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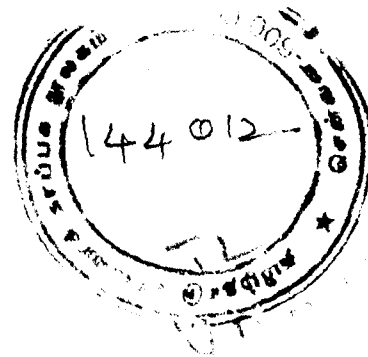
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The Editor takes no responsibility for the views expressed in the Journal. Authors alone are responsible for their respective statements.

The Communal Pattern of India

By

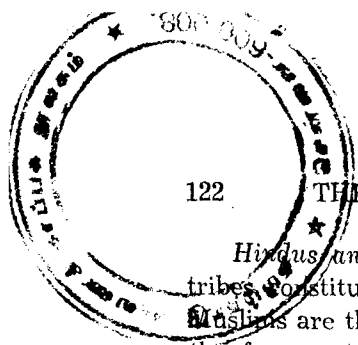
DR. KAZI SAIDUDDIN AHMAD,

Geography Department, Muslim University, Aligarh.

The political problem is at once communal, social and economic. Political rights without communal, social and economic justice are meaningless. No scheme for the future constitution of India can be generally acceptable unless it provides a solution for the communal, social, and economic differences.

The population of India is composed of a variety of peoples following various religions and ways of life and practising diverse customs, rites, and traditions, and speaking different languages. Indian society is clearly divided and is largely organised on a communal basis. India is the most religious country of the world. Religion permeates the entire gamut of life of this country. Social conduct is greatly influenced by practices which may not in themselves be religious but which are subject to religious sanction. While in the Western countries culture is comparatively independent of religion and has more or less a regional basis, in India the two are so inseparably bound together that religion appears as a positive obstacle to cultural fusion.

Unity of religion also denotes a certain amount of common sympathy and this is reflected in common political aspiration and action. Where religion is such a great force and plays such a significant part in the life of the people, no constitution can be successfully framed which neglects its due position and importance.



Hindus and Muslims:—There are many religious castes and tribes constituting the population of India. Of these Hindus and Muslims are the two most numerous and most widely distributed—the former (exclusive of scheduled castes) being 150·9 millions in numbers and the latter, 79·4 millions out of 389 millions in India. While they are found living together over the whole of India, the Muslims constitute a majority of the population in the north-west and the north-east and the Hindus are in a majority in the rest of the country. Although they have lived side by side for centuries, yet, their long association has failed to weld them into a single people. They possess absolutely different faiths. Their religious notions are not only divergent but are repugnant to each other. While Idol-worship is prohibited by one, it is the basis of prayer in the other. While the Mussalmans worship only one God, the Hindus have many. With the division of divinity, the whole social and moral structure is clearly demarcated. The forms of prayer and rituals and the places of pilgrimage are also different. Islam does not recognize either caste or creed, but aims at the formation of a classless society, while the caste system is a prominent feature of the Hindu society.

There is a great difference between the two peoples in tradition, in history and in their attitude towards life—political, social and economic. The Muslims derive their inspiration from the Holy Quran and Hadis, and the Hindus from the Vedas. The Muslims have got their traditions from the Holy Prophet, the Caliphs and Imams, while the Hindus have inherited them from the Ramayan, Mahabharat and Geeta. Their history has been that of two warring peoples, with numerous episodes of mutual destruction. The communal riots of today tell the same story.

The national heroes of the two are quite different. The Muslims look at the successful Mussalman invaders with pride, while the Hindus honour those who offered the greatest resistance. So the history of each is not only different but distasteful to one another.

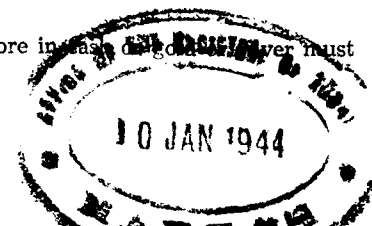
There is a great difference between the Muslim and the Hindu concept of state. Islam is essentially democratic in character, while Hinduism with its caste system and class domination implies minority rule. According to the Islamic conception, the Commander of the Faithful, rules in common brotherhood, all the children of one God. Amongst the Hindus, Government is the legacy of the warrior-class, the Kshattriyas.

There is also a marked difference in the economy of these two great communities. The Islamic economic system is socialistic in outlook. Islam is a proletarian faith which does not encourage the accumulation of wealth. All accumulated wealth must be shared with the poor. Money should not be hoarded but kept in circulation. Through *Zakat*,¹ it ensures the distribution of wealth and the circulation of money. With an organised system of *Zakat* all individual locked-up surplus must dissipate itself within a few decades. Islam does not permit usury. No usury means no banking capital. But Hinduism is a capitalist religion. The Hindus worship Lakshmi, the goddess of wealth, and usury is one of their principal sources of income. Most of the capitalists and industrial magnates, as it is, are Hindus. In two regions where they are in a majority, the Mussalmans are mainly agriculturists. Even here the industry is mainly in the hands of the Hindus.

