"PAKISTAN: A GEO-MILITARY STUDY"

Thesis

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**INTRODUCTION**

The present work is a geo-military study of Pakistan bringing into relief the relation between geography and defence. Both geography and defence being indeterminately vast subjects, an attempt has been made to restrict the study only to those elements of geography which are more directly connected with the broad policies and principles of defence. It brings into focus those aspects of the geographic personality of our country which are of significance in strategic planning for a possible future flare-up.

Except for some casual remarks, the bearing of geographic features and elements on tactics and operations have almost completely been left out for two reasons. Firstly, because an indiscriminately intensive study of every small region of a vast country like ours with a view to establishing the collation of geography and tactics is a hopelessly unenvelopable business and secondly, because such a study is futile in the absence of a complete knowledge of the relative strengths and equipments of the contending powers as also their respective national resources and resourcefulness in replenishment during the period of hostilities. Under
the circumstance the only rational approach to the geo-military study of a country is to describe the role of its geography in the planning for defence and in the conduct of war—considering other things being equal. Although other things are never exactly equal, such an appraisal of a country is still of help in forming a view of its 'soft' areas, its comparative vulnerability or invulnerability from different directions, its strategically important or un-important areas, the possibility of the continuance of its contacts with the outside or the danger of its isolation, its overall defence exigencies etc.

In the first chapter of this work an appraisal is made of the geographical factors contributive to the military strength of Pakistan as also of the points of weakness in its defence thus emphasizing the nature and dimensions of the problem with which the country is faced. The two succeeding chapters contain an account of the physical features, hydrography, system of communication and air-distance relationships of West and East Pakistan and their role in defence.

Inspite of the ever increasing importance of air warfare in modern times, unnecessary details of the
extents of vulnerability of one country from all the vantage points of the neighbouring country or countries, and vice versa have discreetly been discarded. All the same, an attempt has been made to give a comprehensive idea about the great-circle distances of the neighbouring territories from some important centres in Pakistan.

The remaining chapters deal with the border areas and frontier zones of Pakistan including Kashmir and Jammu State which, again, is an important peripheral area of Pakistan and the fate of which is yet to be decided. The frontier areas of Pakistan have been discussed in detail not only because of their intrinsic importance in defence but also because the study of a frontier region helps understand the true vicinal relationship with the country on the other side of the international boundary.

In the actual treatment of the subject only essential books and articles have been consulted. It is mostly based on map study which has been made as minutely as the strategic importance of an area demanded. The One Inch to the Mile maps of India and Pakistan formed the main source of study. These were occasionally supplemented with Half Inch and Quarter Inch maps and the relevant One to One Million maps in the India and Adjacent Countries Series, Imperial Atlas of India, 1939 Edition.
GEOGRAPHY IN RELATION TO DEFENCE.

The realisation that geography has a great bearing on the history of states came very late. A natural corollary to this belated awareness was a sudden and extreme reaction in Germany resulting in the mushroom growth of geopolitical literature which described geography as completely 'deterministic'. Geo-politicians went to the extreme in believing that 'ideas not rooted into the earth' are non-existent. Such views, emanating from the aggressive national psychology of German geographers, resulted in the formulation of fantastic theories of 'autarky', 'lebensraum' 'panregions', 'supremacy of land powers over sea powers', 'organic nature of the state', and the like.

Notwithstanding these unwarranted conclusions which in their attempt to overemphasise the dynamic forces of geography, actually obscured them under so many 'smoke-screens', there can be no denying the fact that it always pays to understand the process of evolution of states in their geographic setting. Sir Thomas Holdich in the preface to the 'Gates of India' writes, "As the world grows older and its composition both physical and human becomes subject to ever-increasing scientific investigation, the close interdependence of
its history and its geography becomes more and more definite.

The security of states is becoming increasingly dependent upon a rational assessment and understanding of geographical values with the passage of time. The ever increasing 'totality' of war necessitates a steadfast enquiry into the relative powers and potentialities of the possible friendly and enemy states. In other words, an understanding of the resources of the countries concerned in men and material, present and potential, and the ability to utilise them, is the first prerequisite of formulating a defence policy. The 'global' character of wars nowadays is another consideration which again demands a scientific and objective study of the vicinal relations of a country with all its far reaching implications. War these days is not the quixotic enterprize of an individual with a limited force under his command. It is the carefully worked out evil designs of nations against nations. Defence against such elaborately thought out plans is an equally onerous task and is not the sole responsibility of the military mind working under his own concepts of spaces to be negotiated and the war impediment that he possesses with greater dependence on his striking power than the spaces to be covered or even a perfect knowledge of the possible theatres of war. War, offensive or defensive, decides the fate of nations. It cannot be
taken lightly.

War is a political struggle between nations fought on the geographic terrain. It involves political, economic and geographic processes working in harmony. It requires a scientific planning based on all the available data of facts. To bring the plan into execution is, no doubt, the task of the militarist. There is no harm, it is rather useful, if the military talent is consulted in the very formulation of the plan in order to ensure its feasibility from purely strategical and operational standpoint. It is in this way that a scientific philosophy of defence for a particular nation can be evolved with increased chances of success.

Now, it is a common concept that the locational, spacial, areal, orographic or even directional functions of the terrain change with the changed efficiency or specialisation in instruments of striking power. Different instruments create different space relations. It is correct, at least partially, but it does not mean, and should not mean, that as the character of the terrain or space to be forced changes with the changed efficiency of the instruments employed for the purpose, therefore the considerations of these instruments have a priority over the study, interpretation and understanding of the geographic terrain itself. It is not wise to stress too much the effectiveness of or to place too much reliance
in certain instruments and thus create a 'unique' concept of strategy. The usefulness of a certain weapon or a set of weapons is in itself not an absolute truth. The counter measure to be taken by the other nation are apt to change the quality and usefulness of these weapons themselves. History provides countless examples of the beguiling nature of such war equipments. Many nations have suffered humiliations on account of it. The example of Germany can be easily culled from the recent history of war still fresh in our minds. Too much emphasis on U-boats or V2s or even on some perfection in the tactical and operational technique is not all that counts. In fact the war weapons change but very slowly.

The fundamental geographic concepts, therefore, remain more or less the same. The atom bomb is an exceptionally big change but still the means of carrying it from the base to the target remain the same, that is to say, the aero-plane which is subject to the same degree of interference by RADAR as any other plane not carrying that bomb. Apart from it, the order of importance of the different instruments of war depends on the dimension, the scene of incidence and the nature of the war which in turn are determined by geographic considerations. In order to elucidate this point two examples of different types of war may be taken into consideration. The first example
is furnished by the World War II in which the New World had to participate in the war fought in the Old World on a colossal scale unprecedented in history. For the successful conduct of such a war from the western hemisphere to the eastern one the relative importance of the instruments of war to be employed and their order similar to the following one has been quite practicable:

First Order -------------Land-based aircraft.
Second Order -------------Carrier-based aircraft
Third Order -------------Armoured forces. Submarines.
Amphibious Commando Units.
Fourth Order -------------Motorised ground forces.
Destroyers and light cruisers.
Fifth Order -------------Ground forces. Heavy cruisers and battleships*.

In such a scheme ground forces, for example, are grouped in the 5th order without jeopardising the ultimate object of winning the war. In another example the order may be radically changed, again without making the plan defective. In case of a localised war between two adjacent countries the ground forces with their respective equipment may figure most prominently in such a scheme or order of ascendancy in view of the territorial contact of the two countries and, possibly, the artificial nature of their common boundaries etc. In short the functional value of instruments of striking may differ from country

*Taken from Global Geography by Renner, p. 465.
country in view of the exigencies of their own unique situations. The peculiar situation in, in an appreciable degree, the outcome of the special geographical pattern of distribution of the spaces of different countries and regional distributional patterns within the individual countries.

As the defence of a country is so much inter-related with natural environment, a dispassionate study of the geography of Pakistan as a 'whole' and as a part of a 'greater whole' i.e. in itself and in relation to other countries is imperative. Such a study helps base our defence plans on a more secure footing as it takes into consideration the exigencies which our geographical conditions have imposed upon us and helps us avoid any pitfall in our way.

The degree of security which we enjoy is not merely dependent upon our immediate vicinal relations but also upon international situations. The U.N.O. with its recognition of the validity of the political pattern of the world of today is a great step forward in vouchsafing the stability of the world order. The determination of the world to maintain peace even through the cooperative 'coercion of peace breaking states' by peace loving states goes a long way in creating a sense of security among smaller states. The concerted world opinion for the maintenance of the status quo is a force
to be reckoned with. The bold action taken by the Security Council in defending the right of self-determination of S. Korea has made the U.N. the sheet-anchor of small and big nations alike. It, however, does not absolve the governments and the peoples of different states of their responsibility to be able to defend themselves in the best possible manner.

Inspite of the pious principles of the United Nations it is not the 'free federation of the world's peoples' as the preamble to the Charter of the U.N.* proclaims it to be, but a league of states with divergent interests and different and differential policies. It is, therefore, not possible for the Security Council to take as effective steps in settling other "disputes" and it tackling other "situations" as did in the case of Korea. And even if it be admitted that the same treatment will be meted out to others as well, it does not make a total change in the situation. Inspite of the best intentions of the U.N. Korea could not escape the ravages of war.

For a country like Pakistan which is a member of the Commonwealth of Nations help guaranteed by the mother country (U.K) in case of an attack by a non-member state is also to be taken into cognizance. The Commonwealth, is, however, silent on its role in case of a collision between any two or more of the sister nations. In the

*We the peoples of the United Nations determine to save the succeeding generations from the scourage of war ...."
course of a discussion with Professor Toynbee in a BBC - Radio Pakistan Exchange Programme, Hon'ble Chaudhri Mohammad Zafarullah Khan remarked, about the concept of the Commonwealth, "One of the essential parts of that conception was that between themselves the members of the Commonwealth will always be able to maintain peace. I am afraid that recently a certain amount of doubt has been cast upon that idea...."

After making this analysis of the existing 'safeties' rendered possible by the world and the Commonwealth it is not difficult to conclude that the safest and in fact the only way to avoid war is yet to become strong enough to convince the 'acquisitive' powers that the other country is powerful enough at least to defend itself successfully. "In the case of a state that is seeking, not conquest, but the maintenance of its security, the aim is fulfilled if the threat is removed - if the enemy is led to abandon his purpose".

For becoming strong, the particular sources conducive to strength for a particular nation are to be properly understood. Their magnitude and extent of their usefulness are to be determined. They are, then, to be utilised to the fullest possible extent. Any debilitating factors are also to be appraised with the same thoroughness. For a resolute nation the existing points of weakness are

never discouraging or disheartening. They simply stress more than any thing else how much consolidatory work is to be done. Successful grappling with difficulties results in creating an attitude of confidence which is all-important for nations still subject to the process of 'natural selection' or 'survival of the fittest. In war as well as in peace nations have to make a concerted effort to tide over the difficulties.

In the case of Pakistan the following factors are some of the sources of vigour and strength to her:

1. Human factor:- The most reliable factor is that of the morale of Pakistan forces and people. Their fighting virtues are well known to the world. They have to their credit a long record of showing, in the past wars, courage, daring decision, offensive will and self confidence. On account of these warlike qualities Pakistani forces are known all over the world as the toughest fighters. They have won laurels for these virtues during the two global wars.

The forces which fought on the side of the Allies during the two World Wars were commonly known as Indian.

@History reveals that nations like individuals or species have always been subject to the law of natural selection. It, therefore, fully justifies the struggle of nations for existence. On the other hand it is fallacious for big powers to argue that it accords them sanction to grow at the expense of smaller nations.
as at that time the sub-continent was not divided into the two countries of Pakistan and India. It is, however, quite well known to those who know the peculiar regional distributions of the sub-continent that the bulk of the best fighting forces has been distributed over its peripheries which now constitute Pakistan. Most of the warring races belong to West Pakistan. "It is no insult to the Indian as a whole to say that the valleys and plains of India, in which the bulk of the population dwells, are no breeding ground for the warrior"."

The sectionalised distribution of warriors in the sub-continent has always been acknowledged by British strategists and politicians, who owing to their long association with these parts of the world, were fully in the know of things. Here is an extract from Simon Commission Report which throws ample light on the subject:

"India (undivided) presents to the observer an astonishing admixture not only of competing religions and rival races, but of races of widely different military capacity.... The contrast between areas and races in India that take to soldiering, and those that do not, has no counterpart in Europe. Whereas the most visible of the so-called martial races provide fine fighting material, other communities and areas in India do not furnish a single man for the regular army. The Punjab

*Rowan-Robinson H., Imperial Defence, p. 300
supplies 54% of the total combatant troops in the Indian Army and, if the 19,000 Gurkhas recruited from the Independent State of Nepal are excluded, the Punjab contingent amounts to 62% of the whole Indian Army. The disparity is no doubt due to economic and climatic considerations, and to the unseen but potent influence of tradition and of race: ... the obvious fact that India is not, in the ordinary and natural sense, a single nation is nowhere made more plain than in considering the difference between the martial races of India and the rest. It seems certain that in the future equal efficiency in the military sense—cannot be expected from all sections of the population in India...." *1

The martial races of undivided India were mostly Muslims. "In fact just as the population of India (Undivided) can be divided into two main religions, Hindu and Mohammedan, so might it be divided into two main characters, martial and non-martial. And it will be found that the martial peoples live where invasion has in the past implanted a strong Mohammedan influence." *2

Now, after the division of the sub-continent Pakistan received the lion's share out of the total reserve of the military manhood. The talents of the NWFP and the tribal belt which had got the recognition of every one but were not allowed to develop on account of some political

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2. Victor Havlev. Is India Impregnable, p. 94.
considerations during the British rule are now an additional source of strength to Pakistan. About the fighting quality of Pathans, Victor Bayley writes:

"The simple truth is that the Empire is served on the frontier by the finest type of man. If this were not true India would indeed be in jeopardy. But fortunately it is true——These men are a race apart from other men and it is only by living among them and by being admitted to the honour of friendship with them that some small understanding may be obtained of the spirit which animates the wardens of the marches". ¹

Baluchis are again famous for their courage and valour.² Sindhis have, in the past, not been inclined towards choosing military careers but they do possess excellent physique. Given proper training they are likely to win a name for themselves. Bengalis are not a military race. It may, however, be noted that there is still a difference between West Bengal (India) and East Bengal (Pakistan). Sir John Strachey, after quoting Lord Macaulay on the Bengalis’ weakness, remarks, "Nic (Macaulay’s )

¹. Ibid pp.279-280.

²."But the Baluch is by heredity and by instinct quite as much fighting man as the Pathan, and in many respects he is composed of far finer material...... his ancestry and his traditions are his pride, and his own right hand is his defence". India by Soldiery pp.51-52.
description may be applied with exaggeration to the
majority of people of Western Bengal, and specially
to those with whom English men come most into communication
in Calcutta and the neighbouring districts. Mohammadan
peasantry of the eastern portion of the province are men
of robuster character." 1

On the whole Pakistan is a country of those whose
high morale and long military traditions coupled with
their will to resist "to the last drop of their blood"
any foreign aggression which might try to violate the
sanctity of their sacred soil, ensures the security of
the State. Pakistanis are really very proud of their
proved morale elan. They are conscious of the riches of
their neighbours but they rightly believe that morale is
such a natural gift which cannot be produced to order.

2. Nature of the Western Frontier.

Since almost the beginning of the 19th century
the British in India had been feeling the 'acquisitive'
impulses of the strategy and diplomacy of Tsarist Russia.
The history of measures and counter-measures taken by
Russia and the British is a long one. It shows that
Russia had been thinking of charting its way towards the
sub-continent in her pursuit of an opening to a warm
ocean. This ambition, anyhow, remained unfulfilled.

What stood in the way of fulfilment of this long
cherished desire? It is difficult to answer this question

1. Taken from India by Holdich, p. 225.
until a host of factors are taken into consideration. In fact it is almost always the cumulative effect of many forces which ultimately determine the resultant effect. But the one factor which stands out in bold relief is that of the nature of the western frontier of West Pakistan. It is formed of high mountainous ranges the altitude of which increases from south to north as the distance between Russia and the sub-continent decreases. In the north at one place the intervening territory of the Wakhan province of Afghanistan narrows down to less than ten miles but it is fortunately here that the mountain rampart forming the frontier is most difficult and in fact impassable for big armies equipped with a large war impedimenta. Southward the distance from the Russian territory increases. In the south the desolate wilderness makes the advance of a hostile army all the more unimaginable. The whole defence problem is, therefore, reduced to the successful protection of the passes which is militarily a very advantageous position as it makes the flanks of the defending armies guarding the passes very secure. The intruder is compelled to use the exterior (and hence longer) lines of supply while we can easily utilise interior lines. No concentration of the foreign forces more than a limited one is possible at a time. Under these circumstances no army can come out successful from these defiles except
after paying a toll of life quite prohibitive to such an adventure. The tribal belt in the immediate rear of the crests of mountains is again a rough country allowing excellent opportunities of guerrilla warfare in which the inhabitants of that region far excel any one else.

The intervening territory of Afghanistan is also a difficult country. The Hindu Kush system runs from east to west through that country which again a lows only a few openings. The difficulties of water supply, rations, and impracticability of tracks specially during winters makes marches over it all the more difficult. The distances to be covered are long and tiresome. The difficulty of access is much aggravated by the fact that these distances lie in a country (Afghanistan) where there is not a single inch of railway line and where roads are only a few and improvised.

It shows that the defence position of this frontier of Pakistan is very satisfactory. Backed by adequate force the frontier is impossible for a foreign ingress.

The question of the backing of the frontier by an adequate force brings us to another consideration. The present trends of international relations indicate that if at all this frontier of Pakistan ever becomes a theatre of war it shall only be a part of a global conflagration engulfing the western and eastern hemispheres alike. In fact any future war of such a character will be
a war primarily between America and the U.S.S.R. It can be called to be an inter-hemispherical war in which the western hemisphere is expected to find some friendly countries within the eastern hemisphere. Now, the question is that in case of such a war if Russian strategists happen to chalk out a course through Pakistan and Bharat to the Indian Ocean and, after consolidating their position, possibly on to the East Indies and Australia, what is going to be done. How and where to check such an advance? Although the two questions are very much allied the military mind has to labour mostly on the question of how to check it. The answer to the question, "where to check", is quite obvious. It can be checked at one and only one place and that is along the western frontier of Pakistan. This second alternative may be the barrier of the Indus river. The second alternative is militarily not very appealing. Other comparatively less important barriers are the rivers of the Punjab (Pakistan). After Sutlej is crossed it is certain that the advance cannot easily be arrested anywhere right up to the Bay of Bengal.

It may be argued, on the basis of history, that like the forces of Alexander the Great the advancing forces will be exhausted by the time they reach the Beas or its continuation in the form of the Sutlej. Such an argument will only be ridiculous. The adage that
'History repeats itself' is only a half-truth; the remaining half being that 'history never repeats itself'. Alexander was not fully aware of the magnitude of the plan of 'conquering the world'. Had he been aware of it he would either have forsaken it or would have started with a force equal to the task. These days no armies can afford to remain so ignorant. Preparations are, these days, made according to the dimensions of the work to be done. So, if such a resourceful and giant-size force happens to come down upon the Sutlej there will be no end to its victories. In analysing the possibilities of a Russian attack on British India, Victor Hayley opines as to what will happen if the five rivers of the Punjab are crossed:

"...at last the invaders will come a sin to the historic battle-field of Panipat outside Delhi. But by this time the defenders would be in no case to survive such a terrible series of defeats and the final battle of Panipat would be decided before even the armies met in combat".

Pakistan is, therefore, one of the most important intervening territories between Russia and the possessions of the West as well as their direct interest of maintaining the freedom of the seas for them. In a global strife between western democracies and communism the territory of Pakistan may either serve as an area of 'partial
Resistance' or of 'absolute resistance'. An area of partial resistance means that when a group of countries are warring against another alliance vast areas comprising a country or countries may be taken away from the defenders in the first sweeps as the offensive strength of the belligerant power is more often than thought comparatively greater in the beginning of the war. Later on after the stage of 'attrition' or equilibrium has been reached and surpassed, the powers fighting a defensive warfare will gain ascendancy and the balance will begin to be turned in their favour. The territories which were lost to them will be reconquered with the ultimate victory. The areas which, thus, fall to the enemy in the beginning are said to be areas of 'partial resistance'. The limit beyond which no penetration of the enemy can be allowed without endangering the object of winning the war is the line of maximum enemy penetration. Areas on the near side of this line are areas of absolute defence. Such a line of maximum penetration is forced by the enemy and apparently does not seem to be a matter of choice. Still, if war is to be won such a notional line is to be fixed giving allowance to the superior might of the enemy in the beginning and war preparations are to be adjusted accordingly.

Now, the British policy in the past has been to utilise water bodies as the final obstacles to the spread
of the inimical power. Under such a strategy, Pakistan becomes an area of partial resistance, supposing that she, as things stand today, sides with the west. Such a strategy is, however, only of a power like Britain with essentially meagre resources but supremacy over the sea. A power like the U.S.A. with plenty of resources cannot undertake the risk of forsaking whale lands. It is evident from the active participation of America in the Korean war that line of maximum penetration shall have to be located on the shores, land and not along the sea. In case of Indo-Pakistan, Durand line promises to serve 98% as the best line of defence against the spread of communism.

3. **Fortifications in the past:** British militarists were quite aware of the very useful nature of the western frontier of the sub-continent. They were also alive to the elements of danger which could threaten the tranquility of the sub-continent. The sub-continent was safe from all other sides. No access was possible from the land and the Indian Ocean was sheltered with the firm hold of the British over the Suez Canal, Aden and Singapore and their influence in South Africa, Australia, etc. They, therefore, concentrated more and more on the fortifications of the north-west frontiers of India. Strategic roads and railways were constructed
at tremendous costs.  

The realisation of the importance of the strategical areas necessitated adequate garrisoning of the defensible corridors and natural lines of least resistance. The gates of the sub-continent (passes in the wall of mountains) were fully fortified. Nothing that the modern technical development rendered available was left undone. The passes are very well denied to a hostile force. "The cantonments in which they (forces) are quartered are more numerous and increase in size the nearer they are on the frontier. Quick concentration at any threatened place is therefore already assured."  

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1*"Running parallel with the Frontier ranges and not far behind them is a system of the lateral railways which were built with much courage and insight at the end of the nineteenth century.... it is safe to say that these railways are the most valuable in the land, for surpassing those which pay the highest dividends. For their existence is vital to the defence of India (Undivided) and without them the task of the defenders would need be enough to make the stoutest heart quail".

Is India Impregnable p.146.

*2 Ibid, p.280.
These fortifications which are the outcome of past developments are precious. They make the defence position of Pakistan against a possible aggression satisfactory. It is always difficult to start with scratch but is all the more so in case of defence which is a long process. It is often said that Pakistan had to build up any thing and every thing anew. This is, however, not applicable to the defensive measure against an invasion from the north and west. Pakistan can well boast a very rich heritage in this connection. Other countries of the Orient, for example, India will take a long time to come up to that level, and even then the artificial fortifications in the plains may more easily succumb to a powerful invasion.

4. **Agricultural character of the country.**

Of all the economies the agricultural one is most reliable. It gives an individuality to a state. It is the surest source of strength and security to a nation. Nations having agriculture as their main occupation are endowed with a great degree of self-sufficiency. It is rightly said to be the most favourable type of economy which avoids the extremes and strikes a happy medium between them. In case of peace agriculture provides food for subsistence and raw materials for industries. In case of war agricultural countries are capable of existing by themselves. Germany fully realised the importance of
agriculture in case of war. There was, thus, a phenomenal agricultural development in Germany during the years preceding World War II. On the other hand the position of Great Britain from the point of view of subsistence was very unsatisfactory. It is said that she was self-sufficient for about seven weeks only. Had it not been for the failure of the ill-conceived scheme of blockade of Britain by Germany by occupying Norway and utilising numerous U-boats, Great Britain would have been in a difficult position.

The environmental diversity of Pakistan-East and West Pakistan taken together affords a great variety in the agricultural scheme of Pakistan. The humid East (East Pakistan) and the arid West (West Pakistan) give a balanced and broad-based economy to Pakistan. The surplus production of agricultural stuffs of varied types makes the trade connections of our country widespread. Our commodities have a ready market in many countries. The balance of our trade is generally not unfavourable in spite of the great imports necessary for building up industries at this juncture.

The temperature variations from one part of the country to another are very well marked. So are seasonal ranges of temperature. The mean January temperature varies from $38.9^\circ F$ in Quetta, $51.7^\circ F$ in Peshawar, $54.5^\circ F$ in Lahore, $58.25^\circ F$ in Jacobabad, $68.45^\circ F$ in Karachi,
66.6°F in Dacca to 66.9°F in Chittagong. So the regional variations are about 28°F. Similarly in July the mean monthly temperature varies from 79.5°F in Quetta to 96.5°F in Jacobabad. Far Lahore these figures are 89.8°F, for Peshawar 91.3°F, for Karachi 84.8°F, for Dacca 84.6°F and for Chittagong 81.3°F. The regional distribution of annual rainfall is such that it is less than 5" in Baluchistan and certain interior parts of the Punjab and Sind (Jacobabad 3.6"). In the greater part of West Pakistan excepting the northern sub-montane region the amount of rain varies from 5" to 20". In the sub-montane region it is from 20" to 40". Now in East Pakistan it varies from 50" in its western parts to over 100" in Chittagong (107.68"). It gives an unbroken chain of rainfall distribution differing from less than 5" to well over 100".

These climatic and soil variations from region to region in Pakistan result in a wide range of natural vegetation differing from stunted dry bushes of the arid regions to luxuriant evergreen vegetation. Similarly there is a wide range of agricultural products from typically dry crops to typically wet crops. In this way some of the agricultural products of the country are not only sufficient for home consumption but huge quantities of them are exported to other countries. There is quite a long list of agricultural commodities exported from
Pakistan. In the wars of sustained nature, as they are today, the importance of agricultural surplus and a diversified agricultural scheme cannot be over emphasised. It may, however, be pointed out that agriculture alone is not all that is desired. It must necessarily be supplemented by industrialisation.

5. Unity of West Pakistan with the Middle East.

Aside from the fact that there exist points of similarity, as also of dis-similarity, between West Pakistan and the Middle East and from country to country within the Middle East itself, a strong case can be made out for their unity for the purposes of defence. Taking the region as a whole, the grouping of its various countries into a common defence plan is justifiable on more than one ground. The region borders on the U.S.S.R. from the Black Sea to the Hindukush. It is a compact region of 2.96 million sq. miles (inclusive of West Pakistan and Afghanistan) of generally unimproved spaces providing a deep zone of defence the crossing of which has always been difficult. In case of such a defence all once these giant spaces are still difficult to be overrun. The general aridity of the region and the hardiness of its 126,547,330 inhabitants with their dynamic habits inculcated in them by the natural rigours of life, are a definite asset to its defence.

Climatic, vegetational, demographic, linguistic
religious, social and occupational similarities of the region go a long way to determine its natural and cultural oneness. General dryness is the keynote to understand the climate of the region. There are some exceptions to the rule but these do not include very extensive areas. In some parts desert conditions are ameliorated by Mediterranean or monsoon influences. The exceptional areas where annual rainfall is more than 20" are (i) Himalayan foot hills and a narrow belt of adjacent plains of West Pakistan, (ii) Caspian seashore in Iran, (iii) Some higher parts of Yemen and (iv) parts of Anatolian coasts land. Mostly the rainfall is below 20" and in southern parts of West Pakistan, Iran, almost the whole of Arabian peninsula and Egypt it is less than 10". The effect of the general aridity of the region is accentuated by the length of dry summers and the pronounced variability of rainfall from year to year.

Excepting in Arabia, a climatic link between different countries exists in the form of winter rainfall of Mediterranean character. Almost everywhere winter rainfall is more than 5" and varies between 5" to 10" and more.

In a region of high temperatures and consequent high evaporation an annual rainfall of about 20" is generally very insufficient for the successful growing of agricultural crops. Therefore, the need for
irrigation is one of the most important problems of the region and there exists a very close relationship between agricultural activities and the availability of water either from subterranean sources or from surface flows. Crop farming and human settlements are highly localised in areas where water is available. The effect of topography which is often important in determining human activities is not so dominant in the region.

Man's adaptation to climate and vegetation is manifest in the similarity of occupational groups further resulting in the similarity of social structure. The people of the region are mostly engaged in agricultural cum pastoral pursuits. Industries are unimportant. Whatever industries exist are mostly in cottage stage excepting the extraction of mineral oil which is mostly a foreign enterprise and its effect on the overall economy of the region is at present limited. The percentage of agricultural population for the whole region is as high as 75. In almost all the countries of the region this percentage is very closely maintained. The percentages of population directly dependent on soil in some of these countries are as below:

West Pakistan 70, Turkey 70, Iraq 75, Iran 82, Jordan and Israel 70 and Egypt 75.

The dependence of a uniformly high percentage of population on agriculture is a noteworthy feature in
itself and has further repercussions in determining a similar social pattern over the distant corners of the region. The farm practice, the methods of cultivation, the nature of implements, the stage of development of agriculture and the traditionalism of the farmer confronted with the same problem of aridity, high salt contents in the soil and small holdings and his own aversiveness to change, are characteristically common to the whole region.

An underdeveloped agricultural economy of the region has resulted in the establishment and the sustenance of the feudal order of the society and vice versa. Every where in all the countries the difference between the landlord and the tenant are faithfully maintained. Differences also exist between the town dwellers and the rural inhabitants, the sedentary agriculturists and the nomadic pastoralists etc. However, the nature and degree of these differences is so uniform all over the region that it simply conforms to the natural unity rather than adds to the diversity. The common religion of the overwhelming majority of the population and the predominant influence of Arabic over other languages of the region further determine the considerably common mode of thinking and behaviour of Arabs, Egyptians, Iraneans, Turks and Pakistanis alike. It may, therefore, be concluded that a grouping of Pakistan with the remaining important countries of the Middle
East will be a natural grouping.

The general poverty of resources of the region makes the task of its consolidation into a powerful bloc difficult without the assistance of one or both of the world power blocks viz. America and U.S.S.R. It is in the interest of both the blocs to make the region stronger and more resistant to foreign influences. In this way the two antagonistic power blocs of the world will be separated from each other by a powerful buffer zone. The siding of the region with one or the other of these powers will, however, not be in the interest of the world peace as the extension of the sphere of influence of one of them over the region will increase the war sensitivity of the other power bloc.

Some other considerations pertaining to the defence of Pakistan are:

1. It is divided into two distinct units separated from each other by a distance of about 1,000 miles or more and having no land link but only an impracticable ocean link by a circuitous journey of about 2,948 nautical miles all along skirting the shores of a foreign country. As such, any mutual help at the time of stress and strain will be out of question. Every wing is, therefore, to be adequately fortified so as to be able to defend itself in case of a prolonged war.

2. The distances and spaces are quite limited
particularly in East Pakistan where the small area of 54,501 sq. miles coupled with the effect of a dense population of 420,62,000 persons per sq. mile makes every inch of land un abandonable for reasons purely strategical apart from others. Also East Pakistan is surrounded by India on all sides excepting a small distance of Chittagong Hill Tracts where it touches Burma. The shape of West Pakistan is far from satisfactory as it is much elongated which makes a territory comparatively more vulnerable.

3. A length of 2,750 miles of our land frontier (W.Pak.1,250 miles and E.Bengal 1,500 miles) does not have any physical basis. The significance of it can well be appreciated in comparison to France which has a common boundary of only 350 miles with Belgium demarcated on flat plains and it is this reach of her boundary not backed by physical barriers which caused so much trouble to that state during the two world wars.

4. Pakistan lies on the periphery of the sub-continent and as such has to bear the burden of defence of not only itself but that of India as well.

5. The dynamism of the vicinal relations of West Pakistan is borne out by the entire history of the sub-continent. Now it is sandwiched between two countries of giant sizes-India and Russia. With India it has a direct contact. From USSR it is separated by a
buffer state, Afghanistan, in the north-west and is in contact with Chinese-Turkistan and Tibet in the north through Kashmir.

6. The population ratio between Pakistan and its neighbouring countries stands at a high figure. The surrounding countries contain 5.2 times the population of Pakistan.*

As long as the relations between states remain friendly and co-operative, this ratio of population is of little or no importance, but the moment that trouble or war darkens the national horizon, it becomes of great importance. France has long been worrying on account of the increased population ratio between herself and her neighbours when it is something like 3.8. It emphasises the gravity of situation in case of Pakistan.

7. The internal topography of Pakistan is such that it is mostly a vast stretch of level plains affording no natural obstacles, excepting a few rivers, in the way of an inimical force from the adjacent plains.

These geographic facts are of redeeming importance to the politician, the strategist and the

1* On account of a very imperfect contact Sinkiang and Tibet are excluded from the list of neighbouring countries for the purpose of evaluating the population ratio.

2* Van Valkenburg, Elements of Political Geography, p.100.
economic planner of Pakistan and her well wishers abroad. They bring home to our mind the extraordinary importance of defence to us and its ascendancy over all other considerations. We are constrained by nature to concentrate more and more, and irrespective of anything else, on defence; however peace-loving and peace-promoting we may be. Pakistan is a zone of tension on the political map of Asia. Our task is to consolidate it and to make it a bulwark against any concept of expansionism.

"Guns before butter" has mostly been the policy of 'acquisitive' states. Our is a different case. In our struggle for existence we are simply constrained to place guns before butter if our economic and industrial planners fail to work out a master plan for the harnessing of our resources and the mobilisation of our agents of production in order to produce both guns and butter at one and the same time, which is not impossible.

3* Prof O.H.K. Spate has, in an article entitled "Partition of India and the Prospects of Pakistan" published in the Geographical Review, Vol. XXXVIII No. 1, expressed the fear that Pakistan is likely to be converted into a 'military state'. He seems to be correct in drawing that inference though other inferences consequent upon it may not be. Strength is the prerequisite of progress which is likely to be tested in the crucible of war.
Love for independence demands a stronger Pakistan.

When late Premier Liaqat Ali Khan said "I will see my nation starve than allow the security of the state to be imperilled" the response from the nation was wonderful. In other countries such a declaration by a politician may work against his popularity. Here it evoked thunderous acclamations of 'Long live Pakistan'. The cause is not far to seek. The maintenance of their hard-won freedom is uppermost in the minds of the masses. The devotion to the cause of the motherland has kindled in them that flame of live which burns to ashes all egoism and selfishness. The effect of patriotic feeling and religious fervour which, whenever and wherever combined, creates a formidable and irresistible force (provided it is not utilised for aggressive purposes) and produces strength of conviction and character. Now it is the responsibility of the politician to utilise the force in the best possible manner ensuring the security of the country.

One of the fundamental concepts of geography is that of 'place continuity' signifying that there has always been and shall always remain in existence a Pakistan in the sense that from times immemorial the space constituting the state of Pakistan has ever been in existence and shall remain so for ever and for ever. It shall remain a part of the world, as it does today, as long as the world lasts. It will also continue to be
inhabited by people, generations after generations. This brings into prominence a vital consideration, that is, the loss of any part of the territory is not a loss at a given moment but that of its entire projection in time like the unending continuity of a shadow in space. No nation can ever allow such a tremendous loss to be incurred by herself if she only knew it.
The role of different physical features in human movement is different. Plain areas promote movement. The construction of a mesh of means of communication is facilitated by the smooth face of the ground with no obstructions and very little undulations. The slope of land is so gradual that it often becomes imperceptible. Taking the example of the Indus plain, the total fall of level is about 1,000 ft. from the foot of the northern hills down to the sea. Still, the slope is very gentle since this change of level takes place over a distance of about 750 miles.

Wide stretches of plain areas permit large scale military deployment and a dispersal of fields of operation over long distances. Such areas are very much suited to tank manoeuvres as also for 'web' or 'area' defence. Referring to the theory of tank superiority in modern tactics Palit describes the conditions for large scale armoured manoeuvres as 'ideal' in the battles of African desert and the 'rolling steppes' of southern Russia during 1941 and 1942*. In open ground without obstacles like marshes, forests, valleys, bridges etc., traffic

cannot be canalised and hence ground mines become ineffective since these cannot be spread over large areas.

Rivers offer obstacles to transverse journeys except at favourable points where the construction of bridges become easier as the general topography around such a point does not allow the river to shift its course. Rivers can well be utilised as defence lines as these impose, at least, temporary restrictions on and slacken the speed of advancing armies, one of the functions of a defence line being that it should allow the defenders time to reinforce themselves. Rivers provide greater advantage in case their valleys are marshy or have an adequate forest cover. Similarly a 'bad land' topography with a fretwork of ramifying gullies is not promotive to quick movement. 'Empty' or 'negative' lands like deserts, inspite of forming parts of plains, are not conducive to movement on account of their general barrenness, high temperatures, dearth of drinking water etc. Adaptations to such areas are of more specialised nature than to others. Less developed parts of plains may abound in numerous unmetalled roads but metalled roads are likely to be few and far between in such regions.

The role of mountains is primarily of hindering communications as the topography is rugged with converging
slopes. An extensive mountain region, as a whole, is more obstructive than individual ranges. However, mountains have maintained a dual role, one of checking movement and standing like immovable rock in the swirling stream of history, and the other of showing man the way through their own valleys and lines of weakness to prized lands. Such a dual role is best manifest in case of the mountains of Pakistan. The wild arrays of mountains in Kashmir and the north-eastern sections of the Hindu Kush have been a complete barrier to large scale human movement. The western off-shoots of the Himalayas have on the one hand been partially hurling back the rising tides of immigrants and on the other hand have directed the more orderly groups of them into defined channels opening out into the sub-continents.

The effect of climatic severities, for example, biting cold or scorching heat creates further difficulties in negotiating mountainous areas. Sometimes the climatic controls may prove to be more effective than the heights themselves. In case of our western mountains the loss of height in their southern sections is more than compensated by extreme aridity and high temperatures. The

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wild raiders of Genghis Khan traversed some of the most
difficult terrains in the world to fall upon India. But
where neither snows nor blizzards could deter them, they
yielded to the overpowering heat, and their grim overlord
acknowledged in the burning sun the one foe he could not
face."

Plateaus do not exhibit such an uneven surface as
those of mountains and have extensive flat summit areas
except where these are domiinated by well defined ranges.
There are escarped slopes on one or the other of their
sides and gradual slopes on the remaining sides. The
extent of a plateau, its location with reference to the
more prosperous parts of the country, its own resources
and the extent of their exploitation, the arrangement of
ranges on it, if any, and the general climatic conditions
prevailing are the factors which together determine the
degree of accessibility of such a region.

On the whole we find that the role of the different
types of physical features in the general scheme of human
affairs and more so in defence schemes is differential.
A proper understanding of the physical personality of a
country is, therefore, essential in order to determine its
comparative contact with other countries and the degree
of its vulnerability, or otherwise, consequent thereon.

* Ibid, p.239.
Terrain

The vast expanse of W. Pakistan presents a variety of land-forms. Out of a total area of 394,707 sq. miles (including Kashmir) 168,211 sq. miles are dominated by mountains and plateaus and as much as 126,496 sq. miles are occupied by plains.

Mountains.

The north and west of West Pakistan is a vast mountainous area dominated by the Himalayas and their western offshoots. Out of all the sections of the Himalayas in the Indo-Pakistan sub-continent, the Kashmir section involves maximum depth. Not only ridges are arranged after ridges but zones follow zones. These zones of mountains are distinct from each other on account of the presence of broad intervening troughs. Four parallel zones are easily distinguishable.

1. The Sub-Himalayan or Foot Hills nearest to the plains are known by the general name of the Siwaliks. These are the youngest of the mountain ranges belonging to the Himalayan system. The maximum width of this zone of mountains is about 30 miles with wide valleys intervening between these and the

*In the context of undivided India it was properly designated as "Punjab Himalayas" by Hayden and Burrard in "The Geography and Geology of the Himalayan Mountains and Tibet".*
Himalayas proper. The sub-Himalayas in Kashmir lie in the southern most parts of the state. The outer hills of Rawalpindi district in Punjab and the southern hills of Hazara district in N.W.F.P. belong to this system. The continuity of the ranges is broken at many places by numerous small rivers draining southward. The altitude of these hills varies from 2,000 to 4,000 ft. and over. The general alignment of the range is roughly south-east to northwest from near Basoli (Jammu) to near Abbottabad. The plainward slope of the mountains is gentler as compared to the slope on the other side of the crest. Between these hills and the outer Himalayas lie the plateaus of Kishtwar and Basharwan (about 3,000 ft. high) which contain the valley of the Chenab.

2. Outer Himalayas or the Pir Panjal bifurcates from the Great Himalayas at the Sutlej valley and trends west or north westward up to the Indus. The depth of the zone of these mountains is about 40 miles. The peaks of this system of mountains follow a more definite alignment than in the case of the Sub-Himalayas. It is a curvilinear alignment parallel to the Great Himalayas. The average height of the Pir Panjal in Kashmir is 14,000 ft. which increases to 15,000 or more eastward in India. Hardly one or two peaks, in Kashmir, attain a height of more than
15,000 ft., one being south-east of Arthal and the other about 25 miles east of Punch. In Hazara the peak east of Andrak is 14,528 ft. Not much away from the south-east boundary of Kashmir, the Pir Panjab is pierced by the Chenab river. A gap occurs in a roughly north-south direction carrying the well-known Banihal road connecting Jammu with the vale via Udhampur, Chineni, Ramban, Digdaul and Gund. The Pir Panjal pass (33°38'N & 74°35'E) is a narrow cleft connecting Baramula south-east of Punch to Shupiyan which in turn is connected with Srinagar and also Islamabad. Further westward the range is pierced by the Jhelum affording the famous Rawalpindi-Murree-Muzaffarabad-Baramula-Srinagar route. Unlike the Sub-Himalayas, the outer Himalayas have their steeper face towards south than towards the valley of Kashmir. The vale of Kashmir is the trough of the Jhelum river which is buttressed by the Pir Panjal in the south and the Middle Himalayas on the north. The valley is from 45 to 70 miles wide, and its average elevation is about 6,000 ft. above sea level.

