Ibn Hauqal, who like him had travelled in Sind, both represent the Mihran to have disembogued by a single mouth, to the east of Debal. Al Idrisi, compiling his compendium of geography from previous works, adopted the account of the two last named, disregarding Al Beruni;<sup>6</sup> perhaps on the ground that it was safest to depend on the descriptions

by writers who had actually been in Sind, rather than on one later in time who had not. Before discussing the relative reliability of these authorities, I would draw attention to the name given by Al Baladhuri to the inlet of the sea on which a naval battle was fought between the Arab governor Junaid and Jai Senha, son of Rai Dahar, as mentioned in the last chapter.<sup>7</sup> He calls it the 'Butaihat-al-Sharqi', which General Haig renders "eastern inland sea" and Raverty "the estuary of ush-Sharki (or Shagira)."<sup>8</sup> Haig is of opinion that this inland sea occupied the western part of the existing Rann of Cutch; Raverty assumes it to have extended much further to the northward, to the Samaro dhandh, and also apparently to Badin.<sup>9</sup> We should probably be safe in assuming that this estuary or lagoon was connected if not identical with the Sind Sagarah, or Shakar, into which Al Beruni tells us the eastern branch of the Mihran fell. It would thus have practically coincided with the modern Kori creek. The encounter doubtless resulted, as Haig suggests, from an attempt by Jai Senha to subvert the Muslim occupation with the aid of troops brought across from Cutch.<sup>10</sup>

Returning to the question of the situation of Alor with regard to the Indus; Al Idrisi in his *Nuzhat-ul-Mushtak* says clearly that the Mihran flowed to the west of Alor, *i.e.*, the town was then on its eastern side, as we should expect it to be; and also that the point of separation of the two branches was below Alor at a place called Kalari, and that they again united about twelve miles below Mansurah. This writer, like Al Beruni, had no personal knowledge of Sind; his method, reminiscent of Ptolemy's, was generally speaking to lift from writers of the tenth century statements which had been true of their own times but might subsequently have become obsolete, and to combine these with up-to-date items of knowledge. The result is often confusion, sometimes absurdity.<sup>11</sup> So far as the position of Alor is concerned, indeed, Al Idrisi seems to be correct;<sup>12</sup> but when he states that one of the branches into which the Mihran divided near Kalari ran to the north, he states an obvious physical impossibility.<sup>13</sup>

In the works of the early Arab geographers, then, we find nothing to suggest that Alor was ruined by a change in the river's course which deprived it of its water supply. The first reference to this catastrophe of which I am aware occurs in the *Tarikh-i-*

Tahiri, which was completed in 1030 A.H. (1621 A.D.)<sup>14</sup> From the account in this work it would appear that the change took place towards the end of Sumra rule in Sind, though the version given in the *Tuhfat-ul-Kiram*, written 150 years later points to a date early in the second century of the Hejira.<sup>15</sup>

No allusion to a drastic alteration of course by the Indus in the first half of the fourteenth century A.D., which the *Tarikh-i-Tahiri* account postulates, is made by contemporary authors; the description of Bakhar by Ibn Batuta, when he passed through the place in 1333 A.D., gives no indication that the then conditions, which approximated to those of today, were recent.<sup>16</sup> Nevertheless, the tradition of the desertion of Alor by the river which had long given it prosperity is so universally held in Sind that it cannot be dismissed as without foundation, merely on account of negative evidence that it did not take place in the era to which it is now assigned.

There can be no doubt that at some time a branch of the Indus flowed in the well-marked channel which divides the Rohri range of hills immediately north of Alor, and about four miles south of the Rohri gap through which the whole stream now passes.<sup>17</sup> How the river came to desert the Alor channel is the subject of a legend recounted very similarly in the two works mentioned above. It is said to have been diverted artificially by one Saif-ul-Mulk, a rich merchant, in defence of his property and of his beautiful handmaid, Badi-ul-Jamal. The tyrant ruler of Alor, Dalurai, was levying an unconscionable tax on the merchant's goods, and in addition required—as his custom was—possession of the handmaid. The merchant obtained three days' grace which he employed in getting a large number of skilled men, at vast expense, to build a bund or embankment to turn the river away from Alor at a point up stream. This they succeeded in doing; the river took a new course "towards Sehwan and the Lakhī hills", and one morning the inhabitants of Alor found "nothing but mud and muddy water" in their formerly deep-flowing channel.<sup>18</sup>

Raverty devotes some space to arguing that an operation of this kind would be by no means impracticable, which may be true if only a minor branch had to be dealt with, and there happened to be a valley-line of low ground close by, into which a cut could be given. But we need not assume that Alor was

deprived of its water by anything but the natural caprice in the river.

Raverty also argues forcibly that the change of course must have removed the stream "much further to the westward than the gap in the limestone hills where Bakhar and Ruhri were afterwards founded."<sup>19</sup> There would have been little difficulty, had the river receded only to its present bed, in digging a serviceable canal from it to Alor—such as in fact existed prior to the inauguration of the Lloyd Barrage irrigation.<sup>20</sup>

But looking to the other relevant circumstances, it seems very doubtful whether the decay of Alor was directly due to a change in the course of the Indus. Apart from the references to it as a place of importance by the Arab geographers quoted above, we find it mentioned quite independently in the *Annals of Jaisalmir and Mewar* during the twelfth century A.D.; the latter stating that the place was held by a member of the ruling family of that state, as a vassal of Kabul, as late as 1201 A.D.<sup>21</sup> Again, we have the evidence of the translator of the *Chachnama*, Ali Kufi, who in his preface declares that in or just after 1216 A.D. he visited Bakhar and Alor, and that it was from the Kazi of the latter, a lineal descendant of the first Kazi installed there by Muhammad bin Qasim himself, that he obtained the original manuscript in Arabic.<sup>22</sup> The histories of the Delhi Sultanate begin to mention Bakhar at about this time, and it is probable that the older city declined as the newer one rose in importance.<sup>23</sup> It may well be that the Indus had only recently established its course through the Bakhar gap at this period.

It has been plausibly suggested that the Dalurai legend connected as it is in both the Sind histories with the tyranny and downfall of the Sumra rulers, really commemorates the drying up of the lower Hakra river, and the ruin not of Alor but of the Sumra capital Muhammad Tur.<sup>24</sup> This may be inferred from the account in the *Tarikh-i-Tahiri*—it being premised that the dates given by the author are obviously incorrect. It is stated in this work that the portion of Sind "now flourishing"—*i.e.*, in 1620 A.D.—was a "mere waste" in the Sumra epoch "owing to the scarcity of water in the Sind or Panjab river, which is known by the above name below Bhakhar."<sup>25</sup> The portion of Sind referred to is presumably western and southwestern Sind. The river which flowed below Alor was "the river of the Panjab,

which is likewise called Hakra, Wahindah and Wahan indiscriminately—for its name changes at every village through which it flows. After fertilizing the land, the river pours its waters into the ocean."<sup>26</sup> Thus there were two distinct and essentially independent rivers, which for the sake of perspicuity may be called the Indus and the Hakra. The deficiency of water in the lower Indus may be interpreted as local rather than absolute—in other words, the bulk of its discharge ran elsewhere than by the course known to the author.<sup>27</sup> On the other hand, there was abundance of water in south-eastern Sind. I would offer the following interpretation of these conditions: the main stream of the Indus above Alor ran to the north westward of Sukkur, probably about the line of the old Sind Dhoru and Sind Wah, but also sent off a branch to the left hand which ran through the Alor gap.

Below this point the river may be assumed to have run somewhat to the eastward of its present course, and in Lower Sind to have followed that now marked by the Puran—any branches to the right hand being comparatively insignificant.

The Hakra may still have been receiving, through the channels which connect it with an old bed of the Sutlej, a share of the discharge of that river, though probably only in the inundation season when, we may presume, a considerable body of spill water from the Indus above Alor also regularly found its way down the Nara valley to join that from the Upper Hakra. This would account for the comparative prosperity of south-eastern Sind.

What I conceive to have occurred was a movement in the lower Sutlej, depriving the Hakra of its regular seasonal supply and adding to the volume of the Panjnad. This produced, or perhaps coincided with, a swing by the Indus itself which abandoned the course to the north of Sukkur and directed its full force against the hills near Bukkur. The gap here being deepened by scour, the whole stream soon became concentrated in it, and the old branch to Alor ceased to flow, except perhaps in the flood season.

The river's course through lower Sind was also modified: less water passed down the Puran, and with the loss of a regular seasonal supply in the Hakra, the south east corner of the province which had been so flourishing suffered severely. The accomplishment of the entire process may have taken many seasons,



and with the complicating factor of the occasional discharges from the Indus into the Lower Hakra by way of the Nara, which persisted into modern times, the tradition of the previous courses of the river, and of what had actually occurred, became confused.

The ascertained facts with regard to the bund of Alor which is so important in the legend illustrate this confusion. The text of the *Tarikh-i-Tahiri* actually reads that the bund was built "below Alor".<sup>28</sup> As the context obviously required that it should have been built some distance upstream, Elliot amended the passage in his translation. Now there is, or recently was, a causeway across the channel leading into the Alor gap from the east; and this was supposed by some to be the "bund of Alor" though its function was virtually the opposite of that of the legendary bund and, according to McMurdo, it was erected only in the second half of the eighteenth century, by Ghulam Shah Kalhoro.<sup>29</sup>

After the country was occupied by the British, Richard Burton and others became interested in the traditional verses which mention the bund of Alor: the bund was to burst, with the result that the Hakra would flow again.<sup>30</sup> This pointed to a bund across the Hakra itself, and when the proposal to give water to the Nara from the Indus was being investigated, the suggestion was made that the bund should first be removed, and the effect observed. There was a bund across one of the spill channels from the Indus, which leads down towards the Nara valley, at Bihra, some five miles east of Alor: but its object, like that of the vast majority of such works noticed by British officers at this period, was clearly to induce flood water to spread out over the adjoining lands and enable their cultivation. Engineers and surveyors established that its effect in impeding the flow of spill water into the Nara valley was negligible. whereupon Sindhis asserted that the vital bund "two cross long and sixty gaz wide" was much further to the eastward.<sup>31</sup> This seems to have been purely fictitious, though Major Raverty argues as if it existed in reality. Yet had there been such a bund, in the position to which he assigns it, it could not have served any purpose but to bank up flood water in another spill channel for cultivation.<sup>32</sup>

It seems necessary to observe at this point that several authorities hold that until the thirteenth century A.D. the Nara-

Hakra was flowing as a perennial river to the sea, and that this was due to the simple fact that it was the terminal course of the Sutlej which only became a tributary of the Indus after this date. Such a revolution in the hydrography of the Panjab would have been more than sufficient to cause the various changes which appear to have taken place in Sind.

I have already made mention of the traces of old channels between the existing bed of the lower Sutlej (Ghara) and the Hakra, in Bikanir and Bahawalpur; and on the score of physical geography it would seem to be possible that the Sutlej once terminated in the Hakra. But the question remains, at what period, if at all, did these conditions obtain?<sup>33</sup> I have already set forth reasons for holding that the Sutlej was not an independent river in the time of Alexander: and Ptolemy, five hundred years later, lays it down as joining the Beas in much the same manner a today. The argument of those who hold the theory of its subsequent connection with the Hakra depends largely on negative evidence—the fact that the Sutlej is hardly ever mentioned by the early Muslim geographers and historians, while kings and conquerors who habitually record their passages over other rivers do not seem to have crossed the Sutlej on routes by which this would seem to have been inevitable.<sup>34</sup>

Most of this "evidence" in my view can equally or better bear the interpretation that the Sutlej had united with the Beas at an early period, and so remained, though we may suppose some vicissitudes, and certainly the point of junction must have altered. But it was only down to that point, wherever it was, that the Sutlej retained its own name. Below it, the combined stream continued to be called the Beas, its channel more or less corresponded with that formerly possessed by the Beas exclusively. As further movements took place, the old independence of the Beas was perhaps forgotten, and by the beginning of the sixteenth century the united river was being called the Ghara. It was not, however, spoken of as the Sutlej until British officers, impressed with the greater importance of that river, set the fashion about the end of the eighteenth century.<sup>34</sup>

There are other objections to the Sutlej-Hakra theory, if it may be so called; but I may here content myself with reiterating my hypothesis that a less drastic alteration in the course of the Sutlej-Ghara may well have stopped a formerly regular

overspill into the Hakra, and being accompanied by a slight but important movement on the part of the Indus above Sukkur, produced those changes in Sind which we have been considering.

The year in which the Indus first made its way through the Bukkur gap was supposed by E.B. Eastwick to be revealed by the inscription in the shrine of Khwaja Khizr, also known as Zindo Pir, on the small island opposite Rohri. The chronogram on the Abjaid system gives the date 341 of the Hejira, corresponding with 952 A.D. It seems likely that the stone bearing this inscription was taken from an older building and incorporated in the fabric of the existing shrine. But Mr. Yazdani shows that the inscription itself could not have been produced till long after the date which it records, since the Nastaliq character and the custom of composing chronograms in Persian verse did not come into vogue until several centuries after that period. The purport of the verses is also ambiguous, and the idea that it refers to the date when the Indus adopted this course and formed the island, though attractive, must be dismissed as fanciful.<sup>36</sup>

Eastwick also states that he deciphered inscriptions on two large stones by the side of the old river bed which penetrates the hills close to Alor, to the effect that they had been set up by Mir Masum to mark the ancient course of the stream. Subsequent investigations have failed to find this monument; the inscribed block of stone examined by Cousens and Yazdani makes no mention of the river, but conveys a religious exhortation by Mir Masum, dated 1599 A.D.<sup>37</sup> It is noteworthy that the Mir in his history of Sind makes no mention of any change of course by the river, or of the existence of Dalurai, though he was a native of and long resident in Bakhar, and was by no means averse from recording marvels of nature.<sup>38</sup>

According to the legend recorded in the *Tarikh-e-Tahiri* and the *Tuhfat-ul-Kiram*, the tyrant Dalurai transferred his capital from Alor to Bahmanu, or Brahmanabad, and by persistence in his course of wickedness brought destruction on this place also. His association with it survives in the name of the modern village, Dalura, close to the ruins. The story bears a strong resemblance to many others. Indeed, almost every old site in North West India has its local tradition of a wicked king, or a wicked people, on whom the vengeance of God fell; and the name of Dalurai is similarly associated with a site in Dera Ghazi

Khan district. As to Bahmanabad, we are told that the city was swallowed up by an earthquake, one tower being left standing to serve as a memorial.<sup>39</sup>

Major Raverty accepts as a fact the destruction of Bahmanabad by an earthquake and assumes it to have taken place about 1050 A.D.<sup>40</sup> But at this period and for nearly two centuries afterwards the city of Mansurah, only six miles away, according to his view, was flourishing. Al Idrisi seems to have obtained up-to-date information about the place for his history, remarking that the buildings were constructed of burnt bricks, tiles and plaster.<sup>41</sup> Al Kazwini, writing a century later states (as did so many of his predecessors) that a branch of the Mihran encircled it and adds "It is very hot and has many fleas, but it is a place of considerable size and has good and sweet water." Even if we reject his testimony, on the ground that he copied extensively from an author who wrote three centuries before his time, we find Minhaju-s-Siraj, in his *Tabaqat-i-Nasiri*, a work nearly contemporary with that of Al Kazwini, making mention of events occurring in 1226 A.D. in the territory of Mansurah "which is one of the cities of Siwistan". Ibn-Al-Wardi, writing about fifty years after that date, refers to the place in the past tense, linking it with others of the same name which had gone to ruin.<sup>42</sup>

Raverty was perplexed by the reference in the *Tabaqat-i-Nasiri*, remarking "It can scarcely be supposed that the earthquake, which is said to have so suddenly destroyed Bahmanabad and its inhabitants would not have affected Mansuriyah likewise, to some degree at least, seeing that it was only about six miles distant from it. If it was inhabited when the Khalji Turks appeared there (in 1226 A.D.) it must have been in a ruinous state, and the inhabitants probably very few."<sup>43</sup> As already explained, Al Baladhuri's statement, on which Raverty relies, that Mansurah was founded two farsakhs away from old Bahmanabad, cannot stand in view of the archaeological evidence adduced by Cousens, and the supporting inferences from Al Idrisi and others, that Mansurah was built on the site of, and from the materials of, the former Bahmanabad.<sup>44</sup>

The cause of the abandonment of this city is uncertain. Tradition ascribes its destruction to an earthquake, provoked by the wickedness of Raja Dalurai. Haig thinks that it was probably due to "a great change in the course of the Indus . . . . at some

time between the middle of the thirteenth and the early years of the fourteenth century.”<sup>45</sup> Cousens remarks, “The great quantity of wells all over the site . . . show that the river indeed must have dried up, but there being plenty of water in the subsoil the sinking of wells obviated the necessity of abandoning the site on that account. . . . A desertion of the place for this cause would have been a gradual affair, in which case we should hardly find the great quantity of copper coins left scattered about the site.”<sup>45</sup> He prefers to suppose that the city was sacked by an enemy. The archaeological evidence he assembles—the great quantities of human bones, the absence of precious metals, and the abundance of small copper coin scattered about—is consistent with this theory, but by no means proves it. Excavation has not been sufficient to justify the inferences from the absence of particular objects. On the whole, the balance of probability seems to be that the prosperity of the place was destroyed by the desertion of its river, that the inhabitants abandoned it by degrees, carrying away everything of value, and that in the hour of their weakness the remnant were attacked and slaughtered by enemies or local bandits attracted by the prospect of loot.<sup>47</sup> Cousens misses the point when arguing that the site need not have been abandoned since wells could be and were sunk effectually. A large commercial city such as Al Idrisi describes cannot exist on drinking water alone. Without irrigation from canals and watercourses there could not be sufficient agriculture in the vicinity to support the population, and trade would decline with the loss of the convenient communications by water.

While it is no doubt possible that three independent alterations of course by the Indus took place in as many centuries, or even within a shorter period, resulting respectively in the decline of Alor, the ruin of the Sumra lands in south eastern Sind, and the abandonment of Mansurah, I consider it more probable that all three events occurred within a few years of one another, and were due to a single change, or process of change, on the part of the Indus, as already set forth.<sup>48</sup>

It may be more than a coincidence that we first hear of Bakhar ( vul. Bukkur ) and Rohri at about this same period—the first half of the thirteenth century A.D.. They may have existed prior to this time as places of small importance, but had their position commanded the passage of the Indus as it has subsequently

continued to do, they would certainly have figured in the campaigns of Sultan Muhammad-i-Sam Ghori.<sup>49</sup> The Sultan, after securing Multan, invaded Gujerat by way of Uchchh in 1177-8 A.D., and five years later marched from Multan to Debal and annexed the whole province. Neither Bakhar nor Mansurah is mentioned in the account of these operations and it must be inferred that neither could have been of strategic importance at that time. The first allusion to Bakhar,<sup>50</sup> at least in Muslim times, is in connection with the viceroyalty of Malik Nasir-ud-Din Kabacha, in the first quarter of the thirteenth century A.D., at which time it was a strong fortress; and Raverty suggests that it may have been fortified by his predecessor, the first representative of the Sultan above mentioned in his new conquest.<sup>51</sup>

It is likely then that a branch at least of the Indus had begun to flow through the Bakhar gap at some time in the last quarter of the twelfth century A.D., if not earlier. Raverty's theory is that the main stream continued for at least another century and a half in its former bed, in all probability to the north of the present Sukkur. He also contends that down to the year 1228 A.D., at least, Bakhar had not been encircled by the branch first mentioned, but was a peninsula from the right bank, the river running past its southern side. This view is based on accounts of the transactions of this year at Bakhar, when the forces of Malik Nasir-ud-Din Kabacha were besieged in the fort by Nizam-ul-Mulk.<sup>52</sup> It is stated in the *Jam'i-ul-Hakayat* that Nasir-ud-Din was driven from the outer fortifications (حصار) into the inner citadel (قلعه), from which we might infer that the former probably included the modern Sukkur.<sup>53</sup> In the description of this affair in the *Taj-ul-Masir* also, there is nothing to suggest that Bakhar was an island, though it is styled "the eye of the forts and the face of the kingdom of Hind... which had not been taken by any Khusru."<sup>54</sup> Similarly we would not infer from the account in the *Tabakat-i-Nasiri*, a reliable work though meagre in details, that Bakhar was an island at that time.<sup>55</sup>

On the other hand, Juwaini in his 'Jahan Kusha' states clearly that Kabacha fled to "Akar and Bakhar, two forts on an island",<sup>56</sup> and this is confirmed by the account in the *Jami-ul-Tawarikh* of Rashid-ud-Din. Elliot in his note on the passage remarks that the *Tarikh-i-Alfi* says plainly "He" (Kabacha) "went towards the island

of Bakhar".<sup>57</sup> The *Jahan Kusha* was written about the year 650 A.H. (1252 A.D.), so the positive evidence that Bakhar was an island at the time of Kabacha's downfall may on the whole be held to outweigh the negative evidence of the other histories, in which the fact is not mentioned.

At least the process of insulating Bakhar was complete before 1333 A.D., when the Moorish traveller Ibn Batuta passed this way. He describes Bakhar as a handsome city through which ran a channel deriving from the Sind river. In the middle of this channel was a splendid hospice, where travellers were entertained, built by a late governor of the place.<sup>58</sup>

Raverty has invoked this and other passages in Ibn Batuta's travels in support of the theory that at this period the main stream of the Indus was still not flowing through the Bakhar gap. He states that the traveller on entering India came down the river and on 1st Muharram 734 H. (September 1333 A.D.) reached the junction forming the Panj Ab, thence proceeding to Jatoi (sic) and on to Siwistan; and draws attention to the fact that no mention is made of Bakhar on the downward voyage. "How did he reach Siwistan without passing Bakhar as he seems to have done? I conceive that he went down by the channel flowing further west" . . . etc.<sup>59</sup> Most of this is misleading, as will be clear from a study of Ibn Batuta's text. In the first place he reached Sind by way of Kachhi<sup>60</sup>—the "Panj Ab", he says, is only another name for the river of Sind<sup>61</sup>—and he did not sail down the river but crossed it and reached Janani (which Raverty renders Jatoi) after two days' march.<sup>62</sup> Thence he marched to Sehwan. He certainly sailed down the Indus from Sehwan to Lahari at its mouth; and it may be that he proceeded up stream by boat to Bakhar and Uchh, though he does not say so. The probability is that his entry into Sind and crossing of the Indus was at a point down stream from Bakhar, about the region of Larkana—the natural destination of a caravan from the Bolan taking the western route through Kachhi.

From this time onwards Bakhar figures prominently in Sind history. In 1520 Shah Beg Arghun re-fortified it, using for the purpose bricks from the old buildings of Alor; and took occasion to turn out the Syeds who had long resided there, giving them room for their houses at Rohri.<sup>63</sup> By this time there can be

no doubt that the entire stream of the Indus was flowing past Bakhar, much as it does today.

We are faced with similar, if not more difficult, problems in the attempt to trace the process of development and change in Lower Sind, during the five centuries after Muhammad bin Qasim's conquest.

We may first notice the ruins of Bhambor about twelve miles to the west of Gujo, on the right bank of the Gharo creek. The author of the *Tuhfat-ul-Kiram* states that this place was founded by one Bhambo Rai and was destroyed by an earthquake towards the end of the eighth century A.D. Mir Tahir, however, records that it was deserted on account of a failure of its river, and that the inhabitants peopled the pargana of Sakra, apparently towards the beginning of the eleventh century.

The earlier dating rests on the observation of Ali Sher Qani that the ruin occurred in the time of Sheikh Abu Turab who in the course of the campaigns of the Abbaside Caliphs to re-establish Islam in Sind is stated to have taken "the fortified town of Tharrah in the district of Sakoral" and some other places.<sup>64</sup> Investigation of these ruins, which cover a relatively small area, tends to show that the place was occupied, if not built, by the Arabs themselves. Cousens says that it was probably "nothing more than an outpost guarding the creek, or a small port regulating the shipping admitted into the open waterway leading to Dewal and the interior" and is of opinion that it was abandoned and fell into ruin when the creek became disconnected from the Indus.<sup>65</sup> McMurdo draws attention to the bearing on the former condition of Bhambor of the story of Sasui and Punhu, according to which the infant Sasui was floated down from Bahmanu to Bhambor in a basket; while the fact that her rescuer was a washerman tends to show that the water in this creek was at that time fresh.<sup>66</sup> I may add that among the traditions still current at Gujo, the scene of Sheikh Ali Turab's exploits, is one that suggests that in his time it was possible for ships to come up from the sea as far as Tharro.<sup>67</sup>

McMurdo believed that Bhambor did not exist until "the first Dibal" was deserted,<sup>68</sup> and we may now attempt to trace the history of the latter city, or rather the successive cities which bore that name. Debal appears to have revived after its sack by the Arabs at the outset of their conquest of Sind, and it is mentioned as the most important place on or near the coast by all the



geographers who described the country, from Ibn Khurdadba down to Al Idrisi.

Al Beruni's reference is of particular interest, in that he is the first to mention also the name of a town—Loharani—actually at the mouth of the western branch of the Mihran, which was later to supersede Debal as the port of Sind. He gives the distance between the two as twelve farsakhs, but it is I think permissible to suppose that this is a slip for "two", which Ibn Khurdadba and Al Masudi state was the distance from Debal to the mouth of the river.<sup>69</sup>

Al Idrisi's description of Debal suggests that here he was not, as so often in his *Nuzhat-ul-Mushtak*, blindly copying from his predecessors, but using up-to-date information. "This is a populous place but its soil is not fertile, and it produces scarcely any trees except the date palm. The highlands are arid and the plains sterile. Houses are built of clay and wood. The place is inhabited only because it is a station for the vessels of Sind and other countries."<sup>70</sup> Debal continued to be a place of importance well into the thirteenth century A.D. It was sacked and a mosque built on the ruins of an idol-temple by Sultan Jalal-ud-Din of Khiva; and in 1223 A.D. the same prince, in flight from Chingiz Khan, sought refuge there.

Haig suggests that this Debal may not have been the original Debal, "but some other town to which the famous name had been transferred". He appears to base this view on the alleged omission of Al Beruni to mention Debal by name. But this is a mistake: Al Beruni not only mentions the city of Debal in relation to Loharani, but also speaks of the "territory of Debal" in his description of the coast.<sup>71</sup>

It seems more probable that Debal never recovered from its severe treatment by Jalal-ud-Din; while Loharani may have been benefited by the great change in the hydrography of the Indus which I assume to have occurred shortly before 1250 A.D. for reasons which will shortly be stated.

When Ibn Batutah visited lower Sind, towards the end of 1333 A.D., the port of Sind and the seat of the local government was Lahari, which he describes as "a beautiful place on the shores of the ocean, and near which the river of Sind falls into the sea. Thus two seas meet near it: it possesses a great port, where people of Yemen, Fars, etc., put in."<sup>72</sup> There can hardly be a doubt

that this is the same place as the Loharani of Al Beruni. During his stay there the traveller went with his host to see some ruins in a plain seven miles from Lahari, called Tarna. Here was a vast quantity of stones, some like parts of men and animals, others like grain, with traces of walls of houses, and the remains of a building of cut stone in which was a statue on a platform. One of the walls bore an inscription in Indian characters. The governor told his guest that historians asserted that there was a large town there, the inhabitants of which committed many crimes, and were therefore turned into stone: the inscription, he was assured, gave the date of this event, about a thousand years before.<sup>73</sup>

Mr. G.E.L. Carter has described the remains of a mosque, known as the Thambawaro Masjid, a few miles north of the ruins of Lahori Bundar. The mosque was obviously constructed from the materials of a Hindu temple, which Cousens considered probably belonged to about the twelfth century.<sup>74</sup> It is tempting to recognize in this the Jami Masjid which Jalal-du-Din constructed on the ruins of an idol-temple at Debal, and also Ibn Batuta's "Tarna"; and in fact this identification would agree with General Cunningham's opinion of the position of Debal.<sup>75</sup> But the Lahori Bundar near this site is the place referred to by Nicholas Withington, Walter Paynton and others, in the seventeenth century A.D., in latitude  $24^{\circ} 38'$ , longitude  $67^{\circ} 22'$ : and I cannot believe that the delta of the Indus extended so far westward in Ibn Batuta's time, let alone in the epoch of Muhammad bin Qasim.

The author of the *Tuhfat-ul-Kiram* mentions the destruction of Bhanbhora "and some other towns" by an earthquake in the time of Sheikh Ali Turab, in the Khalifate of Harun-al-Rashid.<sup>76</sup> We are left with the impression that a severe earthquake did in fact occur at an early period of Muslim rule in Sind, causing great damage; and that the legends of the end of Bhambor and Bahmanabad, which are not recorded in written histories till many centuries later, represent a confused tradition of it.