Between the vale of Kashmir and the Great Himalayas proper is a region of mountains comprising of spurs branching from the great Himalayan wall and having a small number of peaks as high as 15,000 ft. The width of the
zone covered by these mountains is about 20 miles. The bifurcation takes place near Zojila (11,300 ft.) and the range, North Kashmir Range, trends westward forming the water divide between the Jhelum and Kishanganga rivers. The range is highest in the east with the peak of Haramukh 16,890 ft. high Westward it ramifies and decreases in height, the peak north-east of Jumegand being 12,266 ft. The narrow Tragbal pass north of Bandipura connects the vale with Gilgit Wazarat and Political Districts.

3. Spreading over a wider area of 40 to 50 miles from south to north are the Great or Middle Himalayas which enter Kashmir from the east in south-east Udhampur and are continued in an arch-like curve up to the Indus west of Manga Parbat. It traverses a length of about 300 miles in Kashmir and is the most inspiring of all the ranges of the region. The average altitude of the Great Himalayas is over 20,000 ft. The highest peak of the system is Manga Parbat which is 26,660 ft. above sea level. There are quite a good number of other peaks which are more than 21,000 ft. in elevation. The Nun Kun peak north of Pariabad is 23,410 ft. high. This zone of mountains is interspersed with narrow valleys like those of Zaskar and the Dras-Suru having altitudes of less than 15,000 ft. The comparatively broader area of this altitude is formed
by the Kishanganga river and its tributaries with Deosai plain as a part of it. One of the northerly ranges of the Great Himalayan system is known as Zaskar or Zanskar Mts. which is about 16 to 18 thousand ft. high. It trends north-westward from its point of bifurcation from the Great Himalayas near Nampa. From the starting point up to the basin of river Spiti none of its high peaks are more than 22,000 ft. From here up to about the south-eastern border of Kashmir the peaks are 20 to 21 thousand ft. high. Further westward, however, these seldom rise above 18,000 ft. The range in Kashmir is divided into such complex branches as to defy the demarcation of a continuous axis to which the ramifications belong.

The range lying between the Brah-Suru river in the east and the knee-bend of the Indus north of Bunji, are known as the Deosai Mountains. The highest peak (18,480 ft.) occurs west of Basha. The northern and the southern slopes of the Great Himalayas differ in their steepness. To the south the forest covered slopes are steep while bare northern slopes are comparatively less steep. On the gentler side occur patches of high plateaus as also lakes. The comparative idea of the differential degree of steepness of the two slopes is clearly obtained when one
crosses the Zojila.

There quite a good number of difficult passes cross the crest of the Himalayas but these are very narrow, high and of most restricted utility. Out of these the best known and comparatively less difficult to negotiate is the Zojila (11,300 ft.). The Babusar pass (13,690 ft.) occurs towards the western end and provides connection between Battakundi, on the Kasher river, and Gilgit Agency. The remaining passes are mere notches in the range and to call them passes is but a formality. Some of such passes are Shingo P. (16,720 ft.), Post P. (13,750 ft.), Umasila (17,370 ft.) and Pensi P. (14,440 ft). Passes of the same denomination also occur in the Zaskar e.g. Taglangla (17,479 ft.), Shapodakla (18,530 ft.) Chokela (13,510 ft.), Sini P. (16,600 ft.) and Hulume P. (15,450 ft.).

4. Intertwined with the Indus river but mostly lying to its north is the Ladakh Range. Near Thangra (approx. 33° 13' N and 75° 55'E) the range is pierced by the river. From here up to about the Indus-Shyok confluence the range lies north of the river. West of the confluence the Haradhush Range runs between the Indus to the south and the Shigar river to the north.

*For detailed description vide Chapter on Kashmir.*
Map No. 4

SECTIONS
ALONG SOME ROUTES IN KASHMIR

SRINAGAR TO JAMMU

SHOPION TO PUNJAB

SRINAGAR TO GILGIT

After Lawrence, W.R., Valley of Kashmir, Page 247.
The average elevation of the Ladakh range is about 19,000 ft, the highest peak (21,421 ft.) occurring in the east near Chumatang. The highest peak, Rakaposhi (25,550 ft.) of the Haramosh range occurs on its western end. The two gorges of the Indus-the Ladakh range afford passages across it. The Khardungla (18,380 ft.) affords communication between Leh (11,555 ft.) and Shyok (12,135 ft.)

The Haramosh range is cut by the Hunza river which connects Gilgit (4,970 ft.) with Baltit or Hunza (8,000 ft.).

The whole of the northern and north-eastern parts of Kashmir are occupied by the Karakorum Range and its ramifications with numerous peaks above 24,000 ft. The ramifying ranges are Saser Muztagh, Baltoro, Muztagh, Kasherbrum Range etc. The highest peak of the Muztagh-Karakorum system is Godwin Austin or K 2 (28,273 ft.). The Karakorum range received its name from the Karakoram Pass (18,290 ft.) on the waterparting between the southward following Shyok river and the northward following Wahab Jilga. These northern most ranges of Kashmir are noted for their glaciers even among the colossal ranges of Asia.

The western wall of W. Pakistan is formed by the Hindukush, Koh-i-Sorted, Waziristan Hills, Sulaiman Mts., Central Brahui Range, Toilikar Range and Shagai Hills.
The Hindu Kush runs southwest from the Pamir plateau. It is made up of two distinct ranges (i) the main crest line which is cut through by rivers and (ii) a watershed range in the rear of the main range. The Hindukush forms the Pak-Afghan boundary upto about lat. 36° N and longitude 71° 15'E after which it trends westward and enters Afghanistan. In the section of the Hindu Kush lying in Pakistan it has quite a good number of peaks rising above 23,000 ft., Sad Istragh is 24,170 ft. and the highest peak Trich Mir is 25,363 ft. From the Hindu Kush there branch off several ranges towards the south through Chitral, Swat and Dir states. The intervening troughs between the ranges are drained by the Chitral, Panjkora and Swat rivers which flow southward to join the Kabul river. The Kabul river flows from west to east forming a trough between the southern extensions of the Hindu Kush on the one hand and the Koh-i-Sofed on the other. The famous Khyber pass lies south of the Kabul valley. The Koh-i-Sofed range runs east-west from near Ghora to west of Peiwar Kotal. The general height of the range is about 10,000 ft., with the highest peak Sakaram rising to 15,620 ft. It forms the watershed between
the Kabul and Kurram rivers. Between the Kurram river in the north and the Gomal river in the south are spread the Waziristan hills which are by no means very high. The other parts of these hills vary from 7 to 10 thousand ft. in elevation. These hills contain in them the Kurram and Tochi passes. To the east lie the Gomal pass. South of the Gomal river are the mountain ranges of Baluchistan which are discussed together with the plateau on which they lie.

**Plateaus.**

The plateaus of West Pakistan include (i) Potwar Plateau and (ii) the Plateau of Baluchistan.

(i) Potwar Plateau.

Potwar Plateau covers an area of about 11,000 sq. miles in the Punjab. It spreads over the southern and western parts of Kasur district, central and southern Attock, parts of Jhelum district in the northern portion of Khushab Tehsil of Jhelum district. It is bound by the Kala-Chitta range and Maralla Hills in the north and the Salt Range in the south. In the east it extends to the hills bordering the right bank of river Jhelum while the western boundary extends to the rugged sub-montane region of Attock lying to the left bank of the Indus and known as Akhur Janjuwal area.
The Salt range forming the southern boundary of the plateau is orthoclinal in strike structure with steep face on the south and a gradual slope towards north. The general elevation of the Salt Range is from 1,000 to 3,000 ft. rising to 4,992 ft. in Mt. Sakesar. On its eastern extremity the Salt Range, for some length, almost clings to the Jhelum, the distance between the two nowhere exceeding 12 miles. Near Khushab the range takes a turn in a north-westerly direction and pursues a more northerly course to the west of Sakesar till Kalabagh is reached. Almost throughout its length - 152 miles, the range consists of two series of parallel mountain, the northern one being known as Bakrala Ridge and the southern as Tilla Hills. Each of the two ranges in turn is comprised of a number of ridges. The ranges generally run parallel to each other enclosing small plateaus and saline lakes and converge into knobbed masses at places. There is a decrease in the height of the ranges west of Sakesar. As the Indus is approached these culminate into the Tradian hills which have an average height of about 3,087 ft. The Salt Range though pierced through at several points is easily negotiable from south to north at its either ends. The most important of the passes
is the Bakrala pass which carries the Grand Trunk road at a height of 1,400 ft.

The middle of the Potwar plateau is occupied by the Soan syncline and the elevation decreases from Salt Range to the valley of the Soan to rise again in the north. The Soan basin covers an area of 7,000 sq. miles. The average elevation of this undulating tract is between 1,500 and 2,000 ft. The general terrain of the basin is a typical 'bad land' cut up into pieces by a fretwork of ravines and gullies. These ravines are locally known as 'Khadera' and are of varying shapes and dimensions.

The north-easterly portion of the angle between the Soan and one of its tributary, the Sii, is occupied by the Khaire Murat Hills running in a north-east to south-west direction. On either side of the ridge the ascent above the plains is steep and abrupt and at places the height exceeds 3,000 ft. The northern border region of the Potwar plateau is dominated by the Kala Chitta range together with the Margalla and the Utrina ridges. The height of the Kala Chitta range varies between 1,500 ft. and 3,000 ft. while the highest peak, occurring near the western end, has an elevation of 3,521 ft.

(ii) Plateau of Baluchistan.

The whole of the province of Baluchistan spreadi
over an area of 1,34,002 sq. miles is popularly understood as one vast plateau although it also includes some small plain tracts and a tangled maze of mountain ranges. In between the mountain ranges are enclosed plateaus and intermont basins of varying sizes and elevations. The north-eastern and east central parts of the province are dominated by more conspicuous ranges enclosing plateaus of higher elevation. Towards south-west the ranges, as also the intermont plateaus, show signs of a marked, though not continuous, decrease in elevation, thus, determining the general slope of the country towards south-west and south. The more important ranges of Baluchistan are as given below: 1. The Sulaiman Mts. 2. The Kirman and Pab ranges, 3. The Tote Baker, 4. the Jangal Bala, 5. the Ras Koh and Chashal hills, 6. the Chima range, 7. the Central Makran range and 8. the Makran coast range.

The Sulaiman Mountains. The two hundred and fifty miles long Sulaiman range is more well known than justified by its height. It is the disposition of the range on the common border of the province of Baluchistan and the S.W.F.P. and Punjab provinces in a more or less south direction which has made it so. The parts of the range covered by 5,000 ft. contour line on the map are small and discontinuous. The range attains a considerable height only in its northern
section in Baluchistan where it is generally more than 6,000 ft. above sea level with the highest peak, Takht-i-
Sulaiman, having an altitude of 11,295 ft. Towards
south it dwindles in elevation where it is mostly above
3,000 ft. only. The range has its steeper face towards
the Indus plains while towards Lora Lai basin and Harri
and Bugti country the slope is comparatively gentler. Most
of the Lora Lai basin is above 4,000 ft. Harri country
lies mostly between 3,000 and 4,000 ft. while southward
in Bugti the elevation is between 2,000 ft and 3,000 ft.

The right bank tributaries of the Indus struggling
their way from west to east pierce through the Sulaiman
Mts. affording passages between the Baluchistan highland
and the plains of the Indus. The routes in order from
north to south are as below:

The Zhob and the head stream of Cajistan connect
Fort Sandeman with D.I.Khan district. The Razani and the
Vihowa gorges lie at about 4,000 ft. above sea level. The
Mangrotha cleft connects Taunsa with Musa Khel Bazar via
Drug in Baluchistan. Again Taunsa and Musa Khel Bazar
are connected via Thak and Khanim Post.

Draman and fort Munro in D.G.Khan also have their
road connection with the interior of Baluchistan. Road
link also exist between south-western D.G.Khan and
southern Bugt. country.

From the northern high end of the Sulaiman radiates an offshoot to join the Central canal range near Quetta in a bow-like shape with its concave curve towards the north. The height of this offshoot is everywhere greater than 5,000 ft. It is higher in the north east. In the middle the elevation is lower which increases again towards west.

Between these mountains in the south and the Toba Kakar range in the north lies the Zhob basin. The valley of the Zhob and a strip of land along it are less than 5,000 ft. in elevation. The courses of the tributary rivers e.g. Khisor I. S., Rich Sakhit, Gedean etc. mostly between 3,000 ft. and 7,000 ft.

The Kirthar and the Fub ranges. From the Sula river in the north to almost Cape Ronz (separating) in the south is spread the Kirthar range forming the boundary between Sialkot and Bhurban except in the south where the boundary utilises the Sab river. The total length of the Kirthar range is about 200 miles while the maximum width is about 60 miles. The height of the range decreases from about 4,000 ft. in the north to almost nothing in the south. Isolated heights of 7,430 ft. (Kardae peak north west of Karkh or Karu) and 7,125 ft (a point
south-west of Harbah) are met with. On the west the Kirthar range is backed by the Pak range, almost of the same length and having the same north-south alignment. The steeper face of the Pak range is towards east and the slope changes gradually towards the Parali and the Pak rivers in the west. The trough between the Kirthar and the Pak ranges is utilised by the northern and central sections of the Pak river and its tributary Sarun. North of Kirthar, the Mula river valley gives access to the eastern fringe of the plateau region from the Kachhi plain of Baluchistan. The Makachi river valley in the northern half of the Kirthar range is utilised for tracking across the range but the important routes occur more towards south. Sehwan (Sind) is in communication with Bidar (Baluchistan) and Thano Shah Beg (Sind) with Bureji (Baluchistan)... A first class road radiating from Karachi crosses the Pak river to the east of Kot Mandi Chowki and then utilise the Pak and the Sarun river valleys. It continues northward up to Surab which is the focal point of quite a few highland routes. Between Surab and Guru via Kalat the road is not in a very good condition. From Guru it is continued to Quetta.

Toba Kakar Range. Spreading over the whole length of the country lying between the Afghan border and
the Khanal-Fort Sandeman Ry. line on the one hand and the
Gomal and the Khojal passes on the other are the
Toba Lakar hills which run in a north-east to south-west
direction for a distance of about 300 miles. The range
rises from about 4,000 ft in the east near the Gomal river
to more than 7,000 ft in its middle and western sections.
There are quite a good number of peaks in the ranges which
have an altitude of more than 9,000 ft., the highest being
the one to the north-east of Churman pinnacing to
10,966 ft. above sea level. The south-westerly continuation
of the range lying transverse to the Gulistan-Chaman route
is known as Khawaja Auran range which in turn is connected
with the Central Makran range.

The Central Brahui Range. Lying between the Zhob
valley in the north and the Pul river in the south, the
Central Brahui range runs in a north-east-north to south-
west-south direction for a distance of about 225 miles. It
is one of the loftiest of the mountain ranges of Baluchistan.
In view of its central position the mountain range and its
conspicuousness it can be called to be the backbone of the
mountain system of Baluchistan. Its crests and peaks, some
of which rise above 10,000 ft. add stature to its
personality. The high peaks include Loa Nekan in Zarghum
Mts. (11,725 ft.), Takatu (11,336 ft.),
Khalifat (11,440 ft), Chiltan (10,483 ft), Murdar Ghari (10,448 ft) etc. The height of the constituent peaks of the range around Quetta is in all cases more than 8,000 ft. The mass of the southern half of the range is more than 7,000 ft. Only for a short distance towards the south-western end the height dwindles to 6,000 ft. or less. Inspite of its boldness and strength the range has its own weak points which are successfully exploited by men for his cross-range journeys. One of the routes is the popularly known Harmai pass. The other one is the famous Bolan Pass together with the slightly different Mushahaf alignment of the railway line. Sarawan-Rajawal, Sorinda and the Anjira valleys afford other less important routes across the mountains. Again, the eastern slopes of the Central Bahui Range are steeper than the western ones. The land to the west of the range is generally 6,000 ft. high except in the north–the area drained by Shora Rud and Karah Lora–where it is less than 5,000 ft.

In our scheme of treatment of the ranges of the region other mountains of Baluchistan viz. Chagai, Raskoh, Siahan, Central Mekran and Mekran Coastal Range are not so important firstly because of their comparatively lower altitudes and secondly because of their distance from the line of contact of the plains and the plateau the means of communication across which have a special
significance. The Chagai hills are located in the north, have an east-west stretch of about 90 miles and an average altitude of more than 6,000 ft. with isolated peaks as high as 8,061 ft. Had it not been situated in the midst of wildernesses it would have attained importance on account of its situation on the border of Afghanistan and Baluchistan. Southward from it lies the Khar range running in a north-east to south-west direction for about 140 miles from the end of the Khwaja Maran hills to near the Hazun-i-Mashkel. The average altitude is more than 4,000 ft. with the highest peak about 9,833 ft. lying west of Bunap. The average altitude of the Dalbandin plain lying between the Chagai and Khar range is less than 3,000 ft. Further east the Hazun-i-Lora, and the Kuleh and southern Pishin Lora basins are also of the same height. The strategic railway line and road from Spezand via Nushki to Mirjawa and on to Zahidan (Duzdab) for long distance utilises the Dalbandin plain the Dasht-i-Tahlab and western Siniran, the altitude of the two latter plains being between 2,000 and 3,000 ft. Another lowlying area occurs on the Baluch-Afghan border between Koh-i-Malik Siah and Koh-i-Sultan. It is the southern extension of the Dasht-i-Zirreh in Afghanistan with an average elevation of less than 2,000 ft.
Between the Ras Koh and the Siahan Range is a vast stretch of low lying land forming an area of inland drainage. It is the Hamun-i-Mashkel, the Hamun-i-Murgahe and the surrounding area where the elevation drops to less than 2,000 ft. To the south and south-west of Hamun-i-Murgahe the land is between two and three thousand feet high.

This lowland is buttressed on the south by the Siahan Range and the Central Makran Range which are not distant from each other and which converge about 66°E. longitude. The Siahan Range is about 175 miles long and nearly 5,000 ft. high. The Central Makran Range has a length of nearly 250 miles and the altitude varies from 4,000 ft in the west to more than 6,000 ft in the east. A small area falling between the western parts of the two ranges is less than 3,000 ft. in elevation. The low hills of the Makran Coast Range run roughly parallel to the coast for a distance of about 280 miles.

**Plains.**

Plains predominate over a large area of the Punjab and Bahawalpur and Sind and Khairpur. In N.W.F.P. strips of lowland extend into the mountain region along the Kabul, Kurram, Tochi and Gomal rivers. In Baluchistan plains cover only a small area.
In Punjab, plains are the most dominant aspect of the landscape. Excepting hilly parts of some of the northern districts, the Kotwar region and the outer ranges of the Sulaimans in D.G.Khan, the whole of the province is one vast level plain drained by the Indus, the Jhelum, the Chenab, the Ravi and the Sutlej rivers. The general slope of the plain is towards south-west and is gradual to the extent of being imperceptible. The whole the slope is only 2 to 3 ft in a mile except where the rivers debouch on to the plains from the mountains. Here the gradient may be more than 50 ft. in a mile. This is very typical of plains formed entirely by the agency of rejuvenated old rivers as the slope of plains as a whole sympathise with the general curve of water erosion of rivers which is, as a rule, steeper in the beginning and goes on becoming gentler as the river proceeds forward and forward. The monotony of plains is disturbed only in very small pockets where the low and much denuded Kirana Hills stand out above the general level surface. These hills are the distant outliers of the Aravalli system and appear in detached protuberances in Kirana, Chiniot and Sangla Hills.

The plain is divided into several Doabs or interflus. These Doabs particularly the Chej (or Jech) Doab, the Rechna Doab and the Bari Doab, are very similar to each.
other. In each case the slope gradually rises from the low lying riverain tract to the middle of the Doab. The lowest portion is the broad valley of every individual river. Within the valley confined by the river banks on either side the stream finds room for meandering. "Every Punjab river-bed is a considerable strip of country — a stretch of land partly occupied by sand and alluvial mud, with channels here and there, some dry, some with water in them; while the 'deep stream', runs somewhere in the midst or at one side of the area. 14. Actually there may be more than one stream of varying breadth and depth with islands enclosed in between. This portion of the river valley is known as Khachfi. Outward from it the land still low in elevation is subject to flooding and is known as Khadir. Beyond this the land rises and is known as the Bangar. Again, the elevation of the land rises to the middle of the Doab. The highest portion of the Doab is known as 'Bar'. The Bar between the Jumla and the Chenab is known as Kirana Bar, between the Chenab and the Ravi as Sandal Bar, between the Ravi and the old course of the Beas as 'Ganji Bar' and between this old course and the Sutlej as Nili Bar.

As late as the beginning of the present century a very large area of these 'Bars' in central and southern

1*.Baden Powell, Land systems of British India, vol. II, p. 53

quoted in the Agricultural Geography of the Punjab by

Ahmed K.S. p. 33
Punjab formed the thinly peopled sandy waste or dry steppes unaided by a perfect system of irrigation and untraversed by good roads. At that time these were considered as barriers in human movement. The position has now been completely changed. The entire plain of the Punjab specially to the east of the Jhelum is fully knit together into a developed system of communication. In the presence of transverse roads and railways with proper bridges, rivers are no barriers either. The taking off of canals from the rivers has decreased the volume of water in them thus reducing their obstructive function. However, during the course of history they have acted as checks to the advancing armies. Even today the rivers can be utilized as impediments to mechanized movement. The north-south flowing rivers of the Punjab evince a greater tendency of eroding their right banks more than the left banks. The right banks are, therefore, comparatively higher and less gradual in slope. "A general characteristic of these rivers ... is their tendency to hug their right bank. Historical researches and the present form of the land show that this has been going on for centuries. On the left bank are wide, low level valleys with recent alluvium in the abandoned river channels. On the right bank they are cutting directly into the upland
and the rise from the river is steep. On account of such a differential gradient of the two banks of the river, it is easier to defend the right bank than the left one. An analogy is found in the southward flowing rivers of Russia where again the western banks can be more easily defended and where retreat towards east from the left banks is facilitated by the gradual slope.

The Doab between the Jhelum and the Indus is known as Sind Sagar Doab or Thal. It is the largest of the Doabs with a length of about 150 miles and a maximum breadth of more than 50 miles. Before the construction of Jinnah Barrage on the Indus near Ela Bagh the whole of this vast area of 30 lakh acres was a barren desert unpromotive to movement. After the construction of the Thal canals about 3 lakh acres have been brought under cultivation and the total area to be affected in the long run is 20 lakh acres. The topography of Thal is full of minor variations. Low sand hills mostly running in a north to south direction are visible in the north of the region. The number of Tibbas (sand-dunes) increases from west to east. In the extreme west near the Indus is a longitudinal belt covering an area of 5,02,000 acres which is almost free from sand dunes. It is known as Baggar in the north and Jandi Thal in the south. The high bank of

\[ \text{Ahmed K.} \text{., Agricultural Geography of the Panjab, p.40.} \]
the Indus is known as Powah which is about 3 miles broad. Its height in the north is greatest, about 40 ft. The area covered by the sand-dunes increases eastward from less than 40 to more than 40%. Similarly the Tibbas increase in height towards east. The eastern portion, Thal Kalan, is thus more profusely strewn with sand.

The land beyond the Indus is given the general name of Derajat. In Punjab the district of D.G.Khan belongs to it. Here the strip of land near the river is lower in elevation and is called the Sindhu. Seamed with torrents and small streams lies another tract, Pachad, on the near side of the Sulaiman Mts. Midway between these two belts lies the high strip of Danda.

The state of Bahawalpur, to the southeast of the Punjab, is again a vast expanse of plain topography. The land here is divided into three longitudinal strips. The western belt called the Sind is the riverain tract of the Sutlej-Panjnad-Indus system of rivers. The central strip is an upland identical with the Bars of the Punjab. It used to be an unproductive desert before the advent of the Sutlej Valley Canals which converted it into a thriving agricultural country. It is again faced with the serious threat of desiccation owing to the diminished supply of water in the Sutlej after the construction of the Mangal dam.
on the river in India. The third and the eastern most strip of land known as the Cholistan or Rohi is a continuation of the Great Indian Desert into the state. It is separated from the central irrigated belt of Bahawalpur by the dry valley of the dead river Hakra. The surface of Cholistan is a confusing array of sand-dunes occasionally attaining a height of 500 ft. above the surface.

The monotony of plains remains unbroken in Sind and Khairpur. The general slope of the land being extremely gentle is towards southwest. The region is conveniently divided into three longitudinal strips viz. 1. Kohistan, 2. Riverain land or Sind and 3. Thar desert. Kohistan is the western most strip of land and lies on the near side of the Kirthar range which for a long distance forms the boundary between Sind and Baluchistan provinces. It is a typically sub-montane region with an undulating surface becoming more and more hilly towards west. Like the Derajat of Punjab the surface is seamed with hill torrents and small streams coming down from the Kirthar range.

The central tract or Sind is a flat alluvial plain through which languishes the Indus which evinces greatest tendency of changing its course here. The banks of the river being higher than the neighbouring plain the river
finds it convenient to change its course once it overflows them at the time of a heavy flood. This practice of the river has made Sind a very unstable region. Almost every portion of the great alluvial tract of Sind has at some time or other formed a channel for the river Indus.

In every direction traces of ancient river-beds may be discovered, crossing the country like elevated dikes, for the level of the land, as in all other deltaic regions, is highest at the river bank.

The eastern desert is in continuation of the Cholistan tract of Bahawaipur and forms a part of the Great Indian Desert. A succession of wave after wave of sand-dunes and extreme aridity have made it into one of the most undeveloped areas of the province. The southern portion of the vast Indus plain is the Indus delta with its apex at Hyderabad and each side of the triangle measuring roughly 125 miles. The south-eastern portion of the province fringes on the Rann of Cutch, a salt-water marshy waste.

In N.W.F.P. plains are localised in the valleys of the right bank tributaries of the Indus and embrace large areas in the districts of Peshawar, Mardan, Bannu and Dera Ismail Khan. The Peshawar plain including the Mardan plain has an average elevation of about 1,250 ft., decreasing to about 1,100 ft. near the Indus in a gradual manner. The

plain is fortified by hills on three sides, north, west and south. Towards east or southeast flows the Kabul river on its way to the Indus. In Nowshera tehsil of Peshawar district the land is either hilly or ravine stricken. The main opening of the Peshawar plain is towards east while the famous Khyber pass connects it with Kabul towards west.

Separated from the plain of Peshawar by the Jawaki hills of Kohat district, is the Bannu plain which is drained by the Kurrarm and the Tochi towards the Indus. Near the river valley the land is less than 1,000 ft. high which is surrounded by a broad belt of plains 1,000 to 1,500 ft. in elevation. From the Indus side the entrance into the Bannu plain is provided by the combined valley of the Kurrarm and the Tochi. This valley, though having low altitudes, is not very broad on account of the presence of the Surghar hills to the north and the Marwat hills to the south. Southward the Bannu plain is connected with Dera Ismail Khan by a still less broad re-entrant between the Bhattani and the Marwat hills. North-eastward to Kohat and westward to Miranshah the passages are comparatively more difficult.

Separated from the Bannu plain by the Sheikh Budin hills, is the plain of Dera Ismail Khan district having its
general slope towards southeast and south. In the south it merges with the plain of Dera Ghazi Khan in the Punjab. Numerous rivers, some of them originating in the hills of South Waziristan and the Sulaiman Mts. not far away from the plains have divided the land into northwest to southeast running belts. The more important of the Indus tributaries draining the area are the Shuza, the Shahur, the Gomal, the Luni and the Gajistan. The height of the plain in the northwest is less than 1,000 ft. which diminishes to its half in the southeast.

In Baluchistan lowlands are limited to Kachhi plain, the coastal plain and the valleys of the Dasht, Hingol and Porali rivers. The Kachhi plain is triangular in shape and looks like a big re-entrant on the map piercing into the hilly country of Baluchistan. It has Marri and Bugti country to its east, Central Brahui mountains to the west and south-eastward it merges with the plains of Sind. The coastal plains are very narrow beyond which rise abruptly the table hills of the region. The coastal plain broadens itself in a comparative sense towards west. At the eastern and western ends of the coastal plain are situated the valleys of the Porali or the triangular Las Bela plain penetrating northward along the river and the valley of river Dasht respectively. The Hingol valley is comparatively narrower.
The orographic setup of West Pakistan reveals that its main face is towards India. The line of effective contact of West Pakistan with India is the entire length of their common frontier which has been demarcated on level plains. The contact has been maximised due to the meridional alignment of the Indus plain with the longer side of it facing India. On either side of the common border the plains stretch undisturbed and uninterrupted for hundreds of miles with a much greater length in India as that country includes parts of the Indus plain and as the Gangetic plain stretches east-west. The complete merger of the plains of the two countries into each other with developed systems of communication over the respective territories and also across the border are factors which strike a note of caution to the strategist.

**Hydrography.**

The plains of West Pakistan are drained by the Indus system of rivers with Jhelum, Chenab, Ravi and Sutlej as the main affluents. In these rivers flows the life-blood of West Pakistan which is otherwise an arid region and where rainfall is not sufficient for the raising of huge agricultural crops so characteristically associated with the region. The well-developed system of perennial rivers has given rise to a highly developed system of irrigation.
On the other hand, these rivers have considerably restricted the transverse movement across them except only at points where huge bridges have been built at great costs. Any damage to these bridges can considerably reduce the east-west volume of traffic across the rivers. Of all the means of communication railways, in particular, seem to follow the rivers as railway bridges are more difficult to construct.

The rivers of West Pakistan evince a tendency of shifting their courses and flooding the area in their vicinity. The flat surface of the plains of West Pakistan imposes no restrictions on the rivers in making excursions within a limited belt as a normal yearly routine. So flat is the land that sometimes an ordinary obstacle may help divert a channel into a new course. An interesting example of such a diversion is cited by Holdich. "A loop in the Indus was formed above Jera Ismail Khan some years ago, which, had it straightened itself out, would have cut the station in two. Houses were forsaken or sold for an old song, and it certainly appeared as if the place was doomed. But a tree fell in, up stream, some distance from the city, and the accumulation of drift sand and debris against the fallen tree formed a natural embankment which shifted the corroding current into a new direction, and saved the
cantonment. The breadth of the strip falling within the bounds of the shifting channels increases southward as the slope of the land decreases. In the extreme south the delta of the Indus is "little better than a vast swamp." The occurrence and the intensity of floods and the area affected are subject to wide variation and no thorough understanding of the behaviour of the rivers can be made until the catchment areas of the rivers in their respective mountain regions are fully studied. Nor can any effective remedial measures be taken except in the upper stages of the rivers whereever possible. In the plains protective Bunds are constructed at suitable places to arrest the fury of bubbling rivers but in years of abnormal spates these limits are transcended causing widespread flooding and paralysing the whole system of communication for the time being. "...Such inundations often attain to great force and sweep over the low ground with a breadth of many miles and a depth of several feet. Houses, villages and crops are swept away and cattle and even human beings are destroyed." The changing volume of water in rivers and the consequent occasional floods are phenomena of special importance to us particularly

1. India, p.136.
3. Ibid.
because these have a bearing on the efficiency of exploitation of the means of communication.

The amount of water in the rivers is subject to great seasonal variations. The discharge of water in rivers is very small in winter and early summer months. It increases with the increase in temperature in summer when the snow, in the mountainous catchment areas of rivers, begin to melt...The approach of rainy season is marked by a great increase in the volume of water.

All the important rivers of W.Pakistan, on coming down to the plains from the mountains, open out into a number of channels. This formation is continued up to the end interrupted only at places when a river has to pass through a gorge/Indus near Kalabagh. "In the early dry months of summer these channels are frequently nothing but wide white spaces of shimmering sand, with here and there a narrow ribbon of gleaming water, permeating the width of river bed, and offering no difficulty to passers by, except where the main channels, narrowed to the dimension of a rivulet, may perchance present an unfordable obstacle.........Crossing a Punjab river in hot months—is a dry and bitter experience. Crossing it when a wide torrent of rolling flood sweeps southward—is not so
distance south-westward it reaches Attock where its course lies in a narrow rocky bed. Below Attock it flows along the western margin of the Potwar plateau and finally cuts across the Salt Range in a narrow gorge to emerge out in the Punjab plains near Kalabagh.

The Kabul river joins the Indus near Attock. It is then joined by the Haro from the east some 12 miles below Attock. The Soan empties itself into the Indus below Makhad. At Kalabagh the Thal canal takes off from the Indus and consequently the amount of water in the river decreases considerably. The river spreads out into a broader valley in Mianwali. The width attained near Isa Khel is as much as 12 miles from bank to bank. Again, in Bhakra Tehsil the Indus shows signs of greater discipline by restricting its wanderings to a more defined course.

Downward from here the river forms the boundary between the districts of Kuzaffargarh and D.G.Khan. In this reach of the river its width mostly varies between less than 2 miles in winter to a very wide expanse in summer. Here there has been a constant tendency of the river to shift its bed westward giving rise to the existence of numerous side channels which are of use for the construction of inundation canals. In the south of the district of
Mianwali near Mithankot the Indus is joined by the
Panjnad containing the combined waters of the Jhelum,
Chenab, Ravi and Beas -Jutlej. The mentionable tributaries
received by the river on its right bank are the Kurram,
Tochi and Loral.

River Indus has still to travel about 580 miles
before emptying into the sea when it enters the Sind
borders. The river in Sind is as indesistive about its
course as it was before, or it becomes even more so. The
gradient of the plain of Indus in its lower stage is still
less and hence it is more wavering. The only stabler
points in the course of the river are at Sukkur and Kotri.
The breadth of the river varies from about 1,000 to 4,000
ft. in winter to several miles in summer. The right bank
tributaries received in this section are Nari, Kalachi
and Beran. Canals are taken off from the river. The
construction of a barrage at Kotri is in progress and
there is a scheme of construction one at Guddu in upper
Sind, 90 miles above Sukkur.

The following tables give the monthly discharges of
river Indus for a period of 10 years ending 1950, at
Kalabagh, Sukkur (Above) and Kotri.

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January. The month of April witnesses a rise which continues almost up to October. The highest mark is reached in the months of July and August.

Jhelum.

The Jhelum river has its source in Kashmir State. It enters the plain a little above Mampo. at Samba it is joined by the Bumha. Below it the river pursues a south-westerly course for a distance of over hundred miles forming the boundary between the districts of Jhelum on the one hand and those of Gujrat and Sheen on the other. After entering the Sheenur district its direction becomes more southerly up to its confluence with the Chenab at Trimmu in Sheen district. The river shrinks to an average width of about 300 ft. in winter. Only for a very short period, a day or two, the river experiences an increase in its dimensions at least once every winter when the catchment area receives comparatively more rain from the westerly disturbances. Sometimes such an ephemeral winter flood (Jang) may attain the normal summer level. In the summer month of June the width of the river is about half a mile which increases to miles and miles for some time in the rainy season. Two important perennial canals take off from the Jhelum, the U.J.C. at Kamla and the I.J.C. at Resul.
The following tables give the monthly river discharges Baranuila and Rasul for ten years ending 1950:

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The peak months are from March to September while the volume of water decreases from October to February. The lowest level is in November while it is highest in May at Baramula and in July at Rasul.

CHENAB. The Chenab is considered as a 'good' river from the point of view of the amount of water it contains and its tameableness. By way of comparison, the Indus contains much more water than the Chenab but it is tamed only at one place, Kalabagh, while the diversion of its water to other Punjab rivers is not possible much above Khushab from where the area commanded is very small. The Chenab feeds the two perennial Canals — the U.C.C. and the L.C.C. — taken off from it at Marala and Khanki respectively. Possibilities also exist of its being diverted further up in Kashmir. The source streams of the Chenab, the Chandra and Bhaga, rise in the Punjab (India).

*The levels do not admit such a diversion. It is, however, alleged that in order to strengthen her claim over the waters of the Ravi and Sutlej, India has made out a case for the feasibility of such diversions and has presented it before the World Bank which is probing into the problem of water supply of the Indus system to the two countries. The validity of such a claim is yet to be tested. Except at prohibitive costs such a diversion appears to be difficult.*
The river after passing through the Chamba State (India) and Jammu, debouches on to the plains of Punjab at Khairi Bihal in Sialkot district. Here it is joined by the two Tawi rivers, one from the right side and the other from the left, above the Marala Headworks. From Marala to Khanki the general direction of the river is towards southwest. In this section the river receives the water of mountain torrents viz. Doara N., Dulli N., Halsea N., Bhambar—Bhandar N. etc. In rainy season, these runnels being dry very for the rest of the year. In this section of its course the Chenab is split into various channels enclosing islands but this aspect of the river's personality is much more developed below Khanki. Downward from Khanki upto Qadirabad the direction of the river is more westerly. From the latter place upto Chiniot the river makes a more southerly detour. The hills at Chiniot direct the river into a narrower channal. Between Chiniot and Jhang the course of the river is an arc of a circle with a long radius, the curvature being concave towards south. A few miles below Jhang the river is joined on its right bank by the Jhelum at Trimmu from where the Rampur and Haveli canals emanate. Under the name of Chenab the river continues southward upto about Sardarpur and Sarai Sidhu where the Ravi joins it on the left bank. Further southward upto its confluence with the Sutlej at Madwala West of Khairpur Jadid, the combined water of Chenab and Ravi is given the name of Trimab. Only a narrow strip along the
river, two to six miles, is inundated by the river at the time of annual swelling.

The following tables give the monthly river discharges at Trimmu (Above) and Panjnad:

**TRIMMU (Above).**

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The level of the river remains high from April to September while the volume of water decreases during the months of October to March. The lowest volume is in December and the highest in July and August.
OUT OF a total length of 500 miles, the Ravi flows for 130 miles in the mountains from the basin of Kangra to Basoli. Forty-two miles of its course lies in Indian plain. From its confluence with the Beas upto the trijunction of the districts of Shri Hoshiyarpura, Lahore and Sarur (Darat), a distance of about 75 miles, it forms the international boundary between Pakistan and India. It still has 152 miles of its course to traverse in the Punjab (P) upto the junction with the Chenab near Samba. The river feeds the S.B.O.E. and the L.E.B.E. taken off from it at Srinagar (India) and Balakot respectively. Sidhaial canal gates off from the main Ravi near Abdul Naseem. The general direction of the river is from north-east to south-west except in the southern most reach between Jammu and Srinagar where it is almost from east to west. The numerousness of channels and the bewildering of islands which are commonly associated with all the Punjab rivers are found in much less degree in case of the Ravi.

The shifting of the bed is not comparatively restricted within its high outer boundary lying at some distance from the stream. With first soil of the bank and with small volume of water in the river, the surrounding land is less liable to be ravaged by floods. The adjoining country receives lesser quantity of spills on account of a less tortuous course of the river, a narrower valley (only a few miles in width) and a tendency of the river to straighten itself.
as far example above Sirhmali. The main tributary which
the river receives as far south as near Jandaka is
Bag N. Still smaller affluents joining the Javi in Sialkot
district are Selin R. and Jasentar R.

The following tables give the monthly discharges
at Balloki (above) and Abdul Haaka :-

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<td>17447</td>
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<td>14436</td>
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<td>14023</td>
<td>5439</td>
<td>1453</td>
<td>1464</td>
</tr>
<tr>
<td>22690</td>
<td>22272</td>
<td>14818</td>
<td>5446</td>
<td>2350</td>
<td>2194</td>
</tr>
</tbody>
</table>

The volume remains low from November to May being lowest in December at Salloki and in January at Abdul Hakeem. It increases in June and remains so upto October. The maximum amount of water flows in the month of August.

**SUTLEJ.** The Sutlej is one of the long rivers belonging to the Indus system. It takes its rise in the far off Tibetan highlands from the more westerly of the Mansurwar...
Rupar and Harke, its confluence with Beas, the course is almost from east to west with a slight southward sweep near Sidiwan Khas. East or Black Bein and East or White Bein are also received by the Satluj near Harke. From here the river goes south-westward to Sagar Amampur, south-east of Kasur. From the last named place up to a point near Subhmanke headworks it runs along the international boundary. The total length traversed in the plains of Punjab (I) is 121 miles, 73, iles of its stretch forms the boundary and the rest of its course of 240 miles up to its junction with Indus near Ranjau headworks lies in est Pakistan. The volume of water in the river is not in commensurate with its length. In the mountains with the consequent large catchment area. It is because a good deal of the course lies north of the main rainfall axis and thus out of the line of monsoon influence.

The river has been moving southeasterly in its course. Its bed is generally broad and gentle. It is about 11 ft. above the bed, the river feeds the canal from east at Rupar, Herispar, Subhmanke, Israr, and Ranjau.

The following table gives the net daily river discharges at Jala. (above) from 1941 to 1950:
<table>
<thead>
<tr>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>21707</td>
<td>55166</td>
<td>16566</td>
<td>2001</td>
<td>335</td>
<td>588</td>
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<tr>
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<td>65745</td>
<td>3558</td>
<td>612</td>
<td>414</td>
</tr>
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<td>123374</td>
<td>55432</td>
<td>4023</td>
<td>557</td>
<td>379</td>
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<tr>
<td>35128</td>
<td>67206</td>
<td>28710</td>
<td>1928</td>
<td>323</td>
<td>444</td>
</tr>
<tr>
<td>50340</td>
<td>66040</td>
<td>58622</td>
<td>22553</td>
<td>836</td>
<td>713</td>
</tr>
<tr>
<td>47665</td>
<td>89610</td>
<td>17255</td>
<td>2722</td>
<td>360</td>
<td>571</td>
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<tr>
<td>15081</td>
<td>27673</td>
<td>46560</td>
<td>4914</td>
<td>2455</td>
<td>462</td>
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<td></td>
<td></td>
<td></td>
<td>3018</td>
<td>949</td>
<td>821</td>
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<tr>
<td>41564</td>
<td>13765</td>
<td>15878</td>
<td>2524</td>
<td>499</td>
<td>375</td>
</tr>
<tr>
<td>55525</td>
<td>66609</td>
<td>76914</td>
<td>10115</td>
<td>987</td>
<td>839</td>
</tr>
<tr>
<td>40531</td>
<td>74949</td>
<td>42413</td>
<td>10157</td>
<td>791</td>
<td>561</td>
</tr>
</tbody>
</table>
November to June are the slack months. Volume increases from July to October. The amount of water is least in December and highest in August.

It is sometimes desired, for defence purposes, to inundate, if possible, a certain strip of land along a river or a canal so as to be of help in checking the advance of the inimical forces by making the land boggy for mechanised units. In the presence of perennial rivers and a splendid system of canals based on them, such an inundation of land is possible in East Pakistan particularly in the Punjaub and parts of Sind. The canals on rivers from where canals take off can be conveniently utilised for the purpose at the hour of necessity. Water can be stored above a dam to the maximum possible capacity and can be released all of a sudden whenever required. The surplus volume of water above the capacity

* The supply of water in the Satlej registered a steep fall after the opening of Bhakra-Mangal Canals system in India on July 4, 1954. The newly constructed dam at Mangal is 91 ft. high and 1000 ft. long. It is designed to ultimately irrigate 10,000,000 acres of land in Punjaub (I) and Rajasthan and to generate 300,000 kw of electric power. The canal system, when fully developed, will have 877 miles of main canals and branches and about 4,000 miles of distributaries. This diversion of the Satlej water into Bhakra-Mangal Canals will not adversely affect the agricultural prosperity of millions of acres of land in Montgomery, Multan and Bahawalpur as also in Sialkot and Chairpur.
of channels will overflow the banks and will inundate the neighbouring strip of land.

The demarcation of the spill areas controlled by a dam based on the information about the discharge of river water above the dam in different seasons, the nature of the dam, the nature and the extents of the reservoir or lake above the dam, the gradient of the river or canal below the headworks, the possible velocity of the released water at the time of flooding, the height of banks of water courses above the neighbouring plain etc., is a subject for further investigation. Knowing the rate of evaporation, percolation etc. over the affected area, the time to be taken by the land to dry up can also be ascertained and a new release of freshet can be effected at the proper time, if required.

System of Communication.

Primarily designed to fulfill the strategic purpose at the time when the only aim was to protect the outlying regions of united India against a possible Russian aggression, the means of communication of West Pakistan are ill-adapted to our economic and commercial requirements. Under the changed political conditions when the sub-continent has been partitioned into Pakistan and India, two independent sovereign states, the system of communication does not even fulfill the strategic
purpose as defence from the side of Bharat could not be envisaged in pre-partition days. The changed circumstances, therefore, demand a thorough scrutiny of the entire situation anew.

Before embarking upon a revised scheme of development of the means of communication it may be borne in mind that the modern tendency is mostly to give more emphasis on road building programmes. In the age the strategic importance of railways in the border regions has much declined. The railways are more easily susceptible to bombardment from the air and are capable of less speedy repairs. Roads on the other hand can most readily be repaired. The lesser dependence of roads on imported material makes them fittest for our country which has only limited exchange reserves.

RAILWAYS. The length of the railway track in West Pakistan is 5,540 miles. It means that there is 1.4 miles of length per 100 sq. miles of area. The apparently low figure, however, does not portray a correct picture. The uneven distribution of railway track leaving out some regions unserved by railways with the result of increasing the density of track in areas where it is more needed, partially makes good the apparent deficiency of average figures.

F.W.R.P. and Baluchistan are served only to
the barest extent of strategic necessity. The commercially and also strategically important province of Punjab is adequately well served with railways. Bearing in mind the level of economic development of Sind, the province cannot be called to be ill-served. A paucity of railway mileage on the other side of the Bahawalpur and Sind border in Rajputana makes the situation on this side also satisfactory in comparative terms.

The railway routes of West Pakistan mostly follow rivers. The general configuration of land manifests itself in an increased or a decreased number of routes. The narrowing down of the plains in southern Punjab and northern Sind, for example, results in the reduction of the number of railways to the barest minimum, that is, one. The broader expanses of plains on the other hand result in an increased number of routes spreading over a larger area.

The present alignment of railway tracks is defective in so far as there is no through lateral route at a comparatively safer distance from the Indo-Pakistan border. Just as the lateral railway lines were located to the east of the Indus river at a time when the possibility of danger was only from the west, at present the construction of a main railway to the east of the river has become imperative. It is, therefore, advisable
WEST PAKISTAN

RAILWAYS

Scale

MILES

REFERENCE

<table>
<thead>
<tr>
<th>Railways, Broad Gauge</th>
<th>Metro</th>
<th>Other</th>
<th>Proposed Links</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
to construct the Kashmor - Ghazighat link on the western side of the Indus with a bridge over the river at Ghazighat. In order to avoid a change of gauge at Kashmor the Kashmor-Jacobabad section shall have to be converted into a broad gauge one. This will create a direct link of quetta with the railway system of the Punjab and will also provide an alternative route to Karachi from Aultan via Jacobabad. Afterwards a direct link may be created between Jacobabad and Kabib Kot which will bring Aultan nearer to Karachi by avoiding the Jacobabad loop.

As a part of a long range plan, the linking up of the Iranian and Pakistani railway systems seems to be quite advisable. The construction of a railway line linking up the two systems shall be a costly business but it should not be dismissed simply on that account. The presence of only one good port, Karachi, in West Pakistan greatly increases the necessity of having better land links with other countries.

The idea of constructing a railway link between Ferula and India is not a new one. It was first favoured by the British government as far back as July 11, 1912, when Sir Edward Gray said in the House of Commons, "From the Government's point of view, it would be wise to oppose the construction of a railway which in any case, sooner or later, must be built."
On the contrary, in order to safeguard our own interests, England is bound unrealistically to take part in the construction of the Trans-Persian line.*1. The actual construction was deferred on account of the counter Russian and British interests at work in Persia those days each trying to link up Persia with their own system.

The map shows two possible links. Any one of them may be taken up after reviewing the relative merits and considering the relative expenditure involved. But the feasibility of the coastal route Holdich gave as follows:

"There are no physical obstacles interposed to make the way trying for the shunting train of a Khafila, and where could one take the relative way, the more lively locomotive can follow."**

Scarcity of water in the way is the only major problem to be encountered aside from the economic considerations specially when the railway is going to be only a strategic and not a commercial one.

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* 2. Gates of India, p. 3.1.
ROADS. The road position in West Pakistan is not very unsatisfactory. The map shows an uneven distribution of roads in various parts of West Pakistan resulting in a denser distribution in regions where these are more needed. The following table gives the mileage of Pakka roads in various Provinces.*1

<table>
<thead>
<tr>
<th>Province</th>
<th>Superior surface roads</th>
<th>Detailed roads</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punjab</td>
<td>2,694</td>
<td>410</td>
<td>3,104</td>
</tr>
<tr>
<td>Sind</td>
<td>597</td>
<td>160</td>
<td>757</td>
</tr>
<tr>
<td>S.W.F.P.</td>
<td>1,103</td>
<td>120</td>
<td>1,223</td>
</tr>
<tr>
<td>Baluchistan</td>
<td>584</td>
<td>637</td>
<td>1,223</td>
</tr>
</tbody>
</table>

The year to which these figures refer is not given in the source. It, anyhow, gives a good comparative idea about the mileage of roads in different provinces of West Pakistan. It shows that Punjab is well served with good roads.

*1. Report of the Economic Appraisal Committee
Nov. 1952, P. 116, Published by the Ministry of Economic Affairs, Government of Pakistan, Karachi.
The mileage of metalled roads in the Punjab works out to 3.9 for every 100 sq.k. miles as against 3.1 for N.W.F.P., 1.3 for Sind and 0.9 for Baluchistan. Over and above it there has been a good deal of progress in road building in the Punjab during recent years. There were 2,675 miles of metalled road in that province at the time of the partition. By the year 1953, an addition of 1,312 miles was made to the previous figure, thus, bringing the total to 3,987 miles * * * The road map of West Pakistan as also the subsequent map giving the districtwise length of metalled roads, reveals that the eastern districts of Punjab are more privileged in the respect than the western ones. To the west of river Chenab the mileage of metalled roads greatly decreases.

In the plain areas of the Sindh Province the network of roads is not inadequate. The lateral means of communication in the rear of the sur-i-an line are highly satisfactory for the type of terrain in which these are made. 2

The position of roads in Sind is rather unsatisfactory. Excepting the longitudinal roads following the

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*1. The Punjab, A Review of the First Six Years, P. 38, published by the Director Public Relations Officer, Punjab, Lahore.

* 2. For details vide chapter on the Natural Frontier.
general trend of river Indus there is almost a total absence of any improved means of communication in other parts of the province. Even the two arterial roads need improvement.

In the out-of-the-way province of Baluchistan there are very vast areas which are not knit up by metalled roads. Still, areas of strategic importance are satisfactorily well served with good roads. The Quetta region is specially well connected with Punjab and Sind.

In view of the strategic considerations the following improvements are suggested as a part of a short-term programme:

1. Improvement of the Sind section of the Lahore - Karachi road and also of the Punjab section of the road below Multan.

2. Karachi to Quetta road should be made first class throughout its entire length.

3. Pishin - Shinall section of the Multan - Quetta road should be improved.

As a part of a long-range planning the following improvements may be effected:
1. Improvement of the Lahore to D.I. Khan road.

2. Construction of a trunk road between D.I. Khan and Kotri on the Western side of the Indus river. After these changes D.I. Khan will assume a focal position which it, by dint of its geographic location, deserves.

and 3. With the development of the port of Pasni the links between Quetta and that port and between Jacobabad and Pasni via Khuzdar should improve. The last mentioned suggestion will, however, become feasible only after quite a long time when the urgency of an alternative port to Karachi is felt.

Air—Distance Relationship. The revolutionary influences of air navigation are fast changing the geographical values. A new world is in the offing, an ever 'shrinking' world. The shrinkage is brought about in two different ways. Firstly, with the invention of faster and faster moving planes, the time taken in covering a certain distance is constantly being lessened and, in effect, the distance itself is reduced. Secondly, there is a bodily shrinkage of the earth in the sense that the planes are free to follow the shortest distances i.e. the Great Circle routes high up in the air bypassing or ignoring the terrestrial obstacles which make the land and sea routes zig-zag and hence lengthy
The Great Circle flights have given rise to a new set of special relationships which, for example, brought the New World much nearer to Europe than the German geopolititians assessed it to be on the basis of their studies of the world map on Mercator's projection.

The swarming mountains are hurdles which can now be crossed. The height of mountains does not stand in the way of aeroplanes but the breadth over which they spread interferes specially with massed flights in cases when it is too extensive. A large-scale parachute landing across very wide systems of ranges arranged in series one after the other as are found in the north and north-west of W. Pakistan, is still fraught with danger in the face of a powerful opponent but some activity from the air is possible in spite of extensive intervening zones of elevated land.

The flight over plains with usually favourable meteorological conditions is obviously easy. The strip of land within 200 miles from the base is considered to be within most effective bombing range while a distance of about 500 miles falls within an easy range. The ranges are, however, different for different kinds of planes and the ever increasing improvements in the mechanism of planes and their specialisation for different jobs is changing the limits of fields of operation from the bases.
Strategic areas otherwise located in safe corners are immune neither to devastating air attacks nor to landing. The narrowest part of the Indus plain near Kashmir forming the bottleneck of W. Pakistan’s territory is, for example, quite safe from an army onslaught from the east but is a danger spot from the point of view of paratroop landing.

In our country vast dead level plains offer unlimited opportunities for building aerodromes and air strips. Possibilities also exist in the intermont plateaus, and plains in the submontane and mountainous regions. It is therefore an idle business to merely mentioning the existing air strips or other strategic localities of the neighbouring countries as the preparation of new air bases at the time when war is actually on is not at all difficult in extremely favourable terrains. It is, however, most essential to have an aerial view of our vicinal relationships.

Map No. 13 entitled "Karachi in the centre of the old world" shows our relations with the continents

* For details vide Chapter entitled "Indo-Pakistan Frontier (West)".
Map No. 13

KARACHI IN THE CENTRE OF THE OLD WORLD

R.F., 1:250,000,000
Circles around KARACHI give distances in miles.
of Europe, Africa and Australia. It reveals that Karachi is located almost in the geometric centre of the Old World, a fact full of meaning for our peace time relations with the outside world in this Air Age. Such a focal position of the capital of our country imbues in us a 'global' view point and may well become the cause of the glorification of Karachi in times to come. Also, Karachi's nearness to another focal site viz. Iceland on the 'air bridge' between the New and the Old World, may come out to be of equal significance to Karachi. It is nearest to Iceland as compared to any other important port of Asia—the Great Circle distances from Iceland to Karachi being 4,530 miles, to Aden 4,639 miles, to Bombay 5,066 miles, to Calcutta 5,260 miles, to Singapore 5,384 miles, to Canton 5,828 miles, to Shanghai 5,456 miles and to Port Arthur 4,937 miles. (Vide appendix IV). Both these focal viz. Iceland and Karachi are bound to assume a paramount importance in future. This, however, is a long range view of our relationship with the world through Karachi. Even today Karachi is on the criss-cross of important air routes including those which connect East with West.

With reference to the surrounding countries of Iran and Afghanistan, it can be seen that only small outlying portions of their territories come within a radius of 500 miles from Karachi. (Vide Map No. 14). Portions of Indian territory falling within 200-mile radius include
the underdeveloped area of the Rann of Cutch and parts of Kathiawar and Rajputana. The proposed port of Kandla in Cutch falls within 300 miles from Karachi. Jodhpur and Ahmadabad are included in the 400-mile circle. Bikaner, Ajmer, Udaipur and Beroda are at a distance of less than 500 miles while Bombay, one of the biggest urban foci in India and the biggest port on the western coast of that country, is outside the 500 mile circle.

Map No. 15 brings into focus the well known nearness of the many important urban centres of northern and north-western India to the territory of West Pakistan. Amritsar, Jullunder, Ludiana, Jind, Ambala, Patiala and Fazila fall within 200 miles of Lahore. Saharanpur, Meerut and Delhi are less than 300 miles and Agra is just 400 miles. The map also shows a number of other important centres of India falling within 500 miles.

The otherwise unimportant land of Rajputana is capable of harbouring air bases which can be more easily used in bombing targets in southern Punjab, Bahawalpur and Sind. The main danger from such bases is to the narrowest part of the plain of West Pakistan which can be tried to be occupied by paraatroop landing with the resultant disjunction of the road and rail trunk routes between N.W.F.P. and Punjab on the one hand and Sind and Baluchistan on the other. On the U.S.S.R. side none of its urban centres is less than 400 miles from Lahore and
only Khorog and Murghab fall within 500 miles.

Map No. 16 serves the purpose of showing more clearly the vicinal relationship of the north-western territory of W. Pakistan with Afghanistan and U.S.S.R. Although the northern limb of N.W.F.P. is very near to the Russian territory and Sinkiang, none of the mentionable centres of the U.S.S.R. falls within the 200-mile circle from Peshawar. Khorog and Kulyab come within 300 miles. Murghab, Gram, Stalinabad, Kasatagh, Hissar, Tarmas and Chirabad come within 400 miles, while the 500-mile circle embraces Ash, Andijan, Margelan, Kokand, Leninabad, Shar, Samarkand, Huzar, Karshi and Karki.

Kushk Post is just outside 500 miles.

Map No. 17 with Quetta in the centre betrays that on the whole that portion of the W. Pakistan territory is in one of its safest corners. Amritsar and Jodhpur are the only mentionable urban centres of India which are less than 500 miles from Quetta. Out of these Amritsar, being very near to the Indo-Pakistan border, is itself in a risky position and is, therefore, not a fit site for being developed as a big air base.

In Afghanistan Qandahar is less than 200 miles from Quetta. Kabul is much nearer to Peshawar than Quetta. In Iran, Zahidan is the only place falling within 400 miles. Herat in Afghanistan is just outside the 400-mile circle and Kushk is the only centre of U.S.S.R. which
is less than 500 miles from Quetta. It shows that, not only on account of its sheltered orographic site but also because of long distances, Quetta area is much less exposed to air attack from the S.S.S.R. side specially as compared to the northern parts of the S.W.F. Province.
FLYING DISTANCES FROM QUETTA
East Pakistan is a land of rivers, jhils, haors, high humidity, heavy prolonged rainfall and widespread floods. Water, in one form or the other, is the main asset and also the main liability of the region. Owing to its fundamentally different physical and climatic controls humid East Pakistan presents a picture which is radically different from that of arid West Pakistan. Consequent upon these basic natural differences the defence problems of the eastern wing of Pakistan are different as well.

A network of streams and other water-bodies and a limited number of bridges on them determine the nature of warfare in such areas to be an amphibious one. It necessitates a specialised warfare adapted to a landscape dominated by an abundance of water-surfaces and water courses. It does not allow of highly mechanised warfare in the sense in which mechanisation is understood with reference to flat lands with a developed road and rail communication system.

Every river of significance is a barrier in the way of advancing units if it is properly backed by adequate forces. The weakness of rivers, however, lies in the fact that they maximise the frontage. A few successful crossings
at 'soft' points in the line of defence may result in its breach and the defenders are liable to be enveloped. The circuitous course of a river facilitates its crossing as the length increases and the dispositions of the defending army are ill-adjusted to numerous bends. Therefore, the local curves of rivers courses, their fordableness at points, the volume of water in them and their seasonal regimes, all have a great bearing on the conduct of war. On the whole it can be said that, other things being equal, it is easier to defend than to take an offensive in such areas. Hindrance in communication is, however, a debilitating factor for both the invader and the defender. It is, therefore, essential to organise and develop a carefully worked out system of water communication supplemented by other means of communication so as to be of maximum benefit to oneself and of greatest possible disadvantage to the outsiders. Not only this but, in fact, the whole defence policy of the region including the recruitment of men and officers fit for fighting in such terrains is to be adapted to the fundamental environmental features.

**Terrain**

Almost the whole of E-Bengal is a dead level plain excepting the Chittagong Hill Tracts in the extreme south-east of the province. The elevation rises most imperceptibly towards north and north-west in general. Within the /
the slightly higher areas are the old alluvial tracts of Barind and Madhopur Jungles. The undulating tract of Barind with its summit area lying about 60 ft. above the surrounding plains is located in Dinajpur, Rajshahi and Bogra districts. The Madhopur Jungles resembling the Barind is found in the districts of Wymensingh and Dacca and are about 40 ft. higher than the surrounding plains.

The plain may be divided into three sub-regions:

1. The north-western region between Padma and Jamuna. It is generally higher than 100 ft. and contains numerous old river courses. In the presence of tempestuous rivers like the Tista the region is subjected to periodical floods. The land is liable to be water-logged after heavy torrential downpours as the banks of Padma and the Jamuna are generally higher than the Doab. The Barind is a negative area with patches of scrub and remnant forests.

2. Eastern plains to the east of Jamuna and Pad Meghna. The north-eastern part of this lowland, the Meghna-Surma embayment, is the wettest part of East Bengal in rainy season. Madhopur Jungles, which is an interruption in the gentle slope
towards south, and Padma-Jamuna current spilling over an area of 10-15 miles beyond the banks of the rivers in case of floods, help pond back the rain water with the result that vast tracts are so inundated during the rains as to give the look of a sea on which homesteads built on look platforms 15-20 ft. high like small islands. Southward the Gumti which debouches on to look the plains in Comilla district from the Tippera Hill tracts is known for the intensity and frequency of its floods. Along the Padma and the lower Meghna the conditions are more or less similar to those prevailing in the west across the estuary. South-eastward the Karnaphuli river has also been well-known for its floods but with completion of the multipurpose Karnaphuli Project it will be fully tamed.

The south-western plain south of the Padma. The land of the distributaries of the Padma may be further sub-divided into (i) new delta east of the Madhumati and the (ii) old delta west of the Madhumati. The new delta is drained by active rivers which are continually depositing fertile silt. The old delta contains 'dead' deteriorating rivers. Its northern portions contain dead rivers whose off-takes have been silted up thus rendering the channels more or less dry. The inter-fluvial depressions are most ill-drained
and form the breeding grounds of mosquitoes. South of this zone and above Sunderbans conditions are slightly better as the rivers carry some water from the local rains. On the whole more deteriorated condition of rivers is met with as one goes from east to west in the delta making inland water communication more and more difficult westward. The extreme south of the delta is dominated by the tidal forests, the Sunderbans, which spread over a zone 60 to 80 miles deep. Here dense forests and the resultant economic backwardness of the area preclude the construction of the means of communication.

On the whole it can be seen that the variations of terrain are almost non-existent in East Bengal. Whatever differences are found from region to region are due to the differential capacities of different rivers and their action on moulding the face of the land under their respective influences.

**Hydrography**

The numerous rivers spread over the whole area of East Pakistan can conveniently be grouped into three systems viz. (i) the Ganges or Padma system (ii) the Brahmaputra or Jamuna system and (iii) the Meghna system.

In the south-east of East Bengal there are some independent rivers out of which the Karnafuli is most important.
The more important rivers of the north-western plains of East Bengal are: (i) Mahananda, (ii) Attri, (iii) Kalmi-Surma, (iv) Kusiyara etc. The Mahananda is a left bank tributary of the Padma. It is a long river which, descending down from the Himalayan mountains, flows southward. It forms the boundary for some distance in the extreme north-western tip of East Bengal to the north-west of Bhajampur. It, then, flowing into Bihar, State of Bharat enters the State of West Bengal west of Mathurapur. South-east of English Bazar it again forms the common boundary between the two Bengal for a small distance and then covering a distance of about 20 miles in East Bengal territory joins the Padma near Godagari, Distt. Rajshahi. The Mahananda has many long rivers as its affluents. One of them, the Dagar, forms the boundary between Bihar and East Bengal for an approximate distance of 55 miles from south of Baspara (Bihar) to the southeast of Khanta (Bihar). Its remain course until it joins the Mahananda lies in East Bengal. One of its tributaries having its upper course in the Dinajpur district of East Bengal is the Kulik. Other less important tributaries of the Mahananda which, flowing through the north-western tongue of East Bengal territory contain Dinajpur etc. enter West Bengal, are the Jansan and the Purnabhaba.
The Atari River traverses a long distance through East Bengal till it joins the Jamuna on its right bank near Nakalia in Pabna. One of the feeder streams in its upper course is Karatoya which forms the boundary between East Bengal and Bihar for a small distance between south-east of Bhajanpur and north-west of Pachagarh. Most of the affluents of the Atrai have comparatively shorter courses and are rain-fed. The Atrai river itself in its north-south sojourn crosses the border near Samajhia to recross it again near Balurghat. In its southern reaches it is connected with the Ganges through its distributaries like Baranai, Hoja etc. It also received the waters of the Tista through its distributaries draining into Atrai. The Tista, the Jalhaka-Dharla, the Torsa-Raidhak are the other right bank tributaries of the Jamuna. On its left bank in East Pakistan the slope of the land is such that the rivers flow away from it rather than towards it. In this part of the country the Jamuna sends off its branches like the Dhaleswari or Burhi Ganga, the Turag and the Brahmaputra-Banar-Lakhia rivers to feed the Meghna.

The eastern segment of east Pakistan is served with the Meghna with its multifarious affluents. The Meghna is more rain-fed than other big rivers of east Pakistan. Billà are no uncommon features in this wing of Pakistan but
there is a greater preponderance of bigger lakes locally known as Haors in this part of East Pakistan. Many of the rivers here are interconnected with each other through their distributary channels and sub-distributaries. Some of the well known tributaries or the feeder streams of the Meghna are the Megra-Saulai, Someswari, Lubha-Surma etc. from the north. The Kusiyana-Bitiyana, Manu-Dhalesh-Khali, Titas, Gunti etc. join the Meghna from the east and south-east. Sylhetia is a distributary which drains into the Bay. Habari and Fenny are small rivers which also flow independently towards the sea.

Sylhet and the adjoining districts offer a marked difference in their hydrographic conditions between the rainy and the dry seasons. Rainfall is very heavy and results in widespread floods. Owing to the ascending movement of the Monsoon current caused by the steep slopes of the Assam hills, the rainfall is heaviest in East Pakistan and in some parts averages between 200 and 250 inches. Floods on account of very heavy rainfall in the hills to the north, accentuate very much the effect of rainfall.

South of the Padma the land is again littered with innumerable streams which are the distributaries.

*Climatic Regions of E. Pakistan by Dr. Kazi S. Ahmed, Pakistan Geographical Review Vol. XIX No. 2 p. 107.*
EAST BENGAL
A LAND OF RIVERS

BAY OF BENGAL
sub-distributaries etc. of the Ganges and of the combined stream of the Ganges, Jamuna and Meghna. There is a network of these streams in the literal sense of the word. These are so numerous and are so much divided and sub-divided into smaller offshoots that it shall be too much of detail if all of them are traced out. Going from west to east some of the important distributaries met with are Ichmati-Jamuna-Kalinadi, Betna, Kabadak-Sibsa, Bhadra, Fuser, Shahab, Chitra, Nabanganga and Garai-Madhumati-Saleswar.

The preponderance of rivers and adequate supplies of water in many of them have made them one of the most useful means of mobility and arteries of commerce in East Bengal. The inland water communication system is naturally well developed. It is estimated that the length of waterways is about 5000 miles during the rainy season. The total mileage is, however, reduced to about half in the dry season. There is still a great scope for their expansion. Development has also become imperative in view of the fact that before partition Calcutta was the nerve centre of undivided Bengal and most of the important roads and railways converged on it. Now that situation has changed and the face of East Pakistan has been turned from south-west to south-east. It now looks towards
Chittagong and not Calcutta. The main difficulty in joining the southern parts of East Bengal with Chittagong, however, lies in the fact that river boats and steamers are not fit for sea voyages to Chittagong. It involves transhipment from river boats to sea going vessels. In order to surmount this difficulty the East Bengal Government purchased a 350,000-ton flotilla which has been in use since April, 1950.

In order to make the inland waterways more useful and permanent it is also essential to control floods and check the shifting of the course of the rivers. Construction of wharfs and jetties where loading and unloading of cargo can be carried out is also essential. If suitable number of wharfs are constructed on modern line it will mean considerable saving in the expenditure of coal which is one of the problems of East Pakistan where the maintenance of present steamer services depends upon imported coal. There are, however, some natural handicaps in the way of the development of water communications:

(a) In rainy season the volume and velocity of river water increase so much that small boats cannot ply on many rivers. On the other hand in dry season most of the small streams do not contain the required amount of water for navigation. Only big rivers are fit for steamer
service. There are marked fluctuations in the volume of water even in big rivers.

(b) As the slope of land is very gradual and the velocity and depth of water in rivers, in dry season, is not adequate, big steamers get out of commission. The problem is further complicated by the silting up of the rivers. The dredging, training and, in some cases, canalisation of rivers are some of the improvements that are required.

The main rivers and important streams or the main steamer service routes. The Ganges is navigable by steamers at least upto about Rajmahal near Malda beyond the western border of East Bengal. The river as well as the steamer route runs along or very near to the boundary from near Tarapur to near Mirgang. Important trade centres on the section are Godagari, Dumaria, Sarda, and Charghat. In its south-eastward trend the route continues to turn away and away from the western boundary. Between the boundary and a point north west of Kushtia, Raita is the only mentionable trade centre on the river course. The point north-west of Kushtia referred to above marks the bifurcation of the steamer routes. One branch (Garai-Madhumati) goes via Kushtia, Kamarkhali Ghat, Bhatiapara Ghat to near Nazirpur where it is sub-divided into several
branches are serving Kachua, Rampal, Morrelganj, Pirojpur and back to Kachua. Others serve Nasirpur, Kaukhali, Bannar, Barguna etc.

The second route from north-west of Kushtia afforded by the main stream of the Padma turns towards east-south-east and serves Satbaria, Sirkhanpur, Goalundo, Dobar, Bhagyakul, Rajabari, Chandpur, Barisal, Bakarganj, Mirzaganj, Amtali, Baga, Patuakhali and Galachipa. It sends off a branch from south-east of Dobar and west of Bhagyakul to south-east of Nadipur. It is here joined to another branch which emanating from near Rajabari goes via Chikandi, Kulkini to near Baburanj and on to Barisal.

The two main steamer routes (Garai-Nadhumati and Padma routes) described above are joined by a transverse route afforded by Nadipur. Bil between west of Bhagyakul and Kolkata. It is continued south-westward to Khulna, Chalna and further southward. It is joined by a small steamer route coming southward from near Paikgacha. A boat route was very significant in the prepartition days as it connected Calcutta with Khulna district upto river Bhadra east of Paikgacha. After partition it has obviously fallen into comparative unimportance.

The Jamuna is navigable by steamers throughout its course in East Bengal upto a point east of Kurigram
where it enters the province. The important trade centres on it from north to south are Chilmari, Bharat Khali, Gabargaon, Sirajganj and Sibalay. Here at Sibalay the route is joined to the Ganges river route. The Dhaleswari-Burhiganga distributary of the Jamuna upto its confluence with the Meghna is also served with steamer service. The towns and trade centres along this section are Manikganj, Singair, Dacca, Narayanganj and Munshiganj. Northward from Narayanganj the Banar- Lakhya stream affords regular river communication upto a point north-east of Sripur and west of Ulusara.

The Surma-Meghna river system also provides inland waterways for a long distance right upto the north-eastern corner of the province where the Lubha named as Surma further westward enters Sylhet, near Kanairghat. An unbroken steamer route is provided by the river from near the trade centre of Kanairghat to near Madanganj north-east of Munshiganj where the Meghna and the Burhiganga combine. The places served by this steamer route are Golabganj, Sylhet, Chhatal, Sunamganj, Markuli, Ajmiriganj and Shairab Bazar. The Kusiyara is navigable from Fenchuganj to its confluence with the Surma.

The coastal regions of Chittagong and Noakhali and parts of Barisal are well served by a steamer route. It
starts from Morrellganj and going via Kaukhali, Jhalakati, south of Barisal, and skirting along the northern coasts of Dhakin Shahbazpur and southern coast of Hatia islands goes to Chittagong port. Steamer service is continued in the Karnaphuli river up to Chandraghona. Upwards from here up to Rangamati only boats run. Noakhali is connected southward with this route via Charghaizi.

There are some important river ports in East Bengal out of which Narayanganj, Khulna, Barisal, Sirajganj, Chalna and Chandpur are mentionable. Narayanganj has an importance of its own. It is situated some 11 miles south of Dacca on the Lakhya. It is the focal point of the waterways of East Pakistan, is the biggest jute market and has grown into a big industrial town. Chalna anchorage has been established after partition with a view to provide relief to the only port of East Bengal viz., Chittagong. It is situated on Pussur river not far away from Khulna. Sirajganj is situated on the right bank of the Jamuna and is third in importance as a river port of East Pakistan.

At present only two important navigation companies, viz. (i) Indian General Navigation and Railway Company, (ii) River Steamer Navigation Co. are operating. The East Bengal Railway has also put into service a small
Discharge Stations on Karnaphuli and Sangu Rivers

Mop No. 21

Tripura State

Chittagong H.T.

Baraharina

Chota Harina

Kasalong

Chillardak

Barkal

Rangamati

Bay of Bengal

Chittagong District

Karnaphuli R.

Sadorghat

Bandarban
Mean Monthly Discharges

BARA HARINA

CHOTA HARINA

BARKAL

KASALONG

CHILLARDAK
flotilla since 1951. The more frequented routes of the
steamers are as below:

1. Goalundo to Behadurabad is a mail steamer
route. It is a distance of 140 miles and is covered in 12
hours.

2. Goalundo to Narayanganj is a distance of 104
miles. It is covered in 9 hrs.

3. Goalundo to Chandpur, a distance of 95 miles.

4. Narayanganj to Sujanpur is another
service.

5. Khulna to Dolakari. This route is 72 miles long
and steamers run on it on alternate days.

6. Khulna to Nadaripur. The length of this route
is 95 miles.

7. Khulna to Dacca via Barisal is one of the
important steamer routes. It is 238 miles long.

8. Regular service is also maintained between
Barisal and Nadaripur and Ichaganj.

A study of these water courses of East Bengal
brings some redeeming facts into limelight. One of the
important features of the numerous East Bengal rivers is
their predominantly north to south or north-west to south-
est direction. Surma-Naguma being an exception. It can,
therefore, be concluded that, in a broad general sense, these more or less harmonise with the general trend of the boundary between East Bengal and Bihar and East and West Bengals. In other words it can be said that the preponderantly north to south direction of rivers is a definite hindrance in the communication between East Pakistan on the one hand and Bihar and West Bengal on the other. The same is true of the rivers on the other side of the border. The difficulty of bridging rivers has determined the trend of the other means of communication in such a way that these are, in most cases, in consonance with the general direction of rivers. Most of the trade routes, roads as well as railways, follow meridional direction rather than the parallels of latitudes. Steamer or boat routes, which are important in East Bengal, are river courses themselves excepting some Bil routes which run transversely between rivers. The comparatively less important east-west or north-east to south-west roads and railways have been in existence for the dual purpose of, firstly maintaining links between different nuclei of East Bengal lying east and west of each other although these links are never very adequate as secondly connecting them with Calcutta towards which the territory of East Bengal looked before the birth of Pakistan.
Mean Monthly Discharges.

Rangamati

Bandarban

(Jan to Dec)

Cusecs

1,000

5,000

10,000

15,000

20,000

25,000

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35,000

40,000
From the point of view of the defence of the region the river regimes from season to season under the changing conditions of rainfall at different times of the year are to be studied as the increased or decreased amount of water in rivers decreases or increases the easy crossing of them by men.

A complete record of the fluctuations of rivers in volume of water and its velocity are great necessities of the region. It is, however, regretted that almost no record of river discharges, even of important ones, is kept. In a region where so much depends upon the changing behaviour of rivers, such an indifference of the Govt. to them is simply astonishing. The only data which could be obtained from East Bengal is about the Karnafuli and Sangu rivers in Chittagong District and Chittagong Hill Tracts. A study of these rivers may only provide a probe into a small part of a big whole. Generalisations on the basis of such a study will, therefore, not be safe. Bara Haringa, Chota Haringa, Barkal, Kasalong, Chillardak and Rangamati are observation stations on the Karnafuli. Bandarban is on the Sangu river. The discharge data available even for these stations is by no means perfect or complete. Whatever is available is utilised in the making of self explanatory graphs of (1) Mean monthly
Max. and Min. Monthly Discharges.

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**Map No. 24**
Max. and Min. Monthly Discharges.

**Chillardak**

**Rangamati**

**Bandarban**
discharges, (ii) Maximum and minimum monthly discharges and (iii) deviations from the average monthly discharges.

Taking East Bengal as a whole, the amount of rainfall as also the volume of water in rivers is influenced by the seasonal winds. Rainfall is heaviest at the time of Monsoon winds which blow from south-west or south. From November to February the direction of the prevailing winds is from north or north-west. The winds are variable in March and October. June to September are the months of summer Monsoon proper when more than two-thirds of the annual rainfall takes place. June, July and August are the rainiest months when the monthly rainfall varies from 7" to more than 25". The number of rainy days, 15 to 25, is also greatest in these months. October is not without rainfall on account of the in-coming cyclones from the Bay of Bengal. November to February are the dry months. Gheta Barsat or pre-Monsoon rains set in in March or April, spread over May and eventually merge into Monsoon rains commencing from June. The rainfall varies from 1½" to 3" in March, 2" to 9" in April and 6" to 20" in May. In this way rainy season can, on the whole, be said to last for about 8 months from March to October.

The regional variations in the amount of annual rain
received are such that it increases from west to north-east and south-east. "The continental influence drives a wedge from the west between the region of heavy rainfall in the south and that in the north so that East Pakistan could be broadly divided into two halves. (i) a triangular west-central interior with its base in the west having a moderately continental climate and comparatively lower rainfall and (ii) a wet equable "with its arms on the north and south of the triangle. The least amount of annual rainfall in parts of region (i) is 50" and the maximum in parts of region (ii) is well over 100". Region (ii) includes Chittagong district and Hill Tracts, Noakhali, parts of Tippera and Barisal, southern parts of Khulna, Sylhet and parts of Mymensingh, Hanipur and Dinajpur."

It may be noted that the rhythm of rivers in E.Bengal and cannot and does not fully harmonise with the distribution and variations of rainfall in E.Bengal. The important rivers of the region viz. Ganges and Brahmaputra traverse hundreds of miles of distance from their respective sources before entering E.Bengal. Therefore, influenced their rhythms and regimes are considerably by conditions operating in their upper courses.

**SYSTEM OF COMMUNICATION:**

**Roads.**

One of the weakest points of E.Bengal is its
undeveloped system of communications. Leaving aside inland water transport, neither railways nor roads are adequate. Due to the 'physiographic youth' of the region, its hydrological conditions and the insufficiency of building material good metalled roads are few and far between. The following table gives a comparison of metalled roads in Bengal and Punjab:

<table>
<thead>
<tr>
<th>Province</th>
<th>Metalled Roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Bengal</td>
<td>1,622</td>
</tr>
<tr>
<td>Punjab</td>
<td>3,104</td>
</tr>
</tbody>
</table>

The mileage of unmetalled roads in East Bengal is, however, greatest as compared to other provinces of Pakistan:

<table>
<thead>
<tr>
<th>Province</th>
<th>Mileage of unmetalled roads</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Bengal</td>
<td>20,272</td>
</tr>
<tr>
<td>Punjab</td>
<td>12,883</td>
</tr>
<tr>
<td>Sind</td>
<td>11,648</td>
</tr>
<tr>
<td>N.W.F.P.</td>
<td>1,899</td>
</tr>
<tr>
<td>Baluchistan</td>
<td>3,453</td>
</tr>
</tbody>
</table>

The road map of East Bengal shows that metalled roads are not only insufficient in length but in few cases provide through routes between distant corners of the province. There are isolated systems controlling small areas. Such roads connect individual cities with the nearby towns.

Only in the eastern part of the province conditions are...

comparatively better where a few trunk roads, like Dacca-Chittagong Road, exist. In this part of East Bengal through traffic between Sylhet and Chittagong can be obtained if the discontinuation between Sarail and Habibganj is linked up by road. Whatever roads exist in the province are strategically of no avail. This fact is, perhaps, not fully realised.

The progress in the building of roads in East Bengal after the formation of Pakistan has been most inadequate. "The progress in road construction and improvement as well as maintenance has been satisfactory in Punjab and M.W.F.P., but Sind and East Bengal do not appear to have done well, particularly the latter."

The district-wise mileage of metalled roads in the province is given below:

<table>
<thead>
<tr>
<th>Districts</th>
<th>Mileage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dinajpur</td>
<td>28</td>
</tr>
<tr>
<td>Bangpur</td>
<td>98</td>
</tr>
<tr>
<td>Rajshahi</td>
<td>128</td>
</tr>
<tr>
<td>Bogra</td>
<td>33</td>
</tr>
<tr>
<td>Pabna</td>
<td>64</td>
</tr>
<tr>
<td>Backarganj</td>
<td>59</td>
</tr>
<tr>
<td>Khulna</td>
<td>28</td>
</tr>
<tr>
<td>Kuakata</td>
<td>35</td>
</tr>
<tr>
<td>Jessore</td>
<td>128</td>
</tr>
<tr>
<td>Faridpur</td>
<td>Zero</td>
</tr>
<tr>
<td>Sylhet</td>
<td>340</td>
</tr>
<tr>
<td>Dacca</td>
<td>142</td>
</tr>
<tr>
<td>Tripura</td>
<td>193</td>
</tr>
<tr>
<td>Noakhali</td>
<td>98</td>
</tr>
<tr>
<td>Chittagong</td>
<td>150</td>
</tr>
<tr>
<td>Chittagong Hill Tracts</td>
<td>Zero</td>
</tr>
</tbody>
</table>

*Kk. Ibid., p. 116: The mileages have been computed from road map of East Bengal.*
Although the road mileage as a whole is most inadequate and the system ill-conceived from defence point of view it can be seen that comparatively it is least developed in the south-west. In the north-west conditions are only slightly better while in the eastern section of the plains (leaving Chittagong Hill Tracts) the road position is still better particularly in Sylhet which has good road and rail links with Assam.

The districts of Bakarganj and Khulna in the south-west are underdeveloped but at the same time, seeing the communication system on the Indian side, these are least accessible from that country. Within the districts the Sunderban-clad areas of the south are not suitable for locomotion. The district of Jessore in the south-western region has good accessibility from India. It has the longest road mileage in the south-western region but is not well connected with the further east as the means of communication of the contiguous district on the east viz. Faridpur are most underdeveloped. In the interest of providing better links between Jessore and the eastern districts roads mostly with east-west alignment must be constructed in Faridpur district.

The north-western region as a whole is most easily
accessible from India. The districts of Dinajpur, Rajshahi and Pabna are more directly linked with the important means of communication of India. The internal means of communication of all the three districts are very unsatisfactory. The linking up of this part of East Bengal with the eastern region is, therefore, a necessity.

RAILWAYS.

The density of railway net in united Bengal was small, 35576 miles for every 100 sq. miles of area. After partition E.Bengal got a share of 1,442 miles of track out of the total of 3,342 miles. This works out to 2.485 miles of railway for every 100 sq. miles of area.

The division of Bengal into East and West Bengals affected the usefulness of some of the important railway lines adversely as these were originally designed to converge on Calcutta, the nerve centre of the 'one-city province' of undivided India. The Boundary Commission's Award could not avoid the disruption of the railway system. Every continuation of some of the vital lines was not preserved. As a consequence some sections of the Calcutta-Siliguri line lie in East Bengal while the other sections lie in West Bengal. The section of the Purnea-Kalda-Godagarri line lying in East Bengal is too small. Similarly the utility of the transverse lines across the
western boundary of East Bengal is marked.

Different railway lines are separate entities serving a particular area and having no connection with other similarly isolated systems. Broad rivers are a natural barrier in the way of the integration of the railways of the province. These have divided the railway into separate systems more or less detached from each other. The change of gauges has further gone against the integration of railways into one whole. For all intents and purposes the railways of East Bengal can be divided into three sections serving the following areas:

(i) The angle between the Ganges and the Jamuna
(ii) The area south-west of the Padma and (iii) the area east of the Padma-Jamuna.