The three centuries which separate Al Beruni from Ibn Batuta almost coincide with the period of Sumra supremacy in Lower Sind; and since the decline of their power is closely connected by the local historians with the drastic change in the course of the Indus, we may first notice what is said about the

river by the authority first named. Bearing in mind the fact that Al Beruni did not himself visit Sind, it must also be recognized that he was a man of critical and scientific bent, and of outstanding industry and integrity, most unlikely to adopt mechanically the statements of his predecessors without checking them by such means as were at his disposal, during his residence at Multan.

He considers the coast of India to begin with Tiz, the capital of Makran, between which and the territory of Debal was the gulf of Turan (Son Miani bay). He carefully distinguishes a gulf from an estuary,<sup>77</sup> and proceeds, "After the above-mentioned gulf follows the small mouth,<sup>78</sup> then the large, and thereafter one comes to the Bawarij, the pirates of Kaj (Cutch) and Somnath." It is clear from this that the west or right-hand branch of the Indus was the smaller and the eastern the greater of the two. When he comes to describe the course of the river, Al Beruni tells us that it divided into two arms near Mansurah "and flows into the ocean at two places, near the city Loharani and more eastward in the province of Kacch at a place called Sindhu-Sagara, *i.e.*, the Sind sea."<sup>79</sup> We infer from this account that at the beginning of the eleventh century A.D. the main branch of the Indus delta flowed in the old channel known as the Puran, through the territory with which the Sumras are particularly associated.

Ibn Batuta proceeded by boat from Sehwan to Lahari, at the mouth of the Indus, in 1333-4 A.D.; and accomplished the voyage in five days. The fact that he does not mention any branch stream leaving the channel he followed cannot, of course, be taken as evidence that none existed; but it is at least probable that at this time the main volume of the Indus was discharged by the mouth near Lahari, for the traveller remarks of it, "thus two seas meet there".<sup>80</sup> The "sea of Sind" was in Al Beruni's time the mouth of the eastern branch, then the larger of the two. This reversal of previous conditions I take to have resulted from the (presumed) great alteration in the course of the Indus higher up, towards the middle of the thirteenth century A.D.; and to it may be ascribed the deterioration of the Sumra's homelands in the south eastern half of Lower Sind, which was the prelude to their downfall. This may also explain why these princes moved their capital. It was at first near Tharri in the present Dero Mohbat (Matli) Taluka, situated on the channel called by Haig the Western

Puran, which united with the better-known Eastern Puran and the Hakra before falling into the Rann of Cutch. The site lies on the right bank of the old river bed and extends over about ten acres.

Either this channel or more probably the Puran proper is practically certain to mark the course of the eastern branch of the Indus mentioned by Al Beruni.

The Sumras subsequently transferred their headquarters to Muhammad Tur, on the left bank of a branch of the Indus known as the Gungro which connects with the Sir creek. The date and the cause of this move are unknown but it is likely to have been in consequence of the drying up of the Western Puran; and may well have been the result of that change in the course of the Indus in Upper or Middle Sind which I have suggested was the cause of the ruin of Mansurah, in the first half of the thirteenth century A.D. Muhammad Tur had become a flourishing place before the end of that same century when it was destroyed by Nasrat Khan, a general of Sultan Ala-ud-Din Khilji. The remains of another place supposed to have been important in the times of the Sumras are to be seen at Thal Bangar, or Bhungar, on the bank of the (eastern) Puran, between Pangrio and Naokot.<sup>81</sup>

Sumra rule does not appear to have been extended beyond the eastern delta country.<sup>82</sup> Their successors, the Sammas, a much more numerous and widely dispersed tribe, established their capital in the western delta in a position chosen probably for its capability for defence. At this time—about 1340 A.D.—the western branch of the Indus seems to have run in two widely separated channels, that to the right hand passing to the north of the Makli hills on the line of the modern Kalri canal, and the left hand arm following approximately the line of the Baghar, the two reuniting above Lahari. The "island" thus enclosed had an area of some hundred square miles and included the whole of the range of hills.<sup>83</sup> Here the fortress of Tughlakabad, the short-lived Samui, and Thatha were built in quick succession.<sup>84</sup>

The Kalri branch continued to be an important part of the Indus system for about two centuries and in 1519 seems to have been discharging the main volume of the river.<sup>85</sup> Later the Baghar became the most important branch and remained so for more than two centuries.

From the time of Muhammad bin Qasim onwards, Sehwan, also known as Sewistan, figures constantly in the history of Sind.

It was a strong fortress which commanded the route from Upper to Lower Sind by which rulers of the countries to the northward advanced in their invasions. Even when the Indus flowed at a considerable distance eastward from the place, the possession of it was essential to success. At the time when the Emperor Akbar sent the Khan Khanan to conquer Lower Sind the river above Sehwan seems to have been running to the west of its modern course, leaving Pat and Talti on the left bank; it passed close to Sehwan, and from Lakhi bent with a corresponding inclination eastward, to Nasarpur.<sup>86</sup> Along this reach a number of engagements between the Imperial forces and Mirza Jani Beg were fought in boats.

Raverty, in the course of discussion of the extent of the Delta of the Indus in the time of Akbar Badshah, which he believes was not south of a line drawn from near Karachi to about 20 miles above Lakh Pat, alludes to a story that the Khan Khanan, wishing to have a sight of the sea, obtained this from Moghalbhin, which is now nearly fifty miles from the coast. Raverty would derive the name of the place from the incident, changing "bhin" to "bin", the aorist tense of the Persian verb *Didan*, to see. Locally, the names of Mughal and Bhin are associated with two shrines. Raverty does not state the authority for his anecdote. In the *Tarikh-i-Masumi*, which is first hand, the Khan Khanan is stated to have visited the sea port of Lahri Bunder on this occasion.<sup>87</sup>

The head of the main delta in the seventeenth century A.D. was probably about twenty miles south east of the present Hyderabad, then still known as Nerunkot and a fortified place of some importance. The left hand branch called the Ren followed the line of the existing Guni canal down to Badin and the western end of the Rann of Cutch. It is doubtful, as Haig points out, whether the Ren was a perennial river; the main outfall of the Indus was by the right hand branch which ran a little south of west to insulate Tatta, as already mentioned.<sup>88</sup>

It is clear that the river Sutlej had ceased to feed the Hakra, except possibly by occasional overspill, at the beginning of the sixteenth century A.D. The united stream of the Sutlej and the Beas, already known as the Ghara, was adopted as a boundary between Mirza Shah Hussein Arghun the ruler of Sind, and Sultan Hussein Langah of Multan, in the year 1524-5. In the

same year Shah Hussein advanced against the fortress of Dirawar, which lies some 45 miles south south west from Bahawalpur in that part of the Hakra valley which Stein believes to have been an old bed of the Sutlej in prehistoric times. In that year, 1525, it was utter desert "so that even the birds of the air were afraid to glance at it". The Mirza took with his force supplies for a month and sunk a hundred wells before beginning the siege.<sup>89</sup> Thus from a period which may have begun long before the date mentioned, the upper Hakra from Suratgarh down to a point below Dirawar has remained dry, and its channels through Sind, the Wahinda, Raini and Nara, received only an occasional supply from the overflow of the Indus and Panjnad by way of the Ghauspur depression, and from "dhoras" below that point.

The *Tarikh-i-Tahiri*, written about 1621 A.D., has the significant remark "That part of Sind which is now flourishing was a mere waste at the period of the rule of the Sumrahs, owing to the decrease of the Ab-i-Sind...no water flowed towards those then waste parts." Which part of Sind is here referred to is not clear, but it may well have been the north-west, the Sarkar of Bakhar. It is probable that the converse of the statement would have been equally true—that the south eastern portion of Sind which had been flourishing in the time of the Sumrahs, owing to the great volume of water passing down the Puran, then the eastern branch of the Indus, and the Hakra, had become "a mere waste" in 1621 by the failure long before of these waterways.<sup>90</sup>

The lower Hakra, that is from about the position of Vinjrot down to the Rann of Cutch, was however chosen by Nadir Shah for the boundary of the southern portion of the territory ceded to him by Muhammad Shah the Mughal Emperor in 1739. It is called in the text of the treaty the Nala Sankra and it is evident that it was specified in order to annex to Iran the whole of the Province of Sind as then constituted. Had the Indus been adopted as the frontier throughout its length Sind would have been cut in two and its ruler, or viceroy, Mian Nur Muhammad Kalhora, would have been subject to two crowns. It is unthinkable that Nadir Shah would have agreed to any arrangement by which the allegiance of Sind would have been divided; and General Haig's identification of the Nala Sankra with the Sangra canal, or the Ren, cannot be accepted. It was

probably Nadir Shah's intention to make good his claim to what had been the twentieth satrapy of the ancient monarchy of Persia, which had included Sind, as much the greater part of the province lay west of the then course of the Indus.<sup>91</sup>

Raverty shows that there is reason to suppose that there was at least an intermittent flow in the Hakra through Sind in the 18th century A.D. There is in fact clear evidence that up to about 1742 it could be used, perhaps, only in a particularly favourable season, to transport stone from the Rohri hills to a point southward of Umarkot.<sup>92</sup>

It is strange that Major Raverty, who has produced such an elaborate reconstruction of the courses of the great rivers of North West India at various periods during the last thousand years, with the circumstances of a number of their changes, should have omitted all mention<sup>93</sup> of the most remarkable and extensive movement of the Indus bed in Sind of which there is historical record. This occurred about the year 1758-9 and the point at which the river forsook its former channel is about latitude  $25^{\circ} 40'$  and longitude  $68^{\circ} 31'$ , not far below Old Hala. Here it made and still makes an abrupt bend to the west, the abandoned channel running on a little east of south. The old bed is easily traceable by large masses of sand, almost obliterating the depression, past Nasarpur and about fifteen miles east of Hyderabad, as far down as Sheikh Bhirkio. Below this point it is not so clearly defined. In all, about 100 miles of the former course was abandoned; and the branches from it towards the east, such as the Ren, were disrupted.

This extraordinary transformation was not apparently completed in a single season; the tradition at Nasarpur, recorded by Haig, was that several years elapsed between the first withdrawal of part of the stream and its total diversion.<sup>94</sup> We learn from the *Tuhfat-ul-Kiram* that in 1755 A.D. Mian Muhammad Muradyab Khan, on succeeding to the principality of Sind, had founded a new town near Nasarpur which he named Muradabad: and that less than two years later "that accursed town was surrounded (or overwhelmed) by the floods of the river."<sup>95</sup> It is very likely that the great change began owing to an exceptionally heavy inundation during that season. Muhammad Muradyab's brother and ultimate successor then built a new "city" named Allahabad, not far from his father's capital. But this place never

became of any importance; civil wars supervened and it was only after several more experiments that Ghulam Shah, having firmly established himself as ruler of all Sind, made his final move to the old site of Nerunkot. Here the city of Hyderabad was founded in 1768.<sup>96</sup> By that time, we may suppose, the prince could feel confident that the river had settled down permanently in its new course, running west of the Ganjo Takar while a branch thrown off from not far upstream passed close by its eastern side. This, the Fuleli, ran on to join and adopt the bed of the Ren, and it may be that the southern part of the modern Hyderabad district did not suffer greatly from the change, though one must presume that the Ren received less water than formerly.

What happened further to the east is uncertain. We know that up to the year 1762 there was abundant and regular rice cultivation in the western corner of the Rann of Cutch, about Sindri below the outfall of the Hakra and of the Western and Eastern branches of the Puran. It is not clear which of these channels contributed the water. Mian Ghulam Shah after his first invasion of Cutch in 1763 erected embankments across the lower part of this combined channel within his own territory, with the object, it is said, of depriving his enemies of their rich cultivation, which produced a revenue according to Burnes of seven to eight lakhs of Cories. Ghulam Shah's successors and the early Talpur chiefs built similar bunds. It seems at least probable that the rulers of Sind had another motive for these proceedings; that the inundation through the Puran had dwindled ever since the great movement of the Indus westward and that in holding up the water by embankments they were concerned as much to benefit their own people and revenue as to injure those of their rivals.<sup>97</sup>

Whatever the effect of the change of course may have been on the extreme south east and south of Sind, we may be sure that the country immediately east of the city of Hyderabad must have been laid waste and probably did not recover its former prosperity for nearly a century. Not that the rulers were idle; the Sarfaraz Wah is named after Ghulam Shah's son, who had it dug to regenerate the stricken tract, and the nobles and zemindars doubtless excavated many minor canals.

The Kalhoras had a great tradition as promoters of irrigation; Mian Nur Muhammad, the grandfather of Mian Sarfaraz Khan, was responsible for some of the finest of the canals in Upper Sind



on both banks of the river. Only a very few of the entirely artificial canals of Sind are ascribed to earlier rulers, the best known being the Begari.<sup>98</sup> The later Sammas are credited with much improvement of the country round Tatta, but we have no information of specific works constructed by them. They, their predecessors from remote times, and the Moghal viceroys, probably did little more than adapt natural branches of the Indus from which the local landlords made simple cuts to irrigate their own holdings.

One result of the great change of course by the Indus in the middle of the eighteenth century was the final extinction of the Kalri branch north of Tatta; and soon after the year 1817 the Baghar, which had continued to be the main outfall of the river, silted up, the stream taking a more southerly direction, cutting straight across a number of the small branches thrown off from the left side of the Baghar.<sup>99</sup>

It is not clear whether this remarkable alteration in the hydrography of the western Delta was in any way due to the violent earthquake which in 1819 devastated Cutch and caused considerable changes in the Rann and its neighbourhood. The Kori creek, formerly the outlet of the Puran and the Hakra, had long ceased to receive any regular water from these sources; but it was greatly widened and deepened by the earthquake and the western portion of the Rann of Cutch has in consequence become more liable to overflow from the sea than formerly.<sup>100</sup>

Since the year 1819 there have been no revolutionary changes of course by the Indus, but perpetual local adjustments of its regimen involving at times a swing of four or five miles laterally for short reaches.<sup>101</sup> The great changes on the face of Sind during this period, and particularly in its latter half, have been produced by human endeavour. The Talpur rulers carried on the work of the Kalthoras and left a valuable legacy of canals to the British Government. For nearly ninety years after the battle of Miani the greater part of Sind was still being irrigated by canals constructed under these two dynasties and merely improved or extended by their successors. The extensive tracts of waste land which had not been reached by these, particularly in Eastern Sind, were meanwhile developed by new scientifically designed canals of large dimensions.

The first step in this direction was to give a perennial supply of water to some two hundred miles of the old Hakra channel, locally known as the Eastern Nara, by constructing a permanent feeder to it from the Indus just above Rohri. From the Nara thus transformed the great Mithrao and Jamrao canals were led through barren lands which permitted throughout the adoption of the most advantageous alignment. This canal system could therefore be linked directly to the Lloyd Barrage with only minor modifications when that great scheme was inaugurated in 1932. By this date, the double line of protective embankments on either side of the Indus had been completed from the northern frontier down to the head of the Delta, confining the river's overspill in the inundation season to a relatively narrow corridor. The process of harnessing the lower Indus is to be completed by the construction of two further barrages, designed to give controlled irrigation to the areas north and south of the main central zone controlled by the Sukkur Barrage.

Together with steady development of irrigation during the British period, starting with mere modification and extension of the existing canals and passing on to the huge comprehensive schemes which superseded most of them, went the improvement of communications; a network of roads followed by railways.

Looking back through the ages it is abundantly clear how constantly Sind's history has been determined by its geography. The great eastward barrier of sandy desert has always tended to separate its destiny from that of India as a whole. With Cutch, indeed, Sind's relations have been close at various times, but Cutch itself has for the most part remained in comparative isolation from the countries to the east. Sind's political connections have therefore been mainly with the north and west; and as communications even with these countries have been far from easy up till modern times, the country has remained for long periods in almost complete political detachment, ruled by indigenous dynasties.

There have also been times when, in spite of the essential homogeneity of the country, Upper and Lower Sind have been subject to different and rival sovereigns. The Sumras maintained an almost continuous independence in the Delta region for not far short of three centuries, during which Upper Sind was held successively by representatives of the powerful Ghazni and Ghori

Sultans, the Slave kings of Delhi, and the Khilji dynasty. The Sumra principality was raided from time to time, but not subdued; and the explanation of its survival is to be sought mainly in the difficulties of campaigning in such a country. This was the experience also of the Tughlak Sultans, Muhammad and Feroz Shah, in their attempts to subdue the Sammas. The existence in Kalhora times of virtually independent Hindu Ranas in the Western Delta and of "Thanas" belonging to the Rao of Cutch at Baliari and Badin;<sup>102</sup> and again the prolongation of the rule of the Sodha Rajputs over Umarkot after the accession of the Talpurs, are also to be ascribed in large measure to the inaccessibility of these regions.

The idiosyncrasy of culture and manners, so characteristic of Sind, springs from its isolation, and has modified the individuality of the many races that have successively made their way into the country and settled there.

The manner of life of the people as a whole has been dictated by the peculiar climate and by the capricious bounty of the Indus. But for the river, Sind could never have advanced beyond the precarious pastoral economy of its immediate neighbours. And until relatively modern times grazing continued to be the predominant occupation of the people even in the Indus valley. It was a sure means of livelihood, while agriculture was always liable to disaster from the vagaries of the river. Even after all that has been done to give assured irrigation to every part of the plains that the Indus can reach, the dwellings of the peasantry are for the most part of that temporary type appropriate to a semi-nomadic people. The habits which were followed of necessity for long ages are too deeply ingrained to be discarded suddenly. There is no tradition of settled village life such as obtains over the greater part of India; the social organization in the districts has remained on the whole patriarchal and tribal.

The vast extension of agriculture by irrigation from a closely controlled Indus has inevitably reduced the scope for the pursuit of inland fishing and wild fowling, which have been peculiarly characteristic of Sind from the earliest times. Just as the pastoral tribes have become converted into cultivators, so it is with the Mohanas. The demand for agricultural labourers in fact grew much more rapidly than the regress of facilities for fishing. The age-old boat traffic on the Indus survived the competition of

railways, being still a convenient mode of transport for certain commodities; but it was drastically dislocated by the operation of the Lloyd Barrage at Sukkur. Above that place it has retained a measure of vitality, but down stream can only be pursued with advantage in the inundation season. The supersession of the old inundation canals has excluded boats from many parts of Sind through which they plied as late as 1930. The construction of further barrages will probably extinguish this use of the river for transport, the exploitation of which was a principal object of the British in seeking to gain control over the country.

The degree of trade carried by the river through Sind, and into and out of it by sea, has varied much in importance from one epoch to another.<sup>103</sup> If the main factor in limiting or stimulating such traffic has been the political condition of the province and of the neighbouring regions, it has also depended much on the relative accessibility of the mouths of the Indus, and the stability of the successive sea ports on them and in their neighbourhood. Barbarikon, the earlier Debal which was known to the Chinese navigators, as well as to the Arabs,<sup>104</sup> Lahari Bunder, and the later "Diul Sind", have all had their day of importance, and in turn succumbed to the alluvial action of the Indus.

Karachi, immune from this influence and since the last century scientifically improved and secured from deterioration, may aspire to a longer existence than any of its predecessors as the port of Sind. No reference to this place is to be found in history for many centuries after the Classical period, when (according to my view) it was well known as the "Woman's Harbour". It makes its appearance under its modern name in 1742, when we are told that an officer sent by Nadir Shah to bring ships built to his order at Surat, sailed them to Karachi port.<sup>105</sup> According to Seth Naomal's account, the present town was founded about 1729, before which time there had been a mere fishing village there.<sup>106</sup> But the same authority describes the remains of a town "built by King Dalurai" on the stony hillock now known as Bath Island, by the side of the Chinna Creek, and states that it was flourishing "and commanded a good harbour and ample trade" some three centuries before the foundation of Karachi mentioned above.<sup>107</sup> Over a long period the set of the channels in the large area comprising the existing Karachi harbour

would be liable to drastic alteration from time to time by natural causes; enough to bring a prosperous commercial town to ruins, but always affording suitable sites for a headquarters of fishermen.

The question arises how the evidence, such as it is, for the existence of a relatively flourishing port near Karachi in the time of the Sammas, is to be reconciled with the complete absence of any mention of such a place in the chronicles of Sind. It may be premised that Waghudar, near the mouth of the Gharo-Khudro creek some fifteen miles east of Karachi presents the same problem. The remains of the place are still to be seen and the tradition as recorded by Seth Naomal is that it was "a famous town" at a somewhat later period than the other, its harbour on the creek being used by country boats bringing grain from the Panjab and Upper Sind at the time that the Baghar was the main outlet of the Indus. He says that the surrounding country was under the sway of the Rajputs of Jodhpur.<sup>108</sup> In my view this curious statement may be taken to mean "under the sway of the tribes of Rajput origin who ruled in Las Bela." Prior to the establishment of the Jamot dynasty early in the eighteenth century four such tribes are said to have ruled that country successively. Apart from traditions that one or two of their chiefs made expeditions against the neighbouring countries their history is a complete blank; but for the same period there is nothing in the chronicles of Sind to suggest that its rulers, from the Sumras down to the last viceroys of the Moghuls, ever held possession of the country west of the Indus Delta. In fact the western Delta itself was subject to semi-independent Hindu princes until after the middle of the eighteenth century, at which time Karachi and its vicinity belonged to Kelat.<sup>109</sup>

The main line of communication between the antecedent "Karachi" of the middle ages and the valley of the Indus seems to have been by the track through the hills to the vicinity of Thano Ahmed Khan, and thence onward to Sehwan—a trade route from prehistoric times. Along it at intervals occur the structures called, for want of a more precise term, "stone enclosures", which are generally believed to be ancient caravanserais and may date from before the Arab invasion. Only from close archaeological investigation can we hope for more light to be thrown on this very obscure subject.<sup>110</sup>

In conclusion, the attempt to review the historical geography of Sind cannot but leave a consciousness of the grave deficiencies in our knowledge of the real state of the country in any period before modern times. The written authorities on which the principal dependence must be placed are in the main concerned with political events and it is only from casual and often ambiguous statements in these chronicles that an occasional ray illumines the dim background to the drama of court and camp. The works of the Muslim geographers of the Middle Ages supply us plentifully with place names; but being written in the Arabic and Persian scripts many of these have been at the mercy of careless copyists, who by omitting the diacritical points, or inserting them according to their fancy, have hidden the originals under a pile of variant readings. The value of the itineraries in these works is again impaired by contradictions and uncertainties.<sup>111</sup>

The book of Sind's past which is presented by the face of the countryside itself becomes with every passing year more difficult to read. The perpetual aggradation of the land under widely diffused irrigation is obliterating the traces of old waterways which a century ago could be traced with comparative ease. The ransacking of ancient sites by the local peasantry for useful bricks and fertilising earth increases as cultivation is extended into every corner round about them. Unless the hurrying tempo of material development is speedily matched by intensification of research into the fading traces of ancient Sind, the obscurity which covers so much of her past will never be dispelled.

## NOTES

1. Wheeler, *The Indus Civilization*, p. 4.
2. This is depending on the references to the place in the Rajput annals, and by Ali Kufi, over half a century after it is mentioned by Al Idrisi. See page 175.
3. بهاتی فیما بین الجنوب والمغرب الی ارور خمسة عشر وهی بلدة شهیتی ماء السند (Reinaud, *Fragments*, p. 88). Raverty's rendering of this passage is quite different. He makes Bhati, not Alor, lie between two branches of the river, which he calls the Sind Rud, distinguishing it from the Nahr-i-Mihran. (*Mihran*, p. 221, note 163). The distinction is quite illusory as far as Al Beruni is concerned.
4. سند ساکره, or سند شاکر *Mihran*, p. 221; and note 162. Sachau, *op. cit.*, p. 260. According to the text used by Raverty it would appear that Alor was situated to the east of the river. Cf. *Mihran*, p. 418, note 561.

5. شاكورة (Sprenger, p. 386).
6. The references in Elliot, Vol. I are as follows:—  
Al Istakhri, p. 30; Ibn Haukal, p. 40; Al Idrisi, p. 78. See also the map from the *Ashkalu-l-Bilad* at p. 32, and that from the *Masalik-wa-Mamalik* reproduced by Raverty, in *Mihran*, p. 508. For the former, see map No. 9 in this volume.
7. *Supra*, Chap. 9, p. 154.
8. بطيحة الشرنى. Elliot, Vol. I, p. 125; Reinaud, *Fragments*, p. 206; Haig, *Indus Delta Country*, p. 65; *Mihran*, pp. 255-6. Hodivala remarks that the phrase means nothing more than the "Eastern swamp, lake, pool of water, or lagoon" (*Studies, etc.*, p. 77).
9. *Mihran*, p. 465, note 534. Cf. *Ibid.*, p. 477, note 553. Raverty's Samaro Dhandh theory must be rejected, if only because there are ruins dating almost certainly from the Buddhist period near Naokot, which from the relative levels would have been beneath the sea of his great estuary; *vide J.H.S.H.*, Vol. VIII, p. 61. Raverty's attempt to link the Ush Sharki water with "the Kohra'i mouth" depends on his doubtful reading in Al Beruni's text of كوهرائى for the generally accepted لوهرائى (*Mihran*, p. 223, and note 168).
10. It is to be noted that Ash-sharki is mentioned as a kingdom by Al Baladhuri: the Amir Musa appointed under the Khalifate to the charge of the frontier (between Sind and Hind) "killed Bala, king of Ash-sharki". (Elliot, Vol. I, p. 128). This apparently took place nearly a century after Jai Senha's defeat by Junaid.
11. Hodivala, p. 59. Cf. *Ibid.*, pp. 62, 64-5.
12. Idrisi here confirms Al Beruni, according to Raverty's text of that author. *Vide Supra*, note 4.
13. Elliot, Vol. I, p. 78; *Mihran*, p. 229. Raverty who was so quick to note the most trifling errors on matters affecting his favourite theories, actually endorses this nonsense: *vide Ibid.*, p. 474.  
Haig points out that if we exactly reverse the cardinal points given by Al Idrisi in this passage it becomes intelligible. (*Indus Delta Country*, p. 69). Cf. R. D. Oldham, *On Probable Changes in the Geography of the Panjab and its Rivers*, *J.A.S. Bengal*, Vol. XV, Part II (1886), pp. 327 and 328-9.
14. Elliot, Vol. I, p. 256-8; *Mihran*, p. 484, seq., note 564.
15. Trs. T. Postans, in *J.A.S. Bengal*, Vol. XIV, p. 167; Kalichbeg, *History of Sind*, Vol. II, p. 5.
16. *Voyages d'Ibn Batoutah*, trs. C. Defremery and B. R. Sanguinetti, (Paris, 1885), Vol. III, p. 115.
17. Blanford, *Geography of Western Sind*, *M.G.S.I.*, Vol. XVII, p. 105. Cf. Haig, *Indus Delta Country*, Appendix, p. 131.
18. Elliot, Vol. I, pp. 256-8.
19. *Mihran*, p. 480; also p. 487.
20. Prior to the construction of the Lloyd Barrage and canals, an old inundation canal taking off from the Indus above Rohri flowed through the Alor gap, reproducing on a small scale the old natural branch. (Aror Wah, mentioned in *Gazetteer of Sind*, 1907, pp. 276-7). This seems to have been referred to by McMurdo, as the "nulla" known as the

"small Attok". (*Dissertation on the River Indus, J.R.A.S., Vol. I, (1834), Art. III, p. 43 and footnote*).

The new supply channel of the Eastern Nara from the Barrage was excavated through the Alor gap so as to flow in the reverse direction, i.e., from W. to E.—the alignment proposed by Capt. Baker for the Nara supply channel in 1844.

21. James Tod, *Annals and Antiquities of Rajasthan*, Vol. I, p. 260.

22. Kalichbeg, *Chachnama*, p. 7.

23. Bakhar has a much higher antiquity according to Rajput tradition recorded by Tod, *op. cit.*, I, 91. The author of *Notes on the Lost River of the Indian Desert* was disposed to indentify it with the Baghrur of the Chachnama (*Calcutta Review, Vol. LIX, (1874), p. 22*).

24. *Notes on the Lost River of the Indian Desert, Calcutta Review, Vol. LIX, (1874), p. 21*.

25. Elliot. Vol. I, p. 256.

بواسطہ کمیء آب سند یعنی پنجاب کہ پائین از ارور و بہکر بہمین نار می نامند  
26. Elliot, *loc. cit.*; *Mihran*, p. 485, note 564, Elliot reads 'Dahan' but this is due to the constant difficulty of distinguishing the letter د from و in Persian Mss.

The exact significance of the phrase "below Alor" is a matter of doubt.

27. Thus as late as 1830-32, "To the north and also north-west of Shikarpoor there is a large tract of country which at one season is entirely under water. . . . from a great body of water which during the freshes forces itself through a deserted channel or branch of the Indus which formerly flowed south west from the main river 100 miles north of Bukkur." (Capt. W. Pottinger, *Memoir on Sindh: Bombay Govt. file, Secret and Political Department, No. 571 (1832) under "Summary or General Remarks on Sindh"*).

A little further on he states that this inundation extended as far to the west as "Ghoolam Ali Burdee" (near the modern Jafarabad) and was there sixteen miles wide.

Such withdrawals naturally reduced the volume lower down the stream.