But for the link that exists in the form of Hardinge Bridge at Paksey (i) and (ii) would have been quite distinct from each other. Area (iii) has absolutely no railway link with either (i) or (ii). Even their trends are independent of each other except in one case when the Sirajganj railway terminus of the (ii) is not far away from Jagannathganj of (iii) and the river is to be crossed by boats. The Meghna has no bridge at Bhairab Bazar but a ferry instead.
One of the important railway lines runs from Calcutta (Bharat) in the south to Siliguri (Bharat) in the north. Its general alignment is north-south and it is not far away from the common boundary of the two Bengals. Crossing the boundary near Darsana it goes upto Poradaha where it sends off a branch south-eastward. This branch crosses the Garai near Kashtia and pursues a south-easterly course upto Kalukhali. Here it again subdivides itself into two branches, one going to Faridpur and the other to Bhatiaparaghant. From Poradaha the main railway line continuing northward reaches Bheramara sending off a small branch to Raita. The main line crosses the Padma over the famous Hardinge bridge at Paksey. Northward from here one branch leads to Sirajganj on the right bank of the Jamuna. Another branch radiates at Abdulpur and continues north-westward to Assura and Nawabganj. The Murshidabad-English Bazar section of the Indian railway system is broken as the section between Godagari and Rohapur lies in East Bengal. From Abdulpur the Calcutta-Siliguri railway line still continues northward and recrosses the East Bengal boundary north of Chilahati.

The railway line comes dangerously near to the
exclave of the West Bengal territory near Panchbibi, Hili and Cherkai. The Abdulpur-Mawab and line is, all along, its length, quite close to the Padma which forms the boundary here. On the whole it may be said that although it is the main artery of commerce and the most important of the quick means of communication in the western parts of East Bengal it is most unfavourably situated from defence point of view on account of its nearness to and rough parallelism with the Indo-Pakistan boundary. In the flat plains of East Bengal there are no intervening physical barriers in between the boundary and this important means of communication and the Atrai river which is to the west of the railway line is not a very big one.

Another railway connection between Calcutta and East Bengal is found in Calcutta-Khulna railway line. It crosses the boundary near Sarsha. It is continued north-eastward to Jessore from where it, following the course of the Bhairab and remaining to its west, reaches Khulna. Khulna is further connected with Bagerhat by a narrow gauge railway line. There is no connection between the Poradaha-Bhatiapara and the Sarsha-Khulna railway systems although the covered distance between them is not much. It is because Madhumati river stands
between them. But for the huge cost of construction of railway bridge on the river, a link between them must have been useful.

On the whole the south-western part of East Bengal is poor in means of communication. It is particularly so because the extreme south-western part of East Bengal is comprised of Sunderbans which is least developed. The railway line starting from west of Dinajpur and going to Kaunia, to the east of Rangpur, is also a continuation of the Indian railway system. The East Bengal section of this railway line serves well as a transverse means of communication joining the Barsana-Chilahati and the Santahar-Lalmanir Hat railway lines at Faryatipur and Kaunia respectively. The Santahar-Lalmanir Hat section of the E.B.Railway serves Bogra, Golabari etc. and going northward enters in Cooch Behar and continues upto Jaintia. Both Santahar-Lalmanir Hat and the Dinajpur Kaunia are metre gauge lines.

The north-eastern, eastern and south-eastern parts of East Bengal are, only comparatively well connected with each other by metre gauge railways. In the north of this area Jamalpur is one of the focal points from where lines radiate to Jagannathganj, Bahadurabad and Mymensingh. From Mymensingh lines radiate north-westward to Jaria.
Jhamjail and Mohanganj. Towards south it has rail connections with Dacca and, by an alternative route meeting with the former at Tungi, with Bhairob Basar and on to Dacca. Bhairob Basar is connected across the Meghna and the Tista with Akhaura. A railway line goes north-eastward (India) from Akhaura to Karimganj and continues into the Assam territory. Kulauro on the line is connected with Sylhet. Southwards from Akhaura it leads to Camilla and Laksham from where again lines radiate to Chandpur and Begamanj and Keakhali. The main line is continued from Laksham to Fenny (where it sends off a branch to Belonia) and to Chittagong, with Chittagong are connected Hazirhat lying to the north and Dohazari situated to the south-east. About the whole length of the railway line from near Karimganj to near Fenny is close to the eastern boundary of East Bengal.

This appraisal of the system of communication of East Bengal makes it quite clear that it is most imperfect and inadequate. It neither serves commercial nor strategic purposes. The commercial purpose is defeated because it was based on a particular functional design of the land of Bengal in which industries were located in the west and agricultural raw material feeding these industries was obtained from the east and in that province
the position of Chittagong was too eccentric. In this way the resultant ill-adjustment of the means of communication to the needs of East Bengal is much worse than in case of West Pakistan whose commercial flow has always been mostly to Karachi. Strategically the system of communication in East Bengal is most unsuitable and requires a thorough re-adjustment.

Air-Distance Relationship. In air-distance relationship East Bengal can be considered as a speck of a territory. The meagreness of its spaces is nowhere felt so much as in this context. Almost the entire territory of East Bengal is enclosed within the circle of 200-mile radius from its almost centrally located capital, Dacca.

Map No. 30 shows that the effective relationship of East Bengal's territory is with Burma, parts of Tibet and Nepal. By India it is strangulated on various sides, on the east, on the north-east, on the north and on the west. The thickly peopled urban centres of eastern U.P., West Bengal and Bihar and Orissa are within easy communication with East Bengal by aeroplanes. The 200-mile circle embraces Calcutta, Howrah, Burdwan, Berhampur, Murshidabad, Cooch Behar, Goalpara and Shillong. The 300-mile circle contains in it Balasore, Jamshedpur, Asansol, Bhagalpur, Panaka (Bhutan), Nowgong, Kohima and Manipur. Similarly Cuttack, Gaya, Patna, Lakhimpur, Sibaspur etc. are within 400-miles
and Bahrampur, Bilaspur, Benares, Gorakhpur, Kathmandu (Nepal), Dibrugarh, Sadir, etc. within 500 miles from Dacca. Visagapatam, an important naval base in India, is considerably away from the 500-mile circle. Lhasa in Tibet and Mandalay and Akyab in Burma are less than 500 miles from Dacca. Rangoon is less than 500 miles from Chittagong.

The map shows that E. Bengal has easy air connec-
tions only with one big country viz. India. Unlike the territory of W. Pakistan which has such connections with the U.S.S.R., China and India. Maps No. 15 and 30 together reveal that almost the entire expanse of the northern plains of India is covered by 500-mile circles, from Lahore in the west and from Dacca in the east. It signifies that just as the two wings of Pakistan are separately susceptible to easy air attacks from India, none of the important urban nuclei of northern India is safe from such attacks from the two wings of Pakistan taken together.

In comparison to the surrounding land of India, East Bengal enjoys the advantage of non-urbanisation. As a whole unurbanisation or very little urbanisation is a great disadvantage as it, in most cases, also manifests unindustrialisation. At the same time a land with little industrialisation and urbanisation offers small number of targets for air attack. It can, therefore, be concluded
that the territory of E. Bengal, although susceptible to easy bombardment by aeroplanes from the surrounding country of India, as also from Burma, is in such a stage of economic development that its bombing by the foreign planes will mostly be uneconomical to the invader. On the other hand a powerful air-force poised for action in E. Bengal can work havoc in Bihar and Orissa, West Bengal and Assam. The famous big city and port of Calcutta is as near from Dacca as Dacca is from Calcutta. In the event of a strong air force in E. Bengal, Calcutta and the Jamshedpur area, 'the veritable beehive' of modern iron and steel and the associated industries in India, are most dangerously situated.
"India may be likened to an island which has but one practicable landing place. The north-west frontier is her one vulnerable spot". *1. More than seventy years have elapsed since this was written. Colossal changes have taken place during this period. The superficial unity of British control in India has disappeared. The land of differences, diversities and diversities of relief and climate, of outlook and activities, *2 has been divided into Pakistan and Bharat. This brought us the legacy of the defence of the North-West Frontier of West Pakistan which is now much more fortified than it, at the time of writing of the above quoted lines, was. The tribal territory which by virtue of its age-long traditions of liberty and independence was a constant terror to the alien rule, has been converted into a region of most cordial relations with the rest of the Muslim state of Pakistan. The heroic sacrifices of the tribal Mujahids in the liberation movement of Kashmir leaves no iota of doubt about the complete change of heart in them. They are at one with the rest of the populace of Pakistan in defending their


motherland. Pakistan Government is equally responsive
to this goodwill gesture and is spending some twelve
crore rupees annually on the development of the tribal
territory.

Certain other relationships have, anyhow, changed
but little. The policy of Afghanistan is still as
untrustworthy and vacillating as it was during the early
phases of British rule in India. The Kingdom of Afghanistan
with a length of about 600 miles from Herat to the Khyber
and a breadth of about 500 miles still serves as a buffer
state*1 between Russia and Pakistan. This buffer character
of the State of Afghanistan is a matter of redeeming
importance to Pakistan which has already been following
a policy of conciliation and even appeasement until now
and seems to be inclined to continue to pursue the same
policy over the coming years as any weakness of the former
country is indirectly Pakistan's own weakness*2. How and
when these sincere efforts of friendliness are going to

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*1. The Anglo-Russian Convention of 1907, fixed the
status of Afghanistan as a buffer state between
Russia and British India (now W. Pakistan).

*2. "A strong and allied Afghanistan would lessen largel
the problem of defence". Vincent, A. Defence of
India, p.36.
bear fruit is yet to be seen.

Russia stands where it was. The 19th century Imperialist Russia has been metamorphosed into the U.S.S.R. with a new vigour, a fresh zeal and a revolutionary and revolutionising spirit. The swing of China towards communism has made the Sino-Russian power a formidable one in Asia. Pakistan has to feel the impact.

The belligerent posture of Pakhtoonistan has raised by Afghanistan is a sad commentary on the Pak-Afghan relations. It means a definite disregard by Afghanistan of an international treaty signed between British India and Amir Abdur Rahman, the ruler of Afghanistan, which determined the common boundary by mutual agreement. The delineation took place along the Durand Line in 1893.

In the early attempts of the technical demarcation of the boundary some small length were left out undemarcated which task was accomplished in the later years again by the mutual agreement of the two governments concerned. In the light of the said agreement which has obviously received its de facto and de jure international recognition and the validity of which has been unequivocally reaffirmed by the British Government, specifically in the context of Pakhtoonistan; s cry, the said cry is not only hollow but a veiled attempt to disrupt the solidarity of Pakistan. It is an encroachment on the territorial integrity of Pakistan. It is characteristically a Nazi tactics directed against the sanctity of international frontiers. Now, the only silver lining around the dark cloud is that Pakistan is too strong for Afghanistan to be cowed down by any unfounded propaganda however vociferous it may be. Afghanistan is bound to realise as day the strength of Pakistan especially when the latter is on the right and the futility of her own claim specially when it is baseless.
of a very powerful neighbour with a dynamic outlook and, perhaps, with a political and military ambition to obtain an outlet towards the warm waters of the Indian Ocean. Pakistan stands in the way of fulfilment of any such ambitions.

Victor Bayley referring to undivided India of which the present territory of Pakistan forms the western periphery writes in his book "Is India impregnable", as follows:

"But one postulate may be made and that is that it would be utterly impossible to prepare any plans for warfare in Asia—and perhaps it would be well to include Africa, Australia, New Zealand and South Sea Islands—without assuming the existence of an impregnable base in India. If India goes, all is lost". Similarly Capt. Michael Fielding, the well known American press and radio commentator, said, "The Indo-Pakistan sub-continent is a very important base, but in my opinion the defence of this sub-continent does not lie in India but in Pakistan. Pakistan acts as a shield against the encroachment of communism into this sub-continent because it controls the various routes of approach, to the sub-continent through Iran, through Hindu Kush passes, through Chinese Sinkiang via Kashmir and through Burma. Because of this Pakistan
plays a vital part in upholding democratic standards in Asia. Pakistan is the first and the last line of defence against the spread of communism in southern Asia. The whole history of Indo-Pakistan proves that the first effective check to an invading army from Central Asia is furnished by the north-western natural frontier of Pakistan. The termination of geographical barriers with the Sutlej in the east of West Pakistan amply demonstrate that it is the last impediment in the way of India-ward bound forces. Pakistan is, therefore, the sentinel of the whole of southern Asia. There is but one relieving feature out of the whole tangle of responsibilities of Pakistan in the position of a sentinel. It is the geographic nature of her north-western frontier. The frontier is formed by the western off-shoots of the Himalayas which are high enough in their northern section and in the southern section the effect of aridity more than compensates the debilitating effect of a decrease in altitudes. It marks the ethnic, geographic, and economic division between Central and Southern Asia and it is a strategic frontier on which a stable government may rest. There are some famous passes in the frontier.

*1. The proposed American military aid to Pakistan under Mutual Security Act proves the strategic importance of the territory of Pakistan.

*2. Fraser Tytler, Afghanistan, 3. 12.
which merit a separate treatment.

**Physical Background of the Frontier.**

The western frontier of West Pakistan is some 1,950 miles long. In the north, the Pak-Afghan boundary begins from the trijunction of the three boundaries of China, Russia and Pakistan about which the report of the Anglo-Russian Pamir Boundary Commission, 1897, gave the following description:

"...a rugged and inaccessible spur of the Sarikol carries the boundary into regions of perpetual ice and snow to its junction with the main range. Here amidst a solitary wilderness 20,000 ft. above sea level, absolutely inaccessible to man and within the ken of no living creatures except the Pamir eagles, three great empires actually meet".

The trijunction, thus, lies in one of the loftiest of mountain formations correctly designated as the 'Roof of the world'. The Wakhan province of Afghanistan prevents direct contact between Russia and Pakistan and is only too narrow and mountainous to be adequately controlled by Afghanistan.

The northern reach of the Durand line begins from the knot of the Sarikol, Mustagh and Hindukush systems
and runs along the latter mountain or its off-shoots.
For the first hundred miles the axis of the Hindukush,
as also the frontier, follows an uneven trend towards the
west to a point (approx. 36° 45' N & 72° 15' E) which is
20,566 ft. high and overlooks Kila Punja (about 37° N and
72° 35' E) on the Ab-i-Punja or Upper Oxus. Here the
distance between Russia and Pakistan is less than 10 miles.
Thence the boundary changes its direction to south-west
and follows a very irregular course for about 300 miles.
Throughout this length the Hindukush forms a water-parting
between the Indus and the Oxus systems. The highest peak,
Sad - Istragh, pinnacles to the sky at an altitude of about
24,170 ft. above sea level. Again, almost throughout this
length the terrain towards Pakistan is higher and has
steeper slopes than towards Afghanistan. The main crest
throws off towards south in Pakistan a splendid formation
of higher and snow capped mountains. They include the
Tirich Mir (25,400), overlooking Chitral and Rakaposhi
(25,500 ft.) between the Hunza and the Gilgit.

Near Arnawai to the north-west of Dir the boundary
crosses the united steam of Bashgul and Chitral rivers.
It then runs along a prominent, though subsidiary, ridge
for some distance till it reaches river Panjkora. Southward
from here the boundary again utilises summits of ranges
fulfilling the conditions of a stable frontier—at
Shingald pass the height is 12,497 ft. and some distance
southward it is 11,351 ft. These ranges carry the boundary
Kumar
to a point near the ancient town of (Afghanistan) from
where it makes an irregular course through the Hohsand
Dara till Landi Khana in Khyber pass is reached.

Again the boundary follows the summit of Koh Jofed
uptil Peiwar Kotal near Parachinar. Here the altitude
increases towards west where the height of a peak, some
distance to the north of Peiwar Kotal, is 15,600 ft.
Southward the Sulaiman cradle the boundary. After cutting
across upper Kurram it coincides with the southern

waterparting of the river for some distance. Thence it
continues across the head of the Toc i to Domnadi (south-
west of Wana) on the Gomal. Further below the Sulaiman
mountains are locally known as the Kaisargah after the
name of the high peak (11,000 ft.) in it. From Domnadi to
Chaman the boundary with zigzag maintains a south-
western trend with a height of 7,000 to 8,000 ft.

Chaman is almost halfway between Quetta and Qambar
which in turn lies on the Soviet route from the U.S.S.R.
From Chaman the boundary runs in an irregular course
towards the south to a point about 40 miles south-west of
Quetta. Westward from here upto Dom-i-Kalik Siah it
crosses the desert of the Helmand, some 30 miles to the

*Some distance to the east of the summit is situated
the peak, Takht-i-Shah (11,295 ft.). In the rear of
the Sulaiman there are some branching lateral valleys
including the Zhob which collectively offer means of
mobility parallel to that range. These valleys are under
Pakistan control and are well guarded from the
dominating site of Fort Sandeman.
south of the river, dwindling in altitude towards the west to a height of 2,000 to 3,000 ft. Koh Malik Siah (6,390 ft) forms the trijunction of the territories of Afghanistan, Iran and Pakistan and is situated in the midst of wilderesses.

From this point southward the common boundary runs between Iran and Pakistan. Firstly it follows the well defined natural features running towards south-east having a height of more than 2,000 ft. Here it touches the Haamid Mashkel Swamp which receives the combined waters of the Mashkel and the Rakshan. Making a bend around Kuhak (Iran) the boundary runs south-west through the wilderness of western Makran at an altitude of less than 1,000 ft, till it reaches the sea coast to the east of the little fishing port of Gwadar between the Dasht and the Chil rivers and about 50 miles to the west of Gwadar.

DEFENCE POSITION OF THE FRONTIER.

"The frontier of today is neither a chance growth nor the outcome of a few individual strokes of policy... It is the still unfinished issue of a steady contest with elements of danger carried on unceasingly throughout the generations and the British took over the Punjab adjacent territories of B.W.P. in 1849. A definite delineation of the boundary

--- Anil Vincent, Defence of India. p.25. ---
was made after some 45 years. In the evolution of the
effective control of the border regions there arose
the controversy of the "backward" and "forward" policies
which was so much flood lit in the past that it hardly
deserves any comment here. It is a matter of the past.
The 'unfinished issue' which the British bayonets could
not possibly settle, came to a natural end on August 14,
1947, when Pakistan came into being. The creation of a
Muslim state with ethnography, ideals and religion common
to the tribal belt and the rest of the country changed
the mien of circumstances in no time. Now there exists
no question of a forward policy and no need of a backward
one. That chapter is now closed for good. Pakistan is
an integral whole ethnographically, ideologically,
economically and politically. With no financial and
military problems which formerly confronted British India,
Durand Line is the best natural frontier of Pakistan.

A firm hold of the present frontier affords great
possibilities of fighting a defensive battle away from
our own soil. It is a great advantage both strategically
and tactically to fight, wherever circumstances permit, a
battle in front of the territory defended rather than upon
it. If, on the other hand, our forces deem it advantageous

for a time to retreat against too unequal a might of,

*1. Defence of India P. 69.
say, Russia (and the intervening difficult terrain of Afghanistan does not favour such gigantic concentrations) jagged
the tribal belt with jumbled corridors of boulders which give cover to guerilla warriors at every step and where one yard in every two provides an ideal position for an ambush.° will be the most difficult of all passages for the invading troops. Hundreds of miles of such vastnesses peopled by excellent guerilla fighters the world has ever known will make the lines of communication of the invaders so dangerously insecure that such an invasion will ever remain a prohibitive enterprise even for the mightiest of armies. Over and above it, the need for fighting in the foot hills may not arise at all. With our hold on places like Quetta, Fort Sardar, Landi, Thul, Wana, Miran Shah, Parachinar, Dardoni, Landi Kotal etc. etc. we are solidly established within the hills, our forces cannot be taken by surprise, and are, thus, in a better position to check the hostile movements at the very outset.

An orographic study of the frontier brings into light the relative importance of its middle portion. The northern portion covering a length of about 400 miles lies in a mountainous country formed of a tangle of huge rocky peaks and small patches of barren plains at great altitudes. Here and there the ranges are interspersed with narrow

*Ibid., p. 69.
valleys. In the southern 900 to 1000 miles the ranges dwindle into insignificance but the effect of aridity comes into play.

The longitudinal section along the boundary is full of many ups and downs demonstrating the mountainous nature of the terrain. Traversing from north to south the height increases from about 32,000 ft. to above 4,000 ft. over a distance of about 125 miles. Then begins a decrease in altitude to only over 2,000 ft. at the western end of the Khyber pass. Then there follows a succession of crests and troughs indicating the flanking heights and the passes respectively. As one proceeds southward every successive crest is lower than the previous one and the same decrease in altitude is witnessed in case of successive troughs. Southward the stretches of comparatively lower altitudes marking the troughs in the diagram are spread over longer distances. These low regions are distinguished from the passes in being of wider expanses.

In the northern portion of the boundary about four hundred miles are safe. The Panir heights and the loftiest parts of the Hindu Kush are impenetrable ramparts. The Malik (15,800 ft.) the Baroghil the Nucksan, the Dorah (14,600 ft.) and the Shinukuka are mentionable passes in
them. The Spinabuka was negotiated by Alexander with his picked cavalry in an effort to make safe the flank of his main forces going down the Khyber. The Niasan and specially the Derah are connected with Faizabad in Afghanistan and open into Chitral whence a route leads to Nowshera by the Malakand pass. Dargai near Malakand is connected with Nowshera by rail. These passes are difficult even for small forces especially in winter season and are impossible for big armies. Other minor passes like the Tigranshun, the Shakhir, the Karasbar, the Janali and the Kahoti are not worth the name.

The southern 900 to 1000 miles or so are safe again. From about 60°E. longitude up to Kohi-Malik-Siah and on to the north of river Dasht on the Makran coast, the scarcity of water, the scorching heat for the greater part of the year, the barrenness and inhospitality of the land, the hot desert of Khuran and its continuation into Iran and the absence of good means of communication, all render this part of the frontier particularly impracticable for the passage of armies save small and ill-equipped ones. Our most cordial relations with Iran make the position all the more satisfactory. Any ingress into Pakistan from this quarter may take place only after traversing long distances.

*Map opposite p.94, India by Holdich.
through Iran. Any outside adventure in this direction will not take Iran and Pakistan by surprise. It will be resisted according to the nature and quality of the attack. The military railway running from Nushki to Zabidam, together with the road, is there to facilitate our movement. No sensible army will, however, steer its way through such a hostile desolation. Any invasion on India (Indo-Pakistan) from the northwest has to choose, as the map will show, between desert and ranges, the mountain ranges bar all else. There is little question in the choice and throughout the succeeding ages every invader has come by the passes.

The middle section stretching from near Bajaur (roughly 35.4 N and 71.5 E) to near Nushki (where 66° E longitude cuts the border, a distance of about 600 miles, is the key stone of the defence of north-west frontier. It is here that the mass of mountain ranges varying in altitude from 6,000 to 11,000 ft. are traversed by important passes like the Khyber, the Kurram, the Tochi, the Gomal, and the Dolan-Khojak. In the past all invasions have come by the passes. "Every now flood tends to fit itself approximately into old banks." Today again the passes form the lines of greatest expectation.

*2. Semple F. C., Influence of Geographic Environment, p. 6
The southern reaches of the frontier are as arid as they have been in the past and they afford as difficult a passage to any modern army as to the innumerable hordes in the days of old. By seeking to utilise the passes the enemy will be forced to fight on a narrow front and at great disadvantage before he can think of deploying towards Pakistan.

THE TRIBAL BELT.

In connection with the defence of the frontier, it is useful to touch upon the nature and the characteristics of the tribal belt which is the immediate hinterland of the frontier.

It may be divided into three sections:

(I) Region to the north of Khyber pass containing the states of Chitral, Dir and Swat.

(II) From the north of Khyber to about D.I.Khan the region is strategically most important having four out of the five important passes. It is here that population is comparatively less sparse and the region is peopled by no less warriors than Utman Khel, Mohmands, Afridis, Orakzais, Turis, Munsus, Waziris etc. In the Khyber area the Afridis together with their southern neighbours Orakzais form one of the biggest compact groups of fighting talents in the tribal territory. It is a happy
coincidence that the frontier section which is physically
a zone of weakness is backed by the strongest of the
demographic elements.

(III) Southward from D.I.Khan the tribal territory
is not so well defined. There is a growing preponderance
of Baluchis in this section.

The habitat of the guardians of our western
frontier is a strip of land varying in width from
practically nothing at Salakat to about two hundred miles
at Sibi. It is a piedmont region of rough and undulating
terrain of large boulders and bare ranges vivisected
by dry valleys occasionally swelling into tumultuous torrents
which subside as quickly as they agitated. Perennial water
exists only in privileged localities becoming progressively
extinct towards the south. Aridity and the consequent
barrenness and extremes of temperature are a keynote to
understand the hostility of the environment. The resultant

*At Deroch the mean maximum and mean minimum temperatures
for January, the coldest month, are 557 D. P. and 314 D. F.
and for July, the hottest month, 96.7° and 73.5° respectively. The annual rainfall at Deroch is 13". Kohat
has a mean annual precipitation of about 18" and in the
south Miran Shah and Been have about 13" and 12" respectively.
On account of low rainfall and outer hills present
almost a bare aspect. In cultivation is confined to valleys
and intermont basins where irrigation from hill torrents
is possible. The annual range of temperature is great. At
Parachinar the mean minimum temperature in each of the
winter months, December to February, is below freezing
point, while the mean maximum temperatures are between 50 D.
F. and 55 D. F. In June and July, the hottest months, the

(Contd. on next page).
landscape is just a monotonous of sterile stones, ridges and ranges. Hidden in these bleaknesses are small patches of greenery and marvellous fertility growing delicious fruits, excellent harvest and rarest flowers where water is available.

The most valued product of the region is that gem of a man otherwise known as a "Pathan" who is the deadliest enemy of the enemies of Islam and the toughest and bravest fighter for the defence of his country. A vast mass of comment is available on the qualities and characteristics of the Pathans in the writings of the Britons who had the opportunities of studying them from close quarters. Most of these writings are the outcome of biased thinking against the only formidable opponents of British rule in the subcontinent. None of the honest writers, however, ever hesitated to express his appreciation of the excellent fighting qualities of the indomitable Pathans. Arthur Vincent wrote:

"One of the most important features of the tribesmen is

(mean maximum is about 37°, etc.) As in any other part of the mountains the local conditions vary with elevation and aspect. Further towards the south, as rainfall decreases and the hills get barer and barer, the monthly means of temperature also get higher. At Port Sunnymen the mean annual rainfall is 10.39". The mean minimum temperature for January is 30.6° while the mean maximum for July is 99°.38. "Climatic regions of west Pakistan PP.,02-24 by Dr. Kazi S. Ahmed."
the depth of their religious feelings... Another most marked tribute of the tribesmen is their inherent independence... They are proud to a degree, self reliant as only their life can make them, hardy beyond measure, and absolutely tireless. Their physical fitness would be incomprehensible if one did not consider the climate and country they live in, which allows no weakling to survive... With them it has been said that there is no old age as we understand it, no period of increasing senility, but only death as soon as they can no longer endure the full hardship of their life... Taken as a whole, the frontier tribes are unquestionably among the hardest men on earth and so much the more redoubtable foes when war is afoot... In older years their strength lay almost entirely in their natural aptitude for guerilla warfare. Without organisation, save a vague leading and much clever inspiration from their headmen, they would conduct a campaign of harassment for months, raiding, sniping, descending in overwhelming force upon points of whose weakness the opposing military commanders themselves were, may be, scarcely aware. Today, however whilst they have lost none of that inherent aptitude their actual military training is steadily bettering. It (the tribal land) is a country of fierce
extremes, of fierce people, and of fierce trial. The country in itself is such as to permit only the survival of the fittest, its people are capable of being redoubtable enemies indeed vis-à-vis their potential foes. The tribal belt contains about 26.4 lakh people. Such a valuable human reserve of sterling qualities and long traditions of confidence in their fighting ability will, together with the regular forces, give the toughest possible resistance to any invader.

RUSSIA AND THE FRONTIER.

The oriental atmosphere of the Southern and Central Asia was disturbed by the approaching influences of the West from two sides. Great Britain had consolidated her position in parts of Madras, Bengal, Orissa and Bihar by 1792, and her influence was constantly pushed forward towards the remaining parts of the sub-continent. Russian movement was directed to the east of Ural Mts. and her advances were consolidated in the Kirghiz Steepees from 1734 to 1863. From here the process of growth of the territory was taking its way towards the Hindukush. The early years of the 19th century witnessed the forward and onward movements of the two Imperialistic powers towards a

common destination — the Hindu Kush Range in Afghanistan.

The onward movement, was perhaps, conditioned by the impelling urge to find some stable, solid and secure frontier providing the best halting ground. It seems probable that at least, the British strategists and politicians were keen to halt on a natural frontier before they outran their strength by a constant forward push and before they came in a direct clash with an equally big power. They, however, thought that the Russian expansionism knew no bounds. The 'Russian Menace', as it was called by the British, was directed against British India itself and as a safe measure Russia was to be kept at a reasonable distance.

The story of Russian interest in the sub-continent of Indo-Pakistan dates back to almost about the beginning of the 19th century or more precisely to the year 1807 when the treaty of Tilsit was signed.

The increasing British influence in the sub-continent coupled in its effect with the gigantic nature of the task of traversing long distances on way to India, however, lulled Russia into inactivity for the time being. The first substantial diplomatic move was taken in 1836, when a Russian mission entered Kabul. The superior position of
Britain in Europe, however, compelled Russia to undo the achievements of the said mission. Again in the sixties of the 19th century Russian eastward expansion took its course to the northward side of Afghanistan and India. The kingdoms of Bokhara and Khiva were annexed to Russia. Another Russian attempt to extend her influence over Afghanistan — a door to the sub-continent — began in 1878, when a Russian envoy was received at Kabul by Sher Ali, the ruler of Afghanistan. In 1861, Mary was ceded to Russia.

In 1884, Russia consented to allow an Anglo-Russian Commission to demarcate the boun aries of Afghanistan. The sphere of influence of Russia had extended up to the very gates of Afghanistan. British-Indian Government was alerted by the Russian moves so much so that the garrisoning of the frontier and the fortification of the lines of great expectancy was quite vehemently pursued. Lateral means of communication joining the strategic points to the cities in the plain were constructed and the two railway lines to Quetta were completed. These defensive preparations had the desired effect of distracting Russian thoughts away from India. "Thereafter, she had perforce to content herself in respect of practical steps with an extension towards the Pacific instead of the Indian Ocean, though there is little doubt but that the inner desires of her chancelleries remained the same".*1

*1 Ibid, P. 30.
From about 1884, until World War I and during that war the Anglo-Russian tension in the east remained at the lowest ebb. Then the Tsarist regime was over-thrown in Russia and the present day communist order was established. The new set up in Russian derives its inspiration from Marxian dialectics in which the opposing forces in nature are constantly at war with each other resulting in making certain old forces go out of being and in giving birth to new forces. Such a view is most dynamic if applied to the human society and to the political pattern of the world society of states. It is a serious blow to the "status quo" doctrine. British Government in India had, therefore, every reason to be scared by U.S.S.R. and her possible expansion towards the prized colony of India. Lenin is quoted to have said in a meeting of the Third International at Moscow in May 1920, "England is our greatest enemy in the world. British Imperialism is a pest which spreads everywhere. Our task is to root out the British Imperialistic spirit in Turkey, in Persia and in Asia generally. In India we must strike them hardest". At a later stage he declared, "The road to London is through Kabul and India". This substantial, factual and plausible threat caused British bosses in India to tremble under it. They could, anyhow, withstand it so long as Soviet Russia
remained comparatively less powerful and was constrained to be contented with the policy of peaceful though revolutionary penetration.

British policy with respect to her possessions in the East underwent a radical change after World War II in the light of the following considerations:

1. Although Britain came out victorious in the war, her world supremacy was gone. Even her economic structure was seriously damaged and dislocated.

2. Russia had stood the test with the result that she was all the more invigorated and once again marched on the way to development and, possibly, growth. The war had proved the hollowness of most of the Geopolitical views but the concept of Mackinder about the Russian Heartland and its pivotal importance was only reaffirmed.

3. America began taking active interest in the affairs of the Old World. Her participation in the war made her realise that she could not remain a distant spectator in the larger interest of peace and her own prosperity and security. The American doctrine of allowing the 'Right of Self Determinatio to the peoples of the world, was in antithesis with the Imperial policies of Britain.
4. Britain with her essentially limited spaces and the resultant limited resources could not successfully retain most of the colonies in the Orient. Urge for freedom among the 'natives' had attained colossal dimensions. The truth of the prophesy of Oswald Spengler that Britain would not be able to retain her colonies was amply proved. A wise nation like the British could, then, easily read the writing on the wall.

5. Situation had become more favourable for the implementation by Russia of her scheme of rooting out British Imperialism from Turkey, Persia and India.

These and other international considerations made Britain reorientate her policy towards her colonies. The sub-continent was granted the right of self determination and was divided into Pakistan and India. Britain is, therefore, out of the picture for all practical purposes except for the loose ties of the Commonwealth. The rivalries of Western Democracies (championed by U.S.A) and Communism have assumed a global character. Any moves or counter moves by Russia or America in any part of Asia are the outcome of the bi-polar strategy for the success of their respective ideologies. At present the centre of
gravity has shifted to the Far East. Turkey, Persia and Pakistan are, however, by dint of their geographical position, within an easy reach of Soviet Russia. Pakistan though less vulnerable (the character of the Russian word frontier of Pakistan makes her so) is more attractive as it opens a way to India and the rest of southern and south-eastern Asia. For the mighty Russian armies the road from Pakistan to India would be free of all obstacles. No power can stop these armies from reaching the remotest corners of the sub-continent if Pakistan ever falls to them. If at all the sweep of Sino-Russian armies can be halted it can be halted at the western border of Pakistan and nowhere else.

THE INTERVENEING TERRITORY.

The intervening territory between Russia and Pakistan in the north-west of the latter country is the buffer state of Afghanistan. Afghanistan has no homogeneity in it either ethnographic, demographic or orographic. "Afghanistan is simply a lute where we may find a great variety of racial and linguistic scraps, with rival and ever hostile interests without real bond of common speech or common descent or even common creed. Whatever else this makes, it does not make a nation scarcely even a true political entity."

* * * Lyde L.W. The Continent of Asia, p.349.
History of Afghanistan is also typically the history of a buffer state with instability as its chief characteristics. Geographically Afghanistan is a synthesis of opposites and extremes. There are high mountains, jagged plateaus, narrow fertile valleys and wide low lying deserts in that country. There are extremes of temperature in winter and summer seasons. Icy wind blowing in winter from the mountain sides are replaced by hot sultry and dust laden winds from the Seistan in summer.

The irregularities of the surface are of special interest to us as they limit the number and usefulness of the means of communication in Afghanistan. Taken as a whole, Afghanistan is a mountainous country with the resultant ruggedness of the surface. Excepting in the north, in Afghan Turkistan, low plains are more or less absent. Kabulistan is comprised of a series of small plain surrounded by precipitous mountains. Again, the desert of the south and west being comparatively less high does not afford much difficulty in movement except for the climatic severities.

The country is traversed by the Hindu Kush range and the subsidiary hills from east to west. The Hindu Kush has
served through the ages as a barrier in partially diverting the flood of emigration to the sub-continent and in breaking the full force of invasion. The height of the ranges decrease from east to west in their 600 miles stretch. The average height is more than 15,000 ft., the snow line being generally at the altitude of 13,000 ft. It makes the array of high peaks rising to more than 18,000 ft. constantly shrouded with snow and ice. Opposite Kabul the height of the main ridge is from 15,000 ft. to 20,000 ft. There are many a pass in the mountains but it is at the most open for six months in the year and that too with difficulty. "It is not easy to describe the Hindu Kush or to give any just idea of its bewildering conformation as it spreads across Afghanistan and dominates the entire country in a series of subsidiary ranges breaking off from the main ridge to north and south." 1

Most of the territory of Afghanistan is unfrequented and inhospitable. The overall mountainous picture of the surface brings into prominence the focal and strategic location of only three important foci viz. Kabul, Herat and Kandahar. The other two comparatively less important foci are Mazar-i-Sharif and Faizabad. The importance of these cities is determined by the fact that
they are served with roads fit for wheeled traffic in a country where there is not an inch of railway track and motorable roads are few.

Kabul may be considered as one of the important doors to Pakistan. It lies in the midst of a series of patches of alluvial plains at a height of 6,000 ft. Kabul guards the routes which converge on the plateau from the passes of the Hindu Kush in the north and from other points of the compass. Being situated in the gorge of the river of the same name it itself enjoys a sheltered site. In the north Kabul is connected with the Oxus or Amu Darya Valley by a road which crosses the passes of the Hindu Kush in a zig-zag course. More difficult routes connect Kabul with Peshawar in the north-east. The great conqueror Timur crossed the Hindu Kush by the Khawak pass on this route.

Road-links exist with Herat to the west and Kahandhar via Ghazni to the south-west. In this way Kabul is connected with places which in turn are connected with Russian territory. Again, from here radiates the road towards east which going via Jalalabad and crossing the famous Khyber pass reaches Peshawar in Pakistan.

Herat enjoys a focal position in the north-west of Afghanistan. From here roads radiate to Her (U.S.S.R.) via
Kushk, Ashkabad (U.S.S.R.) through Iran, Mazar-i-Sharif, Kabul and Kandahar via Parah and Girishk in the south-western desert. The situation of Herat on the 'flanking bastion' of the Hindu Kush which are not higher than 5,000 ft. here, its nearness to Russian territory, and its situation on the main road to Quetta via Kandahar assign it a great strategic importance.

Kandahar is situated at the margin of the Registan. To its south-west is desert and to the north-east are fertile valleys. Its strategic importance lies in its situation on the road to Quetta. As mentioned above it is also connected with Kabul.

The distances between important centres are given below:

1. From Mary to Kushk the distance is 160 miles.
2. From Kushk to Herat it is 60 miles.
3. From Herat to Kandahar, distance is 380 miles.
4. From Kandahar to Chaman (Pakistan), distance is 72 miles.
5. From Kandahar to Kabul, distance is 290 miles.
6. From River Oxus to Kabul via Mazar-i-Sharif the distance is about 300 miles.
7. From Termes (U.S.S.R.) to Landi Khana via the Akrobat pass is 530 miles.
8. From Termes to Landi Khana via Khawk pass it is a distance of 550 miles.
9. From Kabul to Peshawar is 190 miles.

10. From Kabul to Kohat through Kurram pass is 230 miles.

The hostile nature of the intervening spaces of Afghanistan between Russia and Pakistan and the long distances necessitating extended and, more or less, unmanageable lines of communication, are such factors which will make any planner of strategy think twice before embarking upon such an enterprise. However, a plan of invasion may be complemented in a hypothetical manner and it is an interesting fact that in such a vital matter as defence is, the thinking process is mostly hypothetical. It may, therefore, be conjured up that in the event of military operation the most important route of advance from Russia will be from Herat to Kandahar. Thence the armies may turn to Kabul and form a 290 mile long front with important nuclei along it to act as bases for further advances. The flank of the advancing forces can be made secure by controlling approaches to Kabul from Mazar-i-Sharif and Peshawar. The inhospitable and difficult shorter routes between the Oxus and Chitral may be utilised by smaller groups assigned with the task of distracting the attention of the defenders of the frontier from the main points of gravity furnished by the defiles in the mountain wall forming the frontier. The natural gates of Pakistan may
once again be battered with an unprecedented force as this time they will be backed by an unprecedented will to resist.

New weapons are capable of changing the character and the functional value of terrain to a considerable extent but they in turn have limitations of their own. The aero-plane, for example, can ignore a mountain rampart like the one under discussion but a massed flight is definitely handicapped by the height and the irregularity of the orographic features coupled in their effect with the depth of the intervening spaces to be covered. Secondly, paratroop landing is feasible on not too big a scale. Now, a too unequal resistance may succumb to such a landing. On the other hand the same strength of paratroops may fall an easy prey to a stronger opposing force. In fact even the loftiest of mountain walls is no impediment in the way of an overwhelmingly bigger power while at the same time every small hillock is a barrier provided it is backed by a relatively equal strength. It can be visualised that if at all the western frontier of West Pakistan is ever awakened from its slumber of centuries by the thundering echoes of gun shots, it shall be the outcome of the bi-polar (Moscow-Washington) strategy and presumably as a part of another
world war. Under such a circumstance the fight will, in all probability, not be an unequal one and, as such, the nature of the frontier will play a decisive role.
GATEWAYS OF PAKISTAN.

The history of the Indo-Pakistan sub-continent is the history of the western gates of Pakistan. These have successfully served the purpose of breaking the isolation of the sub-continent by remaining 'open' or 'partially open' to the foreign influence through the ages.

Most of the outside influences which came in succession one after the other through the natural gates in the western off-shoots of the Himalayas were eventually absorbed here as 'cultural fertilisers' although they remained dominant in the beginning. While the seclusion of India by the sea was almost complete down to the 17th century, the eastern flank was fortified by the too much luxuriant forest cover and the northern rampart was lofty enough to defy its conquest by human manoeuvrability, it was through these openings in the Hindu Kush, the Sulaimans and the Kirthar that India suffered many a defeat and benefitted from many civilisational influence of the outside.

The contribution of these passes to the volume of immigrants into India has been great in the past. Travellers, nomads and invaders had been negotiating them for centuries. In the course of history these served as
powerful links between Central Asia and the sub-continent and witnessed many battles between the highlanders and the people of the Indus plains. The frequency of wars, however, went on decreasing as time passed by and India learned to strengthen itself under powerful governments. In the days of British rule when India was strong there was no serious attack from outside but the threat was there. It is difficult to prove whether that threat was real or imaginary particularly because even real threats are obviated in the face of commensurate defensive preparations. Even if a threat of invasion is more imaginary than real the defence arrangements warranted by the hypothetical magnitude of the task and commensurate with the available resources of the country are in no way to be put off. In the days of British the Russian bogey had such a complete sway over the military mind that some of the more important passes were fortified even during World War II when Russia was fighting on the side of Britain. Such a precautionary attitude, however, cannot and should be easily dismissed as a baseless fear. There can always be a certain amount of reality in fears which are connected with the independence and existence of states.

It is wrong to conclude that since these mountain routes have not witnessed any colossal wars for long they have lost their significance as such. Nor is it correct to
believe that the defiles have now lost their former pre-eminence in the Air Age when aeroplanes can ignore high mountain ranges. It can be imagined that instead of trying to force the difficult passes the enemy aeroplanes can fly past them and can make concentrations behind them but such moves are possible only when the opponent is too weak. Secondly massed flight over such mountains is difficult. Even radar fails to remain effective in mountainous areas. Aerial bombardment of positions in the serpentine passes incised into high mountains is well 

The physical character of the terrain of the western frontier of West Pakistan allows only a few passes to the foreign forces which will, by seeking to employ the defiles be forced to fight on narrow fronts and hence at great disadvantage before they can think of deploying towards the plains of our country. It is well known that no military strength derived from the physical features themselves. Also, new weapons and new application of old weapons change the functional importance of terrain features. Still even the smallest barrier is a barrier taking other things equal which supposition is essential for a correct understanding of the role of physical aspects of any possible theatre of war. It can, therefore, be understood that the rough nature of the terrain of the
gates of Pakistan reduces the possibility of fighting to its slenderest extent. In other words, the defending units will be at an advantage to conduct war with the greatest economy of force to themselves.

The force of enemy attack is likely to be diminished or broken by employing mainly the element of surprise in these difficult areas. Surprise is achieved as the nature of the ground makes possible the successful concealment of the position, and strength of our troops and impediments. Also, the enemy logistics and supplies are made inadequate. The high mountainous walls on the sides of the passes act as effective support for the flanks of our armies with the result that the frontal area can be strengthened with the greatest possible concentration thus brightening the chances of a powerful defensive-offensive move. In these areas, therefore, victory does not depend merely on comparative strength of the contending forces but also on the extent of grip of the forces over the advantageous land features and their adaptation to the physical environment.

There are innumerable passes through the mountains, but, apart from some, these are too narrow and difficult to be used for large scale operations. Such passes can only be utilised for infiltration purposes but at the same time no large scale infiltration can go on undetected. Also
small passes can be utilised for distracting moves. Such passes can, however, more easily be protected. The more important passes are (i) the Khyber, (ii) Kurram, (iii) the Tochi, (iv) the Gomal and (v) the Khojak-Bolan. Makran route became known in history with reference to Alexander's invasion of India. It is otherwise unimportant.

KHYBER PASS:

Khyber pass has been very important in the past. It is still important in view of the following facts:

1) It is a more direct route between Afghanistan and the sub-continent of Indo-Pakistan — the distance between Torkham and Jalarud being only about 24½ miles.

2) It is adequately broad to allow well equipped forces to move easily.

3) It opens into a fertile region which happens to be at the head of the Indo-Gangetic plain.

The curves of the Khyber road instead of conveying an idea of the meagerness of space actually betray the width of the pass. By following these meanders a more uneven course is avoided. The width of the pass reminds the author of the idiosyncracy of a fellow traveller otherwise very intelligent. Going up the pass by a specially arranged bus he remarked "I am tired of looking constantly at the bleak mountains. Kindly let me know when the actual pass begins". And this happened at the
tail and of the journey to Landi Khana from Peshawar. It was undoubtedly because in the popular mind the word 'pass' invariably conveys the idea of a gorge or a very narrow opening through the mountains while the Khyber pass is far from being so. Another false impression which is commonly formed is that the route is a circuitous one. Facts however belie it. The Kabul valley route is about 44½ miles from Peshawar to a point on the Durand Line while the Peshawar-Korkham road is only about 34 miles. It, therefore, remains a fact that for such hilly region Khyber route is a direct one.

The opening of the Khyber pass into a thriving country at Peshawar made it the most frequently negotiated of all the gates of Indo-Pakistan in the past. For armies as well as the immigrant hordes from high Asia, the riches of the sub-continent lay at the very foot of the Khyber hills. In other cases e.g. the Khojak-Bolan pass, things were entirely different on account of the general hostility of the geographic environment and the unproductivity of the land at the end of the mountainous journey in Kachi plains. Also in the past a point like Sibi was not so well connected with the key cities like Lahore and Delhi as Peshawar was. This fact has, however, ceased to remain a deterministic one now when the means of communication of the plains of the sub-continent have much
increased and improved.

About 9½ miles west of Peshawar at Jamrud (approximately 34° 4' N and 71° 22½ E) at a height of about 1,550 ft. above sea level the Khyber pass may be said to begin. The Durand Line is touched at a point about 34° 7½ N latitude and 71° 6½ E longitude near Torkham Post at a height of about 2300 ft. The pass can be said to be continued up to Leo Dakka, a distance of 7 miles in Afghan territory. Westward from here it begins to broaden out into the Afghan Plateau. Heights of over 3,300 ft. are reached in the way as the one near Sheikhwal about 2½ miles south east of Landi Kotal. Landi Kotal itself is at a height of roughly 3,500 ft. It is obvious that such altitudes are not very high taking into consideration the general conspicuousness of the western offshoots of the Himalayas along which the Durand Line runs. It can, therefore, be said with ample justification that the territories of Afghanistan and Pakistan come into touch with each other more effectively here than anywhere else.

The mountain rampart in the vicinity of the pass is quite high. Northward the Shinwari the Kau Shilman, the Leo Shilma, and the Ashmand Barra (Afghanistan) tracts taken together are on an average about 4,000 ft. high. Mullagori mountains between the Khyber river and the pass again have an average altitude of about 4,000 ft.
rising to more than 6,000 ft. in their highest parts. The highest peaks in Nallagari are Lakka Sar (6,762 ft.), Shopla Sar (6,684 ft.) etc. and Ter Sar (5,260 ft.), Ter Trappar (5,281 ft.) etc. in Kam Shilman region. The highest peaks in the Mohmand Darra hardly rise above 3,000 ft. Southward between the pass and the Bara river the Ilach Ghar, the Kuki Khel, the Zakha Khel, and the Malik Din Khel, tracts are generally more than 5,000 ft. high and form a part of Kohi Sofaid. Some of the peaks are Toro Sar (6,916 ft.) Erak Sar (6,503 ft.), Zir Sar (6,647 ft.) etc. in the Ilach Ghar range Loa Shamsa Sar (5,190 ft.) and Gancha Sar (5,738 ft.) are some heightened points on the other side of the border. Along the Durand line the height increases from 1,875 ft. about Ghilzo Mana near Kabul river in the north to 7,274 ft. near Parir Peri Sar towards south-west.

The pass proper utilises the dry valleys of the (1) Landi Khama Khwar receiving the Giani Khwar, Uch Tangi etc. as small torrent affluents and (ii) the Khyber river joined by torrents like Ash Khel Khwar, Nari Sewe Khel, Shopola Khel etc. The Landi Khama Khwar flows north-westward and the Khyber flows towards south-east. The area around Landi Kotal forms the local water divide between the valleys sloping towards on the one hand and towards Pakistan on the other.
Along the Khyber route starting from Uch Post near Tor Khan the slopes are steeper on the southern side than on the northern for a distance of about one mile. The escarpment towards south is nearer to the Khyber road. From near Landi Khana up to Qafila Sari, a distance of more than 4 miles the valley is comparatively narrower. Landi Kotal, of which Qafila Sarai is an outskirt, is a village of considerable importance harbouring the biggest human settlement in the pass. It has alternative connection with the plains of Poonch war through more difficult and tortuous roads. The plain-like extension of the area containing Landi Kotal is of an ex-bow shape. The face is however besmeared with small hills inside the small circular plain.

South east of Landi Kotal right up to Zintera railway station or even up to Sher Maddi Post, a distance of about 6 miles, the pass is much broader than along its other reaches. The Nari Sowe Khwar, the Bori Khwar the Daud Khwar and the Zeraikagga Khwar, from the south and the Shopla and Lakka Khwar etc. from the north make the ribbon shaped valley plain all the more broader at their points of confluence with the Khyber Khwar. On an average the width of this section of the pass is about 900 ft. with, of course, variations in between. Southeast of Sher Maddi Post for a distance of 5 miles the course narrows down.
Leaving aside a very small broader stretch near Shagi Fort, the pass again becomes narrow up to Bagiari piquet where the pass actually ends as from here up to Jamrud, a distance of about 3 miles, the heights of the foot hills dwindle into insignificance. The Khyber Khwara takes a more southerly course from Ali Masjid (19 miles west of Peshawar) to cross the road again past Jamrud.

The pass is served with the Peshawar Landi Khana section of the N.W.Railway built in 1925*, which goes right up to the Pak-Afghan border. It is purely a strategic railway and is of great importance as a quick means of mobility in the border region. The course of the railway line is more zig-zag than that of the Khyber road. The beak-like layout of the line jetting northward to Tora Tigga station and southward to Kafir Kot near Landi Khana is a convincing proof of the difficulty of construction of railway line in these hilly areas. Sharp curves like these impair very much the speed of trains yet the same could not be avoided. There are at the same time numerous small tunnels through which the train has to pass. The reconstruction and the repair of any section of the line in case of some damage done to it is in fact quite difficult. Military movement can, therefore, be better conducted by the cheap road than the costly railway line. It still has its own utility of conveying heavy war impediments to the

*Barton, W. India's North-West Frontier p.159.
border in case of a flare up. Generally the railway line does not depart much from the road.

Landi Kotal is connected with Peshawar by an alternative road. It is mere circuitous, not properly is metalled but still motorable. It runs north-eastward from Landi Kotal and then northward to the valley of Loe Khwar which it afterwards follows through the Mullahori Hills forming a route full of curves. Near Kafir Dheri the level of the road is only about 1100 ft. and as such it is practically out of the hills here. From here it proceeds on to Peshawar along the Habul river canal. Its total length from Landi Kotal to Peshawar is 45 miles. From Landi Kotal an unmetalled circular road goes northward and completing the circle via Inzari Kandao (4580 ft.) it enters the Siani Khwar Valley and joins the Khyber railway at Toru Tagga railway station not far from Landi Khana.

**KURRAM PASS.**

All the distance from Para Chinar (5052 ft.) and Thal (2,953 ft.) to Kohat (1,623 ft.) which is served with the transverse strategic road and which passes through a hilly country, is not pass in itself but only gives access to some passes. It is because of this that the popularly known Kurram Pass is said to be controlled at Kohat. It is also served by a metre gauge extension of the N.W.R.
(Kohat-Thal Rly). The road and the railway line utilise the valleys of the Kohat Toi and the Khak Algad Nadi. Their common water parting is situated near Kahi. Kohat Toi follows eastward to Kohat and is hemmed in by the Sipah Ghar to the north and the Lower Miranzai ranges to the south. Khak Algad flows westward.

Upward from Thal the road follows the valley of the Kurram upto north-west of Amalkot from where it proceeds on-ward to Parachinar. Parachinar itself is situated at the eastern end of a small intermittent plateau. The line of weakness in the ranges that the Kohat-Parachinar road (a distance of about 108 miles) follows, hardly comes under the strict definition of pass being comparatively much broader than the usual width. The position of Thal (2353 ft.) is, however, of nodular importance as roads from Miranshah and Parachinar sides meet here. The section of the road from Parachinar to Thal is of high strategic value. It is because the section of the international boundary between Khyber Pass and Feiwar Kotal formed by the Koh Shinwari (Koh Sofed) is high enough while a substantial fall in height occurs southward from Feiwar Kotal up to about the west of Thal. This section of the boundary is adequately looked after.
by the Parachinar-Thal road. In this section various transverse routes cross the boundary from Afghanistan into Pakistan, some of which utilise passes near to or across the border. The focal point of these routes is Gardes in Afghanistan which in turn is connected with Kabul by a second class road. Going from south to north the Thal-Parachinar road is joined by two routes from across the border between Manduri and Alizai. At Aravali a route from Gardes via Natun and Lakha Rigga post joins it.

Another route from Gardes via Mishral crosses the border at Kharlachi. The route from Parachinar north-westward to Kabul is a more difficult one. The pass occurs where the road just crosses the border. The distance of Gardes from the border by the various routes is from 80 to slightly over 100 miles. Kabul is about 80 miles from Parachinar via Peiwar Kotal. The Peiwar Kotal pass was negotiated by the armies of Lord Roberts during the Indo-Afghan war of 1878. Peiwar is, however, snow-bound in winter.

TOCHI PASS.

The hilly road lying west of Bannu and continuing up to Datta Khel, a distance of about 65 miles, mostly utilises the valley of the Tochi even if it does not
necessarily come close to the bed itself. Eastward the river, only a dry Mulla, is known as Margha. It utilises a narrow valley crossing the international boundary in Darweshi Khel and stretches from east of Margha in Afghanistan to Ghazni, north-east of Hatta Khel. This portion of its course can properly be called the Tochi pass.

Routes from Gahzan and Ghazni converge on Shahrizai which through various routes is connected with Margha (Afghanistan) and some points on the border. Eastward from Margha the track follows the bed of the river of the same name. The stream is bordered on the collectively higher surrounding of Hatta Khel with an elevation of over 6,000 ft. The valley of the river is flanked from west to east obviously because steeper to its nature. In this region there it is surrounded by higher hills. The pass ranges a narrow one for a distance of 19 miles upon about Margha Hill. North-eastward from here it slightly broadens. The Margha M. is here joined by numerous nullah torrents which together with the main rivulet remain dry for most of the year. The surrounding hills also present a dry visual look with little or no traces of agriculture. The dry atmosphere is discouraging to human settlements which are as a rule of small size and are restricted to the valley itself. As one goes further eastward the scenery becomes
only slightly less dry and the volume of water in the
Tochi river also increases. On the whole the entire length
of the track (35 miles) from Margha to Ghazalmai presents
many topographic obstacles and is unfit for the movement
of large mechanised forces. The presence of numerous watch
towers in the pass does not necessarily indicate any
high degree of danger from outside. It simply goes to
show the vigilant attitude of the local inhabitants
against the danger of inter-tribal strifes and their
militant habits and character which are the outcome of
the severe environmental control. These towers may also be
explained on the basis of past history which is full of
numerous warfaras and incursions.

An alternative route runs south-eastward from Datta
Khel to Cardai where it is joined by the metalled road
known as the Central Waziristan Road which goes southward
to Reamak. North eastward it follows Khaisora river upto
about Asad Khel where it turns northward and utilising
mostly narrow and difficult gorges crosses the Tochi
river near a small old fortress called Tal. A few miles
northward from here it joins the Datta Khel-Bannu road.

From Asad Khel also radiates a track which following
the bed of the Khaisora river enters the undulating plains
west of Jani Khel Post. Jani Khel Post is southwest of
Bannu and is connected with the latter city by an unmetalled road via Nurar. This road is not very useful in rainy season as it crosses the Tochi and the Baran Algal or Lohra Nadi. Bannu is very well connected with Kalabagh by the Trans-Indus Kalabagh-Bannu railway and the north-west frontier Road.

**GOMAL PASS.**

Westward from Tank there are a couple of passes broad and walled by comparatively lower mountains. A road south-westward from Tank leads to Kot Murtaza via Dabra. Westward from Kot Murtaza the road reaches a point east of Spinkal Post whence onward it degenerates into a mere track following the valley of the Gomal for some distance and then, leaving the valley, trends southwestward. From Khajuri Kach to Domandi on the border the Gomal pass is not served with any road excepting the track provided by the erosive action of the river itself. At Domandi the Gomal route turns northward following the river valley till it reaches Zor Domandi which in turn is connected with Ghazni etc. Southwest of Domandi the Afghan boundary is formed by a tributary river of Kundar for some distance where it receives some tracks from Sulaiman Khel in Afghanistan. At Isa Narai a second class road begins and is continued to Ghazni sending off branches to Gardes. It
also send off branches southwestward to Gandhar. The pass lies almost midway between Kabul and Gandhar and is extensively used by caravans.

The route formed by the Gomal river is an easier one firstly because the peaks are not snow-bound even in winter and secondly because water is available in the way. Another facility is provided by the fact that the surrounding heights are not great. Near to Domandi the height of the valley above sea level is 3512 ft. and the relative height of the bank above the bed is only more than 20 ft. South of Toi Khula post the height is 2875 ft. West of Nili Kach it is 1969 ft. while eastward from it the height dwindles to 1476 ft. Dabra is less than 984 ft. and Tank is still less. The height of crests cradling the river course is in the neighbourhood of 4000 ft.

An alternative course from Tank to Afghanistan takes a detour from west of Dabra and following a northerly course upto Manzai turns north-westward, westward and again north-westwards till it reaches Wana. Wana is connected with Staghai Narai pass through Khand Narai Pass across the border by a track, Staghai Narai leading to Zor Domandi in the upper Gomal Valley. The route from Wana via Jindai to Khand Narai pass on the border may be called Wana Toi pass as it: for some distance, utilises the line
of weakness formed by that tributary of the Gomal.

**KHOJAK-BOLAN PASS.**

The Khojak-Bolun pass is a line of weakness in the Khwaja Amran and Central Brahui mountains. It connects Sibi with Chaman via Quetta, Chaman is further connected with Qandhar in Afghanistan. The whole length is divisible into three sections viz. (i) Bolan pass (ii) the middle section between Darwaza west of Kolpur and a point north of Qila Abdullah and (iii) the Khojak pass across the Khwaja Amran Range.

The Bolan pass lies between latitudes 29° 24' and 30° 10' N and East longitudes 67° 4' and 67° 44'. The direction of the pass is roughly from south-east to north-west. It extends from Rindli in the south to Khunri Para near Darwaza in the north, a distance of about 60 miles. The tract of land comprising the Bolan Pass is of varying width and altitude. Between Kolpur and Dozan it actually forms into a narrow gorge. The broadest part is formed by the Laleji plain south of Mach. Here its maximum width is about 6 miles. The general terrain is rough and hilly. The hills, though they belong to the single system of the Central Brahui range, bear different names in different
localities. Many of the ranges are formed into dome-shaped masses. Just as the Khyber pass does not correspond with the Kabul valley, similarly the Bolan pass is not coincident with the Bolan river.

The middle section of the Khajak-Bolan route lies in the Bhalala Dasht, the Quetta plain and the upper reaches of the Pishin Lora Valley. The Pishin Lora together with its numerous small affluents provides the widest stretch of comparatively uneven topography.

The Khajak tunnel occurs west of Shelabagh (approx. 30° 50' W and 66° 32' E) in the Khwaja Amran Hills which are the southwestern branch of the Toba Kakar range. The tunnel is about 2 miles and 3½ furlongs in length and is at a height of 6,393 ft. above sea level.

Heat and dryness are the characteristic features of the area embracing the pass. It is very much off the line of the wet monsoons. The effect of aridity is much accentuated by the presence of chalk and limestone which is so absorbent of water that the area presents a picture of desolate desert. "It seems to the traveller on entering the Bolan as if the scenery was devoid of everything save stones, rocks and sand-coloured hills. The mountains towering into the distance, rise, hard, relentless and grey
against the sky. Brown, yellow and grey unmodified by verdure are the predominant colours of the rocks, of the dry water courses and of the general landscape. The only sign of life are the camels, goats and sheep travelling to and from the plains."

The high temperatures of the area and the scorching dry heat become all the more accentuated in Kachi plain at the entrance to the pass at its nearer end. It experiences highest minimum temperatures in Pakistan signifying that nights are hottest here.

Sudden and irresistible floods are not uncommon in the region even though the annual rainfall hardly exceeds 4". It was one of these devastating floods which utterly destroyed the old Bolan railway in the year 1890, before the present Kushkai-Bolan line was constructed. Thomas Holdico gives a convincing account of the phenomenon in "The Indian Borderland which reads, "Then the railway was constructed the Baluchi greyhounds wagged their heads and said, "wait till the flood comes; you haven't seen one yet". we waited a long time and then the flood did come and it not only buried a large section of the line so deep that I doubt if the metals have ever yet been recovered, but it also washed away a Ziarat or two belonging to the same

*Baluchistan Distt Gazetteer Vol. IV p. 7.*
Baluch advisers, a fact which seems to indicate that they had hardly appreciated the capacity of a Bolan flood themselves. Anyhow, such terrific local floods are very short lived.

Thus aridity, high temperature and occasional thus devastating floods are the chief environmental features of the twin Khojak-Bolan Pass. On account of its great strategic position it will be important to have a more detailed study of this pass.

Starting from Afghanistan the road from Qandhar to Chaman crosses the Pak-Afghan boundary about 2 miles north of Chaman and only about 6 furlongs from the N.W. Railway terminal. The Afghanistan section of the road is unmetalled. From Chaman the distance of Qandhar is about 65 miles which is easily covered on foot in three halts at Dabrai, Mel and Takhtapul. The area on the Afghanistan side of the border is very undeveloped and there are unmetalled roads. The Chaman area is situated beyond the crest of mountains and is generally sloping towards the west or north-west. The fall of level in the neighbourhood of the international boundary is approximate 80 ft. in a mile. The height of Chaman above sea-level is 4,311 ft. The region is traversed by innumerable torrent flowing more or less in a southeast to northwest direction.
These torrents are of no significance except during the rains short-lived and scanty as they are. For the rest of the year these are absolutely dry. There are two relatively high spots on the Afghanistan side viz. for Baldak and Mian Baldak, 4,315 ft. and 4,292 ft. respectively. The whole area presents a picture of desolation where it is difficult to find a blade of grass growing owing to the stony nature of the country. Except for the main Chaman-Quetta road and railway, Chaman is not well connected with other parts by roads. The Chaman-Quetta road and railway line run in a south easterly direction mostly remaining close to each other. These form the only important arteries of communication. There are, however, innumerable footpaths afforded by dry river valleys and other physical lines of weakness. The railway line naturally follows a more circuitous route when Khwaja Ameran mountains are reached. These mountains have an average elevation of 8,000 ft. above sea level. The railway line passes through short and long tunnels at more than one place but the Khoja tunnel is the longest. After the tunnel is crossed the railway and the road utilise the valley of Mandrak Shela torrent till Qila Abdullah is reached where the landscape changes its mien locally in having less steep slopes than met with previously. From near Qila Abdullah to about 3½
miles east of Saranan railway station the area is a high plateau buttressed by mountains on all sides. The Pishin Lora with its various small tributaries flows through it. Here there is ample space to allow the road and the railway line to follow their own independent courses quite apart from each other but a conveniently crossable point at the river again brings them together near Saiyid Hamid. As expected of plateau regions the slope is gradual in a comparative sense. The general slope is towards the south and southwest. The height decreases from about 5,200 ft. near Qila Abdullah to between 4,800 ft. and 4,750 ft. at the lowest part till it again rises gradually towards the east to about 4,850 ft. at Saranan. Inspite of the less rough nature of the terrain it is almost devoid of a really important human settlement. The explanation lies in the all pervading aridity of the area so much so that names like Gulistan seem to be misnomers except, of course, in the restricted sense that water is not altogether absent, or in the contrast that they offer from the surrounding area.

From the point to the east of Saranan mentioned above upto Besstan and still south-westward the route utilises a gap in the Ajran Ghar or Manhelakh range. Pishim is slightly off the main route. At a height/about
5,200 ft. Bostan seems to be more favorably located as it is connected with Pishin, Khana, Hindubagh, Harmal, Quetta etc. It is near Bostan that Bolan and Harmal routes of the S.W. Railway meet. Still it is a small township. From here going southward and skirting around the Usheia spur the route turns southwardward to Quetta which stands out boldly as the most important city on the Khoja-Bolan pass. It enjoys a unique and a fully sheltered but unisolated position in the midst of mountains. Having a height of about 5,550 ft. above sea level it is surrounded on all sides by much higher mountains. To its north is Taka mountain: (11,336 ft) to the east is Zarakh: (11,725 ft) to the south-east Murdar, (10,449 ft.) to the south-west Chilta: (10,483 ft) and to the west is Mashelakh mountains (more than 6,000 ft.). On account of the fact that Quetta, is on the one hand sheltered from the outside and on the other hand enjoys a few but reliable connections with the plains it of W.Pakistan, has the potentialities of being the Headquarters of our defence forces in case of a threat from the east. Quetta is about 78 miles from Chaman and about 600 miles from the Russian border. Its distance from Sibi is 104 miles. The rail (via Spizzard) and road connections with Khaider are also noteworthy.

Downward from Quetta, the Bolan road as well as the
railway line utilise the not too narrow valley of Shariab (Fishin) Lora between Chiltan mountains on the west and Murdar Ghar mountains on the east for a distance of about 16-17 miles. The valley is dotted with green patches here and there and, thus, helps break the previous monotony of sterility and bleakness. The chequered greenery is the gift of the river itself and the numerous cresszes well distributed over the valley. The height here rises steadily towards the south from about 5,500 ft. to about 5,850 ft. The means of communication cling mostly to the eastern side of the valley as the western part is occupied by the Quetta Lora. The Bolan road receives the Hastung road coming from south-west at Sariab Levy Post. The latter road continues to Kalat. At Spezand the Bolan railway is connected with another strategic railway line which goes west via Bushki to Bahadan as mentioned above. The main means of mobility viz. the Bolan railway and road continue through Bhalla Dasht to Darwaza.

Darwaza makes the beginning of Bolan Pass. The very name Darwaza (meaning gateway) is significant as it forms a narrow opening between the Darkin mountains to the south and the Bahur to the north. The height of the gorge is slightly more than 5,800 ft. above sea level. The gorge is further narrowed owing to the presence of an
otherwise insignificant hillock in it near Khuni Parao. The journey from Darwaza to Kolpur, a small distance, is an easy one as the slope is gradual. At Kolpur and onward the route is narrowed down to what may really be called a pass according to popular imagination. Here it utilises the narrow valleys of the Mohammed Gwasi Nadi, Sangani Nadi etc. which combine to form Bolan river. The pass pierces its way through the maze of Brahui mountains on to Dozan and even Mach. As expected, the reach of the pass contains numerous towers built for the purpose of commanding greater visibility. Again, the height is decreasing from more than 5,800 ft. at Kolpur to less than 3,400 ft. at Mach. The nearby Khurasan hills are not very high (a little more than 6000 ft. on either side). The road and the railway line diverge from each other to meet again only about 5 miles southwest of Sibi. From here onward the railway line pursues a shorter course than the road. The road actually follows a much circuitous route and utilises the western side of the Bolan river plain. The railway line, it seems, tries to avoid the river in order to escape the danger of short-lived floods.

South-east of Mach is the Laleji plain which is about 25 miles long from north to south and 6 miles broad at the maximum width and has a varying elevation from more than
2,000 ft. to 998 ft. It is a stony waste covered with coarse limestone gravel deposited by the streams from the neighbouring hills. Owing to the intervening heights the plain is divided into two parts south of village Fishin. One part opens towards Mushkaf near Sibi and the other to the west of Rindli.

The railway line traverses a distance of about 17 miles through the upper part of Lateji plain when it crosses the northern extension of Kohan mountains (over 2500 ft.) through more than one tunnel till it comes near Panir railway station whence it ut lies the valley of the Mushkaf Nadi upto Osepur railway station. After 1000 ft. contour is passed near Osepur the slope is gradual upto when the line crosses and recrosses the Mushkaf N. In order to get out of the foot hills and thus to enter the plains near Mushkaf railway station. In the plain itself the elevation decreases from 500 ft. to 450 ft. upto Sibi in a distance of about 13 miles. The road more or less clings to the Bolan river till about 4 miles west of Rindli. Rindli is about 17 miles west of Sibi which lies in the Kachi plain of Baluchistan.

**Lateral communications.**

The lateral means of communication connecting the various above mentioned transverse roads are equally
important from strategic point of view. On the whole it can be said that there is a marked contrast in the efficiency and usefulness of such roads on the two sides of the Durand Line, those on the Afghan side being poor. On the Pakistan side the lateral lines of communication connecting almost all the points guarding the passes are not very near to the border. They are away from the border from about 34 miles at Peshawar to 70 miles (by road up to Thal and then to the border) at Kohat, 70 miles at Bannu, 90 miles at Tank, \( \frac{45}{2} \) at Fort Sandeman via Sambaza post, 40 miles at Hindu Bazar and about 80 at Quetta, in accordance with local relief. Such distances are maintained on account of the difficult nature of the terrain and perhaps also because the lateral means of communication should always be at a safer distance from the border.

The distance is least, about 5 miles, southeast of Domandi. The Gomal pass being comparatively less inaccessible this coincidence is not good as it is here that the link between Khojak-Dolan and the Khyber, the two most important passes may be considered to have become weak. In any case the means of communication on the Afghan side of the Gomal pass are not good and different points on to the north and south sides of the Gomal pass on the lateral
road under consideration have adequate connections with the interior of the country. Just north of the Ganj pass, however, the long circular road is interesting as it affords a double line of communication between the Tochi and the Wana Toi passes. The circular road going westward from Bannu to Laha (southeast of Miran Shah) turns southward and south-eastward to Dabra, north-eastward via Tank to Ghazni Khel and thence northward to Bannu again. North of xxxxx this circular road, another road xxxxxxxxxxxxx completes a circuit connecting Kohat, Thal, Mir Ali, Bannu, Ali Khan Khel and reaching Kohat again. South of Fort Sandeman there are again more than one roads.

On the Afghan side of the border the hilly nature of the country has resulted in the under development of the means of communication. Here roads are few and far between. None of them is a first class one for any appreciable length. There are three main centres of communication in the rear of the border at sufficient distances. These are Kabul, Gardaz and Candhar. Ghazni, another centre of communication in these parts of Afghanistan, lies to the west of Gardaz. The lateral means of communication connecting Kabul with Candhar is a
second class (unmetalled) road. It, starting from Kabul, pursues almost a south westerly course to Qandhar via Shaikhbad, Ghazni, Asfar Khet, Mukar, Kalat-i-Chilzai and Robat. Various second class roads bifurcate from it at different points. The branches are mostly of local significance. Another through route is furnished by an unmetalled road between Kabul and Marjan and Barak Khel further westward via Hisarak, Gardez, Sarozai, Patanna, Zarghun Shahr and Jumjuma.

Transversely Kabul is connected with Torkham via Jalalabad, by an unmetalled road and through paths with Peiwar Kotal. Gardez commands various paths coming up to the border between Peiwar Kotal and the Tochi Pass. Unmetalled roads connect Gardez with Matun and Kotani Kote both of which are quite near to the border. Jumjuma, Marjan and Barak Khel have pathway connections with points on the border between Tochi pass and Zhob area in Baluchistan. Qandhar has an easy connection with Chaman.

Comparison of the passes.

A comparison of the passes on the basis of study of their longitudinal and transverse sections reveals the following facts:

1. Of all the passes the Khyber pass is the shortest. In length it is less than half that of the Tochi, two-fifths
of the Kurrum, two ninths of the Gomal and less than one sixth of the Khajak-Bolan pass. This relationship is based on the respective lengths of the passes on this side of the Durand Line. The Khajak-Bolan pass almost ends at the border while the Khyber is continued westward only for a small distance. The remaining passes penetrate far into the Afghan territory.

2. Leaving aside the lengthy Khajak-Bolan and Gomal passes, the Khyber pass has considerably low altitudes at its nearer end at Jamrud, the height being only slightly more than 1000 ft. The Kurram and the Tochi passes begin from Thal and Miran Shah which have altitudes of more than 2000 and 2,500 ft. respectively. It indicates that Khyber, Gomal and Bolan passes terminate in plain areas of Pakistan while the Kurram and the Tochi open into comparatively rougher and undulating country.

3. There are several high and hence controlling points in the Khyber and the Khajak-Bolan passes. These points near Qafila Sarai in case of the Khyber and Sahal Bagh in the case of the Bolan are away from the international boundary but not too far away. These are, therefore, well situated since there is no danger of their severance in the first sweep by the foreign elements and at the
same time are useful in arresting the ingress within the border region.

4. The heights of the mountains cradling the passes are of special significance as these determine the degree of safety or vulnerability of the individual defiles from their sides. Loftier walls rising more abruptly above the passes also afford more numerous and better defensive positions. Transverse sections of different passes at some points have been shown. The one conclusion that can most readily be drawn from the comparative study of these sections is that the surrounding walls of the Khyber pass are higher and steeper at various points as compared to those of the other passes thus making its flanks comparatively safer.

5. The gradual slopes of the Yochi, Kurran and Gojal passes and of long sections of Khojak-Bolan pass may be easily misunderstood as indicative of greater facilities of journey through them. The case, however, is that the first three of them only lead to or control some passages from Afghanistan which in themselves are difficult. The apparent ease of passage of these mountain routes is, therefore, marred by the uneven topography of the country in their rear. Within Afghanistan Khyber is well connected with Kabul, a focal point of road communications.
in that country and having direct links with the Soviet
territory to the north. Chaman, in case of the Khojak-
Bolan, is in direct communication with Qandhar from
where an easy route leads to Kuchik post in U.S.S.R.
avoiding the Hindukush heights and skirting along its
western extremity. Another point which helps maintain
the importance of these two northernmost and southern-
most passes over others is that they form the flanks of
the forces seeking to cross the Durand Line. By dint of
their position, the Khyber and the Bolan passes demand
greater fortifications on the part of the defenders and
more forceful battering by the invaders as any effort of
negotiating the intermediary passes without possessing th-
flanking ones is fraught with the serious danger of the
encirclement of the intruders.
The frontier, on account of its very mode of formation, lacks all the essential elements of security, and naturalness. Its northern section is the outcome of a judicial award based on the distribution of population of Muslims and non-Muslims in the undivided Punjab. The well known 'other factors' taken into cognizance in the determination of the boundary were anything but the considerations of defence. In the southern section the frontier runs along the eastern boundary of Bahawalpur and Sind. In its northern section for a distance of about 240 miles the boundary follows a zig-zag course through a monotonous dead-level plain. The Bahawalpur-Sind section, a length of about 1010 miles, is again devoid of any well-defined physical features though the surface is defaced with a smallpox of sand dunes and the isolated relics of the outliers of the Aravallis.

The boundary came into being in a tense atmosphere of rivalries, dissentions and conflicting interests and was followed by unbecoming acts of savagery, homicide and holocaust. The Indian National Congress accepted the partition only under pressure of circumstances. On the other hand, Muslims were dissatisfied with the idea of the division of the Punjab and Bengal. Moreover, they were disgusted with the Radcliffe Award which did not appear to be fair to them. According to the Muslim claim which
is described as 'moderate to the point of tactical folly', by Professor Spate, it caused a loss of about 5000 sq. miles to Pakistan territory—an area about one tenth that of England or about half that of Palestine. It is also the cause of Kashmir problem which has become a running sore in the body politic of Bharat and Pakistan.

It is not the object of the chapter to enumerate the shortcomings of the award but one of the contradictions and inconsistencies of the working hypothesis of the author of the report (the Chairman of the Commission) may be pointed out. Paragraph (11) of the Report*2 reads: "I think it only right to express the hope that where the drawing of a boundary line cannot avoid disrupting such unitary services as canal irrigation, railways and electric power transmission, a solution may be found by agreement between the two states for some joint control of what has hitherto been a valuable common service". It frankly admits that the maintenance of the solidarity of such unitary services is an impossibility.


2. Published in the Gazette of Pakistan (Extraordinary Karachi, Sunday Aug.17, 1947.)
The very unfulfilled object of maintaining their solidarity, however, becomes a plea for severing such extensive areas from Pakistan as those spreading over the Doab between the Ravi and the Sutlej and even beyond. Para (10) of the report reads, "I have hesitated long over those not inconsiderable areas east of the Sutlej river and in the angle of the Beas and Sutlej rivers in which Muslim majorities are found. But on the whole I have come to the conclusion that it would be in the true interests of neither state to extend the territory of West Punjab to a strip on the far side of the Sutlej and that there are factors such as the disruption of railway communications and water systems that ought in this instance to displace the primary claims of contiguous majorities."

It appears to be a strange logic. In the disruption of the unitary water system should have actually been minimised had the award not disdainfully disregarded the basic term of reference of the Commission viz, the contiguous majority, curiously described as "claims" in the report. The Madhopur headworks, for example, would have belonged to Pakistan together with most of the area which the headworks caters for. Commenting on the award Prof. Spate pointed out," It has one merit in as much as it reduced the minorities on each side to a parity - about four million - but otherwise it is difficult to discover on what principles it was drawn and there seems good reason to think that less than justice was
done to the Muslim cause." #1. One of the causes of the attitude of Muslim dissatisfaction towards the award is that by dividing Kasur tehsil the defence position of Kasur proper as also of Lahore has been hampered even if the chairman of the Commission did not mean it. A boundary line drawn along the Beas and the Sutluj would have been justified on the basis of being a natural frontier although even in such a case quite large Muslim majority areas would have remained with India. Moreover, it would have kept the utility services of at least Bari Doab quite intact.

With the wholesale migration of Muslims from Punjab (India) and of Hindus and Sikhs from Punjab (Pakistan), the cultural landscape on the two sides of the border is radically different. It is such frontiers which may be justifiably likened to a demographic 'line of cleavage' or a 'political rift valley'. There is normally greater strain and stress on such frontiers than on others which are ethnically and culturally broad transitional zones rather than narrow 'partings' or 'divides'. This again makes the Indo-Pakistan frontier less secure.

The boundary also does not have a long history at its back. The meanders of the boundary are as sure signs of its immaturity as these are signs of maturity in case of a river. Historical developments smoothen out the unwarranted curves and irregularities to a

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#1. Q.H. Spate, Partition of India and prospects of Pakistan, p.71.
considerable extent, thus, facilitating the defence of the frontier as there are no numerous exclaves and exclaves of one territory into the other. It reduces the possibility of conflict and clash to its slenderest extent while the wounds of past bitternesses are healed up through the passage of time. The historical accidents also make nations wiser and fully aware of the horrors of war which in turn act as deterrent forces.

The evolution of the means of communication in undivided India was, as it should have been, on such lines that the present territories of Pakistan and Bharat were well knit and well connected with each other by railways and roads fit for vehicular traffic. An improvement and an increase in the means of communication and their encroachment towards the frontier could not be looked upon with fear or apprehension as the boundary never existed before. At present, therefore, the position is that there are quite a few transverse lines of communication which after crossing the boundary are continued into the other territory. In the rear they are equally well connected with the lateral means of communication of the respective countries. The easily accessible points of the frontier become innumerable if deflections from the main routes are also taken into considerations.

**DEFENCE POSITION OF THE FRONTIER.**

The geographical aspect of the frontier brings into focus the fact that it (together with the Indo-
Pakistan frontier in the east which again is the creation of the same circumstances) is the least secure of Pakistan's frontiers. It may well be called to be the danger spot or the zone of tension of Pakistan which must receive its due consideration in a well conceived defence plan of the country.

The absence of conspicuous physical features either along or in the rear of the boundary on either side does make it a good peace time frontier as it affords no hinderance in the free movement of goods, persons or cultural influences from one country to the other. As a war time frontier, however, it is insecure and provides no advantage to either of the contending units. The wide expanse of level topography on its two sides is conducive to mobility, permits little concealment and denies any natural cover to the armies. It maximises the field of fire. The climate also does not favour luxuriant cover to be utilised for concealment.

The work of the intelligence units or aero-reconnaissance is facilitated only to make the strength, positions and formation of the contending armies known to each other more successfully than is possible in difficult terrains. No doubt the art of camouflage has been so much perfected as to make any correct appraisal of forces and their strengths pretty difficult but the trained eyes are equally well versed in detection. Aero-reconnaissance of an open country is remarkably successful. It, therefore, holds good that there is
essentially no 'curtain' or 'screen' behind which a large scale military movement may go on unobserved.

An implication of a long boundary line covering a length of about 1250 miles in an open country, not compelling an advancing army to follow any defiles and thus narrow the resultant fronts, is that it creates a tendency to over extend the front in detriment to depth and reserves. It is, however, quite well known that the ratio of depth to frontage is a very important military consideration which is adversely affected by such a protraction of the boundary line. The tendency of over extending the front is the natural outcome, in such cases, of the feeling that a defending force which 'stays put' is liable to be outflanked. The tendency is more exhibited when an army is weak in offensive armour or when it is short of quick means of mobility. The nature of the boundary brings into eminence three very significant facts:

1. That in such areas there is a comparatively greater importance of improved and numerous means of communication together with an increased transport capacity so as to increase mobility to its fullest extent. Other things being equal, mobility becomes a decisive factor in such a case as this.

2. Although 'defence' is considered as 'stronger form' it is the 'offensive' which generally pays in the cases as the one under discussion. It is because the main weakness of defence is in the flanks which
is expected to be aggravated when front or fronts elongate on account of the protraction of the boundary. In most cases the boundary is not required to be protected uniformly along its entire or greater length. A full-scale mass offensive not being possible on all or numerous fronts it still makes possible such an offensive on one or more well-chosen front or fronts while containing the opposing force along other reaches of the boundary.

3. In the absence of advantages or disadvantages of the geographic features it is the relative strength of the forces (both quantitative and qualitative) which can bring about victory in favour of one or the other. A close analysis of the boundary from defence point of view brings us to the conclusion that every section of the frontier is not strategically as important as others. The layout of the boundary has an important bearing on the defence of its different reaches. An example of the implications of a bend in the boundary may be cited from the Russian-German Pre-World War I frontiers.

\[ \text{E. Prussia} \]

\[ \text{Berlin} \]

\[ \text{Warsaw} \]

Russia has an army in the Warsaw salient. This army, if strong and ready, can quickly reach Berlin, or
it can strike north-west and cut off German forces in East Prussia. The German troops, if relatively weak, have no choice but to withdraw rapidly from their exposed position and interpose between the Russians and Berlin. On the other hand, if there are relatively strong German forces in East Prussia, the situation of a Russian army inside the salient is obviously precarious.*1.

The curves of the boundary together with some other factors make the Lahore sector of prime importance from defence point of view. Other sectors in order of importance are Sulaimanke, Kasur, Narowal, and Khokhrapar. Most of the border of Bahawalpur and Sind is comparatively unimportant on account of the paucity of the means of communication and the rarity of important objectives which conditions are in themselves the outcome of the climatic and hydrographic controls. With no objectives meriting special consideration, most parts of this section of the frontier can be called 'empty spaces' strategically. It may be mentioned and emphasised here that although military objectives do not necessarily coincide with geographical objectives yet the pre-existing means of supply and movement definitely tend towards bringing about such a coincidence. Desert regions demand specialised warfare. They are fittest for the hit-and-run activities of the Commando units on camel back either during the hot hours of the day when mirage and refraction of the 'grazing rays' make the

*1. R. Robinson, Imperial Defence, P. 50
detection of their positions and movements more difficult
er under the black cover of the night when lowered
temperatures also promote activity.