28. *زیر قصبہ الور* Elliot, Vol. I, p. 257.

29. A. Burnes, *Travels into Bokhara*, (1834), Vol. III, p. 77. Capt. J. H. Kirby, quoted in *Journal of the Bombay Branch of the R.A.S., Vol. V, (1857), p. 473*. Cf. Capt. W. Baker, in *S.R.B.G., New Series, XLV, (1857), p. 2* (par. 5 of this report dated 14th October, 1844); J. McMurdo, in *J.R.A.S., Vol. I (1834), p. 43, footnote*.

30. R. F. Burton, *Sindh and the Races that Inhabit the Valley of the Indus (1851), p. 88*.

وہندو ہاکرو پھندی پنڈ ارور

31. *S.R.B.G., New Series, XLV, Report on the Upper Portion of the Eastern Nara etc., pp. 6-9, 12-14, 22, 26*. The bund at Bihra had been mentioned by Capt. W. Pottinger and Lieut. E. del Hoste in their Memoirs on Sindh written in 1832.

32. *Mihran*, pp. 482-3 and note 563, also Plates IX and X. As to the bund alleged to exist about 26 miles east of Alor, I have myself ridden over much of this country from camps in the neighbourhood of its supposed situation—Mubarakpur and Khuhi Khengi—without ever hearing of any bund "two coss long and sixty gaz wide."

33. Sir Aurel Stein came to the conclusion that the Sutlej ceased to give a (perennial or regular seasonal) supply to the Hakra in "late prehistoric times": *vide pp. 179-182 in his*



"A Survey of Ancient Sites along the 'Lost' Sarasvati River" (*Geographical Journal*, Vol. XCIX, No. 4, 1942).

34. The evidence is concisely set forth by the author (C.F. Oldham) of the *Notes on the Lost River of the Indian Desert*, Calcutta Review, Vol. LIX (1874). His conclusions and much of the evidence brought forward was combated by a writer signing himself 'Nearchus' in the same periodical, Vol. LX (1875).

The theory of the first writer was supported with arguments on the geological side by R.D. Oldham in *J.A.S. Bengal*, Vol. LV, Part II, (1887); and developed to a different conclusion by Major H. G. Raverty in *The Mihran of Sind* etc., in the same Journal, Vol. LXI (1892).

35. *J.A.S. Bengal*, LV, pp. 336-8. Cf. *Mihran*, pp. 396-7, 408-9.

36. E.B. Eastwick, *Dry Leaves from Young Egypt* (1849), pp. 38-40. Cf. Haig, *Indus Delta Country*, pp. 133-4; *Mihran*, pp. 491-2 and note 369; Cousens, *Antiquities of Sind*, pp. 145-7.

37. *Dry Leaves from Young Egypt*, p. 44. Cf. Cousens, *op. cit.*, pp. 78-9.

38. E.g., his chapters giving accounts of the 'wonders' of Sibi and of Candahar, *Tarikh-i-Sind*, Trs. Malet, pp. 87-92.

39. Elliot, Vol. I, pp. 258-260.

40. *Mihran*, pp. 199, 205, note 105. Mansurah had been taken by Mahmud of Ghazni after his return from Somnath, in 1026-7 A.D. (*Ibid.*, pp. 258-9, note 204).

41. Elliot, Vol. I, p. 78.

42. *Mihran*, p. 205.

43. *Mihran*, pp. 199-200, note 102.

44. *Vide Supra*, Chap. 9, p. 160. Al-Baladhuri did not visit Sind.

45. Haig, *Indus Delta Country*, p. 72.

46. Cousens, *Antiquities of Sind*, pp. 70-71.

47. I have suggested the same sequence of causes for the end of Mohen-jo-daro, *Supra* Chap. 4, pp. 81, 84.

48. Cf. Haig, "On the Sites of Brahmanabad and Mansurah" etc., *J.R.A.S.* XVI, New Series (1884), p. 287. See also *Supra*, pp. 176-7.

49. Also known as Muiz-ud-Din and Shihab-ud-Din. Kalichbeg, *History of Sind*, Vol. II, p. 9; *Mihran*, pp. 489-90.

50. In referring to Bakhar and Tatta in connection with Sultan Mahmud's proceedings in Sind, Mir Masum in his history means the districts in which they later became the principal places. In contemporary chronicles they are not mentioned. (*Tarikh-i-Masumi*, trs. Malet, p. 23). Cf. *Mihran*, p. 492.

51. *Mihran*, p. 489.

52. *Mihran*, pp. 489-90.

53. Elliot, Vol. II, pp. 201-2. Alternatively we could assume that Bakhar island was at that time connected with the smaller islets of Zinda Pir and Sadh Belo, that the 'hisar' was Akar and the 'qil'a' Bakhar, both on a larger island than now exists. This may well have been so if at the time the whole volume of the Indus was not yet discharged through the Bakhar gap.

54. *Ibid.*, p. 242.

55. *Ibid.*, p. 304.

56. *Ibid.*, p. 396.

57. *Ibid.*, p. 554. There are several variant readings; the words in that relied on by Sir Henry Elliot are, در جزیره رفت

58. *Voyages d'Ibn Batoutah*, Vol. III, p. 115. The word خلیج is there translated 'canal', which is one of its meanings; but Raverty's rendering 'an arm of the river' is to be preferred. It seems unlikely that a hospice would have been built in the middle of an artificial canal. The channel may be supposed to have insulated Zindo Pir or Sadh Belo, if not the Bakhar that we know. The building must have been on one of the three. Cf. *Mihran*, p. 494, note 572. Sadh Belo was a separate island before 1550 A.D.—a small hill, 'which stands in the midst of the water, to the westward of Bukkur' *Tarikh-i-Masumi*, trs. Malet, Bombay Govt. Records No. XIII, New Series, (1855), p. 121.

59. *Mihran*, p. 499, note 575. The 'Jatoi' gratuitously adopted by Raverty is presumably intended to mean the place near the Panjnad mentioned in the Ain-i-Akbari. *Ibid.*, p. 506, note 589; *vide* also Raverty, *Notes on Afghanistan*, p. 559.

60. *Voyages d'Ibn Batoutah*, Vol. III, p. 90. After leaving the "last inhabited place on the boundary of the country of the Turks" the traveller proceeds. "We then entered the great desert which extends for fifteen days' journey.

دخلنا البرية الكبرى وهي مسيرة خمس عشرة

in this desert the poisonous wind (Simoon) blows. . . ." etc. This can obviously be nowhere but Kachhi; the grounds on which Haig argues that the traveller entered India via Peshawar and that he here alludes to the country along the base of the Suleiman range, cannot stand. (*Ibn Batuta in Sind*, J.R.A.S. XIX, New Series, (1887), p. 401).

61. *Voyages d'Ibn Batoutah*, Vol. III, p. 90, also p. 100. نهر السند المعروف پنج آب

62. *Ibid.*, p. 101. It does not seem possible to identify Janani. Cf. Haig, (*Ibn Batuta in Sind*, p. 401).

63. *Tarkhan-Nama* apud Elliot, Vol. I, p. 311; Raverty, *Mihran*, pp. 495-6.

64. He remarks, with regard to the Sheikh's tomb at Tharro near Gujo, "The dome over the remains of this great Sheikh bears the date 171 A.H. (787 A.D.) denoting the year in which it was built." (Kalichbeg, *History of Sind*, Vol. II, p. 5). The extant inscription on the tomb, however, shows clearly that it was built in the reign of Sultan Feroz Shah Taghlak, and bears a date which is either 772 or 782 A.H. It was thus about 400 years old when Ali Sher Qani saw it, and we can only suppose that when he wrote his history, he put down the date of the death of Abu Turab (N.M. Billimoria: inscription on the tomb of Abu Turab in Sind. *J.S.H.S.*, Vol. V, No. 3, pp. 133-6). I read the date as 772, corresponding with 1370-1 A.D.

65. Couens, *Antiquities of Sind*, p. 80. Cf., Elliot, Vol. I, p. 368; Cunningham, *Ancient Geography of India*, pp. 294-5; Mujumdar, p. 19. Dr. Nabi Bakhsh Khan Baloch is of opinion that Bhanbor is on the site of Debal. (Sindhi translation of *Chachnama*, by Makhdum Amir Ahmed, Ed., Dr. Nabi Bakhsh, pp. 392-395). But this view would seem to have been conclusively refuted by the investigation, conducted by Dr. Leslie Alcock; *vide Annual Bibliography of Indian Archaeology*, Vol. XVI, (for 1948-1953), pp. LI, LII.

66. McMurdo, *Dissertation on the River Indus*, pp. 25-6. Burton, *Sindh and the Races that Inhabit the Valley of the Indus*, pp. 92-3.

67. *J.S.H.S.* Vol. VI, No. 2, p. 110.
68. McMurdo, *op. cit.*, p. 25, footnote.
69. That is to say, a copyist may have mechanically added *اثنون عشر* (See text in Reinaud, *Fragments*, p. 91).
70. Elliot, Vol. I, p. 77. Cousens suggests (*Antiquities of Sind*, p. 125) that Al Idrisi is in fact describing the new 'port of Dewal' (?Al Beruni's Loharani) and not the Dewal of Ibn Khurdadba. The discrepancies between Al Idrisi's account and that of Ibn Haukal, (Elliot, Vol. I, p. 37), on which Cousens bases this theory, do not seem to me serious. When Al Idrisi writes "going towards the west there are six miles between the mouth of the great Mihran and Debal" he evidently means that the city was west of the river; and the distance is practically the two farsakhs of the earlier geographers. This itself seems to make Cousens' theory untenable.
71. Haig, *Indus Delta Country*, p. 48, note 68. Cf. Al Beruni's text in Reinaud, *Fragments*, p. 91, translated at p. 118.
- [البحر] و يأخذ ساحله من تيز قصبه مكران طاعنا الى ما بين الجنوب والمشرق نحو  
ناحية الدبيل اربعين فرسخا -
- The distance between Tiz and Debal as given here (forty farsakhs) is much under estimated. It must actually have been about 500 miles. Cf. Hodivala, p. 34, with reference to the mistake in Al Istakhri's text regarding this stage; (Elliot, I. 30). Al Beruni is evidently copying here.
72. *Voyages d'Ibn Batoutah*, Vol. III, p. 112.
73. *Ibid.*, pp. 113-4.
74. *Indian Antiquary*, 1932, p. 86. Cousens reproduces Carter's photographs of the Thambawaro Masjid in *Antiquities of Sind*, pp. 126-7.
75. Cunningham, *Ancient Geography of India*, p. 299.
76. Kalichbeg, *History of Sind*, Vol. II, p. 5.
77. Reinaud, *Fragments*, p. 91 and translation, p. 119. *غوب* = gulf, *خور* = estuary (erroneously translated 'baie' by Reinaud).
78. Al Beruni actually uses the Sindhi word 'Munh' *منهه* for mouth (modern spelling *منهن*)
79. *Vide note 4 Supra*, Raverty, (*Mihran*, p. 220) disparages Al Beruni's authority "especially in reference to the river reaching the sea by two channels which in those early days it did not do". All that Raverty says in reference to the later version of Al Beruni's book by Rashid-ud-Din is irrelevant, since the statement regarding the river occurs in Al Beruni's original Arabic text. He bases his theory on the fact that Al Idrisi states that the branches which encircled Mansurah re-unite, "forming thence forward only one river". (Elliot, Vol. I p. 78; *Mihran*, pp. 228-9 and note 174). But Al Idrisi is here probably trying to combine what is stated by Al Masudi and in the *Masalik wa Mamalik*, without reference to contemporary conditions. His own authority is gravely impaired by the geographically impossible course he assigns to the river in Middle Sind. Al Beruni had at least resided in Multan, and we may be certain that he spared no pains to obtain correct and up-to-date information.

80. *Voyages d'Ibn Batoutah*, Vol. III, pp. 109-112.
81. *J.S.H.S.*, Vol. VIII, p. 61.
82. If we hold that Ibn Batuta's Es Samira refers exclusively to the Sumra tribe, it is obvious that their authority extended into Upper Sind. (*Voyages d'Ibn Batoutah*, pp. 101-2, 105-7): Haig however argues that the traveller really means the Sammas. (*Ibn Batuta in Sindh*, in *J.R.A.S.*, XIX, New Series, Art. XIII, pp. 401, 405-7). In the footnote No. 134 at p. 109 of his '*Indus Delta Country*', regarding Unarpur, it would seem that he has himself written 'Sumra' when he meant 'Samma'.
83. Haig, *Indus Delta Country*, p. 86 and note 105. Kalichbeg, (*History of Sind*, Vol. II, pp. 64-5) confuses the matter.
84. Taghlakabad was built on the ruins of a much older fort, Kalakot. *Mihran*, pp. 327-8, note 316. See also McMurdo, *J.R.A.S.*, Vol. I, p. 31.
85. Haig, *Indus Delta Country*, p. 85; *Mihran*, p. 500, note 577. Mir Masum calls it the Khan Wah.
86. Haig, *Indus Delta Country*, p. 91, note 110; p. 103 and note 124. Cf. *Mihran*, p. 315, note 314.
87. *Mihran*, p. 469, note 537; cf. Kalichbeg, *History of Sind*, Vol. II, p. 113; *Akbar Nama*, Vol. III, Chap CXVII, p. 973; *Tarikh-i-Masumi*, trs. Malet, Bombay Govt. Records No. XIII, New Series, p. 156.
88. Haig, *Indus Delta Country*, pp. 92-3; Kalichbeg, *History of Sind*, Vol. II, pp. 101, 113.
89. Kalichbeg, *History of Sind*, Vol. II, pp. 77-8; *Mihran*, p. 184, note 74. Cf. Stein, in *Geographical Journal*, Vol. XCIX, No. 4, p. 181.
90. Cf. *Mihran*, p. 502, note 578.
91. *Mihran*, p. 466, note 535. Cf. Haig, *Indus Delta Country*, pp. 115-6, and p. 103, note 125.
92. *Mihran*, p. 461; *J.S.H.S.*, Vol. VIII, pp. 58-9. Cf. Fife's Report, in *S.R.B.G.*, XLV, New Series, at p. 40.
93. In his text. In a footnote he remarks, "Haigh (sic) says 'the change occurred only in the middle of last century'—and he is perfectly right—and was coincident with the decay of Nasurpur." *Mihran*, p. 225, note 173.
94. Haig, *Indus Delta Country*, pp. 118-9. It seems possible that some effect may have been produced, or at least the change may have been confirmed, by a huge flood from the Sutlej said to have occurred in 1762, "when the river (Sutlej) was dammed up for some weeks by a landslip in the hills and, as mentioned by Major General Cunningham, its waters rose to a height of 400 feet before the barrier gave way." (Notes on the Lost River of the Indian Desert, Calcutta Review, No. CXVII, Vol. 59, Art. I, p. 8). It was in 1762 apparently, that the Puran failed to supply water as usual for rice cultivation. See below.
95. Kalichbeg, *History of Sind*, Vol. II, pp. 154-5.
96. *Ibid.*, p. 162.
97. A. Burnes, *A Memoir of a Map of the Eastern Branch of the Indus*, Bombay Govt. File, No. 763, paras 3, 6.
98. Early Canal Administration in Sind, *J.S.H.S.*, Vol. III, Part 1, pp. 17-8.
99. *S.R.B.G.*, New Series, Vol. II, pp. 491-2, 534-5. *Vide* also maps facing p. 534 in that volume, by Lieut. T. G. Carless, reproduced as maps 13A, 13B in this volume.

100. *A Memoir and Supplementary Memoir of Map of the Eastern Branch of the Indus*, by Lieut. Alexander Burnes, (1827-8), Bombay Govt. File No. 763, para 13.
101. *E.g.*, in 1906 near Sarhad Station. *Gazetteer of Sind*, 1907, p. 348.
102. A. Burnes, *Memoir of a Map of the Eastern Branch of the Indus*, para 3.
103. The author of the *Khulasat-ut-Tawarikh* writes, at the end of the 17th century A.D., "Many merchants from Multan and Bhakar bring their goods and chattels by water on boats to Thatha . . . it is seldom that people go there by the land route, without undergoing the sufferings of scarcity and privation and toils of the road." Cf. *Araish-i-Mahfil*, trs. H. Courf (Calcutta, 1882), pp. 117-8.
104. Haig, *Indus Delta Country*, p. 49, note 69.
105. Tuhfat-ul-Kiram, in Kalichbeg, *History of Sind*, Vol. II, p. 149.
106. *Memoirs of Seth Naomal Hotchand*, ed. Sir Evan James, (Exeter 1915), p. 37.
107. *Ibid.*, (Appendix XII), p. 209.
108. *Ibid.*, (Appendix XII), p. 209. The site is described in *J.S.H.S.*, Vol. VI, pp. 106-8.
109. The Kalhoras apparently held possession of Karachi for a few years in the first half of the 18th century A.D. (Naomal, *Memoirs*, p. 38).
110. These structures are noticed by Masson (*Travels in Balochistan*, etc., Vol. II, pp. 150, 152, 156); in reports by Capt. Preedy and J. McLeod communicated by Bartle Frere (*Journal of the Bombay Branch of the Royal Asiatic Society*, Vol. V, (1857), pp. 349-362). See also Cousens, *Antiquities of Sind*, p. 44; Majumdar, pp. 142-3; *J.S.H.S.*, Vol. VI, pp. 104-6.
111. *Mihran*, pp. 185, 212, 215, 216, etc. Cf. Whitehead, *River Courses of the Panjab and Sind*, p. 166; Hodivala, pp. 29-32, 38-9.

## THE RACES AND PEOPLES OF SIND

SINCE the discovery of the Indus civilization, any ethnological survey of the existing inhabitants of Sind may well begin by disposing of the question whether it is possible to trace among them the descendants of the people of Mohen-jo-daro.

The existence of Dravidian elements in the Brahui language marks out its speakers as having derived originally from Pre-Aryan races, though there has been a large subsequent admixture of Turanian and other strains. Sir Aurel Stein remarks of the Brahui homeland in the Jhalawan and Sarawan hills, "that barren region affording neither attraction nor room for settlement to any invader is just the ground where the nomadic fringe, poor semi-barbarous relatives, as it were, of that ancient settled race, would be likely to be left undisturbed. It could thus escape the fate of Aryanisation which their congeners in more favoured lands has undergone."<sup>1</sup> Aryan penetration into the lower Indus valley took place later than their main movement across the Panjab into the valley of the Ganges and there is no reason for supposing that they exterminated the "Dasyas" they found in Sind. The archaeological evidence tends to show that the "Indus" people in Sind at least had been brought under subjection by "barbarians" moving eastward through Baluchistan before the Aryans appeared on the scene.

These and succeeding immigrations of tribes originating in Central Asia must have produced such dilution of the "Indus" blood that it would be idle to look for a Mohen-jo-daro racial type among the tribes of modern Sind. In fact we know from the skeletal remains found at Mohen-jo-daro that the inhabitants of that city were themselves of several racial types. Still, there is a certain *a priori* probability that the Mohanas of the Manchar lake

may be aboriginal in a degree that no other Sind tribe could claim<sup>2</sup>—were such claims made; that they descend directly, with comparatively little admixture of other blood, from the lake dwellers of “Indus” times. With them may be associated the Machhis and possibly the Chuttas and some of the obscurer tribes of the western hills, such as the Bikaks and Gahenchas, which have some peculiar characteristics and customs and are said by their neighbours to have been “originally Mirbahars”; but inferences from such slender data are of course highly speculative.

Pliny in his *Natural History* gives a list of about thirty tribes of North West India or the Indus basin,<sup>3</sup> and there are regional lists in four of the Sanskrit Puranas, some of which may be late recensions dating from about Pliny’s own era.<sup>4</sup> In addition we have a most copious catalogue of tribal names, repetitive and without arrangement, in the *Mahabharata*, and in the same work a list of Kshatriya clans, the majority, probably, of which belonged to North West India.<sup>5</sup> Finally Varahamihira in his *Brihat Samhita* enumerates the tribes living in each of the nine divisions of Bharatavarsha as laid down in the *Vayu Purana*. The *Brihat Samhita* dates from about the middle of the sixth century A.D., and it is curious that here we are able to recognize two or three of Pliny’s names, while only one can be certainly identified in the older works.<sup>6</sup> For it is generally supposed that Pliny derived his list from the lost work of Megasthenes, who wrote about the end of the fourth century B.C., and we should thus expect to find the names of the Malli and Sogdi and other nations which were prominent in the time of Alexander. But we only find a casual mention of the Oxydracae—that it was in their country that Alexander reached the limit of his advance.<sup>7</sup> The Malli, whom he places somewhere between the lower Ganges and Orissa, are obviously not the *Μαλλοί* of Strabo and Arrian, that is the Malavas of the Sanskrit works, but probably correspond with the Mallas, mentioned in the *Mahabharata* as a tribe in the region of Bengal.<sup>8</sup>

It is thus more profitable to concentrate attention on the Sanskrit works, which include the names of tribes mentioned by other Western Classical authors. The orientation of the various divisions of India is different as between the Puranas and the *Brihat Samhita*. The eight outer regions in the latter work are reckoned by their bearings from the central division of

Bharatavarsha, so that Sind falls in its south western division, which would correspond with the western region of the Vishnu Purana. But this fact does not suffice to reconcile all discrepancies: the Pahlavas, Yavanas and Abhiras, who belong to the south west in the Brihat Samhita and the west in the Vishnu Purana, appear in the North Region in the Vayu Purana.<sup>9</sup> These indeed were tribes which are known to have advanced into India from the North West, so their different location may mark stages of their movement. On the other hand it is surprising to find that the latest of these works, the Brihat Samhita, locates the Malli (Malavas) in its northern division, as there is other evidence that long before the sixth century A.D. these people had moved southward from the country they formerly occupied in the southern Panjab.<sup>10</sup>

In the Kshatriya list of the Mahabharata the Malavas and Kshudrakas appear as associated or combined tribes, which suggests that the alliance between them, *i.e.*, the Malli and Oxydracae, in opposition to Alexander, was lasting. In the longer catalogue in the Mahabharata the Sudras—the same people as the Kshudrakas—are placed next to the Abhiras, whose position in the second century A.D. is indicated by Ptolemy in the name he gives to the country immediately above Patalene on the Indus. It also seems probable that the Sudras correspond to the Sogdi of Arrian, whose name is rendered Sodrai by Diodorus Siculus.<sup>11</sup> Alternatively it is conceivable that the Sogdi were the Soviras, who in all the Sanskrit sources appear as one of the leading tribes of the Indus region. They are often listed jointly with the Sindhus, as Sindhu-Soviras, and in the Mahabharata are associated also with the Sivas—probably the Sibai of Strabo—and the Trigartas and Madrakas.<sup>12</sup> According to this work, the Sindhu-Soviras played an important part in the war of Kurukshetra.

It has to be recognized that the Sanskrit like most of the Western classics, by copying from earlier works and sometimes adding contemporary material, tend to produce a composite picture, part of which is out of focus as a representation of any exact period. Much of the age to which they relate was marked by great changes in the composition of the population in North West India. This was particularly fluid in the two centuries before and the two after the beginning of the Christian era.



Under the impact of invaders from north and west some of the older clans were displaced and others submerged. The conquerors were for the most part assimilated into the Hindu system as Kshatriyas, though held to be degraded as compared with the indigenous Kshatriyas in consequence of "neglecting" religious rites.<sup>13</sup> In practice they naturally became the accepted ruling classes of the lands where they settled. The Soviras were thus subjected successively by the Sakas, the Pahlavas, the Kushans, and again by the Hinduised Sakas, the Ksatrapas of Western India.<sup>13A</sup>

On the other hand the Malavas seem to have preferred to migrate rather than submit, and at some time early in the Christian era we have evidence that they had settled near Jaipur in Rajputana.<sup>14</sup> Later their name appears with that of the Abhiras among the tribes on the western frontier of the Gupta Empire—in much the same region—who while retaining their independence had done homage to Samudragupta.<sup>15</sup>

For the more permanent, though humbler, elements in the population of Sind, we may more profitably follow another Sanskrit work, which appears to have antedated the Mahabharata. It is known to us only in extract, in a Persian translation, itself translated from an earlier version in Arabic, and was reproduced apparently verbatim by the author of the *Mujmal-ut-Tawarikh*, a sketch of universal history, for the purpose of relating the early history of Sind and North West India.<sup>16</sup>

According to this lost Sanskrit work, the "original" inhabitants of Sind were the Jats and the Meds, the former accustomed to the use of boats and the latter a pastoral people. It seems probable that the translator or copyist by a slip has reversed the two names, for the modern Meds of Las Bela and Makran are a seafaring race<sup>17</sup> and the Jats of Sind are camel men. Be this as it may, we here have the two immemorial occupations of the inhabitants of the Indus valley, fishing and grazing, which must predispose us in favour of the authority of this work. It is likely enough that these two classes disputed possession of Sind, as here related, before Brahmans were known in the land, and that the advent of the latter brought civilization and prosperity.<sup>18</sup> The early Arab writers on Sind show that Jats and Meds were important tribes in their time. Thus Ibn Khurdadba mentions Zutts (Jats) as guarding the route between Kirman and Mansura, and observes

that the Meds, located apparently about the Rann of Cutch, are robbers.<sup>19</sup>

Al-Baladhuri states that the Khalifa's lieutenant in Sind, Imran, at some time after 836 A.D. made war on the Meds, and also coerced the Jats, afterwards employing the chiefs of the latter in a further attack on the Meds.<sup>20</sup> According to Idrisi the Meds dwelt about the Rann of Cutch, but extended their incursions as far as Alor, and occasionally to the frontiers of Makran.<sup>21</sup> Of the Jats, Ibn Haukal states, "Between Mansura and Makran the waters from the Mihran form lakes, and the inhabitants of the country are the Indian races called Zutt. Those who are near the river dwell in houses formed of reeds, like the Berbers, and eat fish and aquatic birds. . . . Another clan of them, who live remote from the banks, are like the Kurds, and feed on milk, cheese and bread made from millet."<sup>22</sup>

These Arab authors wrote in the 10th century A.D., which is a far cry from the era preceding the wars of the Pandavas, with which the *Mujmal-ut-Tawarikh* begins. But we have another authority for the first half of the seventh century A.D. in Yuan Chwang, who shows that the inhabitants of Sind were much the same in his time. He writes, "Among the low marshes near the Sin-tu (Indus) for about 1000 Li were settled some myriads of families of ferocious disposition, who made the taking of life their occupation and supported themselves by rearing cattle; they had no social distinctions and no government."<sup>23</sup> That these were Jats is shown to be probable from the reference to the latter in the *Chachnama*. Muhammad bin Qasim is said to have inquired about "the Jats of the Luhanah tribe" and to have been told "Among them there is no distinction of high and low; they are all of the wild nature of brutes. They have always been refractory and disobedient to the rulers, and are in the habit of committing highway robberies."<sup>24</sup> The Muslim general therefore subjected them to the same harsh and humiliating rules as Rai Chach had done; and the Amir Imran, over a century later, is said to have branded them in the hand and ordered that "every man of them should bring a dog with him when he came to wait upon him."<sup>25</sup> The practice of prohibiting a subject race from wearing silk clothes or using saddles, and the like, was characteristic of the Rajputs well into modern times.<sup>26</sup>

It was reported to Muhammad bin Qasim that Rai Chach had placed the Sammah and Lakha tribes under the same restrictions as the Luhana Jats, but the Sammahs were treated with consideration by the Arab general, as also the Sahitas.<sup>27</sup> It is noteworthy that the latter are represented in the chronicle as living in the same part of the country as now bears their name. We are told that the Jats also inhabited the country as far west as Qandabil;<sup>28</sup> and twelve hundred years later the Jat and "Sammat" tribes still constitute the bulk of the agricultural population of Kachhi.

It will be recalled that between the Maurya Era and the invasion of Muhammad bin Qasim the ethnological composition of the population must have been largely transformed by the successive influxes of hordes of "barbarians" from the north and west—the Sakas, the Yueh-chi, and the Huns. From these stocks, mingled in varying degrees with indigenous blood, the Jats and a large number of the Rajput clans descend; and the great majority of the modern Sindhis in turn derive from these sources.

With the Muslim conquest began the settlement of Arabs in Sind, which though in point of numbers insignificant had a most important influence on the social and religious history of the country. Syeds representative of a large number of the branches descending from the Prophet's family had established themselves in most of the provinces of Persia, Afghanistan and Central Asia, and thence migrated to Sind at various times during a period of perhaps ten centuries. To them is due the conversion to Islam of the great majority of the Hindu population, a process which seems to have been most rapid during the fourteenth<sup>29</sup> and the eighteenth centuries A.D.

A number of other tribes in Sind assert their Arab origin and in the majority of instances where Quresh blood is claimed, this is probably with as little truth as the tracing by some families in Britain of a descent from the Norman conqueror's companions, or even remoter noble origins, by means of pedigrees doctored or manufactured in later times. To particularise bogus Arab derivations among Sind tribes would be invidious, if not unjust.