Although the bottleneck of West Pakistan plains
(about 80 miles in width) is located at the south-western
corner of Bahawalpur where Sind, Punjab and Bahawalpur
boundaries meet, yet almost a complete absence of good
means of communication on the Indian side makes the
apparently more susceptible region comparatively secure.
The danger to this region is not so much from the land
as it is from the air.

DETAILED ANALYSIS OF THE BOUNDARY.

The boundary between India and Pakistan commences
in the north at the point where the western branch of the
Ujh river enters the undivided Punjab from the state of
Kashmir. From here it approximately follows that river
to its junction with the Ravi river which again
approximately forms the boundary to a point on the river
where the district of Amritsar (India) is divided from the
district of Lahore. From here up to a point on the Sutlej
where the 'eastern boundary of village Mastake meets the
boundary between the tehsils of Kasur and Ferozepore' the
international boundary follows a zig-zag course utilising
the previous boundaries of tehsils and even villages. This
reach of the boundary may be described as highly 'artificia
South-westward from here the Sutlej forms the boundary
till it enters Bahawalpur.
From here onward the eastern boundaries of Bahawalpur and Sind, as stated above, form the international boundary.

In the north upto about Narowal there are very few roads traversing the boundary. Shakargarh in Pakistan and Gurdaspur in India command the existing routes. Most of the roads are unmotilled, the plains are interspersed with many Nullas which swell with water in rainy season and the land furnishes a typical example of bad-land topography. Narowal is important in so far as it forms a distant left flank of armies defending Lahore sector. Lahore stands out boldly as the main focus of attention. Inspite of its nearness to the boundary (about 17 miles at the nearest point) it is the nerve centre of Punjab (P). It also has a psychological importance meaning thereby that psychologically too the opposing forces may fix it as their main object as distinct from secondary objectives. The threat to Lahore is mainly from the following sides:-

1. From the north-east. Here at Kakkar (India) the boundary is dangerously near to Lahore. The centre of activity may be at Chunangan. The intervening territory is not traversed by metalled roads but there are many Kuchha tracks in this area. On account of the very absence of good roads it forms the 'line of least expectation' but it is such lines of least expectation which are mostly utilised particularly when the main
Object is quite near at hand (a distance of less than 20 miles). A move from this direction can be effectively arrested by a force stationed in Nqubulpur area. Such a force can be entrusted with the double task of checking the foreign troops from coming into the rear of Lahore by effecting a break-through into these or still northernly parts and of threatening Amritsar. Amritsar is militarily almost as important to India as Lahore is to Pakistan. If Amritsar falls to an army almost the whole area up to Banns particularly Gurdaspur becomes very unsafe.

2. The second route leads directly from Amritsar. It forms the line of greatest expectation both for Amritsar and Lahore. The presence of Grand Trunk Road and Lahore-Amritsar ry. line forming perpendicular supply lines make it so.

3. The third route leads from near Patti via Kallar. Here the distance of Lahore from the border is about 20 miles. Patti is well connected with Tarn Taran and Amritsar.

4. Kasur forms a kind of southern flank of the Lahore sector. The division of Kasur tehsil by the boundary award has brought Kasur proper very near to the boundary. It seems the division aimed at weakening the defence position of Lahore and strengthening that of Amritsar. Its distance from Khem Kahan (I) with which it is connected by road and rail is only about 6 miles. It is about 17 miles from Ferozepore on the
other side of the Sutlej. The distance of the Kasur to Lahore road from the boundary is small in the south. Now, on the Pakistan side Kasur is connected with Raiwind and also Pakpattan. Between Kasur and Raiwind there is a railway connection but the road between them is only unmetalled which is further continued to near Rangilpur on the Lahore-Multan road. This road can play an important part in strengthening Kasur sector. Kasur can be made very safe by a successful thrust from Khalra towards Harik along the route from Lahore to near Patti. Such a move is capable of making the southern flank of Lahore area absolutely secure. At the same time it endangers Amritsar. A two pronged advance from Khalra towards Amritsar along the Upper Bari Doab Canal and from near Patti coupled with a push from Iqbalpur direction in the north can cripple the defences of Amritsar and is capable of encircling the armies trying to deploy towards Lahore.

From near Kasur to about Sulaimanke the boundary more or less coincides with the Sutlej which is not crossed by any 'pakka' road in this section though tracks and ferries are, as usual, numerous.

The strategic importance of Sulaimanke area and the north-eastern portion of Bahawalpur state is great. In view of the fact that distances from important cities are considerable (e.g. Montgomery is more than 50 miles by road. Similarly on the Indian side Firozepore and
Bhatinda each are more than 50 miles away) the sector ranks second in importance to that of Lahore. A powerful thrust into Pakistan in this section of its territory, if not arrested here, may prove dangerous. It may even result in the severance of the Punjab and N.W.F.P. from the southern limb of the Pakistani territory. This, therefore, cannot be allowed to take shape. The means of locomotion on the Pakistan side are at least much more satisfactory than on the Indian side. The circuitous section of the HK. S.R. (now grouped into Northern Railway) in Bikaner and its tentacle to Anupgarh are no serious threat to the southern flank of the armies stationed in the above named sector as Anupgarh is faced with Fort Abbas, a railway terminus in Bahawalpur, and the HK. S.R. is no more than a 3'3 3/8 gauge with low carrying capacity. About the quality of the metre gauge line Victor Bayley wrote in "In India Impregnable"

"It is a bad thing that there is a plague spot of metre gauge lines close behind the North West Frontier (here he considers the whole of the strategic region of northern W. Pakistan as a frontier region of the sub-continent) though mercifully the evil thing has not touched the frontier itself. The whole of Rajputana

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\[1\] Victor Bayley, *Is India Impregnable*, p. 143.
is covered with metre gauge to the exclusion of the broad gauge, with the result that any lateral movements behind the Frontier must travel by a circuitous route or else such traffic must be subject to transhipment at changes of gauge". This adverse comment on the Rajputana railway line held good in case of undivided India. Now it has emerged out as a factor slightly favourable to the defences of Pakistan in this sector.

At Sulaimanke the territory of the district of Ferozepur seems to pierce towards west thus driving a wedge into Pakistan as is exhibited from the map of the Sulaimanke sector. The headworks is, therefore, dangerously exposed. The alignment of Indian roads and railways also seems to be directed against it. The railway line from Ferozepur Cantonment running in a N.E. to S.W. direction comes upto Chananwala Railway station which is very near to Sulaimanke headworks and from where the canal railway goes direct upto the bank of the Sutlej. From Chananwala the line is continued to Mcleodganj Road railway station (Bahawalpur) and is continued upto Samasatta Junction. Fazilka (India) which is about 10 miles east of Sulaimanke lies on the above said line and is, in addition, connected with Kot Kapura and Bhatinda by the B.B.& C.I. Railway (Now incorporated into the Northern Railway). Another railway line running from Bhatinda junction to Mcleodganj section of the NWR lying as it does within the territories of Pakistan can be counted as one of the
arteries of supply to the defence of this strategic point. The railway line is not supplemented by a road quite near to it but there are road ramifications running along the banks of Ford Wah Br. and Eastern Sadiqia canals which act as auxiliaries to the line. Westward from Sulaimanki is a motorable road running upto Nasawewala railway station and further west. The road along the Pakpattan canal also makes possible access from the west. The metallic road via Nasawewala after making a slightly circuituous journey also reaches Pakpattan and is further continued upto Montgomery. There are other roads in the rear of the headworks which can be utilised for wheeled traffic in fair weather. A further improvement of a section of the road (between Dipalpur and Haveli) from Okara to Haveli and thence to Sulaimanki will improve the position all the more. All these roads to the west of the Sutlej and separated from the Indian counterparts by an expanse of desert are quite useful for military movements.

The adjacent district of Ferozepore is a plain area having practically no screening heights, a slice of the Firozepur district contiguous with Bahawalpur is a desert area interspersed with many sand dunes of varying sizes and different strikes. Mobility in this southern extension of the Indian district contiguous to the area under discussion is slightly impaired by the fact that the railway line from Firozepore runs
more or less parallel to the boundary and is not far away from it. The area is also served by railways from Kot Kapura and Bhatinda. It is apparent from the map that Ferorpur has an important modular position and any damage to it may appreciably reduce the threat up to Salaiyana and the adjacent northern territory up to Kasur and further north.

The bank of the Sutlej running along the boundary for a distance (below Salaiyana the river flows within Pakistan territory) may be conventionally termed as (steep) as the relative heights of the banks above the bed are slightly over 10 ft. The river is divided into several streams enclosing many islands and allowing many fords to be formed. The intercourse between the two banks is made possible at more than one point. There is a causeway bridge at Salaiyana carrying the metalled road from Haveli (Pak) to Fazilka. A Bund or embankment forms a minor feature for about 11 miles in the west of the river. A further extension towards north of the slightly raised ground is formed by the banks of the Dipalpur canal and the upper section of the Lower Sohag Branch.

Three canals take off from Salaiyana headworks. One of it, Pakpattan canal flows in a westerly direction away from the international boundary. The direction of the remaining two canals is towards south-west. The eastern Sadiqia canal is nearest to the boundary.
On the other side of the border is Gang Canal and its distributaries. One of its distributaries, Kessi Singhpur Distributary, clings to the border for a distance of about 7½ miles. All these Pakistani or Indian canals and distributaries have unmetalled roads along one or the other of their banks.

Further south-westward along the Bahawalpur-Bikaner frontier the climatic control has been operating against the development of the rail and road communications. But for the canals and their distributaries and the resultant irrigation the region is a wide expanse of desert being more extensive on the Indian side than on the Pakistan side. This has further resulted in comparative under development of the means of communication in Bikaner (India) than in Bahawalpur. The sandy nature of the terrain, high temperatures and aridity have, however, limited the scope of development on both sides of the border. Just as the whole area is dotted with sand dunes it is almost singularly devoid of important urban centres. The Islam headworks on the Sutlej is at a safe distance from the frontier. Bahawalnagar in Bahawalpur is only comparatively more important than the old fort of Suratgarh or Amargarh in Bikaner. The hostility of the region demands its garrisoning by forces specialised in desert warfare.

On the Pakistan side the area is traversed by the North Western Railway line running from McLeodganj
Road Junction to Samasatta Junction tending away and away from the border towards Samasatta. It seems to follow the western margin of the sand-strown terrain lying between the irrigated fertile plains of the Punjab (P) and the boundary, and sends off a branch line from Bahawalnagar to Fort Abbas which in turn remains quite near to the boundary. The branch line is supplemented by an unmetalled road motorable in fair weather. The transverse offshoots of the road are not many but still they are not altogether non-existent. Bahawalnagar and Narumabad Railway Stations are connected with points on the border by unmetalled roads fit for vehicular traffic in fair weather only.

The Naka branch of the eastern Sadiqia canal runs more or less parallel to the border, is lined with a road, and provides some cover as is usual with canal banks. The Indian territory is served with the Northern Railway (metre gauge) which is more than 40 miles away from the nearest point on the border. The Amupgarh Branch and the M. State Railway canal loop line come closer to the boundary - Amupgarh is about 3 miles and Brikaranpur on the loop line is still nearer to the boundary. Under the circumstances Fort Abbas has its own strategic value. The loop line bifurcates from the M. S. Railway (Northern Railway) main line at Suratgarh and after following a semi circular route towards west again joins it near Namumangarh. The layout is such that distance from the boundary
augments increasingly as Srikaranpur is departed from points on the railway line have practically no connection with the boundary through motorable roads. On both sides of the border there are numerous insignificant desert tracks.

Further southward mobility becomes still more difficult. There are two foci of unmetalled roads and paths in Bikaner and Jaisalmer (Rajputana) respectively. They are the small settlements of Pugal and Birasilpur from where zig-zag paths radiate. The fantastic curves in these paths are because they try to avoid sand-dunes. Pugal is comparatively more important as long well defined paths converge on it from Suratgarh and Bikaner Railway stations. The Suratgarh-Pugal path is continued upto Phalodi railway station on Jodhpur Railway (Now regrouped into Western Railway) and for a long distance runs parallel to the boundary at an average distance of about 25 miles from it. The Bikaner-Pugal path crosses the border and goes right upto Bahawalpur. Again, from Birasilpur path lead to this side of the border.

Almost exactly the same desert conditions with the same absence of roads are met with southward along the Sind-Rajputana border. It is only in the southern section of the Sind border, south of Khairpur state, that the number of paths slightly increases. The most important transverse line of communication in this direction of the border is th
Jodhpur Railway line connecting Jodhpur with Hyderabad. It crosses the boundary some what east of Khokhropar.

The southern most section of the boundary has an almost east-west alignment. It is a stretch 160 miles long and marks the southern limit of the Sind desert and the beginning of a totally different type of terrain, the marshy and boggy Rann of Cutch. The portions of the Rann of Cutch, which owing to silting up by the action of waves and also of winds has been a gain of land over the sea, still retains amphibious traits e.g. marshes. The land on both sides of the border in this section specially on the Indian side is most undeveloped. Means of communication are conspicuous here only by their absence.

**STABILISATION OF THE FRONTIER.**

The question of the stabilisation of the frontier deserves special consideration by the people and the political leaders of the neighbouring countries of India and Pakistan. It can be brought about in two ways:

1. By creating and promoting a saner attitude of mind respecting the sanctity and integrity of the frontier. "Neither forms of words nor material and physical forces have any permanence without human agreement and this is no a matter of words but of attitudes and loyalties rooted both in reason and in unconscious

2. By creating the balance of power on the two sides of the frontier. The maintenance of practical parity in power relations is not in antithesis with the first policy but is really very favourable for the maintenance of status quo. It does away with the brow-beating tactics on the one hand and suspicion on the other." Because frontiers have lost their defensive value and because collective action cannot compensate speedily enough for power differentials between individual states, it becomes imperative to strive for approximate equality in strength in the units of the international society".*2. Anyhow, this second policy has to be followed under the guidance of the first with the sole purpose of stabilising and not weakening the frontier.

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The past historical developments of the world are full of the tiresome accounts of war. Every war, however, has mostly tended to bring advances in the orderliness of the world. By now such advances have already been made that war is considered to be a taboo in the political ethics of the civilised world. Fascists alone can justify war as "culture for the virtues of resoluteness and audacity in the decadence of which a nation becomes decadent". Time has already proved the hollowness of such aggressive ideologies and has also shown their unenviable fate. The totality and the all circumscribing nature of war these days are prohibitive forces. There is much to lose and very little to gain through wars even if one becomes victorious and war is 'like a coin' which has two faces, not one.

The need for an amicable policy between Pakistan and India towards each other is great in the perspective of the following conditions:-

1. The inflamable nature of the boundary strikes a solemn note of caution to the two nations against giving any cause for provocation.

2. Both the countries, aside from being the members of the U.N., are members of the Commonwealth of nations as well. An armed conflict between two such

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* Coker, Recent Political Thought, p. 481.
members' states will shake to its root the entire edifice of the Commonwealth.

3. The masses of the two countries are constantly in front of the hunger line. They cannot afford the luxury of war until it comes to them as a bolt from the blue, rather from the blue prints of war formed by the ruling party of one country or the other. Such an effort to disturb the tranquility of the frontier and hence of the countries, irrespective of which way the cat jumps, is bound to bring in its wake that one thing which is much feared by the high-ups — COMMUNISM.

4. The instability of the sub-continent may pave the way for the intervention of some foreign powers necessitating the help of other foreign powers thus converting the whole scene into a Korea.

5. The industrial and commercial centres of the two countries and the irrigation headworks are within effective bombing ranges of each other. The loss of such valuables will be a kind of irreparable loss to both the countries which have only taken a start in the direction of industrialisation.

6. The outbreak of hostilities may easily arouse communal passion and in spite of the best efforts of the respective Governments the same horrible drama of 1947, may again be enacted, perhaps on a much larger scale.

7. The nature of the frontier is such that instead of
localising war in a few areas it will help spread it over a wider area before a decision is reached. It may, therefore, be concluded that the apparent delicacy of the frontier is fraught with perilous dangers. It is in the best interests of both the nations not to detonate this dynamite.
INDO-PAKISTAN FRONTIER (WEST).

The frontier, on account of its very mode of formation, lacks all the essential elements of security, and naturalness. Its northern section is the outcome of a judicial award based on the distribution of population of Muslims and non-Muslims in the undivided Punjab. The well known 'other factors' taken into cognizance in the determination of the boundary were anything but the considerations of defence. In the southern section the frontier runs along the eastern boundary of Bahawalpur and Sind. In its northern section for a distance of about 240 miles the boundary follows a zig-zag course through a monotonous dead-level plain. The Bahawalpur-Sind section, a length of about 1010 miles, is again devoid of any well-defined physical features though the surface is defaced with a smallpox of sand dunes and the isolated relics of the outliers of the Aravallis.

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is described as 'moderate to the point of tactical folly', by Professor Spate, it caused a loss of about 5040 sq. miles to Pakistan territory—an area about one tenth that of England or about half that of Palestine. It is also the cause of Kashmir problem which has become a running sore in the body politic of Bharat and Pakistan.

It is not the object of the chapter to enumerate the shortcomings of the award but one of the contradictions and inconsistencies of the working hypothesis of the author of the report (the Chairman of the Commission) may be pointed out. Paragraph (11) of the Report*2 reads: "I think it only right to express the hope that where the drawing of a boundary line cannot avoid disrupting such unitary services as canal irrigation, railways and electric power transmission, a solution may be found by agreement between the two states for some joint control of what has hitherto been a valuable common service". It frankly admits that the maintenance of the solidarity of such unitary services is an impossibility.


The very unfulfilled object of maintaining their solidarity, however, becomes a plea for severing such extensive areas from Pakistan as those spreading over the Doab between the Ravi and the Sutlej and even beyond. Para (10) of the report reads, "I have hesitated long over those not inconsiderable areas east of the Sutlej River and in the angle of the Beas and Sutlej Rivers in which Muslim majorities are found. But on the whole I have come to the conclusion that it would be in the true interests of neither state to extend the territory of West Punjab to a strip on the far side of the Sutlej and that there are factors such as the disruption of railway communications and water systems that ought in this instance to displace the primary claims of contiguous majorities."

It appears to be a strange logic. In the disruption of the unitary water system should have actually been minimised had the award not disdainfully disregarded the basic term of reference of the Commission viz. the contiguous majority, curiously described as "claims" in the report. The Madhopur headworks, for example, would have belonged to Pakistan together with most of the area which the headworks caters for. Commenting on the award Prof. Spate pointed out, "It has one merit in as much as it reduced the minorities on each side to a parity — about four million — but otherwise it is difficult to discover on what principles it was drawn and there seems good reason to think that less than justice was
den to the Muslim cause." #1. One of the causes of
the attitude of Muslim dissatisfaction towards the award
is that by dividing Kasur tehsil the defence position
of Kasur proper as also of Lahore has been hampered
even if the chairman of the Commission did not mean it.
A boundary line drawn along the Beas and the Sutluj would
have been justified on the basis of being a natural
frontier although even in such a case quite large
Muslim majority areas would have remained with India.
Moreover, it would have kept the utility services of
at least Bari Doab quite intact.

With the wholesale migration of Muslims from
Punjab (India) and of Hindus and Sikhs from Punjab
(Pakistan), the cultural landscape on the two sides of
the border is radically different. It is such frontiers
which may be justifiably likened to a demographic
'line of cleavage' or a 'political rift valley'. There
is normally greater strain and stress on such frontiers
than on others which are ethnically and culturally
broad transitional zones rather than narrow 'partings'
or 'divides'. This again makes the Indo-Pakistan
frontier less secure.

The boundary also does not have a long history
at its back. The meanders of the boundary are as sure
signs of its immaturity as these are signs of maturity
in case of a river. Historical developments smoothen
out the unwarranted curves and irregularities to a

#1. O.H.K. Spate, partition of India and prospects
of Pakistan, P. 77.
considerable extent, thus, facilitating the defence of the frontier as there are no numerous exclaves and enclaves of one territory into the other. It reduces the possibility of conflict and clash to its slenderest extent while the wounds of past bitternesses are healed up through the passage of time. The historical accidents also make nations wiser and fully aware of the horrors of war which in turn act as deterrent forces.

The evolution of the means of communication in undivided India was, as it should have been, on such lines that the present territories of Pakistan and Bharat were well knit and well connected with each other by railways and roads fit for vehicular traffic. An improvement and an increase in the means of communication and their encroachment towards the frontier could not be looked upon with fear or apprehension as the boundary never existed before. At present, therefore, the position is that there are quite a few transverse lines of communication which after crossing the boundary are continued into the other territory. In the rear they are equally well connected with the lateral means of communication of the respective countries. The easily accessible points of the frontier become innumerable if deflections from the main routes are also taken into considerations.

**DEFENCE POSITION OF THE FRONTIER.**

The geographical aspect of the frontier brings into focus the fact that it (together with the Indo-
Pakistan frontier in the east which again is the creation of the same circumstances) is the least secure of Pakistan's frontiers. It may well be called to be the danger spot or the zone of tension of Pakistan which must receive its due consideration in a well conceived defence plan of the country.

The absence of conspicuous physical features either along or in the rear of the boundary on either side does make it a good peace time frontier as it affords no hinderance in the free movement of goods, persons or cultural influences from one country to the other. As a war time frontier, however, it is insecure and provides no advantage to either of the contending units. The wide expanse of level topography on its two sides is conducive to mobility, permits little concealment and denies any natural cover to the armies. It maximises the field of fire. The climate also does not favour luxuriant cover to be utilised for concealment.

The work of the intelligence units or aero-reconnaissance is facilitated only to make the strength, positions and formation of the contending armies known to each other more successfully than is possible in difficult terrains. No doubt the art of camouflage has been so much perfected as to make any correct appraisal of forces and their strengths pretty difficult but the trained eyes are equally well versed in detection. Aero-reconnaissance of an open country is remarkably successful. It, therefore, holds good that there is
essentially no 'curtain' or 'screen' behind which a large scale military movement may go on unobserved.

An implication of a long boundary line covering a length of about 1250 miles in an open country, not compelling an advancing army to follow any defiles and thus narrow the resultant fronts, is that it creates a tendency to over extend the front in detriment to depth and reserves. It is, however, quite well known that the ratio of depth to frontage is a very important military consideration which is adversely affected by such a protraction of the boundary line. The tendency of over extending the front is the natural outcome, in such cases, of the feeling that a defending force which 'stays put' is liable to be outflanked. The tendency is more exhibited when an army is weak in offensive armour or when it is short of quick means of mobility. The nature of the boundary, brings into eminence three very significant facts:—

1. That in such areas there is a comparatively greater importance of improved and numerous means of communication together with an increased transport capacity so as to increase mobility to its fullest extent. Other things being equal, mobility becomes a decisive factor in such a case as this.

2. Although 'defence' is considered as 'stronger form' it is the 'offensive' which generally pays in the cases as the one under discussion. It is because the main weakness of defence is in the flanks which
is expected to be aggravated when front or fronts elongate on account of the protraction of the boundary. In most cases the boundary is not required to be protected uniformly along its entire or greater length. A full-scale mass offensive not being possible on all or numerous fronts it still makes possible such an offensive on one or more well-chosen front or fronts while containing the opposing force along other reaches of the boundary.

3. In the absence of advantages or disadvantages of the geographic features it is the relative strength of the forces (both quantitative and qualitative) which can bring about victory in favour of one or the other.

A close analysis of the boundary from defence point of view brings us to the conclusion that every section of the frontier is not strategically as important as others. The layout of the boundary has an important bearing on the defence of its different reaches. An example of the implications of a bend in the boundary may be cited from the Russian-German Pre-World War I frontiers.

"Russia has an army in the Warsaw salient. This army, if strong and ready, can quickly reach Berlin, or..."
it can strike north-west and cut off German forces in East Prussia. The German troops, if relatively weak, have no choice but to withdraw rapidly from their exposed position and interpose between the Russians and Berlin. On the other hand, if there are relatively strong German forces in East Prussia, the situation of a Russian army inside the salient is obviously precarious.\(^1\)

The curves of the boundary together with some other factors make the Lahore sector of prime importance from defence point of view. Other sectors in order of importance are Sulaimanka, Kasur, Narowal, and Khokhrapar. Most of the border of Bahawalpur and Sind is comparatively unimportant on account of the paucity of the means of communication and the rarity of important objectives which conditions are in themselves the outcome of the climatic and hydrographic controls. With no objectives meriting special consideration, most parts of this section of the frontier can be called 'empty spaces' strategically. It may be mentioned and emphasised here that although military objectives do not necessarily coincide with geographical objectives yet the pre-existing means of supply and movement definitely tend towards bringing about such a coincidence. Desert regions demand specialised warfare. They are fittest for the hit-and-run activities of the Commando units on camel back either during the hot hours of the day when mirage and refraction of the 'grazing rays' make the
detection of their positions and movements more difficult or under the black cover of the night when lowered temperatures also promote activity.

Although the bottle-neck of West Pakistan plains (about 80 miles in width) is located at the south-western corner of Bahawalpur where Sind, Punjab and Bahawalpur boundaries meet, yet almost a complete absence of good means of communication on the Indian side makes the apparently more susceptible region comparatively securer. The danger to this region is not so much from the land as it is from the air.

**DETAILED ANALYSIS OF THE BOUNDARY.**

The boundary between India and Pakistan commences in the north at the point where the western branch of the Ujh river enters the undivided Punjab from the state of Kashmir. From here it approximately follows that river to its junction with the Ravi river which again approximately forms the boundary to a point on the river where the district of Amritsar (India) is divided from the district of Lahore. From here upto a point on the Sutlej where the 'eastern boundary of village Mastake meets the boundary between the tehsils of Kasur and Ferozepore' the international boundary follows a zig-zag course utilising the previous boundaries of tehsils and even villages. This reach of the boundary may be described as highly 'artificial. South-westward from here the Sutlej forms the boundary till it enters Bahawalpur.
From here onward the eastern boundaries of Bahawalpur and Sind, as stated above, form the international boundary.

In the north up to about Narowal there are very few roads traversing the boundary. Shakargarh in Pakistan and Gurdaspur in India command the existing routes. Most of the roads are unmetalled, the plains are interspersed with many Nullas which swell with water in rainy season and the land furnishes a typical example of bad-land topography. Narowal is important in so far as it forms a distant left flank of armies defending Lahore sector. Lahore stands out boldly as the main focus of attention. Inspite of its nearness to the boundary (about 17 miles at the nearest point) it is the nerve centre of Punjab (P). It also has a psychological importance meaning thereby that psychologically too the opposing forces may fix it as their main object as distinct from secondary objectives. The threat to Lahore is mainly from the following sides:

1. From the north-east. Here at Kakkar (India) the boundary is dangerously near to Lahore. The centre of activity may be at Chunganwan. The intervening territory is not traversed by metalled roads but there are many Kuchha tracks in this area. On account of the very absence of good roads it forms the 'line of least expectation' but it is such lines of least expectation which are mostly utilised particularly when the main
object is quite near at hand (a distance of less than 20 miles). A move from this direction can be effectively arrested by a force stationed in Nabhulpur area. Such a force can be entrusted with the double task of checking the foreign troops from coming into the rear of Lahore by effecting a break-through into these or still northern parts and of threatening Amritsar. Amritsar is militarily almost as important to India as Lahore is to Pakistan. If Amritsar falls to an army almost the whole area up to Beas particularly Gurdaspur becomes very unsafe.

2. The second route leads directly from Amritsar. It forms the line of greatest expectation both for Amritsar and Lahore. The presence of Grand Trunk Road and Lahore - Amritsar ry. line forming perpendicular supply lines make it so.

3. The third route leads from near Patti via Khairpur. Here the distance of Lahore from the border is about 20 miles. Patti is well connected with Tarn Taran and Amritsar.

4. Kasur forms a kind of southern flank of the Lahore sector. The division of Kasur tehsil by the boundary award has brought Kasur proper very near to the boundary. It seems the division aimed at weakening the defence position of Lahore and strengthening that of Amritsar. Its distance from Khem Karan (I) with which it is connected by road and rail is only about 6 miles. It is about 17 miles from Ferozepore on the
other side of the Sutlej. The distance of the Kasur to Lahore road from the boundary is small in the south. Now, on the Pakistan side Kasur is connected with Raiwind and also Pakpattan. Between Kasur and Raiwind there is a railway connection but the road between them is only unmetalled which is further continued to near Rangilpur on the Lahore-Multan road. This road can play an important part in strengthening Kasur sector. Kasur can be made very safe by a successful thrust from Khalra towards Harik along the route from Lahore to near Patti. Such a move is capable of making the southern flank of Lahore area absolutely secure. At the same time it endangers Amritsar. A two pronged advance from Khalra towards Amritsar along the Upper Bari Doab Canal and from near Patti coupled with a push from Iqbalpur direction in the north can cripple the defences of Amritsar and is capable of encircling the armies trying to deploy towards Lahore.

From near Kasur to about Sulaimanke the boundary more or less coincides with the Sutlej which is not crossed by any 'pakka' road in this section though tracks and ferries are, as usual, numerous.

The strategic importance of Sulaimanke area and the north-eastern portion of Bahawalpur state is great. In view of the fact that distances from important cities are considerable (e.g. Montgomery is more than 50 miles by road), Similarly on the Indian side Firozepore and
Bhatinda each are more than 50 miles away) the sector ranks second in importance to that of Lahore. A powerful thrust into Pakistan in this section of its territory, if not arrested here, may prove dangerous. It may even result in the severance of the Punjab and N.W.F.P. from the southern limb of the Pakistan territory. This, therefore, cannot be allowed to take shape. The means of locomotion on the Pakistan side are at least much more satisfactory than on the Indian side. The circuitous section of the B.K. S.R. (Now grouped into Northern Railway) in Bikaner and its tentacle to Anupgarh are no serious threat to the southern flank of the armies stationed in the above named sector as Anupgarh is faced with Fort Abbas, a railway terminus in Bahawalpur, and the B.K. S.R. is no more than a 3' 3 3/8 gauge with low carrying capacity. About the quality of the metre gauge line Victor Bayley wrote in "Is India Impregnable."

"It is a bad thing that there is a plague spot of metre gauge lines close behind the North West Frontier (here he considers the whole of the strategic region of northern W. Pakistan as a frontier region of the sub-continent) though mercifully the evil thing has not touched the frontier itself. The whole of Rajputana.

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is covered with metre gauge to the exclusion of the broad gauge, with the result that any lateral movements behind the Frontier must travel by a circuitous route or else such traffic must be subject to transhipment at changes of gauge. This adverse comment on the Rajputana railway line held good in case of undivided India. Now it has emerged out as a factor slightly favourable to the defences of Pakistan in this sector.

At Sulaimanke the territory of the district of Ferozepur seems to pierce towards west thus driving a wedge into Pakistan as is exhibited from the map of the Sulaimanke sector. The headworks is, therefore, dangerously exposed. The alignment of Indian roads and railways also seems to be directed against it. The railway line from Ferozepur Cantonment running in a N.E. to S.W. direction comes upto Chananwala Railway station which is very near to Sulaimanke head works and from where the canal railway goes direct upto the bank of the Sutlej. From Chananwala the line is continued to Mcleodganj Road railway station (Bahawalpur) and is continued upto Samasatta Junction. Fazilka (India) which is about 10 miles east of Sulaimanke lies on the above said line and is, in addition, connected with Kot Kapura and Bhatinda by the B.B.& C.I.Railway (Now incorporated into the Northern Railway). Another railway line running from Bhatinda junction to Mcleodganj section of the N.W.R lying as it does within the territories of Pakistan can be counted as one of the
arteries of supply to the defence of this strategic point. The railway line is not supplemented by a road quite near to it but there are road ramifications running along the banks of Ford Wah Br. and Eastern Sadiqia canals which act as auxiliaries to the line. Westward from Sulaimanké is a motorable road running up to Wasawewala railway station, and further west. The road along the Pakpattan canal also makes possible access from the west. The metalled road via Wasawewala after making a slightly circuitous journey also reaches Pakpattan and is further continued up to Montgomery. There are other roads in the rear of the headworks which can be utilised for wheeled traffic in fair weather. A further improvement of a section of the road (between Dipalpur and Haveli) from Okara to Haveli and thence to Sulaimanké will improve the position all the more. All these roads to the west of the Sutlej and separated from the Indian counterparts by an expanse of desert are quite useful for military movements.

The adjacent district of Ferozepore is a plain area having practically no screening heights, a slice of the Firozepur district contiguous with Bahawalpur is a desert area interspersed with many sand dunes of varying sizes and different strikes. Mobility in this southern extension of the Indian district contiguous to the area under discussion is slightly impaired by the fact that the railway line from Firozepore runs
more or less parallel to the boundary and is not far away from it. The area is also served by railways from Kot Kapura and Bhatinda. It is apparent from the map that Ferozepur has an important modular position and any damage to it may appreciably reduce the threat upto Sulaimanka and the adjacent northern territory upto Kasur and further north.

The bank of the Sutlej running along the boundary for a distance (below Sulaimanka the river flows within Pakistan territory) may be conventionally termed as (steep) as the relative heights of the banks above the bed are slightly over 10ft. The river is divided into several streams enclosing many islands and allowing many fords to be formed. The intercourse between the two banks is made possible at more than one point. There is a causeway bridge at Sulaimanka carrying the metalled road from Haveli (Pak) to Fazilka. A Bund or embankment forms a minor feature for about 11 miles in the west of the river. A further extension towards north of the slightly raised ground is formed by the banks of the Dipalpur canal and the upper section of the Lower Schag Branch.

Three canals take off from Sulaimanka headworks. One of it, Pakpattan canal flows in a westerly direction away from the international boundary. The direction of the remaining two canals is towards south-west. The eastern Sadiqia canal is nearest to the boundary.
On the other side of the border is Ganga Canal and its distributaries. One of its distributaries, Kauri Singhpur Distributary, clings to the border for a distance of about 7½ miles. All these Pakistani or Indian canals and distributaries have unmetalled roads along one or the other of their banks.

Further south-westward along the Bahawalpur-Bikaner frontier the climatic control has been operating against the development of the rail and road communications. But for the canals and their distributaries and the resultant irrigation the region is a wide expanse of desert being no more extensive on the Indian side than on the Pakistan side. This has further resulted in comparative under-development of the means of communication in Bikaner (India) than in Bahawalpur. The sandy nature of the terrain, high temperatures and aridity have, however, limited the scope of development on both sides of the border, just as the whole area is dotted with sand dunes it is almost singularly devoid of important urban centres. The Islam headworks on the Sutlej is at a safe distance from the frontier. Bahawalpur in Bahawalpur is only comparatively more important than the old fort of Suratgarh or Anupgarh in Bikaner. The hostility of the region demands its garrisoning by forces specialised in desert warfare.

On the Pakistan side the area is traversed by the North Western Railway line running from McLeodganj.
Road Junction to Samasatta Junction tending away and away from the border towards Samasatta. It seems to follow the western margin of the sand-strewn terrain lying between the irrigated fertile plains of the Punjab (P) and the boundary, and sends off a branch line from Bahawalnagar to Fort Abbas which in turn remains quite near to the boundary. The branch line is supplemented by an unmetalled road motorable in fair weather. The transverse offshoots of the road are not many but still they are not altogether non-existent. Bahawalnagar and Harunabad Railway Stations are connected with points on the border by unmetalled roads fit for vehicular traffic in fair weather only. The Habra branch of the eastern Sadiqia canal runs more or less parallel to the border, is lined with a road, and provides some cover as is usual with canal banks. The Indian territory is served with the Northern Railway (metre gauge) which is more than 40 miles away from the nearest point on the border. The Anupgarh Branch and the B.K. State Railway canal loop line come closer to the boundary - Anupgarh is about 3 miles and Bhikarampur on the loop line is still nearer to the boundary. Under the circumstances Fort Abbas has its own strategic value. The loop line bifurcates from the B.K.S. Railway (Northern Railway) main line at Suratgarh and after following a semi circular route towards west again joins it near Ranumangarh. The layout is such that distance from the boundary
augments increasingly as Srikarampur is departed from points on the railway line have practically no connection with the boundary through motorable roads. On both sides of the border there are numerous insignificant desert tracks.

Further southward mobility becomes still more difficult. There are two foci of unmetalled roads and paths in Bikaner and Jaisalmer (Rajputana) respectively. They are the small settlements of Pugal and Birsilpur from where zig-zag paths radiate. The fantastic curves in these paths are because they try to avoid sand-dunes. Pugal is comparatively more important as long well defined paths converge on it from Suratgarh and Bikaner Railway stations. The Suratgarh-Pugal path is continued up to Phalodi railway station on Jodhpur Railway (Now regrouped into Western Railway) and for a long distance runs parallel to the boundary at an average distance of about 25 miles from it. The Bikaner-Pugal path crosses the border and goes right upto Bahawalpur. Again, from Birsilpur path lead to this side of the border.

Almost exactly the same desert conditions with the same absence of roads are met with southward along the Sind-Rajputana border. It is only in the southern section of the Sind border, south of Khairpur state, that the number of paths slightly increases. The most important transverse line of communication in this direction of the border is th
Jodhpur Railway line connecting Jodhpur with Hyderabad.
It crosses the boundary some what east of Khokhrapar.

The southern most section of the boundary has
an almost east-west alignment. It is a stretch. 160 miles
long and marks the southern limit of the Siroi desert and
the beginning of a totally different type of terrain, the
marshy and boggy Ramn of Cutch. The portions of the Ramn
of Cutch, which owing to silting up by the action of waves
and also of winds has been a gain of land over the sea,
still retains amphibious traits e.g. marshes. The land on
both sides of the border in this section specially on the
Indian side is most undeveloped. Means of communication
are conspicuous here only by their absence.

STABILISATION OF THE FRONTIER.

The question of the stabilization of the frontier
deserves special consideration by the people and the
political leaders of the neighbouring countries of India
and Pakistan. It can be brought about in two ways:
1. By creating and promoting a safer attitude of mind
respecting the sanctity and integrity of the frontier.
"Neither forms of words nor material and physical forces
have any permanence without human agreement and this is no
a matter of words but of attitudes and loyalties rooted
both in reason and in unconscious

2. By creating the balance of power on the two sides of the frontier. The maintenance of practical parity in power relations is not in antithesis with the first policy but is really very favourable for the maintenance of status quo. It does away with the brow-beating tactics on the one hand and suspicion on the other." Because frontiers have lost their defensive value and because collective action cannot compensate speedily enough for power differentials between individual states, it becomes imperative to strive for approximate equality in strength in the units of the international society." *2. Anyhow, this second policy has to be followed under the guidance of the first with the sole purpose of stabilising and not weakening the frontier.


The past historical developments of the world are full of the tiresome accounts of war. Every war, however, has mostly tended to bring advances in the orderliness of the world. By now such advances have already been made that war is considered to be a taboo in the political ethics of the civilised world. Fascists alone can justify war as "culture for the virtues of resoluteness and audacity in the decadence of which a nation becomes decadent". *1 Time has already proved the hollowness of such aggressive ideologies and has also shown their unenviable fate. The totality and the all circumscribing nature of war these days are prohibitive forces. There is much to lose and very little to gain through wars even if one becomes victorious and war is 'like a coin' which has two faces, not one.

The need for an amicable policy between Pakistan and India towards each other is great in the perspective of the following conditions:

1. The inflammable nature of the boundary strikes a solemn note of caution to the two nations against giving any cause for provocation.

2. Both the countries, aside from being the members of the U.N., are members of the Commonwealth of nations as well. An armed conflict between two such

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*1. Coker, Recent Political Thought, p. 481.
members states will shake to its root the entire edifice of the Commonwealth.

3. The masses of the two countries are constantly in front of the hunger line. They cannot afford the luxury of war until it comes to them as a bolt from the blue, rather from the blue prints of war formed by the ruling party of one country or the other. Such an effort to disturb the tranquility of the frontier and hence of the countries, irrespective of which way the cat jumps, is bound to bring in its wake that one thing which is much feared by the high-ups — COMMUNISM.

4. The instability of the sub-continent may pave the way for the intervention of some foreign powers necessitating the help of other foreign powers thus converting the whole scene into a Korea.

5. The industrial and commercial centres of the two countries and the irrigation headworks are within effective bombing ranges of each other. The loss of such valuables will be a kind of irreparable loss to both the countries which have only taken a start in the direction of industrialisation.

6. The outbreak of hostilities may easily arouse communal passion and inspite of the best efforts of the respective Governments the same horrible drama of 1947, may again be enacted, perhaps on a much larger scale.

7. The nature of the frontier is such that instead of
localising war in a few areas it will help spread it over a wider area before a decision is reached. It may, therefore, be concluded that the apparent delicacy of the frontier is fraught with perilous dangers. It is in the best interests of both the nations not to detonate this dynamite.
The terms of reference of the Boundary Commission were as follows:

"The Boundary Commission is instructed to demarcate the boundaries of the two parts of Bengal on the basis of ascertaining the contiguous majority areas of Muslims and non-Muslims. In doing so it will also take into account other factors."

In ascertaining the contiguous majority areas it was not clarified whether districts or Thanas (Police Stations) were to be treated as units. This was bound to create difficulties as any substantial nucleus of, say, Muslim majority may be effective over the whole district if that is to be treated as a unit while its effect may be limited to a Thana if the latter is selected as a unit for the demarcation of majority areas. Another difficulty was introduced by the term "other factors" which could be easily interpreted in different ways to suit the particular likings or dislikes of the Commission. Had the districts been treated as units for determining the contiguous majority of Muslims and non-Muslims, East Bengal would have included the following additional parts of the districts:
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<tr>
<td>8. Malda</td>
<td>87</td>
<td>33,978</td>
<td></td>
</tr>
<tr>
<td>9. Habibpur</td>
<td>153</td>
<td>52,307</td>
<td></td>
</tr>
<tr>
<td>10. Kaliachak</td>
<td>207</td>
<td>194,324</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,391</strong></td>
<td><strong>544,915</strong></td>
<td></td>
</tr>
</tbody>
</table>
### District Murshidabad (whole District)

<table>
<thead>
<tr>
<th>Total</th>
<th>2,063</th>
<th>1,640,530</th>
</tr>
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</table>

#### District Nadia (now Kushtia)

<p>| | | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Karimpur</td>
<td>172</td>
<td>101,272</td>
</tr>
<tr>
<td>2. Tehatta</td>
<td>178</td>
<td>92,539</td>
</tr>
<tr>
<td>3. Krishnaganj</td>
<td>68</td>
<td>34,102</td>
</tr>
<tr>
<td>4. Kaliganj</td>
<td>113</td>
<td>63,391</td>
</tr>
<tr>
<td>5. Makasipara</td>
<td>140</td>
<td>64,237</td>
</tr>
<tr>
<td>6. Champa</td>
<td>131</td>
<td>70,321</td>
</tr>
<tr>
<td>7. Nabadvip</td>
<td>40</td>
<td>54,208</td>
</tr>
<tr>
<td>8. Krishnagar</td>
<td>138</td>
<td>91,953</td>
</tr>
<tr>
<td>9. Manikshala</td>
<td>103</td>
<td>37,521</td>
</tr>
<tr>
<td>10. Santipur</td>
<td>75</td>
<td>55,086</td>
</tr>
<tr>
<td>11. Ranaghat</td>
<td>171</td>
<td>82,073</td>
</tr>
<tr>
<td>12. Chakdah</td>
<td>126</td>
<td>63,862</td>
</tr>
<tr>
<td>13. Bakinghat</td>
<td>66</td>
<td>27,428</td>
</tr>
</tbody>
</table>

| Total: | 1,507 | 840,403 |

### District Jessore

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bongaon</td>
<td>226</td>
<td>94,016</td>
</tr>
<tr>
<td>2. Chaighata</td>
<td>94</td>
<td>39,088</td>
</tr>
</tbody>
</table>

| Total: | 320  | 133,104  |

| Grand Total: | 6,670 | 4,041,836 |

On the same basis of treating districts as units for the demarcation of contiguous majority areas the
following parts which now belong to East Bengal could have gone to West Bengal:

### District Khulna

| 1.  | Debhatta   | 68   | 45,315 |
| 2.  | Assamgun   | 158  | 116,687 |
| 3.  | Shyamnagar | 176  | 118,546 |
| 4.  | Daulatpur  | 34   | 57,012  |
| 5.  | Tarakheda  | 83   | 66,790  |
| 6.  | Damuria    | 174  | 109,120 |
| 7.  | Khulna     | 38   | 70,798  |
| 8.  | Batiaghata | 97   | 57,320  |
| 9.  | Paikgacha  | 247  | 170,834 |
| 10. | Dacope     | 110  | 64,289  |
| 11. | Fakirhat   | 61   | 53,462  |
| 12. | Rampal     | 104  | 104,877 |

**Total:** 1,440  
**1,031,420**

### District Jalpaiguri

| 1.  | Tetulia    | ------ | 27,472 |
| 2.  | Pachagar   | ------ | 33,614 |
| 3.  | Boda       | 352   | 74,596 |
| 4.  | Debiganj   | ------ | 58,611 |
| 5.  | Pathagram  | 100   | 51,613 |

**Total:** 452  
**245,811**

(Approximate)
In this way a loss of about 4,785 sq. miles of land and a diminution of 2,764,605 persons in the population have been inflicted on East Bengal. In addition to that East Bengal had a claim on the district of Jalpaiguri on the basis of contiguity of Muslim majority areas within Bengal (contiguity with the non-Muslim areas of Bihar was meaningless in case of the division of Bengal only) as the adjacent district of Dinajpur had a clear Muslim majority. The underlying idea in severing most of Jalpaiguri from East Bengal must have been of providing a link between Assam and the rest of India. The claim of East Bengal on the district of Khulna, which forms a part of it, was substantiated on the ground that, although it was not a Muslim majority district, it had a very imperfect contiguity with the non-Muslim majority district of 24-Parganas through the Thana of Hasnabad.

In case of retaining Khulna district compensating for the loss of Jalpaiguri district the boundary between the two Bengals would have been much less unscientific than it is today. The existing exclaves and enclaves of the boundary would have been considerably removed. The comparative straightness of the boundary could have lessened the defence problem of the two governments. The boundary would have been much more advantageous as shown in map 54. It starts from the northern tip of Thana Atwari of Dinajpur district.
and follows the old provincial boundary between Bihar and Bengal upto the confluence of River Nagar and River Mahananda. This part of the boundary is a natural one as it follows the river Nagar for long distances. From here it turns northward for a short distance where it runs along the Mahananda river. The section of the boundary between the Mahananda and the Kalindi rivers is a small one. After following the Kalindi for a small distance the boundary runs southwestward till it touches the Ganges near Sakrigali (Bihar). Southward from here it is formed by the Ganges upto a point to the east of Barharua (Bihar).

The boundary shown in the map departs from the old provincial boundary at a point north of Rajgan railway station and follows the western boundaries of Murshidabad, Nadia and Khulna districts. This part of it is partially artificial. From the point referred to above (to the north of Rajgan) it pursues a more or less southerly course till it comes to the Ajay river in Thana Kandi of Murshidabad whence it turns eastward following the course of that river till the river joins the Hooghly. From here the direction of the boundary is towards the south in keeping with the course of the Hooghly which river it follows upto a point north-east of Chinsura whence it turns eastward and comes upto the north-western corner of Khulna district. From here begins the western boundary of Khulna district which
lies in a north-south direction and is mostly formed by the Ichamati-Kalindi.

A demarcation of the boundary between the two Bengals, considering Police-stations (Thanes) as the unit of determining contiguous Muslim or non-Muslim majority areas, would have been slightly different as shown in Map 55. In this case East Bengal would have got the present Thanes of Jalpaiguri, the whole of Dinajpur district, the whole of Malda district, Murshidabad, Khargram, Kandi, Burwan and Bharatpur Thanes, Nadia district minus Krishnagar, Keligram, Nabadug, Krishnagar, Cossipur, Barraghat, and Dakshah Thanes and the Amanga, Nahra, Barsat, Digang, Sorpur, Baduria and Basirhat thanas of 24-Parganas. On the other hand the present thanas of Debhatia, Assunia, Shyamnagar, Paulatpur, Tarakeshara, Tamluk, Khulna, Hatigaon, Paikgacha, see, Basirhat and Rampal Thanes of Khulna district would have made the southern boundary very complicated and some of the said thanas which contain Sunderbans would have been a liability rather than an asset to West Bengal. Under such a circumstance the western boundary of Khulna district downward from the south-eastern corner of Thana Basirhat as shown by a broken line in Map 55, could be best utilised as an international boundary.

It will be seen that the present international boundary between the two Bengals is much more defective than the one
--- Indo-Pakistan Boundary
--- Boundary when Thanas treated as units
--- District Boundary
--- Thana Boundary

Muslim Majority - Thomas 1941.
shown in Map 54. The one great consideration which must have been the greatest of all 'other factors' i.e. the maximum possible naturalness of the boundary, has been totally ignored. Big and extensive spearheads of the Indian territory are allowed to be pierced into East Bengal. The attenuation of the East Bengal territory in the extreme north-west formed by the setulia Thana of Jalpaiguri becomes rather unmanageable in the presence of the easterly extensions of the Bihar territory containing Baspara, Chopra etc. A very extensive and a deep enclave of Indian territory is formed by the Kaliganj, Itahar, Hemtabad, Kaliganj, Kushumundi, Bansbhari, Gangarampur, Kumarganj, Tapan and Balurghat Thanas of Dinajpur district and the Harischandrapura, Kharba, Ratna, Gajole, Domangola, Manikchak, English Bazar, Malda, Nabipur and Kalachak Thanas of Malda district. Another big spearhead is provided by the eastern parts of the districts of Murshidabad and Nadia and Thana Bongaon of Jessore district now forming part of West Bengal.

It is a noteworthy feature of the present boundary that no particular heed is paid to its coincidence with river courses. In a terrain like that of Bengal where the boundary could be made to coincide with different river courses in its different sections without much difficulty, length of approximately 300 miles of river-less boundary
EAST AND WEST
BENGALS

Thanas
in
Border Districts

For names of Thanas vide appendix V
out of a total length of about 570 miles of the boundary between the two Bengal is a noteworthy feature which reflects badly on the goodness of the Boundary Award. The total length of the boundary in the case shown in Fig. 54 would have been nearly 440 miles which has according to the award been protracted to about 570 miles on account of the unnecessary and unjustifiable loops of the present boundary. In this way an additional length of 130 miles has been unduly added to be defended and that too when none of the natural or even man-made features like railway tracks or roads have been taken into account in order to justify the unnecessary lengthening of the boundary.

Present Alignment.

The Western boundary of East Bengal begins from a point on the Mahananda river north-east of Phansidewa Hat and runs along that river south-south-westward up to near Titalia for a distance of about 10 miles. River Mahananda is one of the important rivers of the region and is quite useful to act as a boundary line. In the rear of the boundary, in East Bengal, runs a metalled road along the river. The road is, however, of no avail to us except for the small section which it serves as, it runs in the Indian territory for a greater part of its length and connects Siliguri with Furna. The means of communication on the other side of the border are not well developed but in any case these are much
better than those on this side of the border. From near Titulia the boundary turns southward and covers a small distance of about 4 miles. Hence it turns north-westward following the upper course of a small river called Beang Nadi, a tributary of the Mahananda, for a distance of about 5 miles. Again, it runs eastward for about 6 miles up to Bajianpur.

The territory of East Bengal comprising of Titulia Police-Station and enclosed by the boundary discussed until here is ill integrated with the rest of the territory. There is not a single efficient means of communication which connects it with the rest of East Bengal. The width of the land here varies from about 3½ to 9 miles only.

From Bajianpur to the north-west of Pachagarh (13 miles) the boundary coincides with the Saum-Karatoya river. The whole area to the north of Pachagarh-Haldibari unmetalled road is not very secure because firstly it is narrow, secondly it is on three sides surrounded by the Indian territory and thirdly it is not well connected with the main body of East Bengal territory. It is made still narrower by the eastward extension of the Indian territory to the east of the Titulia-Kamganj road. It is, however clear that the part of the Indian territory which surround the above said area of East Bengal is also one of the distant corners of India.
Westwards from the point to the north-west of Fazilganj the boundary does not utilise any river course for a distance of 7 miles, till it comes across the headwaters of the Nagar Hadi. Downward, the Nagar forms the boundary with slight deviations here and there for quite a long distance of about 70 miles, upto a point north of Haripur in West Bengal. Then follows a long distance of purely artificial and more or less circumlocutus boundary line full of numerous unnecessary curves spread over a distance of 167 miles. This has resulted from the award of the south-western Thanas of Dinajpur district and the north-eastern and western Thanas of Malda district to West Bengal for which there seems to be no justification either from the point of view of population distribution according to religions or from the standpoint of contiguity. The total population of the district of Dinajpur according to 1941 census, on which Partition was based, was overwhelmingly Muslim and 21 Thanas out of a total of 30 were Muslim majority areas. Similarly Malda was a Muslim Majority district where Muslims outnumbered non-Muslim in 10 Thanas out of a total of 15 Thanas. The map of this section of the boundary shows the meaninglessness of its curves.

In case of the award of the district of Murshidabad the western Thanas of Nadia and the Bongaon and Ghausghata
Thanes of Jessore to West Bengal, the boundary, in the first instance, follows the course of the Padma river which section of it can be called to be the best natural section possible here since it is backed by one of the mightiest rivers. The total mileage of this section is near about 85. Then follows a path devoid of any mentionable geographical feature for nearly 113 miles. The remaining boundary is formed by the Ichamati-Jamuna-Kalindi-Nerabhangha and is about 90 miles long.

**Northern and Eastern Boundary**

This boundary of East Bengal is strategically much less important than the western. It is because East Bengal really faces India proper along its western boundary. West Bengal and north-eastern Bihar are an uninterrupted continuation of the northern plains of India with all its implications. With the developed means of communication coming up to or continuing across the border difficulty in the there is no quickest possible mechanised movement from the interior most parts of India to this end. Difficulty is, however, afforded by the changed geographical conditions of East Bengal itself or parts of West Bengal where much of vehicular and, thus, swifter movement is not possible particularly on account of the profuseness of water bodies.

The northern boundary, described below, separates East Bengal from those parts of India which are
essentially the outposts of that country and are not so directly connected with the main body of the country as West Bengal or Bihar are. The whole link that exists between these parts and the rest of India lies in the bottleneck of the territory passing through Darjeeling and Jalpaiguri districts and the south-western narrow territory of Assam. Actually this bottleneck of Indian territory is too narrow to be effectively guarded. In case of a war much of the movement of the contending armies depends upon the information they have about the distribution and strength of each others troops but purely from the point of view of configuration it forms a tantalising object of attack. Geographically, therefore, the link between Assam and Eastern States on the one hand and the rest of India on the other is essentially weak.

In view of the weakness of this link, the miles of the northern and eastern boundary of East Bengal, running along Cooch Behar, Assam and Tripura territories, become comparatively safer.

Starting from the north-west the boundary for some distance (20 miles), is the northern boundary of Tetulia, Puchgar and Pathagram Thanes of Jalpaiguri district up to a point where it touches the boundary of Cooch Behar. Henceforward the common boundary of Cooch Behar and Rangpur district, which is full of
innumerable small and big curves, is the international boundary. The distance up to north of Sonahat where the boundary of the state turns northward away from the East Bengal boundary is about 180 miles. From here it trends south-eastward till the Brahmaputra is reached at a point east of Nageshwari (a distance of about 30 miles).

To the north of the whole length of this boundary is the narrow strip of plain the background of which is formed by the majestic Himalayan ranges. The varying width of the plain here is from 15 to 50 miles. The communication system on the Indian side of the border is far from satisfactory. It is, as expected of such regions, deficient and defective. The north-south roads are, in this region more numerous than the east-west roads which alone can act as real links between Assam and the rest of India. Such an evolution of the means of communication was quite natural as it purported to connect the northern hills with the plains. After the division of India into Pakistan and Bharat this system of communication became ill-adapted and hence inoperative to the full. On the other hand better links exist between this part of

The respective governments are considering to smoothen out the unnecessary curves by mutual agreement.
India and East Bengal.

The east-west communications of Assam consist of a few roads forming link between the north-south roads. These connect Assam with Purana and through that place with the rest of Bihar. These roads in Assam are first class only in some of their reaches degenerating into second and third class in other reaches. They are by no means straight or direct and are mostly without bridges on river crossings while small rivers and rivulets descending down from the northern mountains are many.

A 3' 6"—gauge railway line connects Darjeeling District, Jalpaiguri district and Assam with Kishanganj and Raghunathpur in Bihar. The railway route has, owing to the exigencies of the terrain and flow of streams, become quite circuitous. After reaching Siliguri it comes south-eastward to Jalpaiguri which here forms the focal point of railway communication and on which also converge two railway tracks from East Bengal. From Jalpaiguri the railway line runs straight northward upto Chalsa and then turns towards east reaching Madari Hat. Here, there is a small break as the railway line again starts from Dalingpore and coming downward to Gitaldaha continues eastward upto Tappur. Gitaldaha is in Cooch Behar very near to the boundary and is joined with East Bengal by a railway line. Over and above it, a small section of the
Bengal and Assam railway actually passes through Thana of Bhurangamari of Rangpur district.

The Bang- Assam boundary then crosses the Brahmaputra and remains along or near to it upto Mahendranagar from where it takes an easterly turn. To the south of the Assam Hills it runs very close to the foothills, the distance between the boundary and the 1000-foot contour being from 2 to 16 miles only. The boundary runs more or less parallel to the outer margin of the foothills upto north-west of Badarpur. The Assam Hills here form a barrier in the way of communications between the northern valley of Brahmaputra and the plains of East Bengal. The hills are crossed by a secondary road going from Jamalpur to Barengapara, Tura, Lakhipur and on to Goalpara. This road skirts the western extremity of the Garo hills. The other road which almost cuts through the middle of the Assam hills starts from Sylhet and going via Jaintiapur and Shillong reaches Guwahati and is connected with the

Now a 160-mile new railway link between Assam and the rest of India has been built. It avoids the Jalpaiguri-Dakbri link which is cut by the Indo-Pakistan boundary. On the new line the Jalpaiguri-Burma Chet has been replaced by a bridge on the Tista.
main east-west road of Assam running south of the Brahmaputra river. It seems rather strange that the Assam Hills not being much higher than 6,000 ft. at the highest points and the bulk of its higher parts being only above the 3000-foot contour, is so inadequately crossed by good roads. The answer lies more in the climatic control of the region than its orography. The southern slopes of the hills receive very heavy rainfall and contain rainiest places in the world like Cherrapunji. The vegetation cover is naturally thick and in keeping with the extraordinarily heavy rainfall. This cover of evergreen forests puts greater obstacles in communication than the heights themselves.

From the point north-east of Badarpur (Assam) the general direction of the boundary is towards south-east. Here it passes through the plains for a distance of 30 miles upto a point (approx. 24°31' N and 92°14' E) where it joins the western boundary of Tripura state. This section of the boundary is crossed by the East Bengal railway which connects the north-eastern and eastern parts of East Bengal with Silchar (Assam) and sending off branches to Kalkati Ghat, Bullabchara, Lalaghat and Silchar continues north-eastward where it passes through the narrow opening formed between the Sura Range of the Naga Hills on the east and the Jaintia Hills on the west. Here it has to pass through tunnels not very long and
continues upto west of Luming.

On the Pakistan side the railway line happens to run in the general direction of the eastern boundary and not far away from it upto Comilla and continues upto Neakhalji sending off branches from Laksham to Chandpur in the west and Chittagong and Dohasari in the south-east at Akhaura it is connected with Dacca etc. But for its nearness to the boundary it serves as an excellent lateral means of communication capable of being helpful in guarding the whole length of the eastern boundary. The remaining boundary is formed by the Bengal-Tripura boundary upto a point approximately 23° 45' N and 92° 12'E (distance of 310 miles). Then again the prepartition Bengal-Assam boundary (140 miles) is recognised as the inter-national boundary upto a point about 21° 58' N and 92° 37'E. Downward from here upto the mouth of the Naf river east of Jaliapara, a distance of 117 miles, the boundary runs along Burma. It is here that it utilises quite well defined ridges, 1000 ft. to 2000 ft. high and over, for an aggregate distance of about 85 miles with lower altitudes occurring near the source of the Sangu river, the Saingdin river (Burma) and in the Naf and the Ramu plains south-west of 21° 28' N and 92° 22'. The length of the Naf forming the boundary in the extrem south is about 35
An analysis of the land boundary of East Bengal reveals that it is by no means a 'natural' one. Out of a total length of about 1,500 miles (western section 570 miles and northern and eastern section 930 miles) only 455 miles are along rivers or in hilly areas. In the west rivers are the only features which could be utilised and have been only partially utilised. Rivers do hinder quick movement and mechanised forces according to their width and volume and velocity of water, still their curves can be disadvantageous to the defenders not fully vigilant and unable to replenish their strength according to the exigency of the situation. Such curves add to the possibility of the troops being attacked from behind and eventually being isolated from the bases. Carefully worked out and highly flexible and mobile dispositions and distributions of forces are, therefore, required to avert mishap.

The evolution of the northern and eastern boundary took place in such a way that there was no necessity of making them any more stable as Assam and Bengal were both parts of the same country India. The outcome is that physical features, for example Assam Hills, which could be utilised for the demarcation of a better international boundary are in the rear of it, thus, giving comparatively greater advantage to India. In this sense it stands
In contrast to the western boundary of West Pakistan where every prominent feature is fully utilized and the boundary tends to lie on that rather than on this side of greats which is definitely an advantageous position.

East Pakistan is surrounded almost on all sides by Indian territory excepting a small distance where the boundary runs along Burma and the sea. The shape of the country is compact excepting for the too many enclaves and enclaves. Such a shape, is in general, considered to be advantageous as any thrust from outside into the narrower parts of the territory is not likely to sever an extensive and useful link from the rest of the country. In case of East Pakistan, however, this advantage is more than nullified by the limitedness of its extents. The total area of East Bengal is only 54,501 sq. miles and the greatest length and breadth are 300 and 250 miles respectively.

In East Bengal the total population of 4,20,63 thousand persons with an average density of 777 persons to the sq. mile, according to 1951-census has accentuated the defence problem of the region. Greater population, in so many cases, means greater and surplus manpower and is a matter of national pride. Some belligerent powers of the world e.g. Germany were actually planning for an increase in their population when at the same time they were crying for 'lebensraum'. In response to such a policy of Germany those nations which intended to
remain purely on the defensive were also compelled to increase their manpower e.g. France where every effort was made by giving 'birth grants' or by raising the basic wages of workers by 15% through the legislation 'Code de la famille' etc. in the inter-war period. Such, however, is not the case everywhere. Too much of population is in many cases a curse rather than a blessing specially where an increase in resources cannot keep pace with a simultaneous increase in population or when there is no possibility of a substantial increase in resources. In such circumstances any addition to population is simply at the expense of quality which must be a greater consideration than mere numbers. In fact in some cases the thinly peopled vast areas are very advantageous to the defenders as they have unlimited opportunities of retreating without being defeated and their resources are scattered rather than concentrated and, therefore, are no easy targets to bombardment. An ideal case of such conditions was provided by Russia during the World War II and the Napoleonic War on that country. A land like East Bengal lies in perfect antithesis with this example of Russia. Greater population in East Bengal simply means increased congestion. At the time of attack mass movement of a large civilian population may involve grave difficulties in respect of supplies and communications may cause great strain on already meagre means of /
The unevenness of the distribution of population accentuates the effect of density in some crowded areas. All the more, e.g., there are 1,500 persons to the sq. mile in the Tippera district and 1,869 and 1,871 in Narayanganj and Munshiganj sub-divisions of Dacca District respectively, while in Chittagong Hill Tracts there is a density of only 57 persons per sq. mile. Strips of land along rivers usually accommodate a greater number of people.

Densities of over 1000 persons per sq. mile are found in the east central districts of Dacca (1492), Noakhali (1424) Faridpur (1052) and Tippera (1500).

Greater density of Dacca is also because of industrialisation which has made the Dacca-Narayanganj area as the greatest industrial region of East Bengal. The density varies from 750 to 1000 in the districts of Mymensingh (931), Chittagong district (902), Pabna (869), Bogra (868), Rangpur (792) and Dakarganj (902). Four western districts of Dinajpur, Ajshani, Jessore and Kushia have densities of 544, 608, 656 and 647 respectively. Those and the Sylhet district (628) have less than the average density of 777 for East Bengal. The western districts are part of the old delta which is a land of dead or dying rivers. Many streams have silted up. They no longer bring the fertile silt or carry the surplus water with malaria. The result that they have become unhealthy and subject to

Khulna is one of the least densely peopled areas in East Bengal having a density of 432 with some parts of Sunderbans containing only 1 person per sq. mile. On the whole it can be said that, except densities apart, the regional distributional pattern of population is not too unsatisfactory since great densities are not found either in the western or in the northern border districts.

When high densities of population are the outcome of industrialisation and urbanisation, there emerges a definite advantage from defence point of view. The urban localities act as localities of stubborn resistance to the invading forces. Even though aerial bombardment proves very damaging to such centres, they still prove successful in checking or hurling back the force of enemy attack. The example of Stalingrad in World War II, has become a proverbial one. Built up structures with the most developed internal system of roads are of great defence value. Such centres of human agglomeration cannot even be bypassed in many cases since these are situated at the criss-cross of vital lines of communication the possession of which becomes essential for a successful advance.

If a city or a town is surrounded by smaller townships or its own outgrowths the area of resistance increases and the entrances to the city are located at a comparatively greater distance. The encirclement of a town
apocleded villages on all sides is of immense help to the defenders. It furnishes a deep zone of defense properly interlinked. The allied forces were confronted with difficulty in capturing Caen in Normandy after their successful landing on account of such a distributional pattern of villages around the urban centre. It resulted in the delay in advance of the British forces who were fighting in this sector.

In case of East Bengal this advantageous aspect of population distribution is almost non-existent inspite of the very high densities. It is because the province is not urbanised. Only 4.36 per cent of the population lives in towns and cities. The highest urbanisation has taken place in the districts of Dacca and Chittagong where the percentages of urban population to total are 10.22 and 12.94 respectively. The least urbanised districts are Sylhet, Faridpur and Jessore where the percentages are as low as 1.05, 2.1 and 2.2 respectively. These do not compare well even with the lowest percentages in most hostile environmental conditions in parts of West Pakistan, for example, in Tatta Distt. (3.21), Las Bela State (4.04) and Kharian State (4.74).

The number of cities and towns in the province is small. There are only 3 cities of the category of 50,000 to 100,000 inhabitants and 2 of more than 100,000. It shows that towns are sparse in a region of dense
population. On the other hand in W.Bengal with comparatively less dense population and a smaller area the number of towns is much more. Of the 18 towns with a population of over 50,000 in both Bengals as many as 13 are in West Bengal. Out of it ten are on the Hooghly. There are, thus, not only more towns in W.Bengal but are also less dispersed.

Even agricultural community of E.Bengal is not clustered in nucleated villages. It is spread over the region thus providing absolutely no centres of even weak resistance as compared to those of cities. The typical patterns of distribution of population in various parts of E.Bengal are shown in maps No.60 to 62. These maps clearly bring out almost a total absence of villages. The causes may partially be traced out in the past history of the region which was farthest away from the N.W.F.P. and the Punjab, which lied on the path way of invasions. The safe position of the region from invasions in the past created a sense of security among the inhabitants. They did not feel the necessity of living in clusters least to say of constructing walled villages and towns which was in the past and is, even to day, the common site in parts of W.

Pakistan. Partly the causes may be found*

*In Punjab there are found extraordinarily big villages which are the legacy of the days when people needed greater concentration for purposes of defence against invaders and marauders.
in the overall geographical conditions with special reference to rice cultivation. Being agriculturists the people are very much associated with the soil and a number of harvests of rice a year increases this tendency very much. The patch of land which they till is their only theatre of activity with the result that they prefer to live in their independent homesteads by the side of their farms.

Both the historical and geographical causes have combined to determine a pattern of distribution which can be called to be a 'spread out' one as against 'nucleated'. However, as one goes towards west there is a slight tendency towards agglomeration which is manifest in a comparatively greater degree in West Bengal. Still westward in India there is increasing clustering of population at the expense of dispersal.

In view of the aforesaid considerations of congestive non urbanisation of population and in view of the unique physical and hydrographic conditions of the region the problem of defence of E. Bengal also becomes a unique one. A limited area with consequent limited resources, agriculture forming the only mainstay of the population, is the cause of an extreme poverty of the teeming millions. Poverty coupled with the enervating humid climate results in a low standard of health not quite fit for making the people very bold, resistant and warlike. Still it is they who can best take the responsibility
of that wing of Pakistan. The very distance with almost a complete absence of intercommunication facilities between the two wings of Pakistan is detrimental to the continuance of the present policy in which the defence of E. Bengal is mostly the responsibility of West Pakistanis. Any area entirely cut off from the region responsible for supplying the bulk of the defence forces shall have to be made more and more self-sufficient from its own resources in men whatever be the available stuff in the beginning. Secondly although warlike qualities cannot be easily inculcated in the people of a region as these require a particular stuff with a long history of confidence in itself but at times virtue is to be made out of necessity and, when that be the case, it becomes safer to allow them time to attain the requisite qualities so that they may eventually become equal to the task.

Over and above these considerations are the questions of acclimatization and adaptability to the environment. It has been discussed that the geographic environments of east and West Pakistan are fundamentally different and men adapted to conditions in one wing of the country, say, West Pakistan may not be able to adapt themselves nicely to the conditions found in the eastern wing. If they are stationed in the east, changed environmental conditions may bring about deterioration in
PATTERN OF DISTRIBUTION
OF POPULATION

(Distt. Dacca)

MILES
them and after some time fresh supplies of men may be needed from the west which the central exchequer may ill-afford. Even if that may not be the case the replenishment may become an impossibility at a time when it is most needed. Men from the east shall, therefore, have to take to military services to an extent commensurate with their responsibility of defending that part of the country.

In these days of specialised warfare different terrains with different geographical conditions demand of various types of adaptations. Men accustomed to a particular type of environment can do very well there provided they have got the proper training and right type of impediments.

In fact if specialisation is not understood in the narrow sense of the specialisation of weapons alone it can prove to be something most effective. The concept that mere specialisation of the impediments is enough, is the outcome of the experience of the two world wars but in these cases adaptation of men from a certain group of countries to all the possible theatres of war so widely different from each other was more or less an impossibility. Therefore, the strategists had to be contented with adaptations in the instruments of war alone.

It is generally seen that soldiers from a particular region may be good in various types of environments but these are best only in one particular environment.
Example: of Pathans can be taken into consideration.

They are on the whole good fighters but are at their best only in hilly countries. If that is the case it is quite in the fitness of things that the responsibility of the defence of a region, where amphibious operations can be the dominant aspect of a possible war, should primarily be entrusted to those who are fully acclimatized and who, by their very nature, have the greatest adaptability to such conditions.

Politically, economically as well as psychologically it is useful to entrust the major share of the defence of the province of East Bengal to its own populace. Militarily, however, it is more desirable. The status of the defence forces is high if they enjoy a popular moral backing by the people. In other words the general people of a region should not only be co-operative with the forces but should have an enthusiasm for them. A popular enthusiasm for the forces makes their morale high. Such an enthusiasm is not denied to the forces even today when the bulk of them come from West Pakistan because these too are the countrymen of Bengalis. Still, they will take a keener interest in and nourish a greater fervour for the army when Bengalis are themselves the guardians of their liberty and security and they feel that they have a part to play in the defence of their country.
The process of change of responsibility from west to east should, however, not be a quick one. Any undue agility in this connection will defeat the very purpose. It may, therefore, be concluded that in order to bring about a very gradual change in the said direction two separate commands, one eastern and the other western, be established under a central authority with a view to gradually increasing the strength of Bengalis in the eastern command.
A highly perplexing problem is offered by the sea frontiers of Pakistan, a problem which defies an easy solution. The coast is divided into two distinct and separate parts. The nearest points of the two sections are at a distance of about 2,500 nautical miles from each other. The whole length of the interlying sea routes is effectively controlled by India. The length of Pakistan's coast is short for the hinterland it commands. For an area of 364,737 sq. miles the coast length is 1,100 miles only. It means that there is a hinterland of 337.6 sq. miles for one mile of coast. Taking the two wings separately it works out as 121.1 sq. miles for East Bengal and 477.3 sq. miles for West Pakistan.

The limited number of existing ports and the want of suitable sites for the construction of new ones, still aggravates the problem for a country which cannot do without foreign imports, not only in munitions and weapons but also for its day-to-day needs. An agricultural country striving for semi-industrialisation and in an adolescent stage of its growth, needs contacts through the sea with the rest of the world. The freedom of the seas in the Indian Ocean is, therefore, a prerequisite of security and progress of Pakistan.
and Pakistan in August 1947, changed the entire defence position of the Indian Ocean. Before that the ocean was a 'mare clausum'. All the approaches to the ocean were fully guarded by Britain. The Mediterranean Sea was protected at its two entrances, Strait of Gibraltar and the Suez Canal. The passage to the Indian Ocean from the west was further protected by the naval base at Aden. The Cape of Good Hope route was also safe as it skirted around the union of South Africa. From the east the sea routes to the Indian Ocean were protected at Singapore. Further south-eastward the ocean routes were guarded by Australia and New Zealand. The eastern fortifications gave way temporarily during World War II when Singapore fell to Japanese. With the change of circumstances in favour of the allies afterwards the previous position was again restored. Now the position is that all the British bases are intact but the ocean has come under the sphere of influence of the Commonwealth countries of India and Pakistan. The relative importance of the two countries with respect to the Indian Ocean can be assessed on the basis of a study of the sea routes, land-water arrangements etc.

ROUTES OF THE INDIAN OCEAN. The more southerly routes connecting the union of South Africa and East Africa
with Australia and Indonesia are too far away from the sub-continent. In the north Colombo is a focal point of shipping in the Indian Ocean. Routes are Cape Town, Suez to Karachi, Aden, Karachi to Bombay, Calcutta and Chittagong, Colombo, etc., in part are realmente converging here. This focal point is obviously very near the Indian coasts. The principal sea routes converging on the west Indian ports are: Karachi (1470 Nautical Miles), Aden to Bombay (1655 ...), Karachi to Bombay (483 N.M.), Bombay to Colombo (140 N.M.), Colombo to Madras (590 N.), Madras to Calcutta (775 N.M.), Calcutta to Chittagong (330 N.M.), Calcutta to Hongkong (737 N.M.), Madras to Hongkong (1086 ...), Madras to Penang (1366 ...). Other longer routes are Mombasa-Bombay (570 N.M.), Cape Town-Bombay (4600 ...), and Calcutta-Chittagong (3639 N.M.).

The land water arrangements and the layout of routes show that India is in a much more advantageous position than Pakistan. The coasts of both the wings of Pakistan are farthest away from the main routes and from the main body of the ocean. The commercial disadvantage is not a disadvantage on the whole if a port whatever its situation depends upon the conditions of the hinterland and the maximum capacity of the port itself. However, the position of the coasts of a country with regard to the
SEA ROUTES OF THE INDIAN OCEAN

Map No. 63

[Map showing sea routes of the Indian Ocean with major cities and regions marked.]
ocean routes matter in determining the marine significance of that country. Peninsular India projecting downward into lower latitudes increases much the influence which the country is capable of extending over the Indian Ocean. It stands as a complete barrier in the way of intercommunication by sea between the two wings of Pakistan unless there are peaceful relations between India and Pakistan.

Off the western coast of India the Laccadive Isles and the Maldives Isles are of great importance specially for the Karachi, Bombay and Colombo route. It was rather unfortunate that no provision was made in the Independence Act for the allocation of Laccadive Isles to Pakistan when their Muslim population was 100%. The fact that these islands administratively belonged to Madras could have been no consideration in the event of the division of as small units as districts and even Tehsils. With Laccadives forming a part of Pakistan and having friendly relations with Maldives Isles, the sea passage between Karachi and Colombo might have been easier for Pakistan. The unlawful possession of Junagarh and Manawadar including the port of Veraval by India has also limited our facilities of shipping in the Arabian sea.

COASTS OF PAKISTAN. The coasts of Pakistan fall into two separate and distinct sections, that of West Pakistan (650 miles) and of East Pakistan (450 miles). The coast
of West Pakistan may again be divided into two sub-sections viz. coast of Baluchistan and the coast of Sind. The difference of the two sub-sections of the coast of West Pakistan may be understood in the context of different morphological conditions, economic and commercial aspects of the respective hinterlands and the degree of accessibility of the coast from the interior of the country.

The sub-section of Baluchistan is more or less/regular coast with very few indentations. The bays and backwaters are small in extent and are shallow. The coast is cut across by dry river valleys. The aridity of climate is much pronounced, the annual rainfall being about 3" only. The non-availability of drinking water is a serious deficiency. The hinterland comprises of a narrow dry coastal plain behind which the plateau edge and the coastal slopes stand like a wall. It is one of the most backward areas of Pakistan where the general geographical environment is hostile to any development. The plateau as a whole is very much isolated from the rest of the country and the means of communication within Baluchistan are least developed. There is ample evidence of small scale localised faulting in the terrain behind the coast but the sea littoral is
unaffected. The coast remains unbroken and as such there are no good natural harbours.

The general alignment of the coast is east-west except east of the mouth of the Paroli river where it turns south-east and south towards Cape Monza. The direction of stronger winds and also of currents being mostly westerly for a greater part of the year, the southward projecting promontories protect the boat anchorages lying to the east of them.

Starting from the west, the Pakistan coast begins from a point on the Gwatar Bay between the mouths of the Dashtiari Chil (Iran) and the Dasht (Pakistan) rivers. Near the mouth of Dasht the coast is swampy. The Gwatar Bay is a small one. Eastward of it is a small promontory, Ras Jiwani, which projects south-westward. At a distance of about 65 miles from it is the Gwadar promontory (Oman territory) on the two sides of which are Gwadar West Bay and Gwadar East Bay. The promontory affords protection from the currents to the Gwadar harbour situated on its eastern side.

Further eastward a stretch of about 100 miles follows the general east-west trend till Ras Jaddi is reached. The direction of the Ras is south-eastward and the fishing port of Paani lying, in its rear is very well protected. Paani has a comparatively better road connec-
tions with the interior and is capable of being developed into a good harbour to provide relief to the only port of West Pakistan vis. Karachi. The construction of a great port at Pasni at huge costs, where even the availability of drinking water is problematic, does not appear to be an economic proposition. However, strategic considerations demand more than the commercial ones that an alternative port be developed. Pasni is at a distance of about 300 miles west of Karachi and is in a comparatively safer corner of the Arabian Sea. The establishment of the port must, however, be accompanied by the construction of more improved means of communication linking it up not only with the interior of Baluchistan but also with the Indus plain.

After Pasni there is again a section of 100 miles of the coast which evokes no interest in it. Eastward the Ras Ormara is very much like Gwadar promontory in shape and configuration but covers a slightly bigger area. In its rear there is another site for the development of quite a good port of Ormara. Further eastward the coast contains no sites for a good port to be developed in future till Karachi is reached.

The section of the coast south-east of Karachi is of deltaic formation full of many a narrow channel.
Sutting of the mighty Indus river is carried on on a large scale on the mouths of its numerous channels chief of which are the Uchito and the Haidari. Quite a good number of the old river ports have disappeared owing to the silting up of the old river mouths. The distributaries of the Indus in the Delta region have a tendency of shifting towards the east. The western half of the Sind coast is less amphibious than the eastern one. Towards east there is a greater preponderance of channels, cut-offs and oxbow lakes and the coast is more swampy and marshy. Owing to such hydrographic conditions the whole of the Sind coast is unsatisfactory for the location of a stable port and the proximity of the port of Karachi further reduces the possibility of the development of any other port in this section.

The climatic and hydrographical controls in East Pakistan make the coast of that wing of the country very different. Typical deltaic conditions resulting in innumerable river channels are met with. The channels are mostly sheltered by the outgrowths of land in the form of islands. These are of varying shapes and sizes and are ever increasing in dimensions. Islands west of the Meghna estuary are more numerous but cover small areas. In the estuarine section there are bigger islands which are less uninhabited as compared to the western ones.
The biggest is the Dakhin Shahbaspur Island. Others are Matia, Sandwip, Manspura and Dommanick Islands. Off the Chittagong section of the coast are situated the Kutubdia, Dhekkhal and Sondia islands. Some of these islands can be of great value in coastal defence. The approaches to the land from the sea furnished by the mouths of the Tetulia, Shahbaspur, Neghna, Matia River and Sandwip Channel in the east are broad and easy. In the western section of the coast, however, the channels affording access inland are much narrower.

The East Bengal coast can be sub-divided into three sections (i) Khulna - Bakarganj section (ii) The estuary section and (iii) the Chittagong section. The western section is full of dense evergreen forests known by the general name of Sunderbans. These also extend into West Bengal. The Sunderbans area is one of the most underdeveloped parts of Pakistan. The dense growth of forests and marshy conditions prevailing here have made the region inhospitable to human settlement. A large number of wild animals has further increased the unsuitability of the Sunderbans to man. Here means of communication, excepting rivers, are non-existent and the accessibility of most people from this side is very much limited. Whatever accessibility is provided is through the main river channels. The estuary section of the coast is more protected by the presence of bigger
islands but the factor of a thick vegetation cover is lacking and the coast is much less marshy. Similarly the coastal littoral is not so marshy in the Chittagong section.

PORTS. Apart from the many minor anchorages which hardly deserve the name of port, there are but two big ports in Pakistan viz. Karachi and Chittagong, one each in West and East Pakistan respectively. Chalna Anchorage is only a newly established port which was opened on Dec. 11, 1950, with a view to giving partial relief to the over burdened port of Chittagong. In view of the present state of our commercial development the presence of only two ports in the country may not be a serious problem, but it is one of the weakest points in the defence of the country. An effective safeguard of the existing ports from naval attacks as also from air raids becomes simply imperative.

Together with an increase in the naval strength of the country commensurate with the dimensions of the task which falls to its lot, proper emphasis should be given on the land fortifications for the protection of our ports. There are ample opportunities for the building of such fortifications against frontal naval attack both in case of Karachi as well as Chittagong.
The entrance to the Karachi harbour is very well guarded from Manora Island. Chittagong is situated about 10 miles upstream on the right bank of the Karnaphuli river and is a well protected harbour. The Middle Island (Manihar Char) and the Patenga promontory are excellently well situated for giving protection to the port of Chittagong. It was this sheltered site of the port which made the Portugues select it as their Porto Grande in the 16th Century A.D.

The situation of both Karachi and Chittagong is eccentric to their respective hinterlands. This factor has contributed towards making their sites comparatively safer. Karachi is situated in the extreme south-western quadrant of the lower Indus plain. To the west of this point is the Hub river and the off-shoots of the Sindh range. Further westward is the inhospitable Hakran coastal plain and beyond the border is a friendly country, Iran. On the eastern side is the natural defence line of the Indus followed by a vast expanse of desert. Similarly Chittagon in East Bengal is in the remotest corner and is, thus, farthest away from the plains of the sub-continent. It can, therefore, be summed up that their geographic situation on the land being safe, complete and infallible arrangements are to be made for the safety of the ports from naval attacks. They are to be given as
such protection from the air as is possible. The
least possible number of ports in each wing of
Pakistan increases their importance to us to an unusual
extent and their proper functioning in peace, and more
so, in war is a dire necessity.

Maritime defence has an unusually great importance
in the case of our country. Even our land forces are
entirely dependent upon the freedom of the sea to us in
the absence of which these will not be able to sustain
themselves for long. The problem is further complicated
by considerations of the nature of maritime defence in
which it is the absolute naval supremacy which matters.
Partial supremacy in restricted areas for given times
is not of lasting value. In cases where there is no
absolute supremacy enjoyed by a nation its naval strength
cannot be of much avail to it. The enemy ships can possibly
succeed in neutralising the ships of the comparatively
weaker power by forcing them to remain in their havens
for long periods of time even though there are much needed
outposts in the open sea and in spite of that an absolute
supremacy is most difficult to attain. Even if it is
supposed to be attained, the question of inter-communica-
tion between the two wings of Pakistan still remains as
a passage around Cape Tresfil will not be free from land-
based aircrafts from, say, India which commands the Indian Ocean from the north.