Another most important element in Sind's population of today, who also lay claim to Arab origin, the Baluchis, were making their presence felt before the end of the fifteenth century

A.D.<sup>30</sup> They were a pastoral and semi-nomadic people, much addicted to violence, and their slow progress eastward from Syria, where the nucleus of the race is said to have originated, was occasionally accelerated by punitive measures taken against them by the rulers of the countries where they sojourned. They had been settled for a considerable time in Seistan before a last migration into the Indus valley began, due probably in the main to economic pressure as they and their flocks and herds continued to increase.

A number of their tribes established themselves in Kachhi, and thence spread along the hills northwards to the Dera Jat and southwards to Sehwan and beyond. Their value as fighting men was quickly recognized and we are told that they were mustered by the Sindhi governor of Sibi to fight Shahbeg Arghun; again, this prince having gained possession of Upper Sind a few years later, found them so troublesome that he attempted to rid the country of them by a wide-spread simultaneous massacre. This was about the year 1521; in 1523 Shahbeg's son, Mirza Shah Hussein, made a successful punitive expedition against the Rinds and other Baluchis at Sibi.<sup>31</sup> According to Raverty, the Langah Jat rulers of Multan during the first quarter of the sixteenth century A.D. encouraged Baluch tribes to settle in the Dera Jat by grants of jagirs in return for which they were to render military service.<sup>32</sup> In Sind they seem to have encroached gradually, retaining their pastoral way of life, and wandering through the country in search of grazing; in a few instances the tract where a tribe settled down became known by its name, as Chandko and Burdika. The Kalhoras were the first rulers of Sind to encourage the immigration of Baluch tribes, on account of their usefulness as soldiers; they could exert their authority as spiritual guides to induce the Talpurs and Marris to come and serve them. Nevertheless the Baluchis, by reason of their tribal organization and addiction to blood feuds and violence generally, continued a turbulent element in the population of Sind, even under sovereigns of their own race.

With the establishment of the Talpur dynasty a large influx of Baluchis naturally followed, mainly from the Panjab, and their tribal chiefs became the military aristocracy of the country. The position of the Baluch jagirdars was supported, though modified, by the British Government, and the predominance of the

Baluch zemindars in the social structure of the country districts is still widely recognized by the peasantry.

During the period in which the Baluchis were establishing themselves in Sind political revolutions brought in some other foreign races but in relatively small numbers. Thus there are Moghals descending from the officers and soldiers associated with the Arghun and Tarkhan dynasties, and from those connected with the Imperial subhadars of Bakhar and Tatta. More important are the Pathans of Garhi Yasin and Shikarpur, who settled when that part of Upper Sind was under the rule of the Durani dynasty of Afghanistan.

There are similarly a number of tribes and communities which have migrated into Sind from neighbouring regions of the north and east in relatively modern times for a variety of reasons—quarrels with their own people, inadequacy of their ancestral lands, or as refugees from their tyrannical rulers. The most numerous are Jat tribes from the Panjab, such as Sials, Joyos and Khuhawars, to whom the generic term "Sirai" is applied. Most of these came into Sind when the Kalhoras, with whom they were associated as disciples and supporters, were reconciled with the Moghal emperors and granted the government of Bakhar.

Sirai, which at first meant simply "a man from the north", came from its association with the Kalhora dynasty to be used as an honorific title. The majority of these tribes speak Lahnda or Western Panjabi among themselves—a dialect known in Sind as Siraiki. It is also the language of the camel-driving and camel-raising Jats, and of a number of the Baluch tribes or sections of tribes which came into Sind after prolonged residence in the Panjab.

Whatever may have been the original distinction between the Rajput Samma and Jat, from which races the majority of Sindhis descend, it is now unreal except in a very few instances. Even tribes which bear well known Rajput names are often classed as Jat in the Panjab, and as Sammat<sup>33</sup> in Sind. In the South West Panjab the name Jat includes a most miscellaneous congeries of tribes of all sorts. Its significance tends to be occupational, to denote a body of cultivators or agriculturists; or social, to denote tribes which have a certain social status as yeomen, rather than having a racial bearing. It is not in general applied to

tribes known to have recently immigrated from elsewhere, yet in some areas undoubted Baluchis, living separated from their *tumans*, are locally classed as Jat. This term has in the Panjab acquired during recent centuries considerable prestige and the typical Jat tribe is usually made up of yeomen of substance and respectability. The name is in fact in much higher estimation than Rajput, which counts for little among a predominantly Muslim population, for whom it is associated with anti-Muslim traditions. Similarly the name Baluch, among the Jats at least in the central Panjab far away from the Baluch tribal territory, tends to indicate a professional camel driver or camel breeder, which in Sind would be just the contrary. Thus there is a tendency for all tribes in the Western Panjab, east of the Indus, to claim the title of Jat, in much the same way as numbers of Jat or Sammat tribes in Sind seek to be classed as Baluchis.

In Sind, the incoming Baluchis referred to the country people as Jats indiscriminately. When they came down in increasing force during Kalhora and Talpur times they must have been accompanied by large numbers of camel men and servants, or slaves, some of them captured in tribal wars; these too were termed, collectively and contemptuously, Jats. As the Baluch tribes tended to become the military aristocracy of the country, the name Jat in Sind became practically an occupational term, meaning a camel man, instead of a racial name. The late Mr. Covernton points out that in the Panjab the word for the race or class is *جٹ* or *جٹ*, while the word for a camel man in the Lahnda dialect is *جت*, as in Sind. The word with the cerebral *ت*, *جت* (جت) used until recently by Hindus in Sind to mean a (Muslim) peasant or yokel, is probably connected with the racial term used in the Panjab, but has taken on a contemptuous sense. The probable explanation of the degradation of the name Jat in Sind is that the Baluch, having originally no cerebral *ت* or *ٹ* in his language, habitually pronounced the name with the soft *ت* (جت), which word as already mentioned means camel man, when referring to the indigenous peasantry of the country.

The term Rajput originally indicated a man of superior social status and gentle birth, rather than a member of a particular race, and some of the Rajput tribes are probably of Jat origin. It is noteworthy that in the *Chachnama* the military nobility of Rai Dahar are referred to as Thakurs; these we may assume to have

been Rajputs in the original sense of the word. Their tribes are not named. It is curious that the only numerous Rajput tribe living in Sind in modern times, the Sodhas, are usually referred to as Thakurs as if this were their tribal name. They were prominent in the history of lower Sind between the 13th and 15th centuries A.D. and supplied a considerable part of the armies of the Sumra and Samma rulers. They acted usually in concert with the Jharejas, who while often classed as Rajputs—as is reasonable, considering that they provided Cutch with its ruling dynasty—reckon themselves as a branch of the Sammas of Sind. The Jharejas, like many of the Sammat tribes, are Muslims in some parts of Sind and Hindu in others. The Sodhas have remained staunchly Hindu, though Tod mentions a tradition that the Sumras, who later embraced Islam, derived from them. The Khokhars, who are considered to be a branch of the Rathor class of Rajputs, are in Sind mainly Muslims, and are classed as "Sirai", as they came from the Panjab in relatively recent times.

It is a vexed question whether the Luhanas who now constitute the great majority of the Sind Hindu "banias" are the remaining non-Muslim representatives of the Luhana Jats of the Chachnama. It is often said that in the course of a few centuries virtually the whole of the original Hindu or Buddhist population who stayed in Sind west of the Thar desert was converted to Islam and that the remainder emigrated. It is a fact that Hindu Luhanas are to be found in Cutch and Kathiawar, as well as in Sind; but not in the Panjab, which also fell early into the orbit of Islam. There is also a tradition among some of the modern Luhanas that they came to Sind from the Panjab long after the Arab conquest. But apart from the restrictive measures imposed on the Luhana Jats by Muhammad bin Qasim, which were no more severe than they had endured under the Brahmin Rais, the attitude of the Arabs to the non-Muslim peoples of Sind appears to have been mild—there was no religious persecution. That the Luhanas are not mentioned as a tribe or community in Sind after the time of Mahmud of Ghazni proves nothing; at least we have record of an individual Rana of the tribe, Sanir son of Dhamaj, of the tribe of "Koreja Samma Luhana" who was one of seven feudatory chiefs ruling the country at the time when the Governor was Malik Nasir-ud-Din Kabacha, early in the thirteenth century A.D.<sup>34</sup>

The Sahtas living in Sind, some being Muslims and others Hindus, must be presumed to be equally the descendants of the Sahtas of the Chachnama. And as Covernton points out, such differences between the modern physical or mental characteristics of the Luhanas and those of the Muslim Sammat tribes are not greater than can be accounted for by the fact that for many hundred years the Luhanas have been townsmen and traders and the Sammas have been peasants. That the former have been treated as an inferior race by Muslim rulers for so great a span of time continuously was obviously sufficient to modify their original racial character.

If the Luhanas migrated from Sind in the early days of Muslim rule and subsequently returned, their absence was not long enough to leave any trace on their customs or language; and their place of exile can certainly not have been the Panjab, as some would surely have settled down there, and Luhanas are not found in the Panjab. The Panjab community corresponding with the Luhanas are the Aroras, who almost certainly take their name from Aror (Alor) in Sind and emigrated northwards probably after the decline of that place in the time of the Khalifate.

Many Aroras are worshippers of Uderolal, the deity of the Indus, which is largely a Luhana cult; and the two communities have in common a large number of names for their "Nukhs", the Aroras adopting for the purpose the Sindhi genitive—*ja* rather than the Panjabi—*da*. All this tends to the conclusion that both the Aroras and Luhanas belonged originally to Sind: that the Aroras migrated to the Panjab, there adopting their present distinguishing name: and that the majority of the present Luhanas are descended from people bearing that name continuously, who never left Sind; those belonging to Cutch and Kathiawar having been settled there before the coming of the Arabs.

The pattern of the population of Sind proper, that is the Indus plain, has been changing with ever increasing rapidity along with the extension and improvement of irrigation. Two centuries ago its composition and distribution were relatively simple; now they have become kaleidoscopic. The nomadic way of life is becoming rare, but the settled inhabitants now present such variety, in origin and in the period of their residence, as would require the researches of a strong team of social historians to unravel and assess, and volumes to record.



In the Kachho and the hills, in the Desert, and to some extent in the Delta, there is relative stability because these tracts offer little attraction to newcomers, and the established inhabitants would not be easy neighbours. Thus from the existing north west frontier as far south as Sehwan the hills and the Kachho are peopled by Baluch tribes and by tribes who have long lived in association with them including those which may be believed to derive from very ancient local stock, the Chuttas and Gahenchas.

In the large block of hill country between Schwan, Kotri, and Karachi the principal inhabitants are the Numrias or Burfats, of predominantly Rajput stock, as apparently are the Jokhias who occupy the skirts of the hills to the south of them, towards Malir and Tatta. Both these tribes were at one time associated more closely with Las Bela than with Sind, the Numrias having for a short period in the seventeenth century supplied the ruling dynasty of that country. The Rajput derivation of these tribes is demonstrated by the style of the carved stone tombs which are such a feature of the country in which they have been predominant, from Jherrak as far north as Hinidan on the right bank of the Hab river.

There are also Baluchis settled in these hills; Gabols on the west, from the south of Sehwan Taluka nearly down to Karachi, and Khosas in the eastern tract towards Kotri. South of the hill country the Karmati Baluch tribe is prominent in the neighbourhood of Mirpur Sakro; these are supposed to have entered the country direct from Makran before the beginning of the sixteenth century A.D., and derive their name from the Kalmat Hor, or creek, in that country.

We find Khosa Baluchis again in the vicinity of Nagar Parkar, beyond the Thar; and it was the raids of these people on Cutch, after that country had come under British protection, which gave rise to the diplomatic exchanges between the Bombay Government and the Talpurs, which ended in the treaty of 1820. These Khosas, like those of the southern hills, almost certainly came in from Makran at a relatively early period.<sup>35</sup>

The bulk of the people of the southern half of the Thar desert within Sind are Sodha Rajputs, who have already been noticed. Much intermingled with them are a variety of tribes of Rajput and Sammat origin who have been converted to Islam in rela-

tively recent time—Rajars, Palis, Nuhrias and many more. The Kholis and Bhil of Sind east of the Indus are modern immigrants.

In the desert tracts of north eastern Sind and the adjoining plains the Mahars are the most prominent tribe and may be assumed to have been established in the area from an early period. There are still Mahar Rajputs professing Hinduism in the desert, but the great majority are Muslims of considerable standing. The Dahar tribe, in the extreme north east of the existing Province of Sind may have come in somewhat later from Rajputana; they had achieved together with the Mahars a position of great power by the first half of the sixteenth century A.D., and have given their name to part of their country. Close by is the tract known as Machhko, which takes its name from the Machhi tribe.<sup>36</sup> These people are now numerous all over Sind, and in parts of the Panjab and Gujerat. Their origin is obscure; they are generally held in low estimation by others and the claim to Rajput blood by those who call themselves Solangi Machhi is very doubtful. There seems some ground for holding that their stock is largely pre-Aryan. The name Machhi is occupational; they must have been fishermen but are no longer so as a rule. They are more often engaged in wood cutting and making grass mats, and are quite distinct from the Mohanas.

On the opposite bank of the Indus from Machhko we enter the tract where Baluchis are the predominant race, settled in the plains stretching northwards through Dera Ghazi Khan, westwards past Jacobabad and under the hills to the east and west of Kachhi. Interspersed among these are the remnants of the Jat and Samma tribes who preceded the Baluchis as the principal landowners of these countries.

Such, in most imperfect summary, is the composition of Sind's population in those areas which have been least subject to alteration in recent times. In the hills and the desert, which are not susceptible of much development, the existing pattern is likely to continue indefinitely. Elsewhere a new process of change is at work.

With the accession of Sind to Pakistan, large numbers of the wealthier and more advanced Hindus emigrated to Gujerat and Bombay, and the modern "colonies" of Sikh zemindars and cultivators returned to their homeland in the Eastern Panjab. In exchange an immigrant tide composed of Muslims of every race

and belonging hitherto to virtually every Province and State in India has continued ever since partition to flow into Sind. Their absorption into the country's economy is a painful and most difficult problem for the Government and will inevitably produce a profound effect on the social structure of the population. New schemes for modern irrigation in the remaining backward areas of the plains should provide many of the newcomers with a stake in their new country; intensification of agriculture in the already developed tracts will doubtless achieve more and the development of industry more again. Those who find their place upon the land, there to rub shoulders with Sammas and Jats, Serais and Baluchis, will surely in the course of time fall under the age-old spell of Sind, which has made so many strangers, drawn to her from such diverse causes, feel themselves her true children.

### NOTES

1. Sir Aurel Stein, *An Archaeological Tour in Gedrosia*, M.A.S.I., No. 43, p. 14.
2. Cf. the opinion of Sir P. Cadell in "Who are the descendants of the people of Mohenjo-daro?" *Journal of the Bombay Anthropological Society*, Jubilee Volume, 1937.
3. Pliny, *Nat. Hist.*, Book VI, Chap. 20 (23). I have used the edition of Karl Mayhoff, Leipzig, 1906 (pp. 460-464).
4. The Vishnu, Vayu, Matsya and Markandeya Puranas. Wilson was of opinion that the list in the Vishnu Purana was "applicable to the political and geographical divisions of India about the era of Christianity." (*Vishnu Purana*, trs. H. H. Wilson, Trübner, London, 1865, Vol. II, Chap. 3, pp. 133 and 136, note).
5. The great list in the Mahabharata occurs in the Bhishma Parva, section IX. (*Mahabharata*, trs. P.C. Roy, Calcutta, 1925, Vol. IV, pp. 21-24). The list of Kshatriya clans is in the Sabha Parva, section LII.
6. *Brihat Samhita*, trs. H. Kern, in *J.R.A.S.*, New Series, Vol. V, (1871) Chap. XIV, "Divisions of the Globe". I take Pliny's *Arbae* to be the *Arava* of the Brihat Samhita (S. W. Division) and his frontier tribe, the *Astaceni*, to be the *Ashmakas* of the N. W. Division: the latter generally supposed to have been the ' *Ασσηκαιοι* ' of Strabo, (XV. i. 27) who were settled between the Indus and the Cophea (Kabul river).
7. Pliny, XII. 12.
8. *Ibid.*, VI. 21, (p. 457 of Mayhoff's edition). The Brihat Samhita places the Malavas in the Northern Division. For the Mallas, see Mahabharata, Sabha Parva, 1077 and 1086.
9. Wilson notes (*Vishnu Purana*, p. 168 note). "The fact seems to be, that the people along the Indus, from Surat to the Himalaya, are often regarded as either western or northern nations according to the topographical position of the writer."
10. See notes 14 and 15 below.

11. E. Washburn Hopkins, *The Great Epic of India*, (London, 1901), p. 393; R.G. Bhandarkar, in *Indian Antiquary*, Vol. I, p. 23. Strabo calls the Malli and Oxydracae 'The Great Nations' and names the latter *Ευδράκαι* as well as *Ὀφυδράκαι* (XV. -i. 33).

Cf. Wilson, *Vishnu Purana*, pp. 184-5, note. In the Mahabharata the Sudras are said to have occupied the region where the river Sarasvati vanishes into the desert.

See also, M. Vivien de St. Martin, *Etude sur la Geographie Grecque* (Paris, 1858), pp. 152-3; Tod, *Annals, etc.* Vol. II, pp. 301, 311; McMurdo, in *J.R.A.S.*, Vol. I, p. 33, for identification of the Sogdi with the Sodha Rajputs.

12. *Mahabharata*, Nana Parva CCLXII-CCLXV. Roy, *op. cit.*, Vol. II, pp. 559-572. Strabo, *loc. cit.*

13. Manu, X. 43, 44. The Sakas, Pahlavas and Yavanas are in this category.

13-a. The evidence for the view that Sind was for a time subject to Bactrian Greek rulers does not seem to justify their inclusion in this list.

14. Cunningham, *Archaeological Survey Reports*, Vol. VI, 1871-3, p. 72 seq. Cf. Tod, *Annals and Antiquities of Rajasthan*, Vol. II, p. 296-7, 301.

15. Allahabad Pillar inscription. *J.R.A.S.*, 1897, p. 856; *Ibid.*, 1898, p. 386. The Abhira are generally thought to be represented by the Ahirs of the Panjab, etc., (B.C. Law, *Tribes in Ancient India*, Poona, 1943, p. 78). I suggest that the Abirs of Cutch have at least an equal claim. (McMurdo, in *J.R.A.S.*, Vol. I, pp. 248-9). See also *C.H.I.*, p. 596.

16. M. Reinaud, *Fragments*, p. 25 seq. Elliot, Vol. I, pp. 100-105 Cf. Hodivala, pp. 74-5. Hodivala is certainly wrong in assuming the country of the Jats and Meds of this era to have been the "hilly tract near the Salt Range".

17. *Baluchistan District Gazetteer*, Series 1907, Vol. VIII, Las Bela, pp. 57-9.

18. It is noteworthy that according to the Baudhayana Dharmasutra the Sauvira country was considered impure, and outside the limits of Aryandom proper: Aryans who went there had to perform sacrifices of purification on their return. *Vide* B. C. Law, *Tribes in Ancient India*, p. 344; and cf. *Mahabharata*, Karna Parva XL, 8. 40 (Roy, Vol. VI, p. 101).

19. Elliot, Vol. I. pp. 14, 15. Ibn Khurdadba died in 300 A.H., corresponding with 12 A.D.

20. *Ibid.*, p. 128.

21. *Ibid.*, p. 79.

22. *Ibid.*, p. 40. We here recognize the Mirbahars of lake Manchar and the camel-rearing Jats.

23. Watters, *Yuan Chwang*, Vol. II, p. 252.

24. Kalichbeg, *Chachnama*, p. 170.

25. Al Baladhuri, Elliot, Vol. I, p. 128.

26. Hodivala, p. 85.

27. Kalichbeg, *Chachnama*, pp. 174-5.

28. *Ibid.*, p. 173.

29. Haig, *Indus Delta Country*, p. 79.

30. According to the *Tarikh-i-Masumi*, a certain number of Baluchis had penetrated into Sind as early as 1326, when Khusru Khan on being appointed Governor of Sind on behalf of Muhammad Shah Tughlaq rebelled against his sovereign and gathered an army of Baluchis at Bakhar.

At some time in the same century, according to this authority, the later Sumra princes were opposed by Baluchis acting in alliance with Rajput Sodhas and Jharcejias—a strange coalition.

(*Tarikh-i-Masumi*, trs. Malet, Bombay Govt. Records, No. XIII, New Series, 1855, pp. 32, 42.)

31. Kalichbeg, *History of Sind*, Vol. II, pp. 61, 70.

32. *Mihran*, note 359, at pp. 358-9.

33. Sammat is the Arabic plural of Samna and is used to cover all the Sindhi agricultural tribes deriving from those of the old Hindu kingdom.

34. The list is given in the *Tuhfat-ul-Kiram*. I follow Raverly (*Mihran*, p. 326) in putting the tribal name 'Lohano' after 'Samna'. It does not appear in the translations by Kalichbeg (*History of Sind*, Vol. II, p. 28), or Postans (*J.A.S. Bengal*, Vol. XIV, p. 162).

35. The Khosas were distrusted by the Talpurs and excluded from military service, because they had been predominant in this capacity under the Kalhoras: the Namurdias (Numrias) were out of favour for similar reasons. J. McMurdo, *An Account of the Country of Sind* etc., *J.R.A.S.*, Vol. I, Art XX, p. 254.

36. Mir Masum tells us that in the year 1521 A.D. the Dahars and Machhis of Ubauro were constantly fighting the Mahars of Mathelo, and instigated the local Baluchis to join them. *Tarikh-i-Masumi*, trs. Malet, pp. 96-7.

## THE SINDHI LANGUAGE<sup>1</sup>

THE Sindhi language, according to the accepted scientific classification, belongs together with Landha or Western Panjabi to the North West group of the outer circle of Indo-Aryan vernaculars. The two tongues show a strong connection with the Dardic languages further to the north, especially with Kashmiri. Like other modern Indian languages of the Aryan family, Sindhi derives from a Prakrit, that is an early popular dialect of Sanskrit; but it is distinguished if not unique in its retention of a number of characteristic features of this Prakrit which in other existing Indo-Aryan languages are regularly modified. This conservatism is largely due to the isolated position of Sind, separated by the great desert from the other tracts where cognate tongues are spoken.

According to the Prakrit grammarian Markandeya, the Apabhramsa Prakrit spoken in Sind was called Vrachada. He remarks that the consonants "t" and "d" at the beginning of words common to most Prakrits become in the Vrachada Prakrit cerebrals instead of dentals; and he notices a tendency for sibilants to be pronounced "sh". These features are constantly reproduced in modern Sindhi, in contrast to the practice in most related languages.

Hindu grammarians also recorded a Paisachi or Dardic dialect spoken in the Vrachada country. One of the peculiarities of the Dardic tongues is that the letter "t" when it comes between vowels is retained and not elided as in all Indo-Aryan languages. This characteristic too has survived in modern Sindhi. Looking

still further backward, we find in the dialect form of Pali in which the Emperor Asoka's rock inscriptions in Gandhara were written many phonetic peculiarities which are still observable in the Dardic languages, and in Lahnda and Sindhi.

Before examining further the peculiarities of Sindhi we may consider the area over which it is spoken as the predominant local language. This includes the whole of the modern province of Sind with Khairpur, the peninsula of Cutch, the southern portion of Las Bela in Baluchistan, the Baluchistan province of Kachhi which adjoins north west Sind, and the extreme southern portion of Bahawalpur.

Standard Sindhi, the literary language, is that spoken in Vicholo, the central area of the modern province. In addition there are five regional dialects or forms of Sindhi: Siraiki, spoken in Upper Sind and Kachhi: Thareli or Dhatki, in the eastern desert areas: Lari in the Delta of the Indus and the coastal areas: Kachchhi, in the peninsula of Cutch: and Lasi, near Karachi and in the south of Las Bela.

If to the areas in which Sindhi is the predominant language, whether standard or dialect, we add the tracts in which the essentially similar Lahnda tongue is spoken, we find that the combined region corresponds remarkably closely with the boundaries of the old Buddhist kingdom of Sind as recorded in the Chachnama. The Prakrits from which Sindhi and Lahnda were developed had probably become well established before the country was annexed by Darius Hystaspes, and the subsequent influxes of Greeks, Sacas, Parthians and Huns may have had little influence on the language except possibly in contributing to its vocabulary.

The most characteristic features of Sindhi all connect it with the Dardic tongues of the north west. The more important of these are as follows: affection for double consonants: extensive use of prenominal suffixes: the ending of every word with a vowel: and the large number of irregular past participles of verbs.

There are four double consonants peculiar to Sindhi, پ, ڈ, ج, گ, which Sir George Grierson renders as bb, dd, jj and gg. These occur in the Prakrit; in most derived vernaculars one of the two is dropped and the preceding vowel lengthened in compensation. In Sindhi as in Kashmiri when one of them is omitted the preceding vowel remains unchanged: but generally

speaking, the Prakrit double consonant is retained in the corresponding Sindhi word; and, still more significant, Sindhi frequently introduces a double consonant in place of a single one in the Prakrit original.

Prenominal suffixes are extensively used in the Dardic tongues, for instance Kashmiri, and are also a feature of the Lahnda language; but it is in Sindhi that their most elaborate application is found. In Kashmiri they are attached only to nouns, and in Lahnda to verbs and nouns; Sindhi in addition joins them to postpositions. Two such suffixes may be attached to verbs together, so that the sentence, "I hit him" can be rendered in a single word. Phrases such as "to him", "his father", "my head" are almost invariably expressed in this manner. The resulting conciseness of idiom makes Sindhi an admirable vehicle for conversation and this is perhaps its most captivating feature to persons who become well acquainted with it after equal experience of other Indian languages.

The most important peculiarity which Sindhi shares only with Kashmiri, that every word in the language ends in a vowel, is widely unrecognized. In fact, these terminal vowels are so lightly pronounced as to be almost imperceptible to European ears, except perhaps when the words are being sung and not spoken. The pronunciation of the mute "e" in French feminine endings is broadly speaking parallel; while a somewhat similar feature in Sindhi itself is the occasional arbitrary insertion of a short vowel, either "i", or after the letter "h" an "e", between consonants. This is generally more audible than the terminal vowel of words which seem to end in consonants. Thus *Asman*, sky, is often pronounced as *As-i-man*, and *Mehmani*, hospitality, as *Meh-e-mani*.

The noun in Sindhi possesses in addition to the nominative and oblique cases which are common to all Indo-Aryan vernaculars an organic ablative, an organic locative and a vocative case. As to adjectives, one minor peculiarity in Sindhi is that when governing a plural noun in an inflected case, the adjective is put into the oblique plural, instead of the oblique singular as in Hindi.

The conjugation of Sindhi verbs in general corresponds closely with the system in Hindi and other languages. The Past Conditional tense is wanting in Sindhi and is roughly supplied by means of the Imperfect, Past or Pluperfect indicative. On the



other hand, Sindhi has a Habitual Past tense peculiar to itself, formed by adding *ٿي*, the oblique form of *ٿو*, a declinable particle which may be classed as a remnant of an auxiliary verb meaning "to be", to the Past tense of the main verb. The latter alone is conjugated, *ٿي* remaining unchanged. When used to form the Present Indicative tense, by addition to what is known as the "old present" tense of another verb, this auxiliary *ٿو* agrees in gender and number with the subject: it thus possesses something of an adjectival character. The "old present" tense of Sindhi verbs is a subjunctive, as in most Indo-Aryan languages; but it has sometimes the force of a Present or, as in Kashmiri, a Future indicative.

In addition to the peculiar *ٿو* Sindhi possesses two other verbs meaning "to be"; one, *آهيان* — I am, like it possesses only a present tense, but unlike it can be used separately: the other, *هئڻ*, is conjugated throughout.

Sindhi is distinctive also in its formation of tenses from the participles of verbs. Thus the present participle is used to form the Future Indicative and not as in Hindi the Past Conditional—a tense which as already mentioned is wanting in Sindhi. Most of the connected languages produce their future tense by means of a periphrasis based on the old Sanscrit future passive participle. Again, the tenses derived from the past participle, which has a passive meaning, can be used in Sindhi in this passive sense and conjugated exactly like intransitive verbs, a use not found in Hindi; though as in Hindi, when used in an active sense, the subject is put in the case of the agent.

The Perfect, Pluperfect and Future Perfect tenses are regularly formed as in Hindi.

The Past Participle in Sindhi has two terminations; that having the sense of a verb in -o, and the other with a purely adjectival sense in -al. Both are declined. Sindhi is in this respect distinguished from Gujerati, Marathi and the eastern group of the outer circle of Indo-Aryan languages, which have the l-termination of the Past Participle without any alternative. The formation of the Past Participle in Sindhi verbs is very often irregular; in this respect again the language resembles Kashmiri and Lahnda. Such instances in Sindhi number 128; far more than in any Indo-Aryan vernacular belonging to the regions east and south: for example, Hindi has only seven such. It may

be that the repeated influxes of new races into the Indus valley contributed somewhat to this peculiarity. There is also a characteristic tendency in the language to form the past participle with a "t" after the penultimate vowel.