Such are the dimensions and the nature of the problem which inspite of the difficulties involved has got to be solved. It, therefore, invites the most serious attention of the planners of defence of Pakistan.

India appears to be in a better position to try a blockade of Pakistan than our country is with respect to the former. Everything, however, depends upon the relative naval strength of the two countries. A country which is geographically in a more advantageous position normally requires at least twice or thrice as much naval strength as that of another nearby country for the blockade of the latter country. The naval strength of Pakistan is, therefore, to be built up on a comparative basis unless an understanding is reached between the two countries on the basis of some agreed formula. India and Pakistan are obviously the only powers which can reasonably strive for supremacy in the Indian Ocean. On account of the geographical disadvantages mentioned above Pakistan has to struggle more for coming on par with India.

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Appendix I.

Report by the Chairman of the Punjab Boundary Commission.

To

His Excellency the Governor-General.

1. I have the honour to present the decision and award of the Punjab Boundary Commission which, by virtue of section 4 of the Indian Independence Act, 1947, is represented by my decision as Chairman of that Commission.

2. The Punjab Boundary Commission was constituted by the announcement of the Governor-General, dated the 30th of June, 1947, Reference No.D-50/7/47-R. The members of the Commission thereby appointed were:

   Mr. Justice Din Muhammad,
   Mr. Justice Muhammad Munir,
   Mr. Justice Mehr Chand Mahajan, and
   Mr. Justice Teja Singh.

I was subsequently appointed Chairman of this Commission.

3. The terms of reference of the Commission, as set out in the announcement, were as follows:

"The Boundary Commission is instructed to demarcate the boundaries of the two parts of the Punjab on the basis of ascertaining the contiguous majority areas of Muslims and non-Muslims. In doing so, it will also take into account other factors".

We were desired to arrive at a decision as soon as
possible before the 15th of August.

4. After preliminary meetings, the Commissioner invited the submission of memoranda and representations by interested parties. Numerous memoranda and representations were received.

5. The public sittings of the Commission took place at Lahore, and extended from Monday the 21st of July 1947, to Thursday the 31st of July, 1947, inclusive, with the exception of Sunday, the 27th of July. The main arguments were conducted by counsel on behalf of the Indian National Congress, the Muslim League, and the Sikh members of the Punjab Legislative Assembly; but a number of other interested parties appeared and argued before the Commission. In view of the fact that I was acting also as Chairman of the Bengal Boundary Commission, whose proceedings were taking place simultaneously with the proceedings of the Punjab Boundary Commission, I did not attend the public sittings in person, but made arrangements to study daily the record of the proceedings and of all material submitted for our consideration.

6. After the close of the public sittings, the Commission adjourned to Simla where I joined my colleagues, and we entered upon discussions in the hope of being able to present an agreed decision as to the demarcation of the boundaries. I am greatly indebted to my colleagues for indispensable assistance in the clarification of the issues.
and the marshalling of the arguments for different views, but it became evident in the course of our discussions that the divergence of opinion between my colleagues was so wide that an agreed solution of the boundary problem was not to be obtained. I do not intend to convey by this that there were not large areas of the Punjab on the west and on the east respectively which provoked no controversy as to which State they should be assigned to; but when it came to the extensive but disputed areas in which the boundary must be drawn, differences of opinion as to the significance of the term "other factors", which we were directed by our terms of reference to take into account, and as to the weight and value to be attached to those factors, made it impossible to arrive at any agreed line. In those circumstances my colleagues, at the close of our discussions, assented to the conclusion that I must proceed to give my own decision.

7. This I now proceed to do. The demarcation of the boundary line is described in details in the schedule which forms Annexure A to this award, and in the map attached thereto, Annexure B. The map is annexed for purposes of illustration, and if there should be any divergence between the boundary as described in Annexure A and as delineated on the map in Annexure B, the description in Annexure A is to prevail.

8. Certain representations were addressed to the Commission on behalf of the States of Bikaner and Bahawalpur
both of which States were interested in canals whose headworks were situated in the Punjab Province. I have taken the view that an interest of this sort cannot weigh directly in the question before us as to the division of the Punjab between the Indian Union and Pakistan since the territorial division of the Punjab Province does not affect rights of private property, and I think that I am entitled to assume with confidence that any agreements that either of those States has made with the Provincial Government as to the sharing of water from these canals or otherwise will be respected by whatever Government hereafter assumes jurisdiction over the headworks concerned. I wish also to make it plain that no decision that is made by this Commission is intended to affect whatever territorial claim the State of Bahawalpur may have in respect of a number of villages lying between Sulemanke Weir and Gurka Ferry.

9. The task of delimiting a boundary in the Punjab is a difficult one. The claims of the respective parties ranged over a wide field of territory, but in my judgment the truly debatable ground in the end proved to lie in and around the area between the Beas and Sutlej rivers on the one hand, and the river Ravi on the other. The fixing of a boundary in this area was further complicated by the existence of canal systems, so vital to the life of the Punjab but developed under the conception of a single administration, and of systems of road and rail communication, which have been planned in the same way. There was also the stubborn
geographical fact of the respective situations of Lahore and Amritsar, and the claims to each or both of those cities which each side vigorously maintained. After weighing to the best of my ability such other factors as appeared to me relevant as affecting the fundamental basis of contiguous majority areas, I have come to the decision set out in the Schedule which thus becomes the award of the Commission. I am conscious that there are legitimate criticisms to be made of it; as there are, I think, of any other line that might be chosen.

10. I have hesitated long over those not inconsiderable areas east of the Sutlej River and in the angle of the Beas and Sutlej rivers in which Muslim majorities are found. But on the whole I have come to the conclusion that it would be in the true interest of neither State to extend the territories of the West Punjab to a strip on the far side of the Sutlej and that there are factors such as the disruption of railway communications and water systems that ought in this instance to displace the primary claims of contiguous majorities. But I must call attention to the fact that the Dipalpur Canal which serves areas in the West Punjab, takes off from the Ferozepore headworks and I find it difficult to envisage a satisfactory demarcation of boundary at this point that is not accompanied by some arrangement for joint control of the intake of the different canals dependent on these headworks.

11. I have not found it possible to preserve undivided
the irrigation system of the Upper Bari Doab Canal, which extends from Madhopur in the Patankot Canal to the western border of the district of Lahore, although I have made small adjustments of the Lahore-Arbitrar district boundary to mitigate some of the consequences of this severance; nor can I see any means of preserving under one territorial jurisdiction the Mandi Hydro-electric Scheme which supplies power in the districts of Kangra, Curdaspur, Amritsar, Lahore, Jullumur, Lushiana, Ferozepore, Sheikhupura and Lyallpur. I think it only right to express the hope that, where the drawing of a boundary line cannot avoid disrupting such unitary services as canal irrigation, railways, and electric power transmission, a solution may be found by agreement between the two states for some joint control of what has hitherto been a valuable common service.

12. I am conscious too that the award cannot go far towards satisfying sentiments and aspirations deeply held on either side but directly in conflict as to their bearing on the placing of the boundary. If means are to be found to gratify to the full those sentiments and aspirations, I think that they must be found in political arrangements with which I am not concerned, and not in the decision of a boundary line drawn under the terms of reference of this Commission.

Sd/- Cyril Radcliffe.

New Delhi, 12th August, 1947.

The Schedule

See Annexure A and B attached.
1. The boundary between the East and West Punjab shall commence on the north at the point where the west branch of the Ujh river enters the Punjab Province from the State of Kashmir. The boundary shall follow the line of that river down the western boundary of Pathankot Tahsil to the point where the Pathankot, Shakargarh and Gurdaspur tahsils meet. The tahsil boundary and not the actual course of the Ujh river shall constitute the boundary between the East and West Punjab.

2. From the point of meeting of the three tahsils above mentioned the boundary between the East and West Punjab shall follow the line of the Ujh river to its junction with the river Ravi and thereafter the line of the river Ravi along the boundary between the tahsils of Gurdaspur and Shakargarh, the boundary between the tahsils of Batala and Shakargarh, the boundary between the tahsils of Batala and Shakargarh, the boundary between the tahsils of Batala and Narowal, the boundary between the tahsils of Ajnala and Narowal, and the boundary between the tahsils of Ajnala and Shahdara, to the point on the river Ravi, where the district of Amritsar is divided from the district of Lahore. The tahsil boundaries referred to, and not the actual course of river Ujh or the River Ravi, shall constitute the boundary between the East and West Punjab.

3. From the point on the river Ravi where the district of Amritsar is divided from the District of Lahore, the boundary between the East and West Punjab shall turn
southwards following the boundary between the tahsils of Ajnala and Lahore and then the tahsils of Tarn Taran and Lahore, to the point where the tahsils of Kasur, Lahore and Tarn Taran meet. The line will then turn south-westward along the boundary between the tahsils of Lahore and Kasur to the point where that boundary meets the north-east corner of village Theh Jharolian. It will then run along the eastern boundary of that village to its junction with village Chathianwala, turn along the norther boundary of that village, and then run down its eastern boundary to its junction with village Waigal. It will then run along the eastern boundary of village Waigal to its junction with village Kalia and then along the southern boundary of village Waigal to its junction with village Panhuwan. The line will then run down the eastern boundary of village Panhuwan to its junction with village Gaddoke. The line will then run down the eastern border of village Gaddoke to its junction with village Nurwala. It will then turn along the southern boundary of village Gaddoke to its junction with village Katluni Kalan. The line will then run down the eastern boundary of village Katluni Kalan to its junction with villages Kals and Mastgarh. It will then run along the southern boundary of village Katluni Kalan to the north-west corner of village Kals. It will then run along the western boundary of village Kals to its junction with village Khem Karan. The line will then run along the western and southern
boundaries of village Khen Karon to its junction with
village Naewala. It will then run down the western and
southern boundaries of village Naewala, proceeding
eastward along the boundaries between village Mahidepur
on the north and villages Sheikhupura Kuhna, Kamalpuran,
Fatehwa and Mahewala. The line will then turn northward
along the western boundary of village Sahjra to its
junction with villages Mahidepur and Machhike. It will
then turn north-eastward along the boundaries between
villages Machhike and Sahjra and then proceed along the
boundary between villages Hattoke and Sahjra to the
junction between villages Hattoke Sahjra, and Nabbuke. The
line will then run north-east between the villages
Hattoke and Nabbuke to the junction of villages Hattoke,
Nabbuke and Gajjal. From that point the line will run
along the boundary between villages Nabbuke and Gajjal,
and then turn south along the eastern boundary of village
Nabbuke to its junction with village Nager Aminpur. It
will then turn along the north-eastern boundary of village
Nager Aminpur, and run along its eastern boundary to its
junction with village Hasteka. From there it will run
along the eastern boundary of village Hasteka to where it
meets the boundary between the tahsils of Kasur and
Ferozepore.

For the purpose of identifying the villages
referred to in this paragraph, I attach a map of the Kasur
tahsil authorised by the then Settlement Officer, Lahore District, which was supplied to the Commission by the Provincial Government.

4. The line will then run in a south-westerly direction down the Sutlej river on the boundary between the districts of Lahore and Ferozepore to the point where the districts of Ferozepore, Lahore and Montgomery meet. It will continue along the boundary between the districts of Ferozepore and Montgomery to the point where this boundary meets the border of Bahawalpur State. The district boundaries, and not the actual course of the Sutlej River, shall in each case constitute the boundary between the East and West Punjab.

5. It is my intention that this boundary line should ensure that the canal headworks at Sulemanke will fall within the territorial jurisdiction of the West Punjab. If the existing delimitation of the boundaries of Montgomery District does not ensure this, I award to the West Punjab so much of the territory concerned as covers the headworks, and the boundary shall be adjusted accordingly.

6. So much of the Punjab Province as lies to the west of the line demarcated in the preceding paragraphs shall be the territory of the West Punjab. So much of the territory of the Punjab Province as lies to the east of that line shall be the territory of the East Punjab.
Appendix II.

REPORT BY THE CHAIRMAN OF THE BENGAL
BOUNDARY COMMISSION.

To,

HIS EXCELLENCY THE GOVERNOR-GENERAL.

1. I have the honour to present the decision and
award of the Bengal Boundary Commission, which, by virtue
of section 3, of the Indian Independence Act, 1947, is
represented by my decision as Chairman of that Committee.
This award relates to the division of the Province of
Bengal and the Commission's award in respect of the
District of Sylhet and areas adjoining, thereto will be
recorded in a separate report.

2. The Bengal Boundary Commission was constituted by
the announcement of the Governor-General dated the 30th
of June, 1947, Reference No. D. 50/7/47R. The members of the
Commission thereby appointed were:

  Mr. Justice Bijan Kumar Mukerji,
  Mr. Justice C. C. Biswas,
  Mr. Justice Abu Saleh Mohamed Akram, and
  Mr. Justice S. A. Rehman.

I was subsequently appointed Chairman of this Commission.

3. The terms of reference of the Commission, as set
out in the announcement, were as follows:

"The Boundary Commission is instructed to
demarcate the Boundaries of the two parts of Bengal on
the basis of ascertaining the contiguous areas of Muslims and non-Muslims. In doing so, it will also take into account other factors.

We were desired to arrive at a decision as soon as possible before the 15th of August.

4. After preliminary meetings, the Commission invited the submission of memoranda and representations by interested parties. A very large number of memoranda and representations was received.

5. The public sittings of the Commission took place at Calcutta, and extended from Wednesday the 16th of July 1947, to Thursday the 24th of July, 1947, inclusive, with the exception of Sunday, the 20th of July. Arguments were presented to the Commission by numerous parties on both sides, but the main cases were presented by the counsel on behalf of the Indian National Congress, the Bengal Provincial Hindu Mahasabha and the New Bengal Association on one hand, and on behalf of the Muslim League on the other. In view of the fact, that I was acting also as Chairman of the Punjab Boundary Commission whose proceedings were taking place simultaneously with the proceedings of the Bengal Boundary Commission, I did not attend the public sittings in person, but made arrangements to study daily the record of the proceedings and all materials submitted for our consideration.

6. After the close of the public sittings, the
remainder of the time of the Commission was devoted to clarification and discussion of the issue involved. Our discussions took place at Calcutta.

7. The question of drawing a satisfactory boundary line under our terms of reference between East and West Bengal was one to which the parties concerned propounded the most diverse solutions. The Province offers few, if any, satisfactory natural boundaries, and its development has been on lines that do not well accord with a division by contiguous majority areas of Muslim and non-Muslim majorities.

8. In my view, the demarcation of a boundary line between East and West Bengal depended on the answers to be given to certain basic questions which may be stated as follows:

(1) To which State was the city of Calcutta to be assigned, or was it possible to adopt any method of dividing the city between the two States?

(2) If the city of Calcutta must be assigned as a whole to one or other of the States, what were its indispensable claims to the control of territory, such as all or part of the Nadia River system or the Kulti river upon which the life of Calcutta as a city and port depended?

(3) Could the attractions of the Ganges-Padma-Madhumati river line displace the strong claims of the
heavy concentration of Muslim majorities in the districts of Jessore and Nadia without doing too great a violence to the principle of our terms of reference?

(4) Could the district of Khulna usefully be held by a State different from that which held the district of Jessore?

(5) Was it right to assign to Eastern Bengal the considerable block of non-Muslim majorities in the districts of Malda and Dinajpur?

(6) Which State's claim ought to prevail in respect of the districts of Barjeeling and Jalpaiguri, in which the Muslim population amounted to 2.42 per cent of the whole in the case of Barjeeling, and to 23.08 percent of the whole in the case of Jalpaiguri, but which constituted an area not in any natural sense contiguous to another non-Muslim area of Bengal?

(7) To which State should the Chittagong Hill Tracts be assigned, an area in which the Muslim population was only 3 per cent of the whole, but which it was difficult to assign to a State different from that which controlled the district of Chittagong itself?

9. After much discussion, my colleagues found that they were unable to arrive at an agreed view on any of these major issues. There were of course considerable areas of the Province in the south-west and north-east and east, which provoke no controversy on either side;
but, in the absence of any reconciliation on all main questions affecting the drawing of the boundary itself, my colleagues assented to the view at the close of our discussions that I had no alternative but to proceed to give my own decision.

10. This I now proceed to do; but I should like at the same time to express my gratitude to my colleagues for their indispensable assistance in clarifying and discussing the difficult questions involved. The demarcation of the boundary line is described in detail in the schedule which forms Annexure A to this award, and in the map attached thereto, Annexure B. The map is annexed for purposes of illustration, and if there should be any divergence between the boundary as described in Annexure A and as delineated on the map in Annexure B, the description in Annexure A is to prevail.

11. I have done what I can in drawing the line to eliminate any avoidable cutting of railway communications and of river system, which are of importance to the life of the province; but it is quite impossible to draw a boundary under our terms of reference without causing some interruption of this sort, and I can only express the hope that arrangements can be made and maintained between the two States that will minimize the consequence of this interruption as far as possible.

New Delhi 12th August, 1947    Sd/-CYRIL RADCLIFFE.
The Schedule. See Annexures A and B.
ANNEXURE A

1. A line shall be drawn along the boundary between the Thana of Phansidewa in the District of Darjeeling and the Thana Tetulia in the District of Jalpaiguri from the point where that boundary meets the province of Bihar and then along the boundary between the Thanas of Tetulia and Rajganj; the Thanas of Pachagar and Rajganj, and the Thanas of Pachagar and Jalpaiguri, and shall then continue along the northern corner of the Thana Debiganj to the boundary of the State of Cooch-Behar. The district of Darjeeling and so much of the District of Jalpaiguri as lies north of this line shall belong to West Bengal, but the Thana of Patgram and any other portion of Jalpaiguri District which lies to the east or south shall belong to East Bengal.

2. A line shall then be drawn from the point where the boundary between the Thanas of Haripur and Rajganj in the District of Dinajpur meets the border of the Province of Bihar to the point where the boundary between the Districts of 24-Parganas and Khulna meets the Bay of Bengal. This line shall follow the course indicated in the following paragraphs. So much of the Province of Bengal as lies to the west of it shall belong to West Bengal. Subject to what has been provided in paragraph above with regard to the Districts of Darjeeling and Jalpaiguri, the remainder of the Province of Bengal shall
belong to East Bengal.

3. The line shall run along the boundary between the following Thanas:-
Haripur and Raiganj; Haripur and Hemtabad; Ranisankali and Hemtabad; Pirganj and Hemtabad; Pirganj and Kaliganj; Bechaganj and Kaliganj; Biral and Kaliganj; Biral and Kushmundi; Biral and Gangarampur; Dinajpur and Gangarampur; Dinajpur and Kumarganj; Chiribandar and Kumarganj; Phulbari and Kumarganj; Phulbari and Balurghat. It shall terminate at the point where the boundary between Phulbari and Balurghat meets the north-south line of the Bengal-Assam Railway in the eastern corner of the Thana of Balurghat. The line shall turn down the western edge of the railway lands belonging to that railway and follow that edge until it meets the boundary between the Thanas of Balurghat and Panchbibi.

4. From that point the line shall run along the boundary between the following Thanas:-
Balurghat and Panchbibi, Balurghat and Joypurhat; Balurghat and Dhamairhat; Tapan and Dhamairhat, Tapan and Patnitala; Tapan and Porsha; Bamangela and Porsha; Habibpur and Porsha; Habibpur and Gumastapur; Habibpur and Bholahat; Malda and Bholahat; English Bazaar and Bholahat; English Bazaar and Shibganj; Kaliachak and Shibganj; to the point where the boundary between the two last mentioned thanas meets the boundary between the
districts of Malda and Murshidabad on the river Ganges.

5. The line shall then turn south-east down the river Ganges along the boundary between the districts of Malda and Murshidabad; Rajshahi and Murshidabad; Rajshahi and Nadia; to the point in the north-western corner of the District of Nadia where the channel of the river Mathabanga takes off from the River Ganges. The district boundaries, and not the actual course of the River Ganges, shall constitute the boundary between East and West Bengal.

6. From the point on the river Ganges where the channel of the river Mathabanga takes off, the line shall run along that channel to the northernmost point where it meets the boundary between the Thanes of Baulatpur and Karimpur. The middle line of the main channel shall constitute the actual boundary.

7. From this point the boundary between East and West Bengal shall run along the boundaries between the Thanes of Baulatpur and Karimpur; Sankhil and Karimpur; Mahapur and Karimpur; Mahapur and Tenatta; Mahapur and Chapra; Damurbuda and Chapra; Damurbuda and Krishnaganj; Chuchura and Krishnaganj; Jibannagar and Krishnaganj; Jibannagar and Sankhil; Mahasnpur and Sankhil; Mahasnpur and Banaghat; Mahasnpur and Bongaon; Jhikargacha and Bongaon; Sarsa and Bongaon; Sarsa and Gaihati; Gaighata and Kalpara to the point where the boundary between those thanas meets the
boundary between the district of Khulna and 24-Parganas.

8. The line shall then run southwards along the boundary between the districts of Khulna and 24-Parganas to the point where that boundary meets the Bay of Bengal.
APPENDIX III.

REPORT RELATING TO SYLHET DISTRICT AND
THE ADJOINING DISTRICTS OF ASSAM.

To

His Excellency the Governor-General.

1. I have the honour to present the report of the
Bengal Boundary Commission relating to Sylhet District
and the adjoining districts of Assam. By virtue of
section 3 of the Indian Independence Act, 1947, the
decisions, contained in this report become the decision
and award of the Commission.

2. The Bengal Boundary Commission was constituted
as stated in my report dated the 12th of August, 1947,
with regard to the division of the Province of Bengal
into East and West Bengal. Our terms of reference were
as follows:

"The Boundary Commission is instructed to demarcate
the boundaries of the two parts of Bengal on the basis
of ascertaining the contiguous majority areas of Muslims
and non-Muslims. On doing so it will take also into
account other factors. In the event of the referendum
in the District of Sylhet resulting in favour of
amalgamation with Eastern Bengal, the Boundary Commis-
will also demarcate the Muslim majority areas of Sylhet
District and the contiguous Muslim majority areas of the adjoining districts of Assam."

3. After the conclusion of the proceedings relating to Bengal, the Commission invited the submission of memoranda and representations by parties interested in the Sylhet question. A number of such memoranda and representations was received.

4. The Commission held open sittings at Calcutta on the 4th, 5th and 6th days of August 1947, for the purpose of hearing arguments. The main arguments were conducted on the one side by counsel on behalf of the Government of East Bengal and the Provincial and district Muslim League; and on the other side, by counsel on behalf of the Government of the Province of Assam and the Assam Provincial Congress Committee and the Assam Provincial Hindu Mahasabha. I was not present in person at the open sittings as I was at the time engaged in the proceedings of the Punjab Boundary Commission which were taking place simultaneously, but I was supplied with the daily record of the Sylhet Proceedings and with all the material submitted for the Commission's consideration. At the close of opening sittings, the members of the Commission entered into discussions with me as to the issues involved and the decisions to be come to. These discussions took place at New Delhi.

5. There was an initial difference of opinion as to
the scope of the reference entrusted to the Commission. Two of my colleagues took the view that the Commission had been given authority to detach from Assam and to attach to East Bengal and Muslim majority areas of any part of Assam that could be described as contiguous to East Bengal, since they construed the words "the adjoining districts of Assam" as meaning any districts of Assam that adjoined East Bengal. The other two of my colleagues took the view that the Commission's power of detaching areas from Assam and transferring them to East Bengal was limited to the Districts of Sylhet and contiguous Muslim majority areas (if any) of other districts of Assam that adjoined Sylhet. The difference of opinion was referred to me for my casting vote, and I took the view that the more limited construction of our terms of reference was the correct one and that the "adjoining districts of Assam" did not extend to other districts of Assam than those that adjoined Sylhet. The commission accordingly proceeded with its work on this basis.

6. It was argued before the Commission on behalf of the Government of East Bengal that on the true construction of our terms of reference and section 3 of the Indian Independence Act 1947, the whole of the district of Sylhet at least must be transferred to East Bengal and the Commission had no option but to act upon this assumption.
All my colleagues agreed in rejecting this argument, and I concur in their view.

7. We found some difficulty in making up our minds whether, under our terms of reference, we were to approach the Sylhet question in the same way as the question of partitioning Bengal, since there were some differences in the language employed. But all my colleagues came to the conclusion that we were intended to divide the Sylhet and adjoining Districts of Assam between East Bengal and the Province of Assam on the basis of contiguous majority areas of Muslims and non-Muslims, but taking into account other factors, I am glad to adopt this view.

8. The members of the Commission were however unable to arrive at an agreed view as to how the boundary line should be drawn, and after discussion of their differences, they invited me to give my decision. This I now proceed to do.

9. In my view, the question is limited to the districts of Sylhet and Cachar, since of the other districts of Assam that can be said to adjoin Sylhet neither the Garo Hills nor the Khasi and Jaintia Hills near the Lushai Hills have any thing approaching a Muslim majority of population in respect of which a claim could be made.

10. Out of 35 thanas in Sylhet, 8 have non-Muslim
majorities; but of these & two-Suila and Ajmiriganj
(which is in any event divided almost evenly between
Muslims and non-Muslims), are entirely surrounded by
preponderatingly Muslim areas, and must therefore go
with them to East Bengal. The other six thanas comprising
a population of over 530,000 people stretch in a
continuous line along part of the southern border of
Sylhet district. They are divided between two sub-
divisions, of which one, south Sylhet, comprising a
population of over 515,000 people, has in fact a non-
Muslim majority of some 40,000; while the other,
Karinganj, with a population of over 568,000 people, has
a Muslim majority that is a little larger.

11. With regard to the District of Cachar, one thana,
Hailakandi, has a Muslim majority and is contiguous to
the Muslim thanas of Badarpur and Karinganj in the
district of Sylhet. This thana forms, with the thana of
Katlichara immediately to its south, the sub-division
of Hailakandi, and in the sub-division as a whole Muslims
enjoy a very small majority being 51% of the total
population. I think that the dependence of Katlichara
on Hailakandi for normal communications makes it
important that the area should be under one jurisdiction
and that the Muslims would have at any rate a strong
presumptive claim for the transfer of the sub-division
of Hailakandi, comprising a population of 166,536, from
the Province of Assam to the province of East Bengal.

12. But a study of the map shows, in my judgment, that a division on these lines would present problems of administration that might gravely affect the future welfare and happiness of the whole district. Not only would the six non-Muslim thanas of Sylhet be completely divorced from the rest of Assam if the Muslim claim to Mailakandi were recognised, but they form a strip running east and west whereas the natural division of the land is north and south and they effect an awkward severance of the railway line through Sylhet, so that, for instance the junction for the town of Sylhet itself, the capital of the district, would lie in Assam, not in East Bengal.

13. In these circumstances I think that some exchange of territories must be effected if a workable division is to result. Some of the non-Muslim thanas must go to East Bengal and some Muslim territory and Mailakandi must be retained by Assam. Accordingly I decide an award as follows:

A line shall be drawn from the point where the boundary between the thanas of Patharkandi and Kalaura meets the frontier of Tripura State and shall run north along the boundary between those thanas, then along the boundary between the thanas of Patharkandi and Barleikha, then along the boundary between the thanas of Karimganj and Barleikha, and then along the boundary between the thanas of Karianganj and Beani Basar to the point where that boundary meets the River Kusiyara. The line shall then turn to the east taking the river Kusiyara
as the boundary and run to the point where that river meets the boundary between the Districts of Sylhet and Cachar. The central line of the main stream or channel shall constitute the boundary. So much of the District of Sylhet as lies to the west and north of this line shall be detached from the Province of Assam and transferred to the Province of East Bengal. No other part of the province of Assam shall be transferred.

14. For purposes of illustration a map marked A is attached on which the line is delineated. In the event of any divergence between the line as delineated on the map and as described in paragraph 13, the written description is to prevail.

Sd/-  CYRIL RADCLIFFE.

New Delhi,
### APPENDIX IV

<table>
<thead>
<tr>
<th>City</th>
<th>Approx. Long.</th>
<th>Co-ordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karachi</td>
<td>24° 51' N.</td>
<td>67° 4' E.</td>
</tr>
<tr>
<td>Aden</td>
<td>12° 46' N.</td>
<td>45° 2' E.</td>
</tr>
<tr>
<td>Bombay</td>
<td>18° 54' N.</td>
<td>72° 49' E.</td>
</tr>
<tr>
<td>Calcutta</td>
<td>22° 34' N.</td>
<td>88° 24' E.</td>
</tr>
<tr>
<td>Singapore</td>
<td>1° 24' N.</td>
<td>103° 51' E.</td>
</tr>
<tr>
<td>Canton</td>
<td>23° 12' N.</td>
<td>113° 15' E.</td>
</tr>
<tr>
<td>Shanghai</td>
<td>31° 13' N.</td>
<td>121° 27' E.</td>
</tr>
<tr>
<td>Port Arthur</td>
<td>38° 48' N.</td>
<td>121° 20' E.</td>
</tr>
<tr>
<td>Iceland</td>
<td>65° 0' N.</td>
<td>18° 0' W.</td>
</tr>
</tbody>
</table>

The great circle distance between Iceland and another point can be calculated using the following equations:

\[
\text{arc } \frac{a+b}{2} = 45° 44' \\
\text{arc } \frac{a-b}{2} = 20° 42' \\
\text{arc } \frac{c}{2} = 42° 32'.
\]
\[ \text{cot } 42^\circ 32' = 0.0374 \]
\[ \text{cot } 20^\circ 5' = 7.9727 \]
\[ \text{cos } 45^\circ 5' = 0.8468 \]
\[ \tan \frac{A + B}{2} = 0.7613 \]
\[ \frac{A + B}{2} = 55^\circ 24' \]
\[ \text{A} - \text{B} = 27^\circ 52' \]

\[ \text{A} = 63^\circ 16'; \text{B} = 27^\circ 32' \]
\[ \sin 29^\circ = 0.6239 \]
\[ \sin 85^\circ = 1.0000 \]
\[ \sin 27^\circ 32' = 0.6649 \]
\[ \sin a = 0.9594 \]

\[ \theta = 65^\circ 36' = 1.1449 \text{ radians} \]
\[ \text{Distance} = 39572 \times 1.1449 = 4550 \text{ miles} \]

Additional
\[ \frac{a}{2} = 51^\circ 7'; \quad \frac{a - b}{2} = 26^\circ 7'; \quad \frac{a}{2} = 31^\circ 31' \]
\[ \text{cot } 31^\circ 31' = 0.2124 \]
\[ \text{cos } 26^\circ 7' = 0.9532 \]
\[ \text{cos } 51^\circ 7' = 0.1836 \]
\[ \text{cos } 71^\circ 7' = 0.7927 \]
\[ \tan \frac{A + B}{2} = 0.3679 \]
\[ \frac{A + B}{2} = 66^\circ 48' \]
\[ \text{A} - \text{B} = 42^\circ 41' \]
A = 109° 29'  ;  B = 24° 7' 
\sin 25°  ;  1.6259 
\sin 65° 2'  ;  7.9500 
\sin 24° 7'  ;  7.9737 
\sin 2°  ;  7.9846 

\sin 6° 11' = 1.1726 \text{ radians} 
Distance = 3957 \times 1.1726 = 4639 \text{ miles.} 

Bunday. 
\frac{\pi}{2} = 48° 3'  ;  \frac{\pi}{2} = 23° 3'  ;  \frac{\pi}{2} = 45° 24' 

\cot 45° 25' = 1.9936 
\cos 23° 3' = 0.9629 
\cos 48° 3' = 0.6251 
\tan \frac{A - B}{2} = 0.1324 
\frac{A - B}{2} = 53° 36' 

A = 81° 1';  B = 26° 11' 

\sin 25° = 1.6259 
\sin 90° 49' = 0.0000 
\sin 26° 11' = 1.6446 
\sin 8 = 1.9813 

\sin 6° 11' = 1.2793 \text{ radians} 
Distance = 3957 \times 1.2793 = 5064 \text{ miles.}
Calculus.

\[
\frac{a + b}{2} = 66^\circ 13', \quad \frac{a - b}{2} = -21^\circ 13', \quad \frac{c}{2} = 53^\circ 12'.
\]

\[
\log \cot 53^\circ 12' \cdot 7.8740
\]
\[
\log \cos 21^\circ 13' \cdot 1.0035
\]
\[
\log \cos 46^\circ 13' \cdot 1.2401
\]
\[
\tan \frac{A + B}{2} = 0.0035
\]
\[
\tan \frac{A - B}{2} = 7.5741
\]
\[
\frac{A + B}{2} = 45^\circ 14'
\]
\[
\frac{A - B}{2} = 20^\circ 34'.
\]

\[
A = 65^\circ 48'; \quad B = 24^\circ 40'.
\]

\[
\log \sin 25^\circ \cdot 7.6259
\]
\[
\log \sin 106^\circ 24' \cdot 7.9820
\]
\[
\log \sin 24^\circ 40' \cdot 7.6204
\]
\[
\log \sin c \cdot 7.9873
\]

\[
e = 76^\circ 18' = 1.3317 \text{ radians.}
\]

Distance = 3957 \times 1.3317 = 5269 \text{ miles.}

Singapore:

\[
\frac{a + b}{2} = 56^\circ 48'; \quad \frac{a - b}{2} = 31^\circ 48'; \quad \frac{c}{2} = 60^\circ 50'.
\]

\[
\log \cot 60^\circ 51' \cdot 1.7464
\]
\[
\log \cos 31^\circ 48' \cdot 1.0294
\]
\[
\log \cos 56^\circ 48' \cdot 1.7384
\]
\[
\tan \frac{A + B}{2} = 7.9374
\]
\[
\tan \frac{A - B}{2} = 7.5456
\]
\[
\frac{A + B}{2} = 40^\circ 53'
\]
\[
\frac{A - B}{2} = 19^\circ 21'.
\]
\[ A = 60^\circ 24' \; \; \; B = 21^\circ 32' \]

| \( \sin 25^\circ \) | 1.6259 |
| \( \sin 121^\circ 51' \) | 1.9291 |
| \( \sin 21^\circ 32' \) | 1.5647 |
| \( \sin c \) | 1.9903 |

\[ c = 77^\circ 57' = 1.3605 \text{ radians.} \]

**Distance** = 3957 \times 1.3605 = 5384 miles.

**Canton**

\[ \frac{a+b}{2} = 45^\circ 54'; \quad \frac{a-b}{2} = 20^\circ 54'; \quad \frac{c}{2} = 65^\circ 37'. \]

| \( \cot 65^\circ 38' \) | 1.6560 |
| \( \cos 20^\circ 54' \) | 1.9704 |
| \( \cos 45^\circ 54' \) | 1.8426 |
| \( \tan \frac{A+B}{2} \) | 1.7838 |
| \( \frac{A+B}{2} \) | 31.18' |

\[ A = 43^\circ 59' \; \; ; B = 18^\circ 37'. \]

**log.**

| \( \sin 25^\circ \) | 1.6259 |
| \( \sin 131^\circ 15' \) | 1.4761 |
| \( \sin 18^\circ 37' \) | 1.5041 |
| \( \sin c \) | 1.9979 |

\[ c = 84^\circ 24' = 1.4731 \text{ radians.} \]

**Distance** = 3957 \times 1.4731 = 5828 miles.
Shanghai.

\[ \frac{a + b}{2} = 41^\circ53\frac{1}{2}' \quad \frac{a-b}{2} = 16^\circ53\frac{1}{2}' \quad \frac{c}{2} = 69^\circ43\frac{1}{2}' \]

\begin{align*}
\cot 69^\circ44' & : 7.5673 & \cot 69^\circ44' & : 7.5673 \\
\cos 16^\circ54' & : 0.9808 & \sin 16^\circ54' & : 0.4634 \\
\cos 41^\circ54' & : 1.5481 & \sin 41^\circ54' & : 0.6718 \\
\tan \frac{A+B}{2} & : 1.6763 & \tan \frac{A-B}{2} & : 7.2060 \\
\frac{A+B}{2} & = 25^\circ23' & \frac{A-B}{2} & = 9^\circ8' \\
\end{align*}

\[ A = 34^\circ31'; \quad B = 16^\circ15' \]

\begin{align*}
\sin 25^\circ & : 1.4659 \\
\sin 139^\circ27' & : 1.6129 \\
\sin 16^\circ15' & : 1.4469 \\
\sin e & : 1.9919 \\
\end{align*}

\( e = 79^\circ = 1.3788 \text{ radians.} \)

Distance \( = 3957 \times 1.3788 = 5456 \text{ miles} \).

Port Arthur.

\[ \frac{a+b}{2} = 38^\circ6\frac{1}{2}' \quad \frac{a-b}{2} = 13^\circ6\frac{1}{2}' \quad \frac{c}{2} = 69^\circ40' \]

\begin{align*}
\cot 69^\circ40' & : 7.5689 & \cot 69^\circ40' & : 7.5689 \\
\cos 13^\circ6' & : 1.9843 & \sin 13^\circ6' & : 1.3554 \\
\cos 38^\circ6' & : 1.8959 & \sin 38^\circ6' & : 1.7903 \\
\tan \frac{A+B}{2} & : 1.6615 & \tan \frac{A-B}{2} & : 1.1340 \\
\frac{A+B}{2} & = 24^\circ38' & \frac{A-B}{2} & = 7^\circ45' \\
\end{align*}
\[ A = 32^{\circ}23' ; B = 16^{\circ}53' \]

\[
\begin{align*}
\sin 25^\circ & \quad \log \quad 1.6259 \\
\sin 139^\circ20' & \quad \log \quad 0.3999 \\
\sin 16^\circ53' & \quad \log \quad 1.4628 \\
\sin e & \quad \log \quad 0.9769
\end{align*}
\]

\( e = 71^\circ28' = 1.2473 \text{ radians} \)

Distance = 3957 \times 1.2473 = 4937 \text{ miles}.
APPENDIX V.

Names of Thanes in border districts of East and West Bengal.

District Jalpaiguri.
1. Totulia.
2. Pachgar.
4. Debiganj.
5. Raiganj.
7. Mal.
8. Mittali.
9. Waynapuri.
11. Dhusburi.
12. Madaribat.
13. Falakata.
15. Alipur Duara.
17. Pathagram.

District Dinajpur.
1. Atwari.
2. Saliedangi.
3. Thakurgaon.
4. Banisankail.
5. Pirganj.
8. Bochaganj.
11. Raijanj.
12. Itahar.
15. Kushumandi.
16. Bazehbheri.
17. Biral.
18. Dinajpur.
20. Parbatipur.
22. Ghora,chat.
23. Gangarampur.
24. Kumarganj.
25. Phulbari.
27. Balurghat.
28. Porsha.
29. Patnitala.
30. Dhamoirhat.

**District Malda.**

<table>
<thead>
<tr>
<th>1. Harischandrapur.</th>
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<tr>
<td>2. Kharba.</td>
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<td>3. Ratua.</td>
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<td>4. Cajoie.</td>
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<td>5. Banamgola.</td>
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<td>7. English Bazar.</td>
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<td>8. Malda.</td>
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<td>9. Habibpur.</td>
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<td>12. Comtapur.</td>
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<td>15. Nawabganj.</td>
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</tbody>
</table>

**District Nalbhai.**

| 1. Miramatpur.          |
| 2. Mahadebpur.          |
| 5. Naugon.              |
| 6. Raminagar.           |
| 7. Atrai.               |
| 8. Tanor.               |
| 12. Paba.               |
| 15. Holia.              |
| 17. Singra.             |
| 22. Bagalipara.         |

**District Boora.**

| 1. Panchbibi. |
2. Joypurhat.
4. Sirgunj.
5. Adamdighi.
6. Dupchanchia.
8. Bogra.
10. Shariakandi.
11. Handigram.
12. Sherpur.

**District Murshidabad.**

1. (a) Farakka.
1. (b) Samsurganj.
2. Suti.
3. Raghunathganj.
4. Sagardighi.
5. Lalgola.
7. Jiganj.
8. Shagabangola.
13. Harinagarpara.
15. Domkol.
17. Keragram.
18. Kandi.
20. Chaturpur.

**District Kushtia (Formerly Medinipur).**

1. Daulatpur.
2. Sairamara.
3. Mirpur.
5. Kumarkhali.
8. Gangauli.
10. Sheherpur.
11. Amadanga.
13. Chhautanga.
15. Jibannagar.
17. Narakasipara.
18. Chapra.
22. Santipur.
23. Ranaghat.
25. Haringhata.

District Jessore.
1. Harinokundu.
2. Salkopa.
5. Kaliganj.
7. Bongaon (Now in 24-Parganas).
9. Galghata (Now in 24-Parganas).
12. Shikargacha.

15. Keshabpur.
17. Naugara.
18. Salikha.
20. Alfadanga.
21. Lohagara.
22. Narail.
23. Kalia.

District Khulna.
1. Kalaroa.
2. Satkhira.
3. Tal.
4. Debbatta.
5. Kaliganj.
6. Asansuli.
7. Shyamnagar.
8. Fultola.
10. Tarakhan.
11. Domria.
15. Dacope.
<table>
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<td>40</td>
<td>Kakdwip</td>
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<tr>
<td>41</td>
<td>Sugar</td>
</tr>
</tbody>
</table>

**District 24—Parganas:**

1. Hijpur
2. Naihati
3. Jagatdal
4. Nosapara
5. Barrackpore
6. Titagarh
7. Khardah
8. Barranagar
9. Dum Dum
10. Metiabruz
11. Maheshtola
12. Behala
13. Tollygunge
14. Budge Budge
15. Bishnupur
16. Sonarpore
17. Bhansar
18. Baruipur
19. Jayanagar
20. Canning
21. Andamana
22. Habra
23. Barasat
24. Deganga
25. Rajerhat
26. Sarupnagar
27. Baduria
28. Basirhat
29. Haroa
30. Sandeshkhali
31. Hasnabad
32. Falta
33. Magonhat
34. Diamond Harbour
35. Kulpi
36. Matherapur
37. Kakdwip
38. Sugar

**N.B.** Part of Daulatpur Thana (Kushtia Distt.) was allocated to West Bengal and that of Balurghat Thana (Dinajpur District) to East Bengal.
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