A relatively large number of Sindhi verbs possess a causal form. This is normally obtained by adding -ai to the root, the resulting verb being conjugated regularly. But many causals are formed in other ways, for instance by modification of the root itself. A special feature of Sindhi is the double causal, allowing the concise expression of fine shades of meaning.

Characteristic also is the extensive use of the Passive voice, particularly that of intransitive verbs, used impersonally in the third person singular, e.g., "It was being gone by me" instead of "I was going". The regular formation of the passive is by the addition of "-ij", with a short "i", to the root. This corresponds closely with the practice in Shina, a Dardic language, which adds "-ij" with a long "i" in order to form its passive.

Compound verbs—intensives, potentials, completives—are in common use in Sindhi as in most other Indo-Aryan languages, the auxiliary being frequently the same as in Hindi.

The characteristic features of Sindhi mentioned above are found, generally speaking, in the dialects as well as in the standard literary language of Vicholo. The peculiarities of the dialects may now be briefly reviewed. These, as mentioned earlier on, are Siraiki, Thareli or Dhatki, Kachchhi, Lari and Lasi.

The term Siraiki is commonly used in Sind to designate the Lahnda dialect spoken by Jats and certain Baluch and other tribes who came into the country from the Panjab. It is used by these people wherever they may be living in Sind. Its secondary meaning is the type of Sindhi spoken in Siro, that is Sind north of the latitude, roughly speaking, of Dadu and Kot Lahu. This latter hardly deserves to rank as a dialect; it is generally esteemed the equal of Vicholi or standard Sindhi, and differs from it only in pronunciation and in the exclusion of certain alternative words. Consonants are vigorously pronounced and there is a characteristic tendency to insert in speech, though not in writing, *y* after the cerebrals *ṭ*, *ṣ*, *ṣ*.

Thareli or Dhatki, and Kachchhi, are forms of Sindhi having a strong admixture of Rajasthani and Gujerati respectively. They are mongrel tongues rather than true dialects, shading off

into one or other of the two components according to localities and the racial origins of the people speaking them.

Lari on the other hand is a true dialect. It is regarded by the speakers of standard Sindhi as uncouth—"What men speak in the Lar is the speech of oxen in Siro"—and in fact it appears to be the most primitive type of Sind . It tends to soften the harsher sounds; to substitute the dental *j* for the cerebral *ʃ* and to disaspirate consonants which are aspirated in the neighbouring languages. These are features of the Dardic tongues, which virtually exclude aspirated consonants. Lari has also a very large number of words peculiar to itself, including many of the commonest terms.

Lasi again is a real dialect. It resembles standard Sindhi rather than Lari, but is distinguished by having special forms of personal pronouns, some special post-positions and many peculiar words of its own, some of which may derive from older sources than the Prakrit.

Sindhi must have been a well established, flexible and copious language at the time of the Arab conquest, but it was much enriched by that event and by the embodiment of the country in the Islamic world. This association antedated the conquest of Upper India by the Ghaznavi and Ghori sultans by some three centuries and has left its traces in the peculiar use of Arabic words. In other Indian languages learned words connected with the religion, science and philosophy of Islam are commonly borrowed from the Arabic, but Sindhi has also assimilated a number of the commonest words; a hill, a thing, a tent, an onion, a saucer, are all known by their Arabic names. These we may be sure were taken directly from the Arabs, whereas the Arabic element in other Indian languages came in with the Persian, and as a part of that language. Persian words are indeed used most extensively in Sindhi, but as elsewhere in India it is the vocabulary and not the syntax which is affected. The formation in Sindhi, already mentioned, of the present indicative tense by the addition of particles to the aorist, occurs also in Persian; but the very fact that these particles are inflected in Sindhi and not in Persian shows that Sindhi derived this usage direct from a remote common origin, and preserves it in its older form. We do not find the Persian order of words in the formation of Sindhi sentences, as occasionally occurs in Urdu: Persian words "naturalised" in Sindhi

are not pronounced as in Persia, nor are the Arabic words in use inflected according to their own rules, but have been obliged to conform to the indigenous grammatical system.

From this brief survey it will be evident that the Sindhi language as we now possess it reflects a number of features of the country's history, and also the influence of its geographical position and circumstances. Viewed through its literature, the peculiar genius of the language will on the whole be found more readily in poetry than in prose; but it would not be appropriate to enlarge on this subject in the present work.

#### NOTES

1. This chapter is based almost entirely on Sir G.R. Grierson, *The Linguistic Survey of India*, Vol. VIII, Part I, and on Richard F. Burton, *Sindh and the Races that inhabit the Valley of the Indus* (W. H. Allen, 1851).

## APPENDIX I

### THE LOST RIVER OF THE INDIAN DESERT

THE problem of the Lost River (Hakra) is best considered separately for the upper and lower courses of the channel: that is, from the small rivers of the Siwaliks down to Dirawar, and again from the Ghauspur depression down to the Rann of Cutch.

It will be convenient and prevent confusion, while the various theories are being discussed, to refer to the upper portion as the 'Hakra' and the lower as the 'Nara', though this terminology is not accurate.

The antecedents of the 'Nara' were first investigated many years before the 'Hakra' aroused any comparable interest. Captain James McMurdo, a scientific officer of the Bombay Army obtained information about this channel which led him to suppose that it was an ancient course of the Indus, on which the former prosperity of eastern Sind as described in such chronicles as the *Tarikh-i-Tahiri* and the *Tuhfat-ul-Kiram* had depended.

It is unfortunate that McMurdo refers to the 'Nara' as the 'Purana Deria', as the latter name properly belongs to a different channel, still traceable from near Mirpur Khas to the Rann of Cutch; but the mistake was natural, because the 'Nara' unites with the Puran (or the Puran with the 'Nara') some fifty miles before entering the Rann of Cutch. It will simplify matters to substitute 'Nara' for 'Puran' in considering McMurdo's observations.

He came to the conclusion that the Nara channel separated from the existing bed of the Indus above Bakhar; his informants stated that this was at a place called Syed Ganj Bakhsh, about forty miles upstream. The Nara thence flowed 'perhaps twenty miles' eastward of Bakhar and past Alor, and so southward. At a point about 20 miles east from Bahwanwa (Bahmanabad: to

McMurdo belongs the credit of first indicating the true position of this place) the Nara, according to his information, threw out to the westward a branch formerly known as the "Lohanna Deria"; this flowed towards "the modern Khodabad or perhaps between that place and Halakhandi, where joining the present channel it crossed that course, and fell into the sea at Dibal after passing the ancient Bhambor."<sup>1</sup>

The eastern branch of the Nara "still retaining the name" (Puran) "travelled south and fertilizing the now sterile districts bordering on the great desert, passing through the Jone and Badban Pargannah, fell into the present river" (i.e., the Puran properly so called) "near Allahbandar, where, spreading itself over the flat country it found its way into the sea through the Lakhpat river."

McMurdo thus having information that the 'Nara' separated into two lengthy terminal branches naturally proceeded to the assumption that these represented the ancient Delta of the Indus as it was in the time of Alexander the Great, Bahmanabad being on or close to the site of Pattala.

This theory, appearing in McMurdo's "Dissertation on the River Indus" in 1834,<sup>2</sup> revolutionised previous conceptions of the geography of Sind in Alexander's time; and though there have been differences of opinion among subsequent writers as to the position of Pattala, the view that the Indus then ran down the Nara valley at least as far as Jamrao Head has held the field virtually unchallenged down to the present time.<sup>3</sup> I have given in the text of this work my reasons for holding this accepted view to be incorrect.

Alexander Burnes was the next investigator of the Indus; with regard to the 'Nara' his contribution unfortunately served to obscure rather than elucidate the subject. His informants in Cutch had ascribed the great flood which came down the 'Nara' in 1826 to "the bursting of the Arore bund", and similarly the want of water in the ensuing season to the fact that the bund had been rebuilt.<sup>4</sup> Burnes after visiting Upper Sind in 1831, and similarly Captain W. Pottinger and Lieutenant del Hoste, who were there in the following year, were confirmed by what they heard in the idea that all that was required to restore the 'Nara' to the condition of an active branch of the Indus was to remove certain bunds in the neighbourhood of Rohri and Alor.

Pottinger and del Hoste were also of opinion that the 'Nara' had formerly been the 'main river'—that is, the terminal stream of the Indus itself.<sup>5</sup>

None of these officers had the opportunity of examining the Nara channel. Its upper course was first surveyed in 1844 by Captain W. Baker of the Bengal Engineers, with a view to ascertaining what was needed to give it a regular supply. Baker found that there was no bund in a position to prevent spill water entering the 'Nara'. He reported also that its existing source of supply was from a depression parallel to the Indus on its left bank, and that there was a similar depression parallel to the Sutlej from Rupar to near Bahawalpur. This was supposed to extend to Subzalkot and thence to "the head of the Eastern Narra, about 11 miles East of Roree." Baker also speaks of the 'Nara' incidentally as "one of the ancient channels of the Indus."<sup>6</sup>

The whole course of the 'Nara' was surveyed in 1851 by Lieutenant J. G. Fife. He found that it was fed by two floods "one which comes from near Subzulcote, the other from the low ground.... a few miles above Roree."<sup>7</sup> He noted that these floods only cut themselves channels after they had flowed for some distance over the plain, and particularly where the water was held up by obstructions, causing a violent rush when they gave way. He noticed also that the flood water concentrated in these channels on its way to the Nara was quite clear, the silt having been thrown down directly the water left the Indus.<sup>8</sup> Fife as a practical engineer confined his investigations to what bore upon the problem in hand and did not enter into theories as to the origin of the Nara. He seems to have regarded it in no other light than as a regular spill channel from the Indus.

The 'Nara' was made a virtually perennial stream in 1859 by a supply channel from the Indus above Rohri designed and executed by Fife; meanwhile, as the great Triangulation Survey was extended over the Panjab the courses of old river channels in that region became better known. During the minority of the ruler of Bahawalpur, when Colonel Minchin administered that State, it was found that irrigation could be extended by giving cuts from the Sutlej to two of the 'branch channels' of the Hakra, known as the Triwanna and the Wahind; thus Fife's restoration of the 'Nara' could be repeated, on a minor scale, for part of the 'Hakra'.<sup>9</sup>

It was in the light of this information that an anonymous writer—actually Dr. C.F. Oldham—wrote his “Notes on the Lost River of the Indian Desert”, which appeared in the Calcutta Review for July 1874 (No. CXVII). This writer’s theses, in support of which he marshalled a selection of statements (and silences) by early historians and geographers of North West India, and a number of inferences from local nomenclature, was that the ‘Hakra’ and the ‘Nara’ were the former bed of a single river, namely the Sutlej; and though flood water from the Indus also found its way into the channel along the middle part of its course, it had never been a bed of that river.

This view was combated by a writer signing himself ‘Near-chus’ in an article appearing in the Calcutta Review for 1875 (No. CXX). He made a greater use of the new survey information than his predecessor, and by a different selection and interpretation of historical material and the toponymy was able to present the subject in an almost entirely different light. His theory was that the channel of the ‘Hakra’ had been formed by the Junna in a remote period, when that river had inclined to the west, instead of the east, after emerging from the hills; that the ‘Hakra’ joined the Indus (then flowing east of its modern course) above Bakhar; and that the terminal stream of the Indus ran down the ‘Nara’ to the sea until the eleventh century A.D. He conceded that the ‘Hakra’ was fed also by overflows from the Sutlej; but maintained that the latter itself had never actually flowed in it, interpreting the ‘obliteration’ of the upper portion of such feeder-channels of the ‘Hakra’ as the Naiwals, as proof that they could only have been spill channels from the Sutlej during the inundation season.

R.D. Oldham, in his article “On probable changes in the Geography of the Panjab and its Rivers” in J. A. S. Bengal, Vol. LV, Part II (1887), supported the theory of the original Calcutta reviewer, *viz.*, that the Sutlej itself formerly flowed into the ‘Hakra’ and so into the ‘Nara’, and that the Indus never flowed into the latter, though frequently feeding it with overflow. He admitted that in a very remote age—before the Vedic period—the Junna also might have fed the ‘Hakra’ by way of the Chitang, but regarded the Sutlej as its main source of supply in early historical times. R.D. Oldham was a geologist and produced some technical explanations of the behaviour of the



Indus in the critical region just above the Bakhar gorge, and in refutation of the arguments of 'Nearchus', that the physical appearance of the dry channels between the Sutlej and the 'Hakra' proved that they could not have been occupied by the Sutlej itself. He also reiterated a number of the historical arguments of the original Reviewer.

The views of Major H.G. Raverty, in "The Mihran of Sind and its Tributaries" (J.A.S. Bengal, 1892, Part I) resemble in the main those of 'Nearchus'—to whom however he makes no reference—in that he was convinced that the 'Nara' was the terminal stream of the Indus in historical times.<sup>10</sup> He holds however that after the Indus had altered its course to the westward the Sutlej continued to run down the 'Hakra—Nara', prolonging the active existence of the last named beyond the period supposed by other writers.

Raverty disregards the possibility that the Jumna could ever have contributed to the 'Hakra' system. His arguments rest mainly (as did those of the original writer in the Calcutta Review) on the interpretation of incidental statements by historians and geographers, of which he adduces a vast number.

R.B. Whitehead, writing in the *Indian Antiquary*, Vol. 61, (1932),<sup>11</sup> discussed the theories of his predecessors in the light of recent canal survey-levelling in the Panjab, from which it appears certain that the river Jumna at one time took a course to the westward, which is now represented by the beds of the Chitang and the 'Hakra'. He seems to have accepted the view that the 'Hakra' and 'Nara' then formed a single independent river as far as the Rann of Cutch, while recognizing that in comparatively recent times the 'Nara' was separately fed by spill water from the Indus from above Alor. But he would not allow that water from the Sutlej had contributed to the forming of the 'Hakra'.

Sir Aurel Stein in the course of an archaeological expedition in 1940-41, made a careful examination of the Hakra channel. His party included a member of the Survey of India, so the topographical observations in Stein's paper, "A Survey of Ancient Sites along the 'Lost' Sarasvati River" (*Geographical Journal*, XCIX, No. 4, 1942), may be allowed considerable weight. At two points on the right bank of the Hakra he noticed the appearance of river beds joining it: that near Walar he was satisfied

was an "ancient winding bed of the Sutlej", and the lower one, near Kudwala, probably another such abandoned course. The general alignment of these channels has been followed in either case by modern canals from the Sutlej Barrage. From the disposition of the prehistoric and later sites in the Hakra tract, Stein assumed that the Sutlej had forsaken the Hakra bed in later prehistoric times. He drew attention also to a feature of the country about Dirawar—branching river beds, "almost deltaic"; a "network of terminal channels" indicating a considerable flow of water.

It seems to me that every one of these writers has contributed in a greater or less degree towards the elucidation of this problem; and it is now possible to pick out from among them the most important elements of the probable truth.

It may be accepted that the Hakra owes its existence mainly to the Jumna having at some remote period taken a westward instead of an eastward course; but the Sutlej may have been a contributor from as early a time, and certainly continued to feed it by overflows long after the Jumna had taken its present direction. If the Hakra and Nara formed a continuous independent river, running to the sea, it was so probably only as long as the Jumna discharged into it. It seems doubtful whether the whole volume of the Sutlej ever took this course. Such indications as remained when the question was first investigated rather suggest that only a portion of this river flowed into the Hakra. The various channels between the Sutlej and the Hakra were probably carrying only overflow in the inundation season, but doing so with fair regularity. The "deltaic region" about Dirawar records, in my view, the period when the Hakra had ceased to carry a perennial stream, and was receiving only such spill water.

The fact that the Nara is now a low valley-line and that when first observed it bore none of the signs of an alluvial river, does not prove that the terminal stream of the Indus never took this course; but only that it has not done so for a very long period of time—at least so long as it may have taken to build up the higher plain to the westward. If it ever took the line of the Nara it would not have abandoned it except for a lower line.

For the practical purposes of historical geography, then, as distinct from geology, we feel bound to look upon the Nara rather as a regular spill-channel of the Indus, receiving its supply from several points, the highest probably opposite the junction of the Panjab rivers with the Indus.

Thus as far as the historical period is concerned, it would seem that the Hakra and the Nara depended on different sources for their supply. The gap between Dirawar, where the influence of the Sutlej spill into the Hakra seems to end, and Ghauspur, where the depression leading down to the Nara begins, is certainly supposed to be traversed by a continuation of the Hakra. It is now so overspread with drift sand that the channel cannot, I believe, be actually traced throughout. This part of the "Lost river" would seem then to belong to the relatively remote period when the Jumna discharged to the westward as already mentioned, and the "Lost river"—aided probably by a branch of the Sutlej—reached the sea.

Independent evidence of this former continuity exists in the reappearance of the name 'Hakra', by which the lowest reach of the "Lost river" in south eastern Sind, is known to this day. Yet the country people along its banks regard this, as their brethren in Middle and Upper Sind regard the Nara and its feeders the Raini and Wahinda, as nothing more than a flood channel from the Indus.

## NOTES

1. In actual fact, the channel still to be seen close to Bahmanabad, and at other points (often under other names) above and below that place, does not derive from the Nara but comes down with a general course slightly westward of the western edge of the Registan, corresponding broadly with the modern Mir Wah and Nasrat canal.
2. *J. R. A. S.*, Vol. I (1834), pp. 20-44.
3. See e.g. Cunningham, *Ancient Geography of India*, pp. 251-2 and map; McCrindle, *Ancient India* (Arrian); Tarn, *Alexander the Great*, Vol. I, pp. 103-4; C. C. Davies, *An Historical Atlas of the Indian Peninsula*, Map No. 4.
4. *A Memoir of a Map of the Eastern Branch of the Indus*, by Lieut. Alexander Burnes (Government Lithograph Press, Bombay, 1828), para 12; Supplementary Memoir, *Ibid.*, paras 5, 6, 11.
5. Capt. W. Pottinger, *Memoir on Sindh*, 1832, para, *The Narrali or Nallah*; Lieut. del Hoste, *Memoir on Sindh*, 1832, para, *The Pooran*.

6. *S.R.B.G.*, XLV, New Series, (1857), pp. 1-5.
7. *Ibid.*, p. 26.
8. *Ibid.*, p. 44.
9. R. B. Buckley, *Irrigation Works of India*, 1880, pp. 155-6.
10. Raverty uses the term 'Mihran' for the terminal stream of the Indus, and regards the Indus above the confluence of the Panjab rivers as a mere 'tributary' of the Mibran.
11. *The River Courses of the Panjab and Sind*. (*Indian Antiquary*, 1932).

## APPENDIX II

### THE VALUE OF THE WORKS OF THE MEDIAEVAL ARAB GEOGRAPHERS WITH REGARD TO 'SIND

Considering that the Arabs and their Muslim successors were in possession of Sind and Baluchistan and in continuous contact with the adjoining countries from the early part of the eighth century A.D., it must be recognized that their geographical conceptions of this region, as they appear in works written several centuries later, are remarkable for vagueness and inaccuracy. The fact is that the Muslim writers were not at pains to find a scientific basis for their geography, and there is little sign of progress among them over a period of three or four centuries, during which the general stock of knowledge available must have increased and early errors should have been corrected.

The inadequacy of the Arab geographers is displayed in their cartography: the maps of Sind accompanying the works of Al Istakhri and Ibn Hauqal are destitute of scale and make no attempt to reproduce even approximately the bearings of the coastline or other natural features. The bye-river encircling Mansura is crudely indicated, but one map fixes the city itself on the left bank of the main river, and the other on the right bank of the branch.

Itineraries were the staple material of these as of all early writers on geography, but the Arabs do not seem to have appreciated the importance of obtaining even approximate bearings from point to point, or of working to an easily recognizable standard of distance.

Professor Hodivala fairly remarks in this regard, "these much-heralded itineraries have not fulfilled the hopes entertained at their first publication, of shedding welcome light on the historical geography of Sind and Baluchistan. They have served rather to obscure the subject than to illuminate it."<sup>2</sup>

It was not the fault of the geographers that the measure of distance they used, the farsakh, was differently reckoned in

different districts; and we may be grateful at least that Ibn Khurdadbih, Al Masudi and Al Beruni all inform us what their own ordinary standard was. But when we apply these standards the result is usually to produce serious contradictions. For instance, Al Masudi gives the distance between Multan and Mansura as "75 farsakhs each of eight miles". This would approximate to about 600 English miles.<sup>3</sup> Al Beruni makes it fifty farsakhs, and as his standard was 16000 cubits, or somewhat over  $4\frac{1}{2}$  miles to a farsakh, the result is only about 225 miles. The real distance is about 360 English miles. Al Istakhri says that the same two places are 12 days' journey apart, which again appears to be an underestimate.

A "day's journey" is, naturally, the other measure of distance habitually used by these writers; but it is obviously subject to great variations, according to the method of travel, the convenience of halting places, the style of country traversed, and the like. Though the relatively late writer Al Idrisi tells us that he reckons an ordinary stage at thirty miles and a long day's journey at forty miles, these standards cannot be uniform, and generally produce errors if applied to itineraries which include two identifiable places.<sup>4</sup>

Faced by such discrepancies with regard to distances between known places, we cannot expect the itineraries to enable us to locate the unknown place names. Most of these themselves have to be guessed, since many of the manuscripts and maps omit the diacritical points, permitting half a dozen or more variant readings. We cannot but suspect, too, that the copyists have frequently failed to reproduce their original letters, which are so easy to mistake. The Arabic and Persian scripts are probably more vulnerable than any others in this respect.

If there is one physical feature of North West India which any geographer with opportunities for obtaining local information might be expected to record with care, it is the relationship of the five rivers of the Panjab *inter se* and with the Indus. Ptolemy's accurate delineation of these is remarkable: he had used the descriptions of the country by Aristobulus and Megasthenes to good effect, and had almost certainly obtained up to date information to test and supplement them. I may record by way of contrast what is said of the tributaries of the Indus by the Arab geographers, in their chronological order of writing. Al Masudi

mentions the Raid (Ravi), Hatil (ṛBiah), Kabul, and Kashmir (Jhelum), but not the Chenab or the Sutlej. Al Istakhri gives only one of the rivers, naming it the Sind Rud. Ibn Hauqal knows of two, which he calls the Sind Rud or Sandaruz and the Jand Rud or Jandaruz. These names, as Hodivala shows, probably represent the Sutlej and the united Chenab which is now known as the Trinab.<sup>5</sup>

It has to be borne in mind that these three writers had all travelled in the Indus valley. Al Beruni enumerates all five rivers under their proper names, which he draws from Sanskrit sources, and though in his tabulation he transposes the Ravi and Beas, with the notes that the former flows east of Multan and the latter west of it, he partially corrects this in his description, stating that the Beas flows east of Multan.<sup>6</sup> Raverty lays an undue stress on the slip, such as it is, obviously to discredit Al Beruni's authority; for unless his clear statement that the Sutlej joins the Indus by way of the Panjnad is rejected, the great Mihran-Hakra theory falls to the ground.<sup>7</sup> But in fact greater reliance should be placed upon Al Beruni's statements in this matter than on those of other writers—not only because he resided for a time at Multan, but in view of the clear evidence of research throughout his work, and of his scientific and critical approach to his subject as a whole.

Al Idrisi, with all that his predecessors had written available to him, shows himself notably lacking in these qualities; his industry, however creditable, is discounted by the absence of the selective faculty.<sup>8</sup> Thus he ignores Al Beruni, and is content to mention that there were two tributaries of the Indus—apparently relying on Ibn Hauqal, though without even reproducing the names mentioned by him.<sup>9</sup> And Muslim writers of succeeding centuries continue to show strange ignorance or carelessness in this matter.

The habit of uncritical copying of the statements of former writers is in fact so common that apparent confirmation of statements is often valueless. For instance, Yakut in his great geographical dictionary written in the first half of the thirteenth century A.D. gives us numerous interesting details of Mansura in Sind:<sup>10</sup> but we have only to compare what was stated of the place by Al Masudi and other writers of the tenth century to see that Yakut's facts are directly borrowed from them. All that we

hear of Mansura in contemporary chronicles indicates that it had lost its old importance by the beginning of the thirteenth century: certainly it did not then possess a king of Qureishi origin, whose forbears had long exercised authority there. This is as if Baedeker's guide to Europe for 1961 were to state that France is under the rule of a king of the Bourbon family.

I have not thought it necessary to make reference in the text of this volume to the town called by the Arab geographers Manhatara or Manhabari, as it seems to have been of no importance in Sind history. But what they say about this one place (if it was only one) serves to illustrate most of the faults already mentioned.

In the first place its name is far from certain: in addition to the alternatives already given, it may have been Manjabari. Its position on the map belonging to the Ashkalu-l-Bilad is clear enough, and accords with what is stated by Al Istakhri and in one passage by Ibn Hauqal: on the west of the Milhran, nearly opposite Mansura.<sup>11</sup> But Ibn Hauqal in another passage states that it lay on the route to Qannazbur in Makran, and two stages from Debal,<sup>12</sup> which would remove it to somewhat the position occupied on the same map by Kambali, and several days' journey from the river. Al Idrisi locates the place three days from Sharusan (Schwan), six from Firabuz (Qannazbur) and two from Debal on the way to Firabuz.<sup>13</sup>

Haig and Holdich conclude that there were two places of the same name; thus Al Istakhri may be supposed to have referred to one, Ibn Hauqal to both (without distinguishing them) while Al Idrisi mixed up the two: the latter's "three days from Sehwan" connecting with Al Istakhri's Manjabari, and the rest of his remarks with the second Manjabari of Ibn Hauqal, *i.e.*, that which was on the road from Debal to Makran.

Professor Hodivala thinks that the place was one, and that the second of Ibn Hauqal's directions is correct: *viz.*, two days from Debal on the road to Qannazbur. The indications from Mansura and Nirun he ascribes to copyists' errors—the author being presumed in each instance to have written "Qannazbur".

Hodivala suggests that Manhabari may be identical with Bhambora, which is not otherwise mentioned by these writers and, according to Richard Burton, was also known as Manhara.<sup>14</sup>



This is a reasonable suggestion for one set of directions, but it does not seem to me that the other set will fit in, even if arbitrarily altered as Hodivala proposes.

It is something of a curiosity to see in juxtaposition the various locations suggested for Manhabari by modern commentators:—

*McMurdo*:- in Rupah Pargana (the south of Shahdadpur taluka. This agrees with Haig's placing of one of his presumed two Manhabaris).

*Cunningham*:- Tatta.

*Raverty*:- possibly, near Badin; (he considers but rejects Manjhand).

*Hodivala*:- Bhambora.

*Haig*:- not far from Karachi; (for the other of his two).

Thus between them they 'box the compass' round an area approaching two thousand square miles.<sup>15</sup> We may condemn Cunningham and Raverty for succumbing in this instance to the influence of their own special theories: but such aberrations became possible only because of the negligence of the original authorities.

## NOTES

1. By "Arab" I mean the Muslim authors who wrote their works in Arabic.
2. *Studies in Indo-Muslim History*, p. 30.
3. Hodivala remarks that Masudi seems to have equated his Sindhi Farsakh with the "double Yojana" (see Appendix B, in Cunningham's *Ancient Geography of India*, pp. 571-6). He also uses an ordinary farsakh of about half the length of the Sindhi variety, and if that were applied here the result would be nearer the truth (Hodivala, p. 28).
4. Hodivala, pp. 30-32.
5. *Maruj-uz-Zahab*, trs. A. Sprenger, pp. 381-2. Elliot, I, pp. 22-3, 30, 40; Hodivala, pp. 38-40.
6. *Tarikh-ul-Hind*, ed. E. Sachau, Vol. I, pp. 258-260.
7. *Milwan*, pp. 219-220.
8. Hodivala, pp. 59-60.
9. Elliot, I, p. 83; Hodivala, pp. 64-5.
10. Trs. Barbier de Meynard, Paris, 1861, pp. 546-7.
11. Elliot, I, p. 37.
12. *Ibid.*, p. 40.
13. Elliot, I, pp. 79-80. Firabuz, or Qannazbur, was probably Panjgur. Hodivala, p. 63.
14. Hodivala, pp. 36-8.
15. McMurdo, *An Account of the Country of Sindh, etc.*, J. R. A. S., Vol. I, p. 233; Haig, *Indus Delta Country*, p. 68. Cunningham, *Ancient Geography of India*, p. 289; Raverty, *Milwan*, pp. 227-9 and notes. Hodivala, *loc. cit.*, Haig, *Indus Delta Country*, pp. 67-8.

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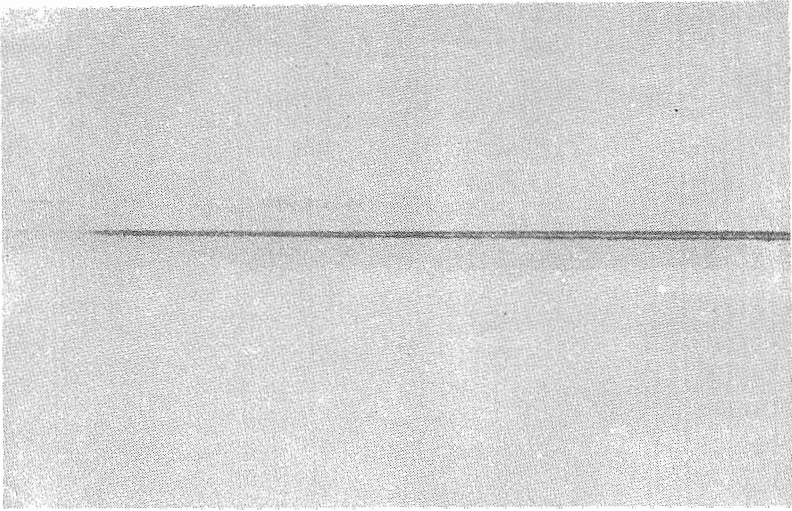
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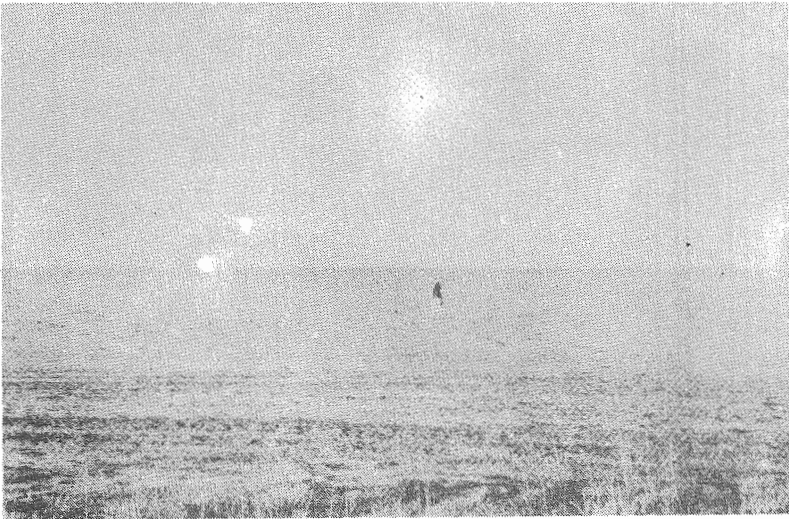
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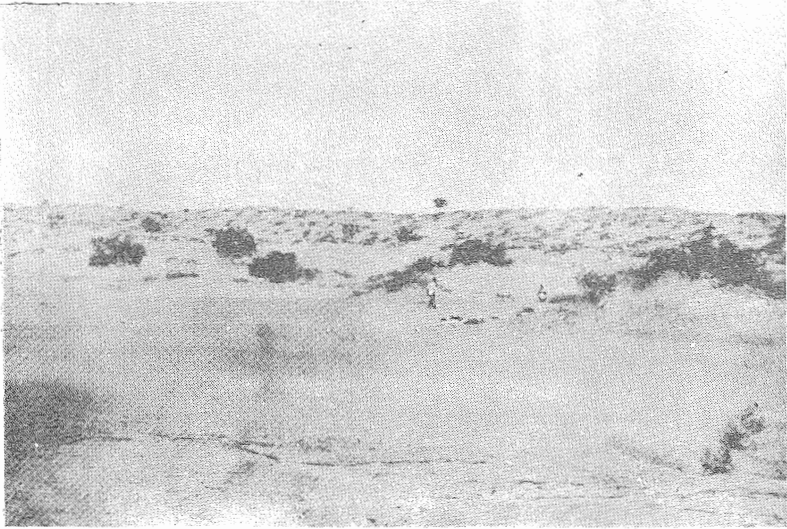
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**The river Indus : looking towards the Lakhi range .**



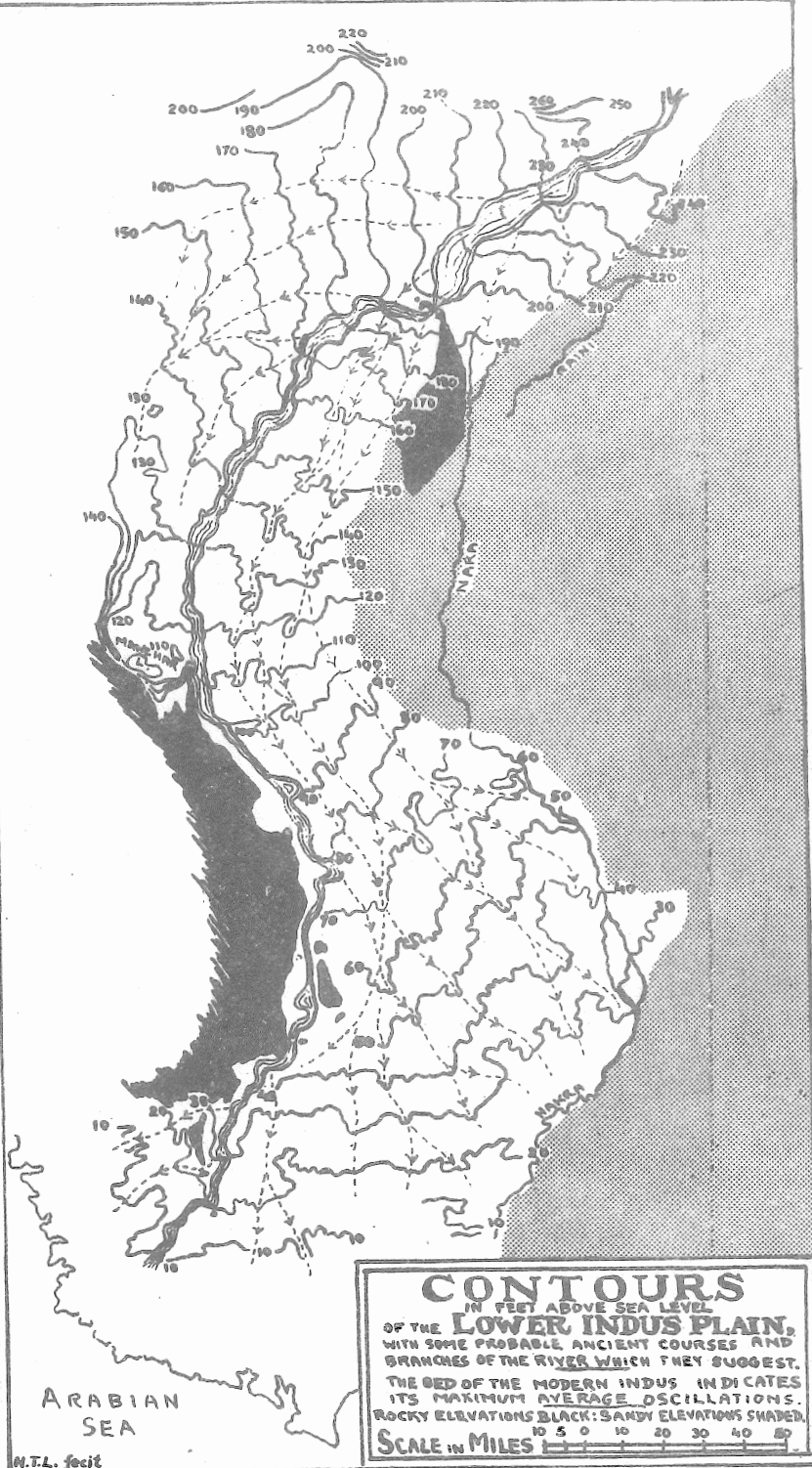
**The 'Pat', or desert of Upper Sind .**



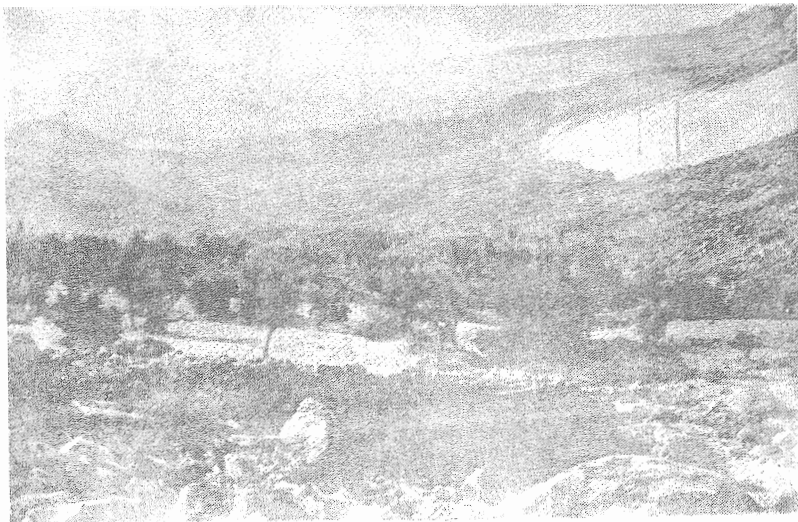
**In the Thar desert.**



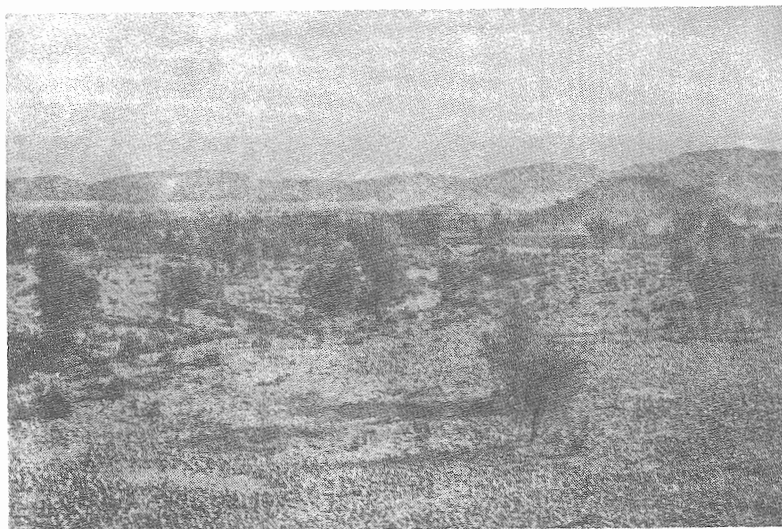
**The Manchar lake : Mohanas fishing.**



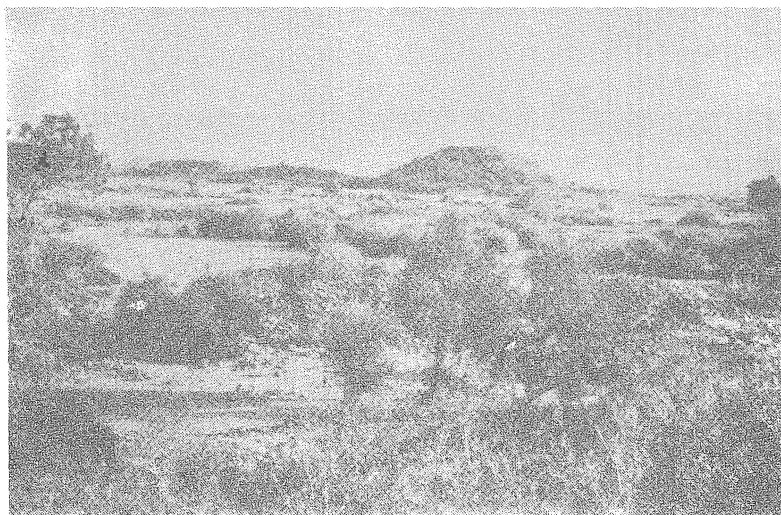
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**'Goharband' at Gozbani, Sehwan Taluka .**



**Kandhi Wahi, a prehistoric Settlement in Sehwan Taluka**

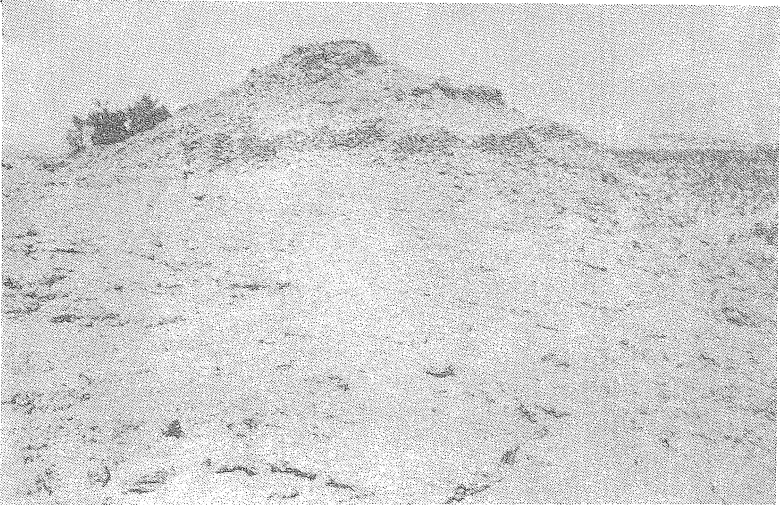


**The 'Miri' at Taung, Kohistan Mahal.**

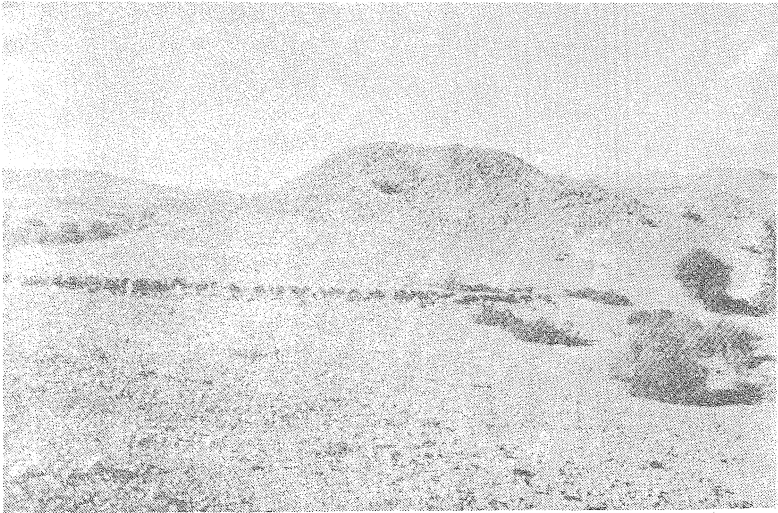


**Defences at the Ratan Shah spring, Taung.**



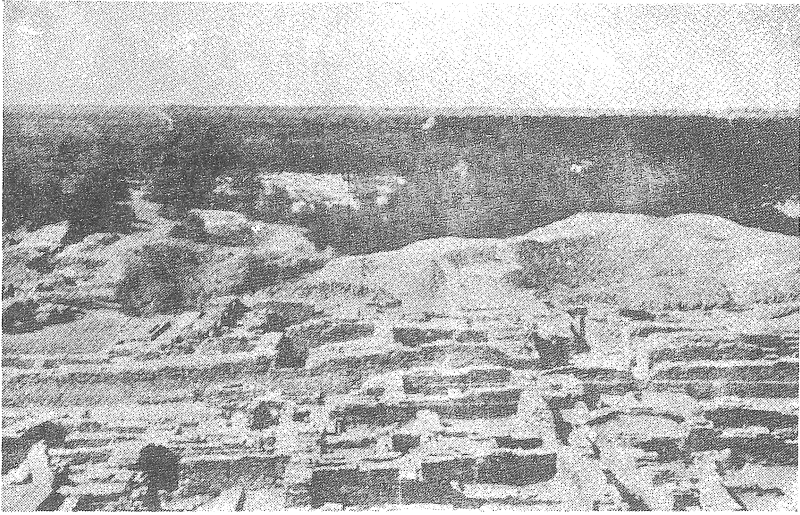


**Lundi Buthi, near Naig, Sehwan Taluka.**

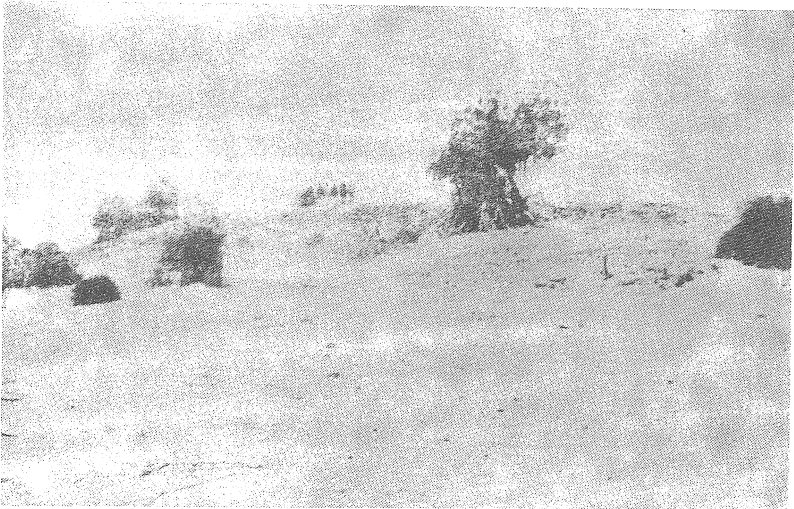


**Kai Buthi, Sehwan Taluka.**

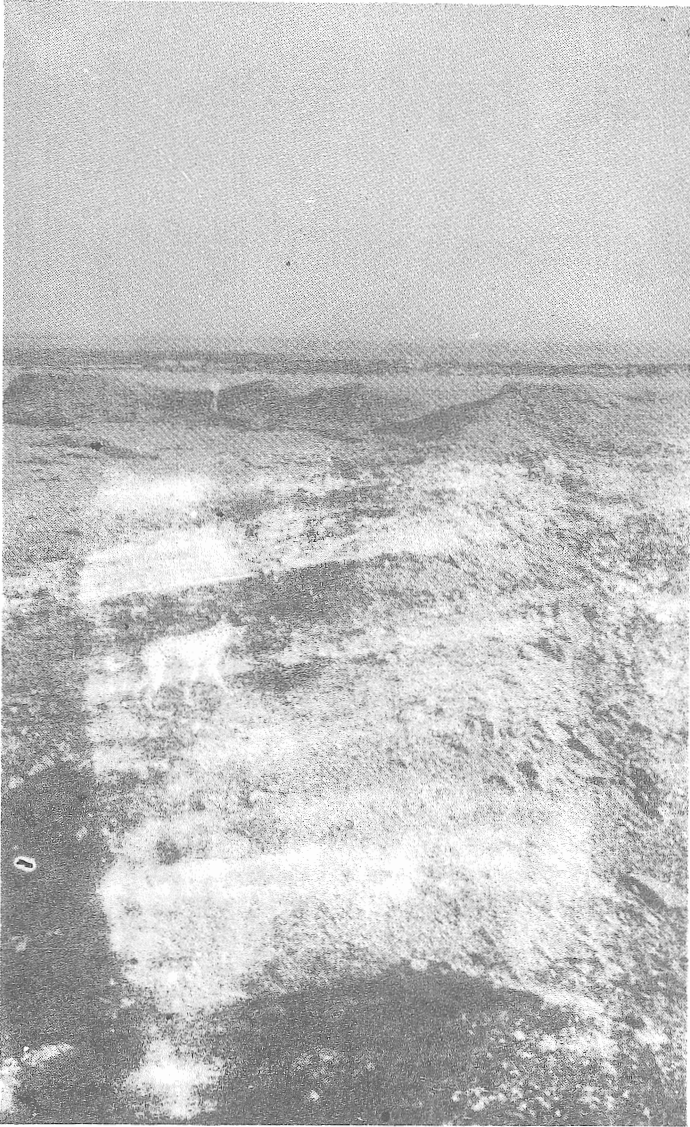




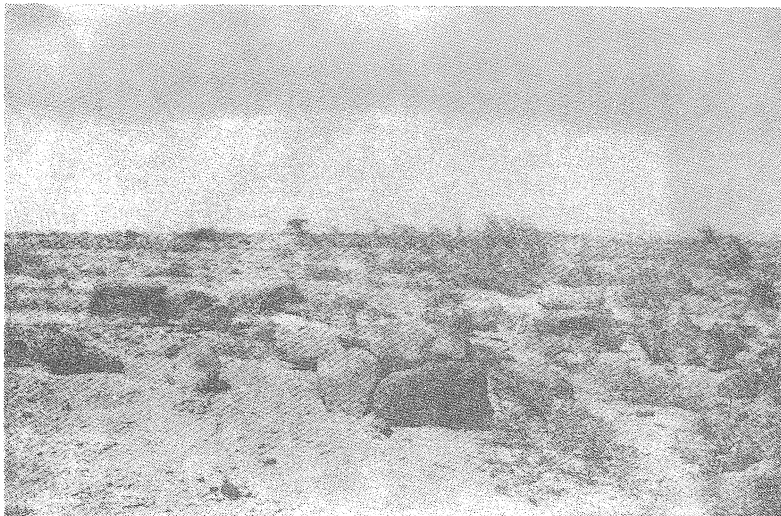
**Mohenjodaro: looking westward from the Stupa .**



**'Ther', a settlement of the 'Indus' period near Mamro, Rohri Taluka .**



**Ancient fortification at Waghodar, Karachi Taluka.**

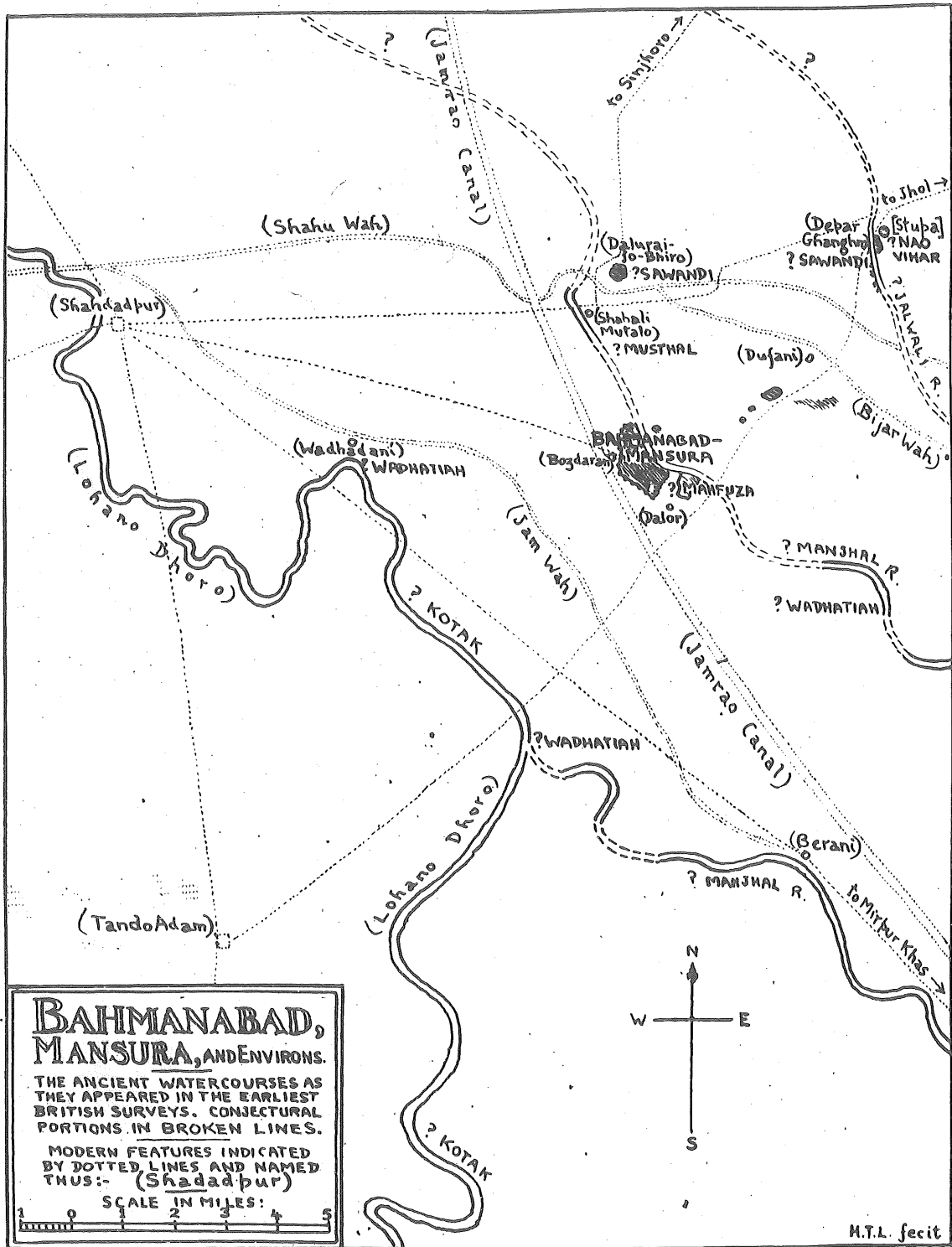


· Kafirs' graves, (burial cists) near Damlot, Karachi Taluka .



‘ Stone Enclosure ’ near Naig, Sehwan Taluka .

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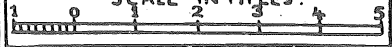


**BAHMANABAD,  
MANSURA, AND ENVIRONS.**

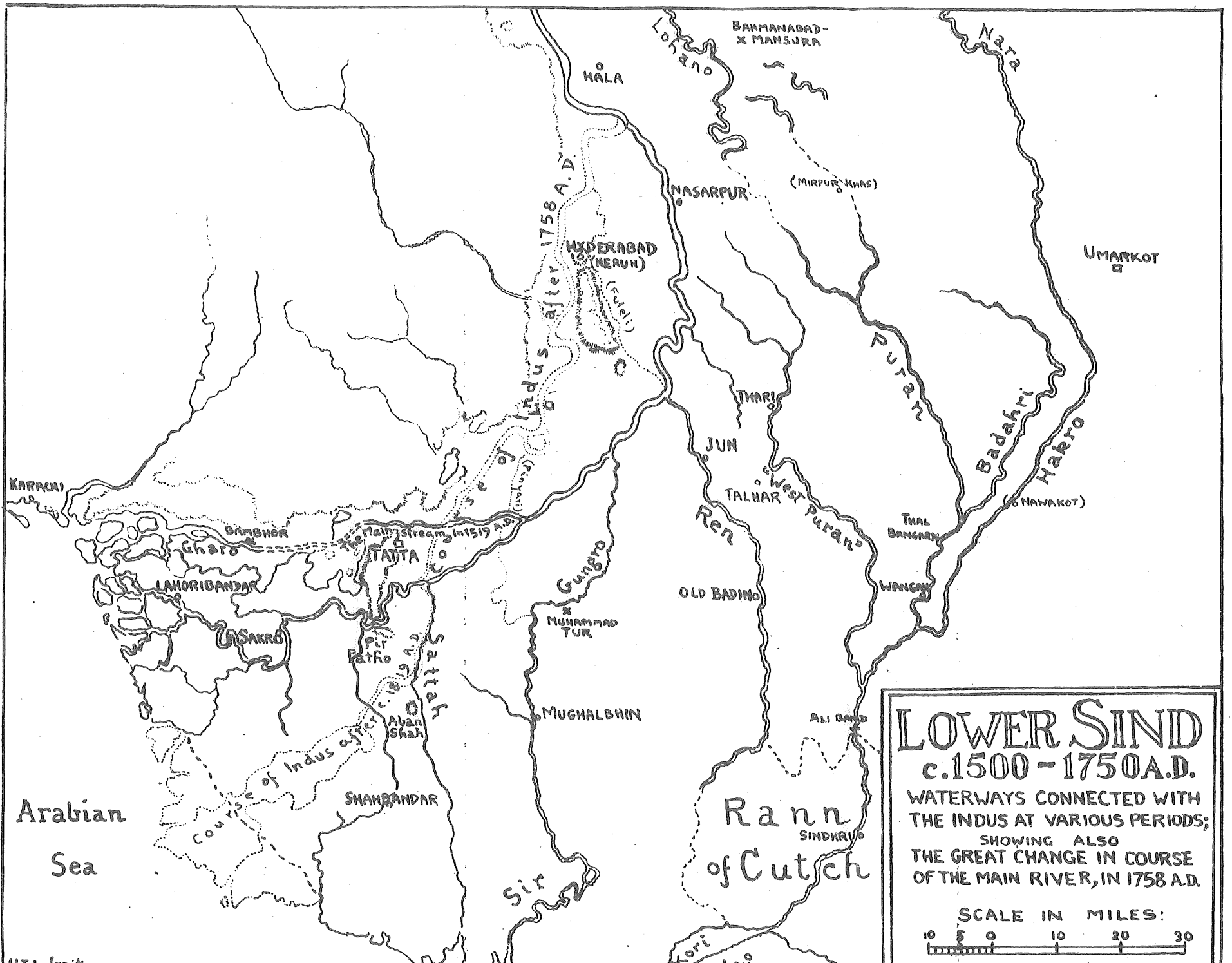
THE ANCIENT WATERCOURSES AS THEY APPEARED IN THE EARLIEST BRITISH SURVEYS. CONJECTURAL PORTIONS IN BROKEN LINES.

MODERN FEATURES INDICATED BY DOTTED LINES AND NAMED THUS:- (Shadadpur)

SCALE IN MILES:

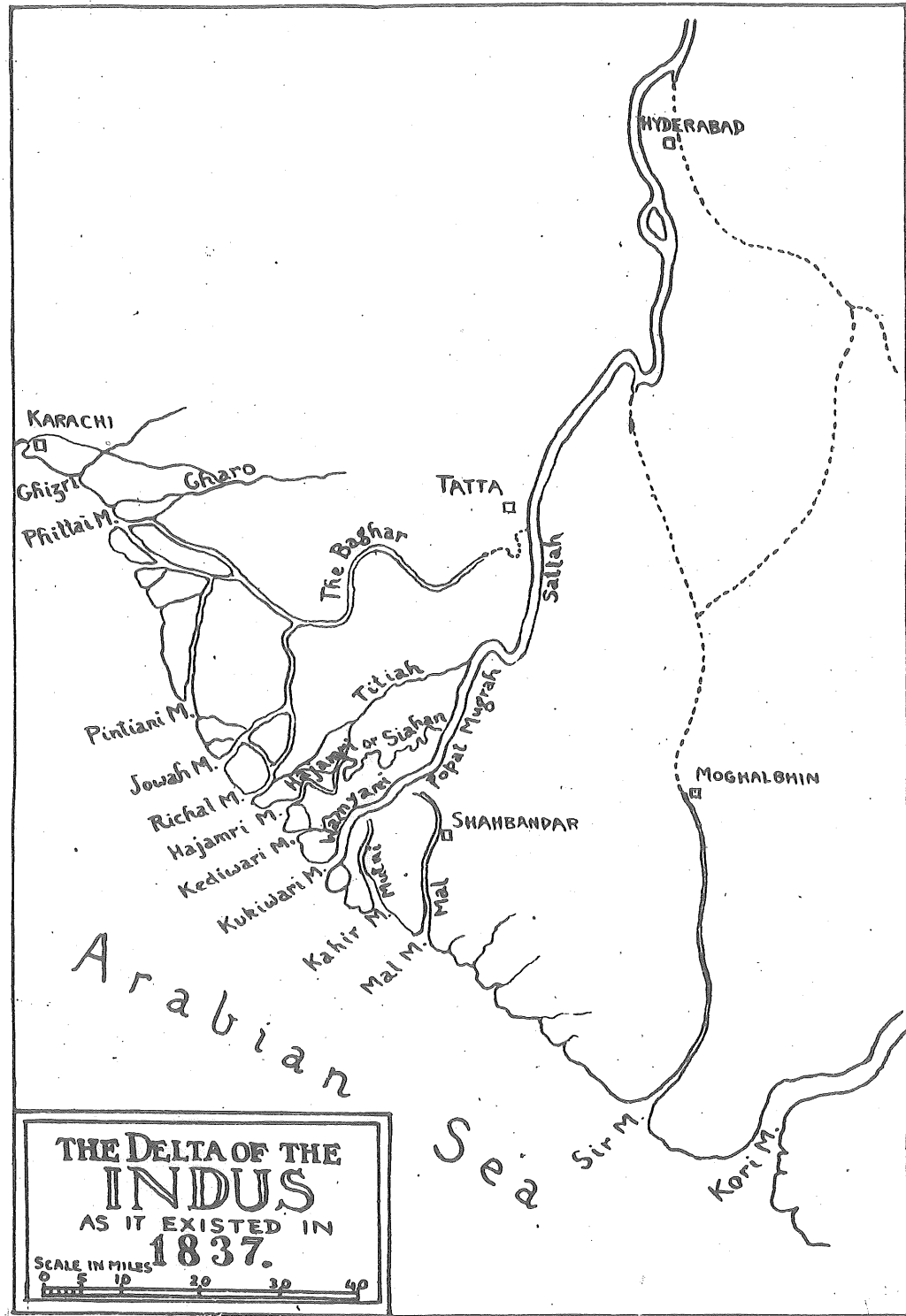
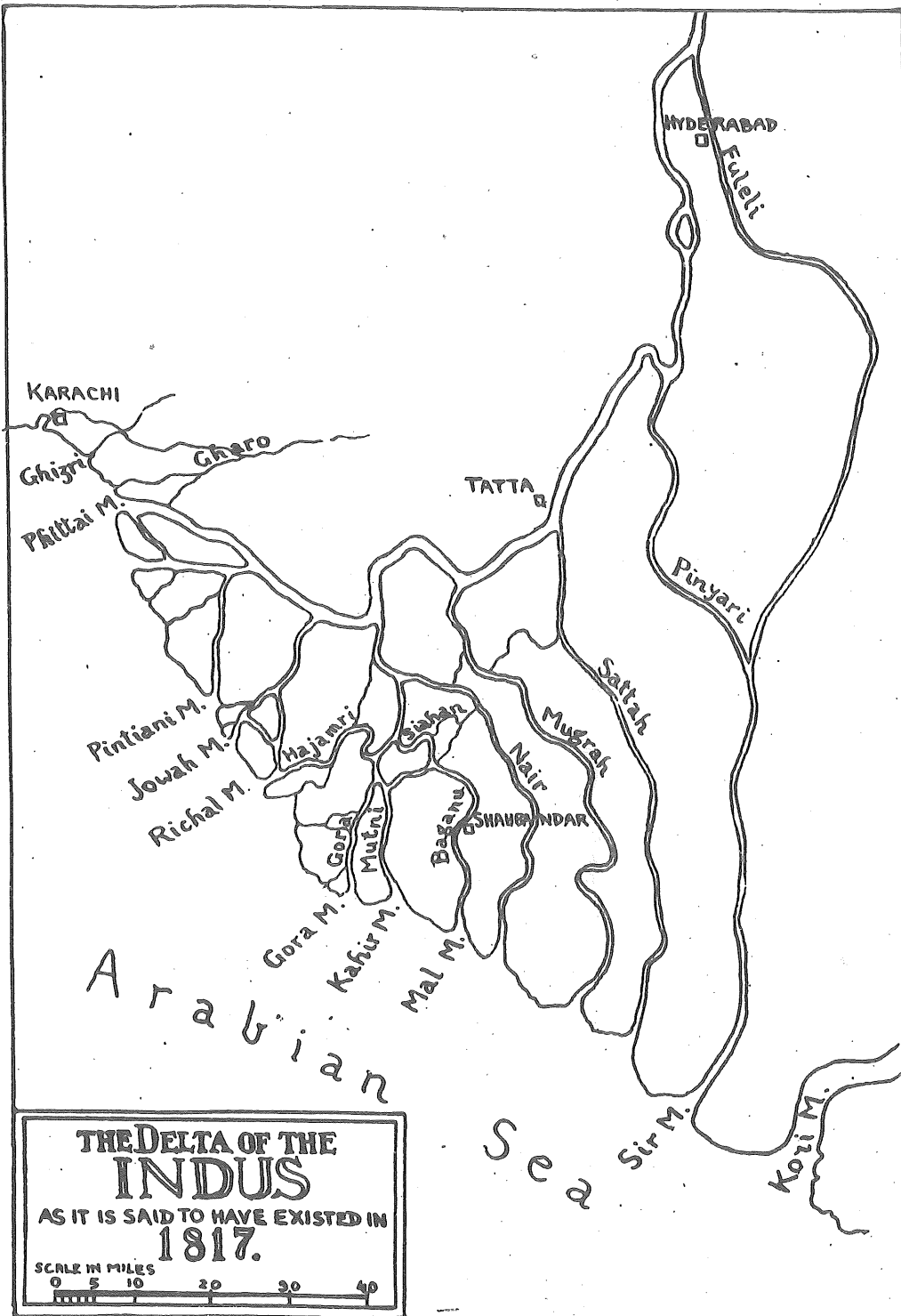


M.T.L. fecit



**LOWER SIND**  
 c.1500-1750 A.D.  
 WATERWAYS CONNECTED WITH  
 THE INDUS AT VARIOUS PERIODS;  
 SHOWING ALSO  
 THE GREAT CHANGE IN COURSE  
 OF THE MAIN RIVER, IN 1758 A.D.

SCALE IN MILES:  
 10 5 0 10 20 30

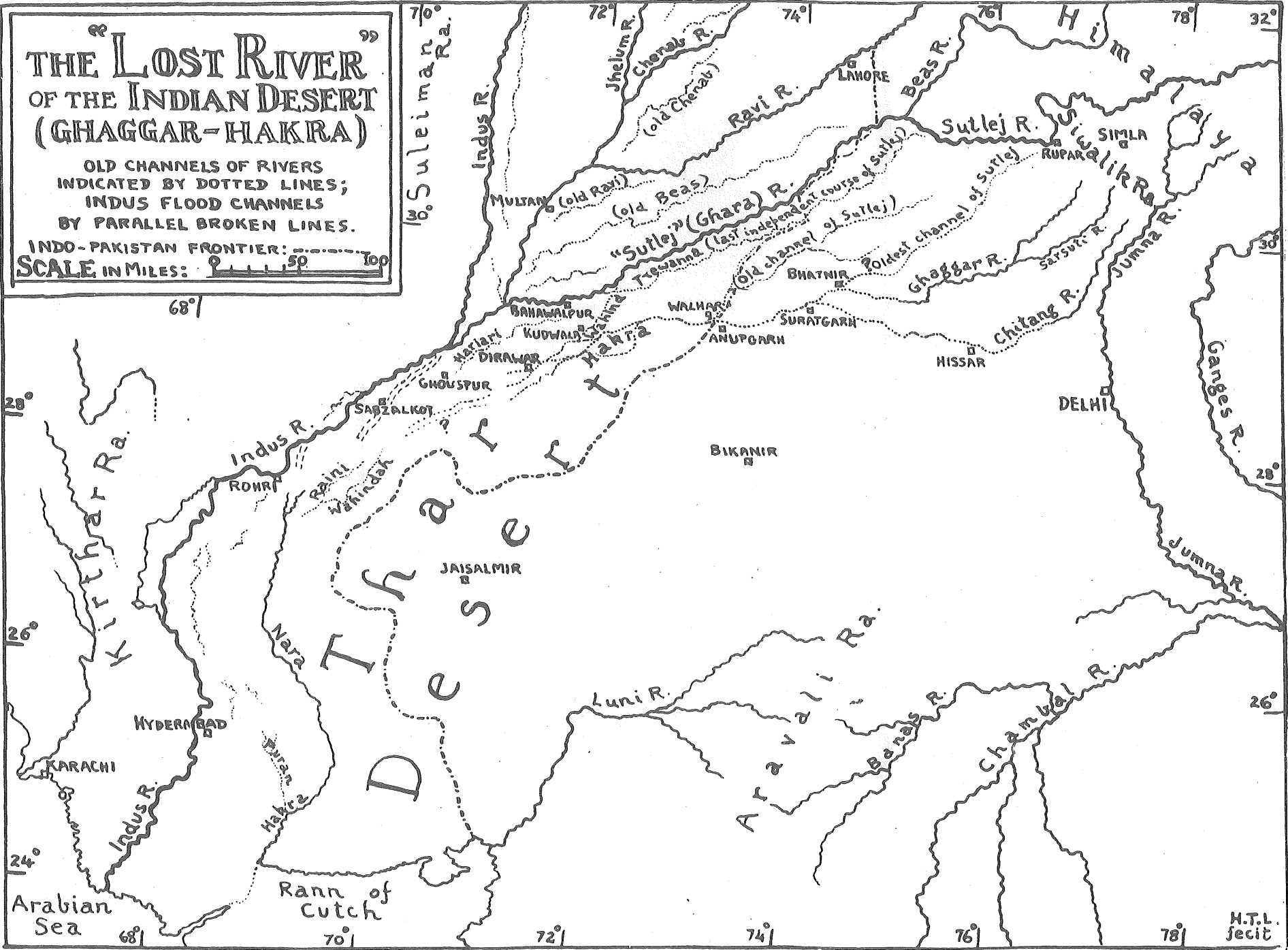


# THE LOST RIVER OF THE INDIAN DESERT (GHAGGAR-HAKRA)

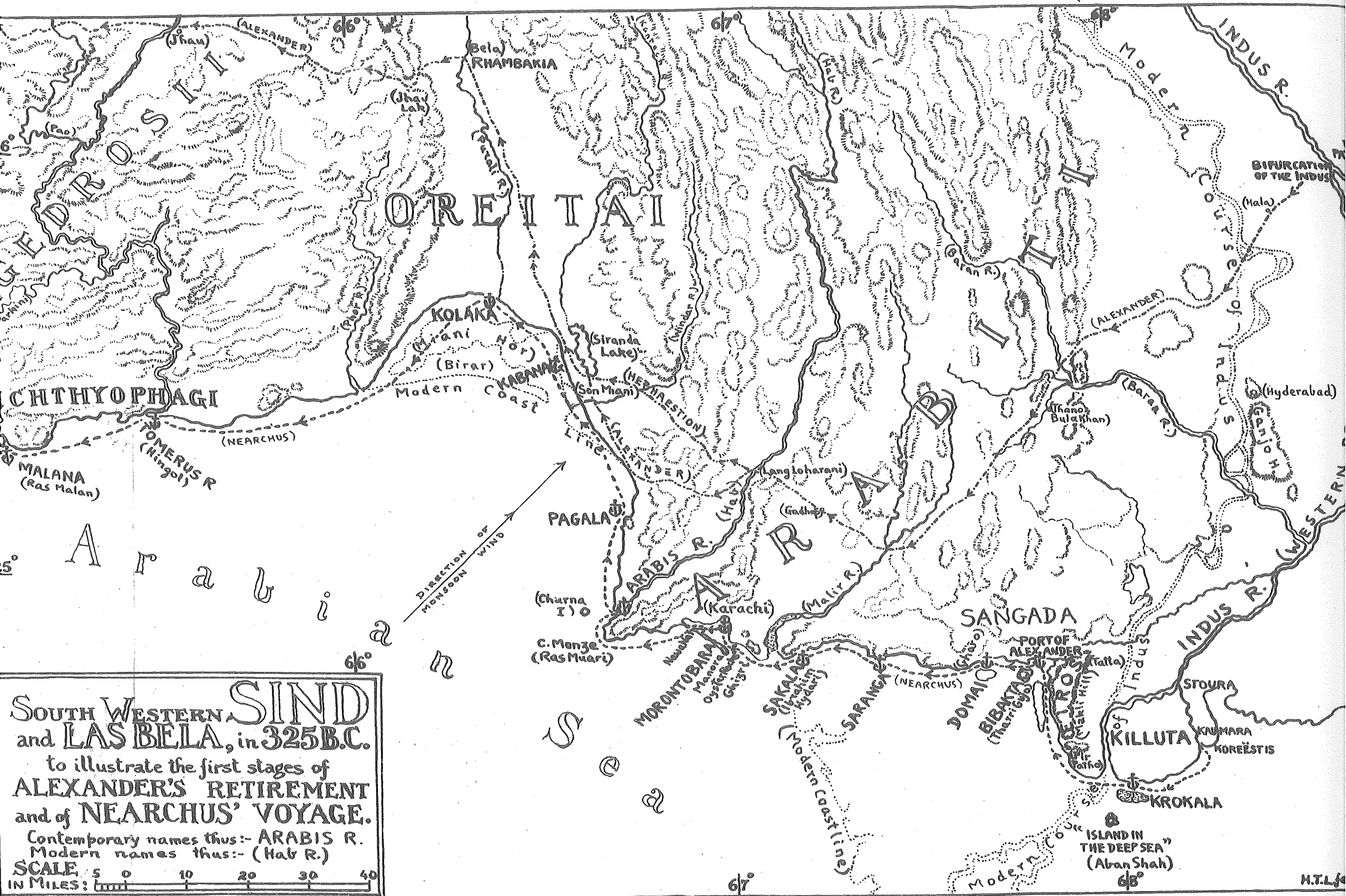
OLD CHANNELS OF RIVERS INDICATED BY DOTTED LINES; INDUS FLOOD CHANNELS BY PARALLEL BROKEN LINES.

INDO-PAKISTAN FRONTIER:

SCALE IN MILES: 0 50 100

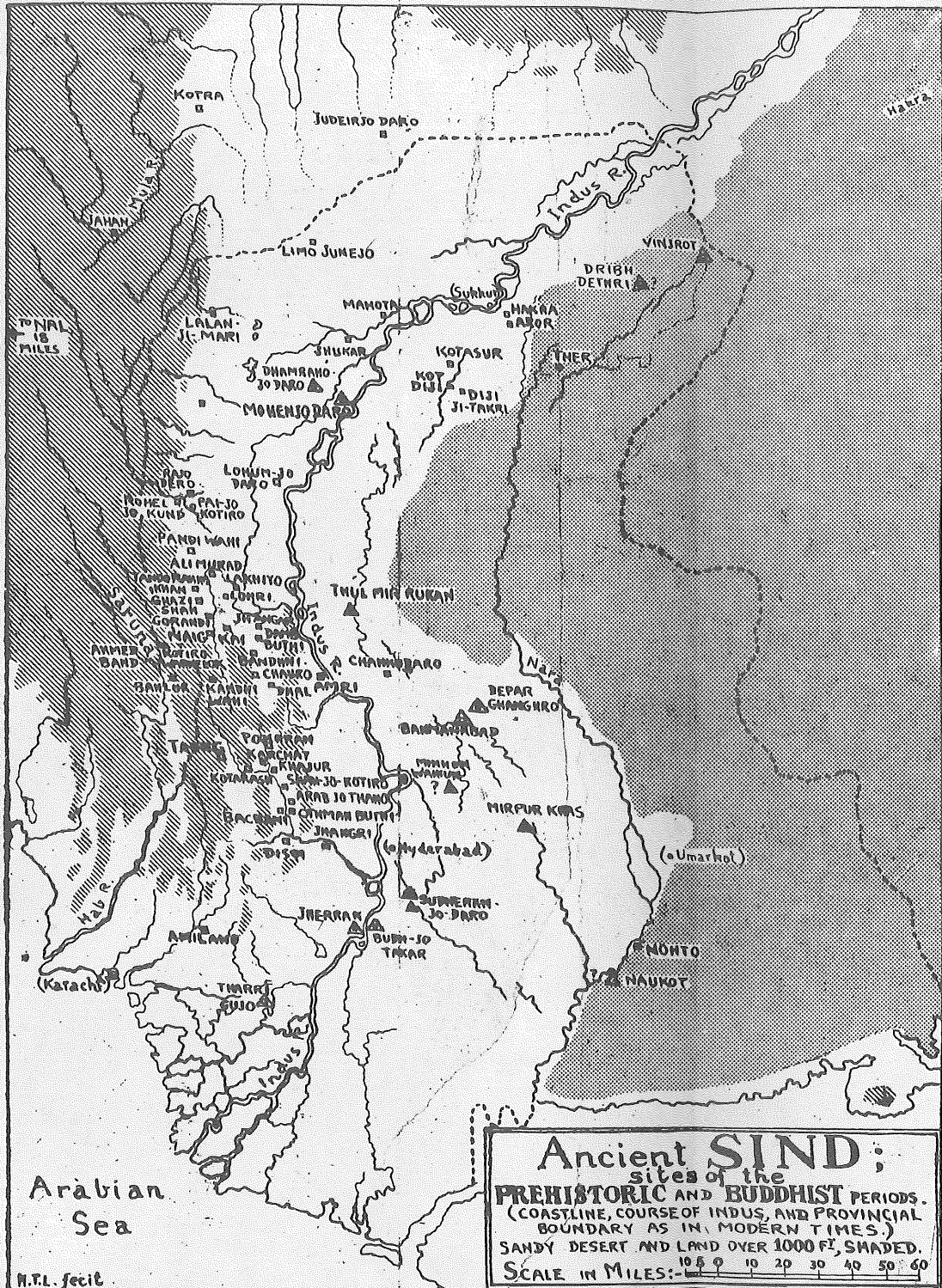




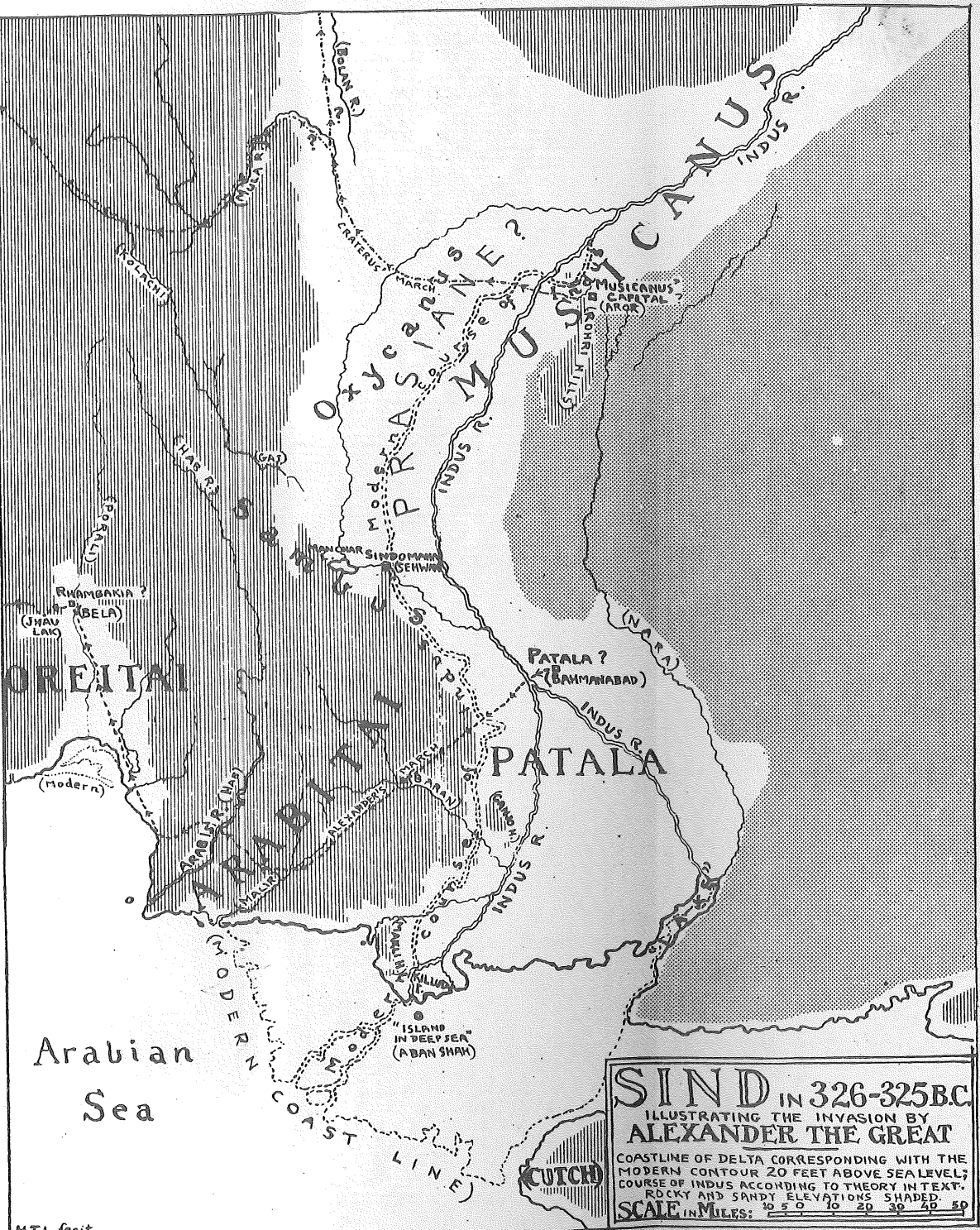


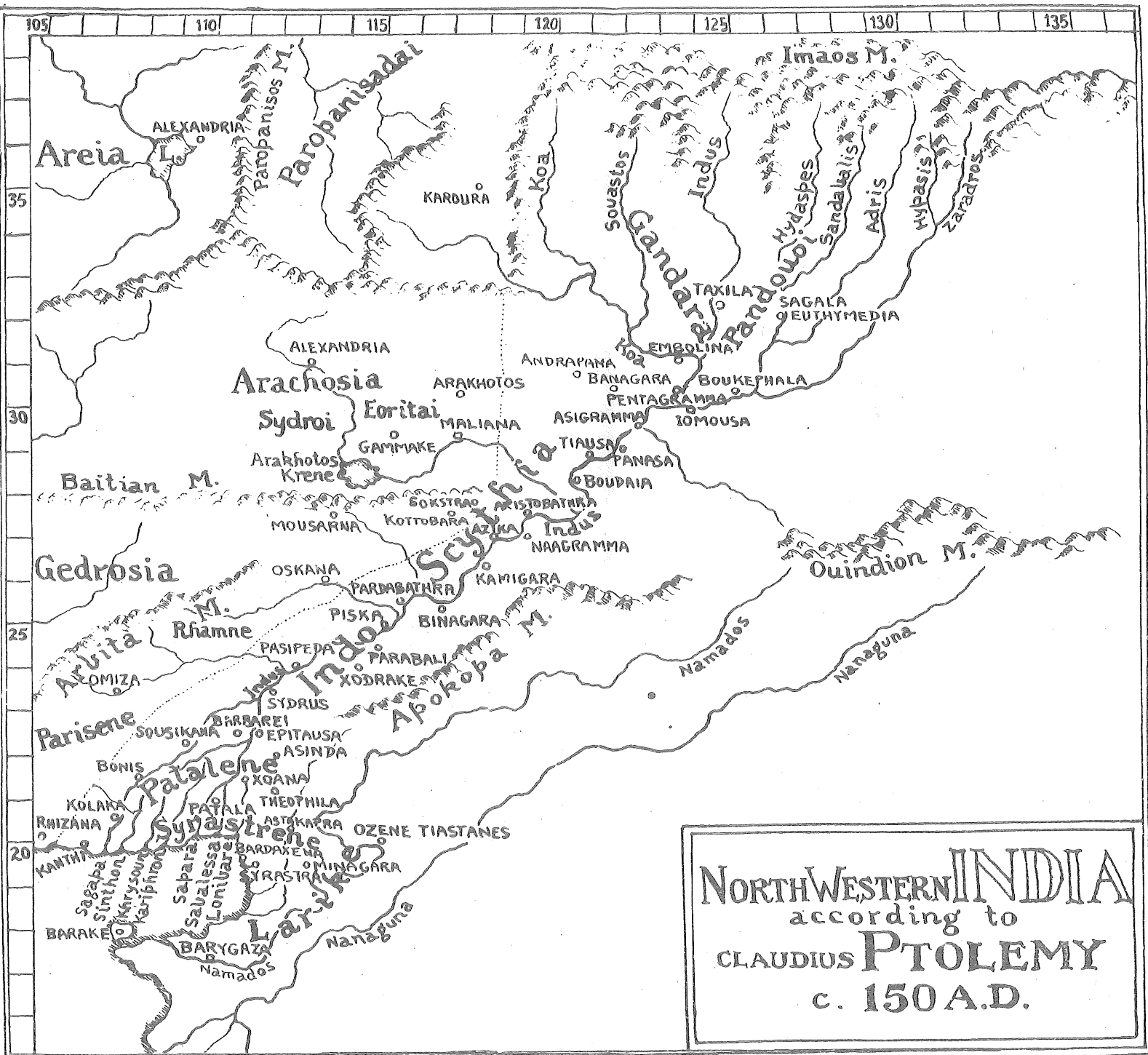
**SOUTH WESTERN SIND**  
**and LAS BELA, in 325 B.C.**  
 to illustrate the first stages of  
**ALEXANDER'S RETIREMENT**  
 and of **NEARCHUS' VOYAGE.**  
 Contemporary names thus:- ARABIS R.  
 Modern names thus:- (Hab R.)  
**SCALE** 5 0 10 20 30 40  
**IN MILES:**



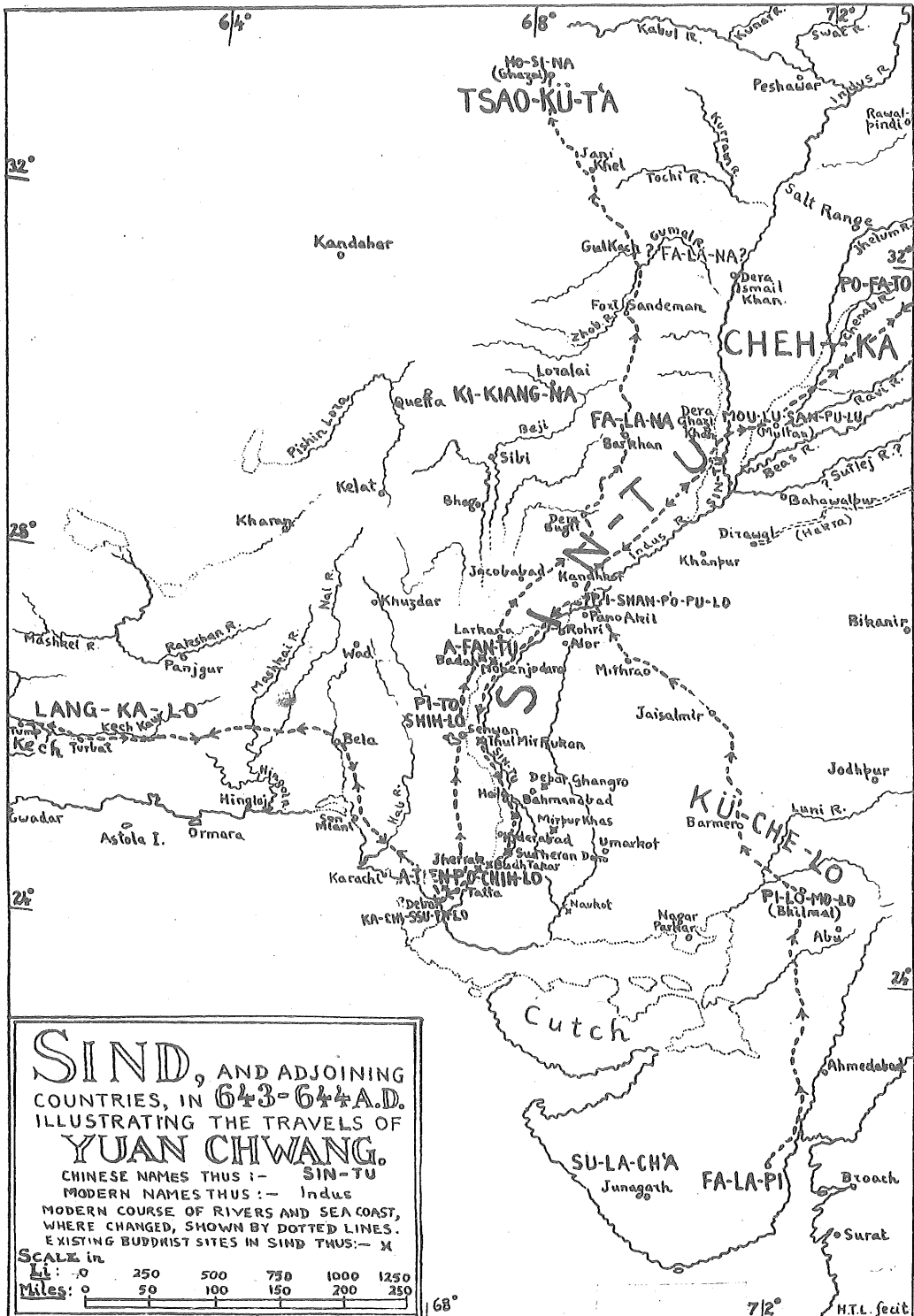


H.T.L. fecit





**NORTHWESTERN INDIA**  
 according to  
**CLAUDIUS PTOLEMY**  
 c. 150 A.D.



# SIND, AND ADJOINING COUNTRIES, IN 643-644 A.D. ILLUSTRATING THE TRAVELS OF YUAN CHWANG.

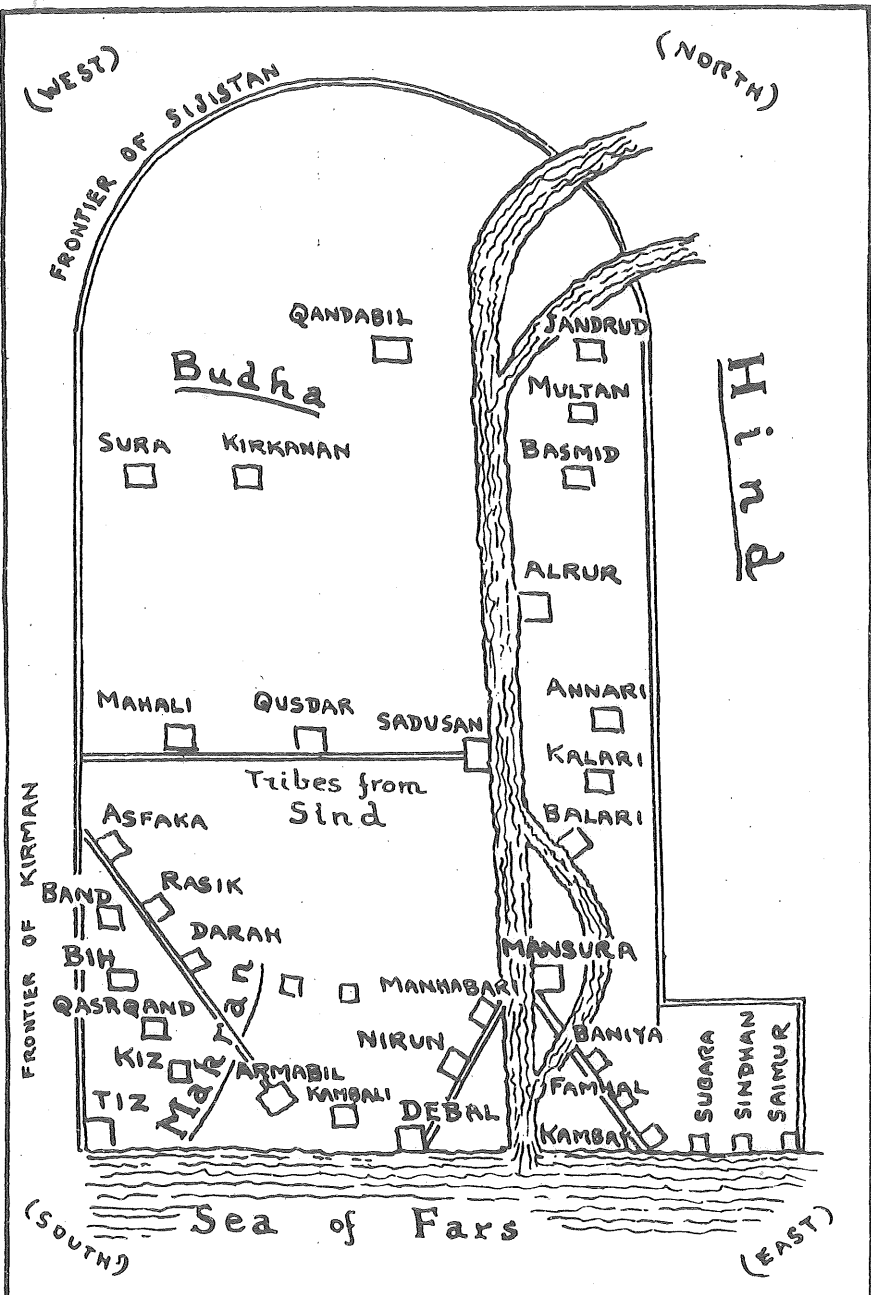
CHINESE NAMES THUS :- SIN-TU  
 MODERN NAMES THUS :- Indus

MODERN COURSE OF RIVERS AND SEA COAST, WHERE CHANGED, SHOWN BY DOTTED LINES.

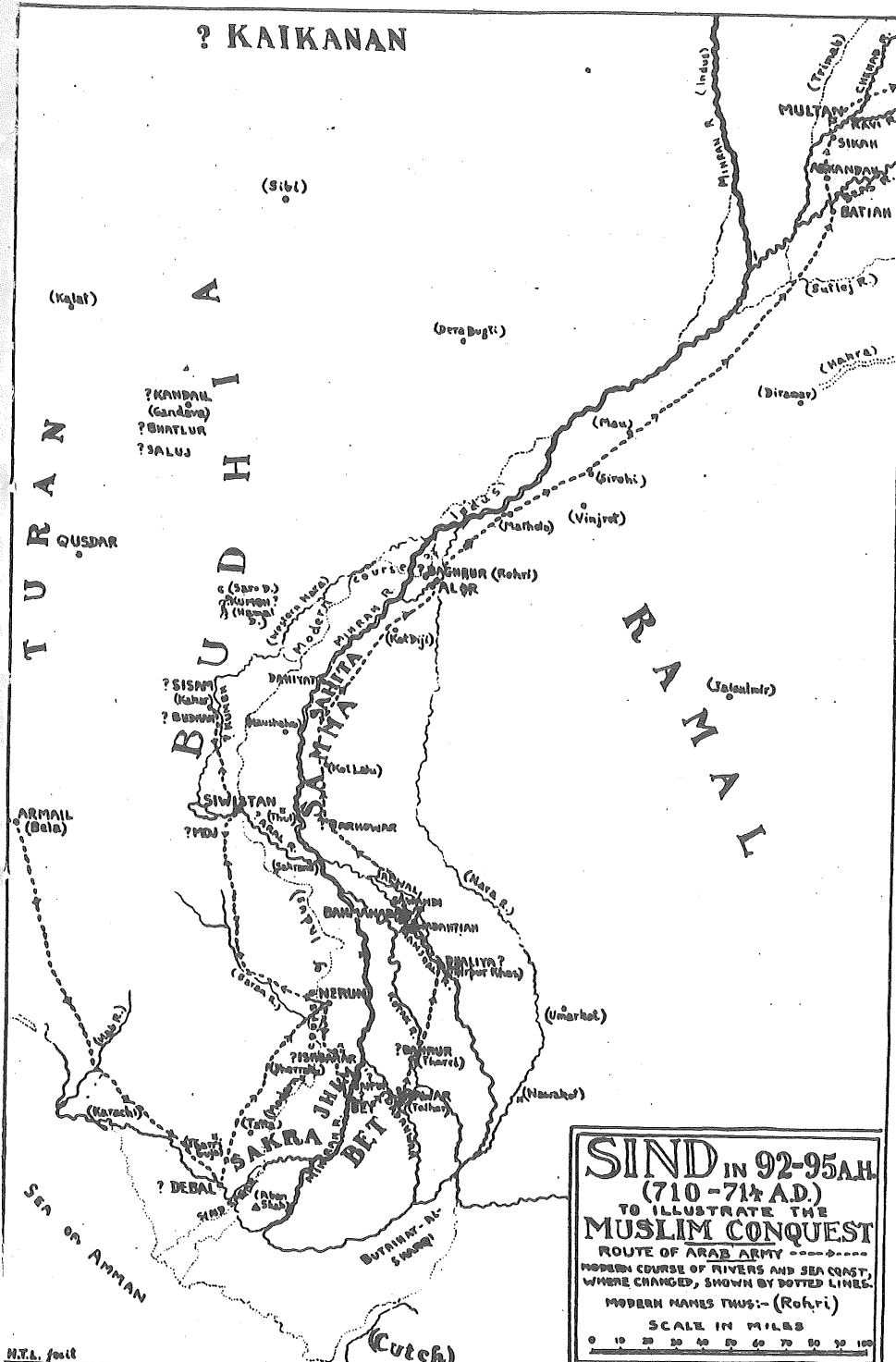
EXISTING BUDDHIST SITES IN SIND THUS :- X

SCALE in

Li:	0	250	500	750	1000	1250
Miles:	0	50	100	150	200	250

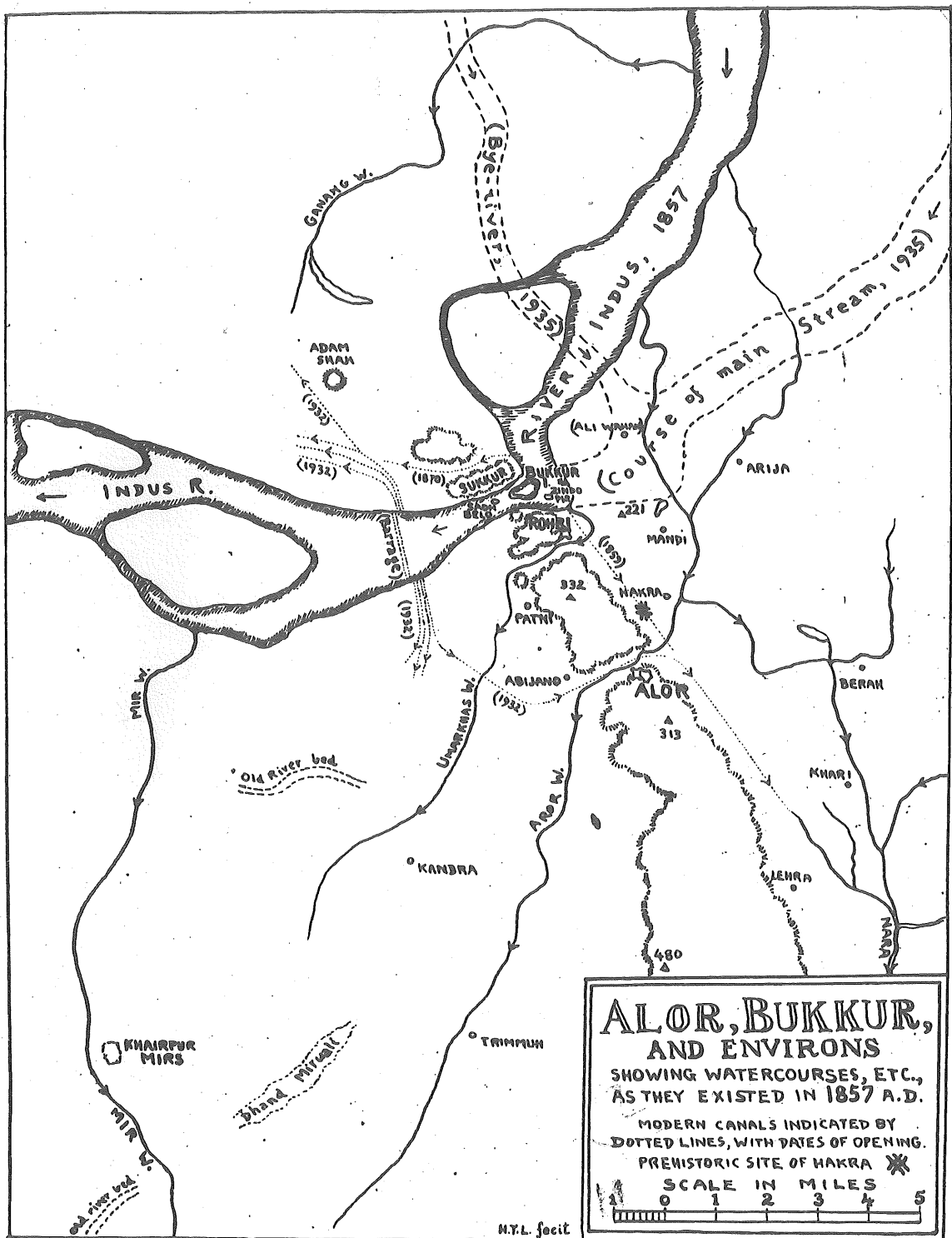


**SIND**, WITH PARTS OF  
ADJOINING COUNTRIES, ACCORDING TO THE  
**ASHKALU-L-BILAD (c.1100 A.D.)**



**SIND in 92-95AH**  
**(710-714 AD.)**  
TO ILLUSTRATE THE  
**MUSLIM CONQUEST**  
ROUTE OF ARAB ARMY  
MODERN COURSE OF RIVERS AND SEA COAST,  
WHERE CHANGED, SHOWN BY DOTTED LINES.  
MODERN NAMES THUS:- (Rohri)  
SCALE IN MILES  
0 10 20 30 40 50 60 70 80 90 100



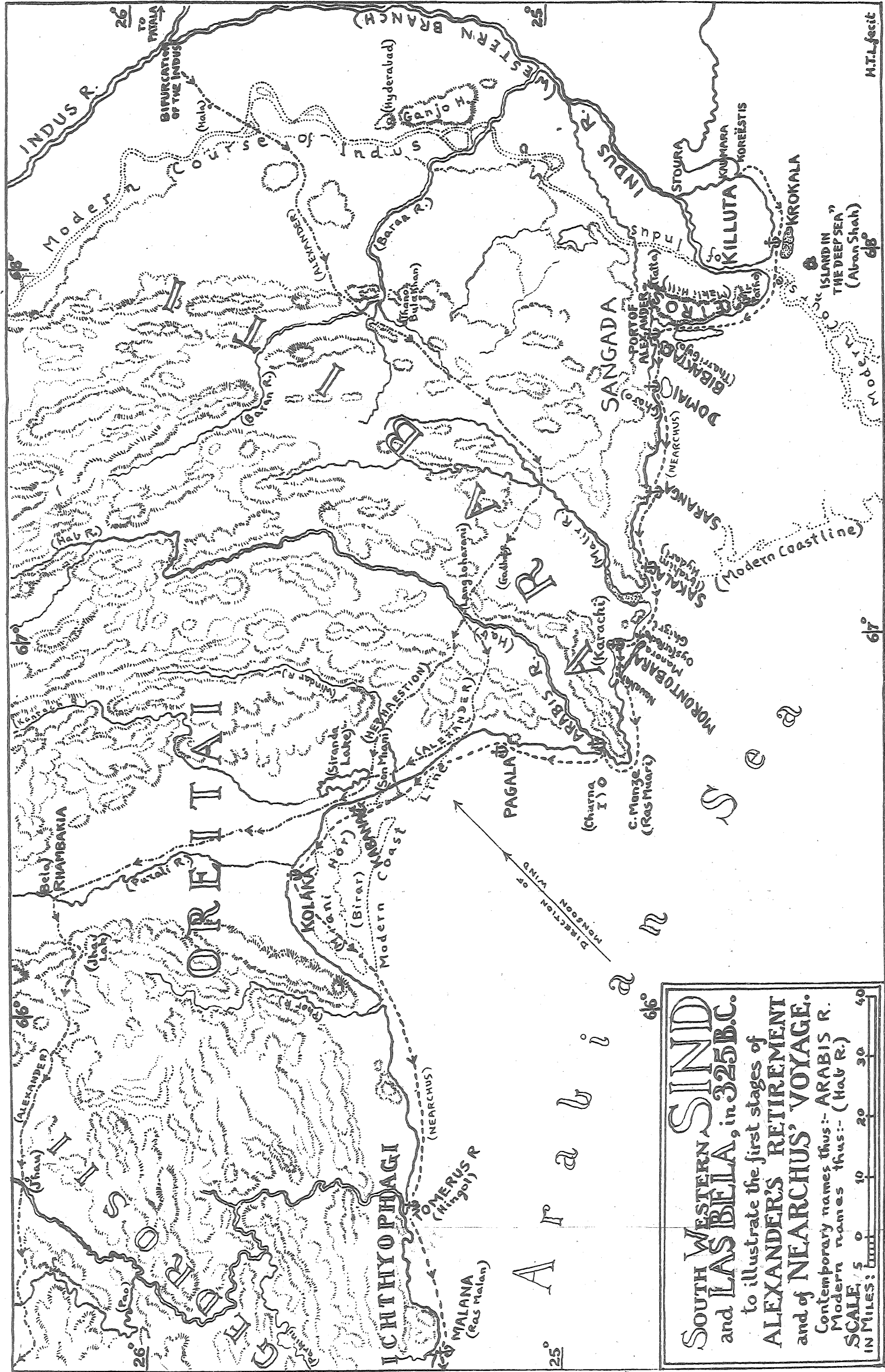


**ALOR, BUKKUR,  
AND ENVIRONS**  
 SHOWING WATERCOURSES, ETC.,  
 AS THEY EXISTED IN 1857 A.D.  
 MODERN CANALS INDICATED BY  
 DOTTED LINES, WITH DATES OF OPENING.  
 PREHISTORIC SITE OF HAKRA \*

SCALE IN MILES

0 1 2 3 4 5

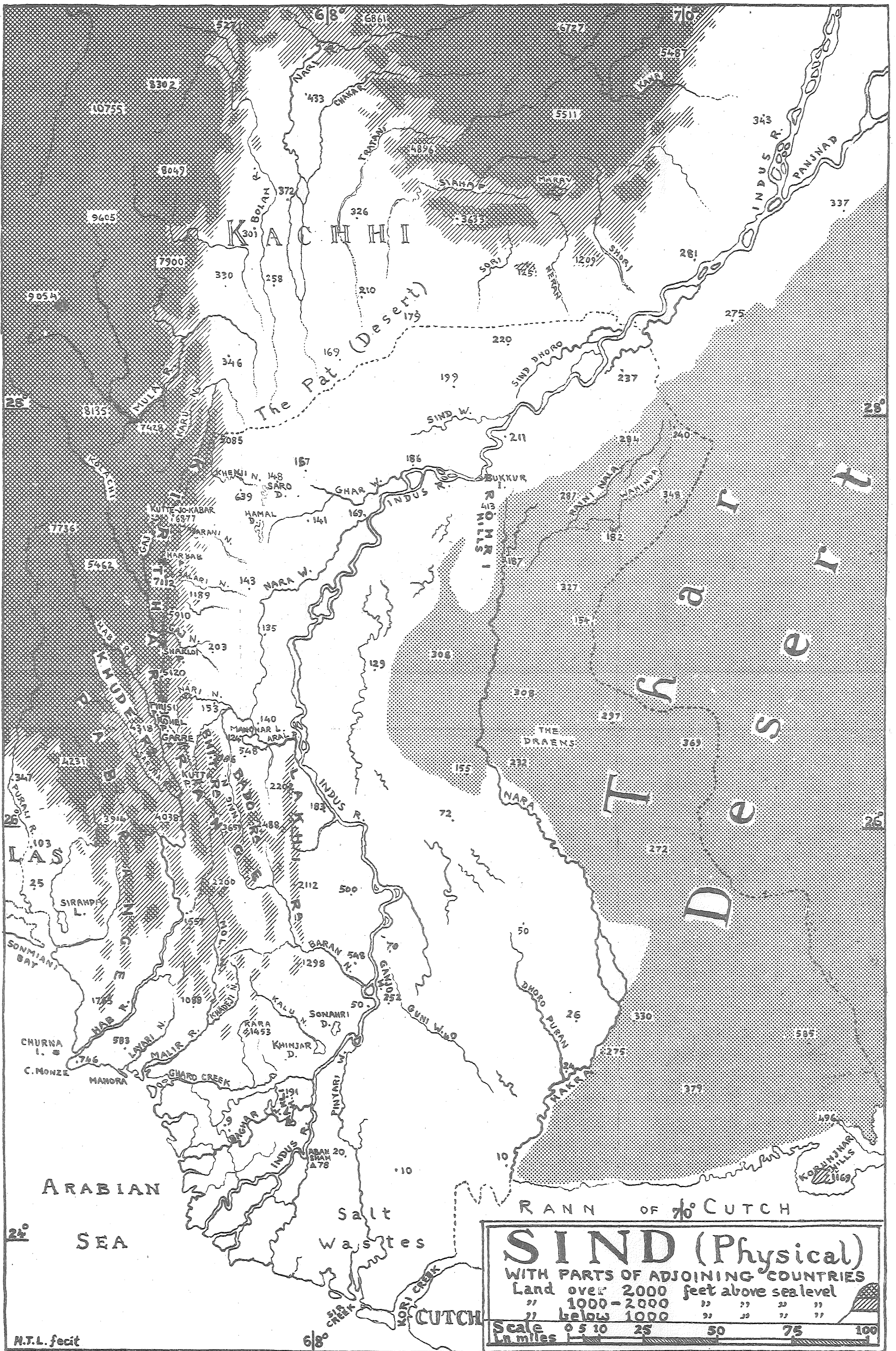
N.Y.L. fecit



**SOUTH WESTERN SIND**  
 and **LAS BELA**, in 325 B.C.  
 to illustrate the first stages of  
**ALEXANDER'S RETIREMENT**  
 and of **NEARCHUS' VOYAGE**.

Contemporary names thus:- **ARABIS R.**  
 Modern names thus:- **(Hab R.)**

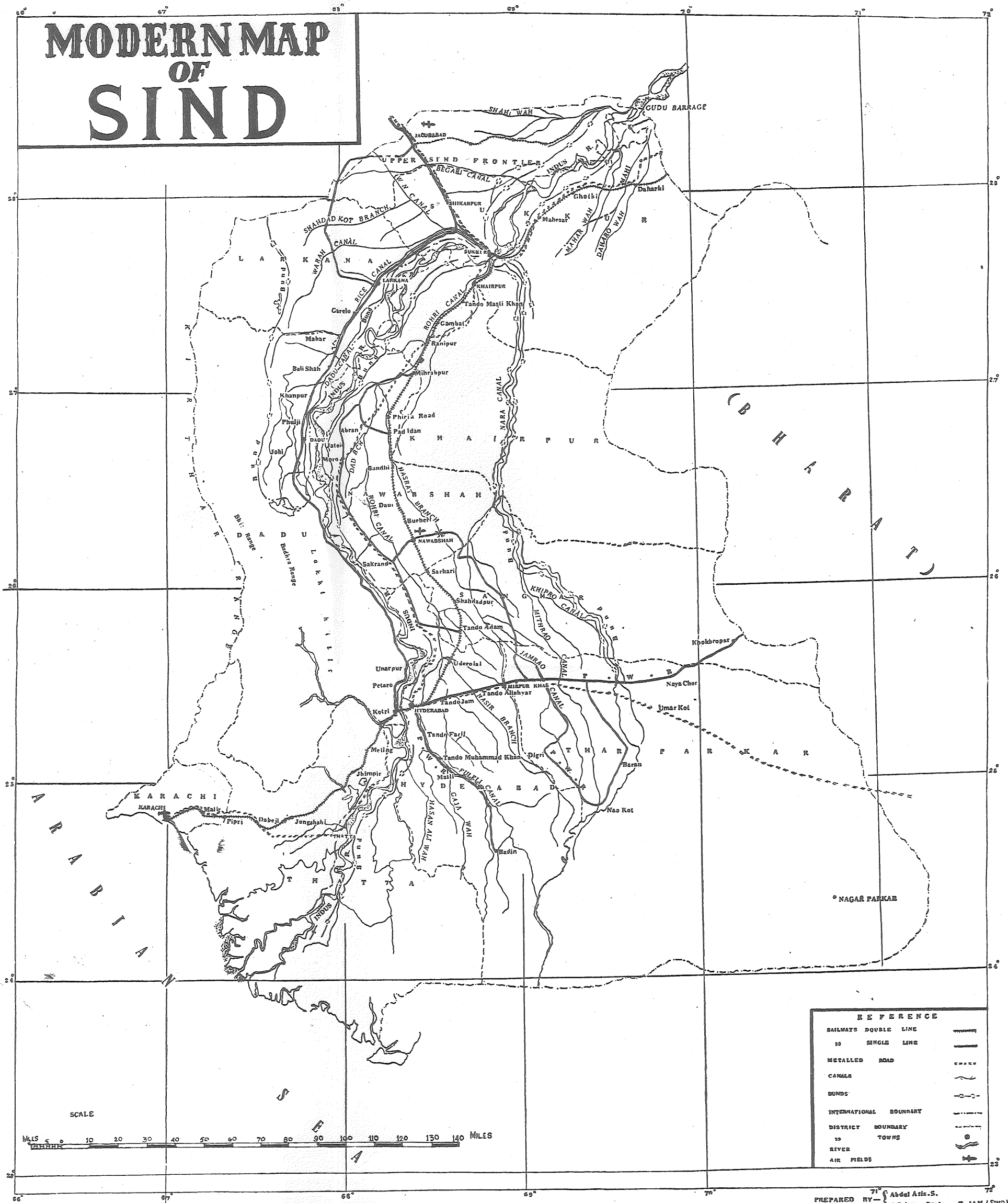
SCALE: 5 0 10 20 30 40  
 IN MILES: [Scale bar]



H.T.L. fecit

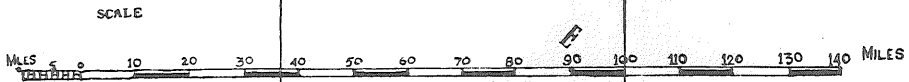


# MODERN MAP OF SIND



**REFERENCE**

RAILWAYS DOUBLE LINE	
RAILWAYS SINGLE LINE	
METALLED ROAD	
CANALS	
BUNDS	
INTERNATIONAL BOUNDARY	
DISTRICT BOUNDARY	
TOWNS	
RIVER	
AIR FIELDS	



## THE AUTHOR



Born in 1904, Hugh Trevor Lambrick descends from a family some members of which served in Sind before as well as after its annexation by the British in 1843: his maternal grandfather was Commissioner of the Province in 1889. He himself served there between 1927 and 1946 in a variety of administrative posts, devoting his spare time largely to study of Sind's ancient geography, archaeology, history and ethnology. On these subjects he contributed extensively to the journal of the Sind Historical Society, and was President of the Society in 1940-1943. On retirement from the Indian Civil Service he became in 1947 Fellow of Oriel College, Oxford, where he had formerly graduated, producing successively *Sir Charles Napier and Sind*, *John Jacob of Jacobabad*, *Sind: a General Introduction* (Volume 1 of the present Series), and recently *The Terrorist*. In 1971 he was admitted to the degree of Doctor of Letters in the University of Oxford, and elected Fellow Emeritus of Oriel College.

This edition commemorates memory of the learned scholar, Mr. H.T. Lambrick, who passed-away on 31st: August, 1982.