The laws of inheritance in Islam promote the same even distribution of property and the scattering of families. Women have a share in inheritance. The joint family system is, however, the fundamental basis of the Hindu society; their women are not entitled to inheritance.

A *touch-me-not-spirit* pervades the atmosphere in the Hindu society, and is a great strain on social relations. Not only the Shudras, the so-called untouchables, but also the Mussalmans suffer from social humiliation and ostracism. The Hindus and Mussalmans form two distinct and isolated social groups, with no ties to bind them together. Social condition, habits, customs, manners, dress, diet, houses and festivals are all different. They do not live mixed together as a common family. Hindus or Mussalmans, in provinces where they are in the minority, they live in towns, while the rural areas are mostly inhabited by the majority community. In every town, or village, there is a segregation of the Hindu and Muslim population. Their quarters are apart and have distinct patterns. Their drinking water is separate. There are no opportunities and occasions for common friendly contacts on any large scale. There is no inter-dining and no inter-marriage. And these two things are a great bar to social assimilation. In Europe the problem of religious minorities is not so acute since their differences in faith are superficial and most of the divergent faiths have the same root. They are Christians all the same,

1. Every Muslim who owns Rs. 40 or more in cash or goods must pay one-fortieth to the poor every year.



whether Catholic, Protestant, or Orthodox Greek, and they have free inter-dining and inter-marriage. Their dress is uniform. Even in India sections of educated Hindus and Muslims, who are liberal in their views and have few restrictions about them, maintain quite good and amicable relations with each other, on account of greater opportunities of social contact.

Two Nations:—The Muslims look upon their distinct religion, culture and social institutions as a clear expression of their separate individuality and therefore claim the right to be recognized as a separate nation in regions where they form predominant groups. This attitude has been gradually and slowly developing in them for a long time as a consequence of their social humiliation and economic serfdom. It has recently burst to the surface under the pressure of the domination exercised by some of the Congress ministries during the short term of their office.

A nation, in the words of Keane,² comprises all the inhabitants of a given region subject long enough to one political system to have acquired a certain outward uniformity, a common standard of social usages, interest, aspiration, generally also language, literature and religion. It tends towards ethnic uniformity or unity by the gradual fusion of diverse elements in a uniform type. The Hindus and the Muslims, as they are today, taken as a whole, have no ethnic unity, or uniformity. There is no visible tendency and there is not even a remote possibility of their fusion into a uniform type. And they have no desire to exist as one independent political unit. So, obviously, they do not constitute one single nation. There is no such thing as an Indian nation just as there is no European nation. The basis of the two-nation theory is not merely religious but also social, cultural, economic and to a certain extent linguistic. The All-India Muslim League, speaking on behalf of the Muslims, claims that Muslims are a separate nation. Savarkar, for long the President of the Hindu Mahasabha, admits this claim that "India cannot be assumed today to be an unitarian and homogeneous nation, but on the contrary there are two nations, in the main, the Hindus and Muslims."³

There cannot be a nation without an independent political existence and a separate homeland. Unless the Hindus and Mohammadans ignore their religious and cultural differences and

are prepared to merge themselves in one common state, or in other words, unless the Muslims can be induced to forego their claims for a separate nationhood, there is no alternative but to provide separate homelands. A people about hundred million strong and mostly inhabiting large contiguous areas with independent outlets to the sea, cannot be coerced into accepting the status of a minority contained in a much larger geographical unit. If the countries of Holland and Belgium each with about $3\frac{1}{2}$ million population, or the Baltic states of Latvia, Lithuania and Estonia, all three of which together have a total population of about $5\frac{1}{2}$ million, can be recognised as separate nations; the claims of the Muslims with a population of more than 20 million in the north-west and 36 million in the north-east is irresistible.

The growth of consciousness amongst the Muslims of their separate nationhood is a factor which cannot be passed over in any attempt to secure political peace in India. History teaches us the same lesson. Many wars, political dissensions in various countries, and disruptions of several states can be traced to a similar consciousness in the peoples of their separate nationalism. The formation of Baltic States in Europe, and the dismemberment of Turkey in south-west Asia are two very good examples. In the Austro-Hungarian Empire various peoples lived together united for several centuries, but ultimately the Empire was split up into several states—each forming a separate nation. Any attempt to solve the political problem on the assumption that Hindus and Muslims are now one nation, or are likely to be hereafter, is to ignore the facts and evade the real issue, and so, it must come to nought. For a solution to be successful, it must be based on amity rather than unity of the two peoples and must take cognizance not only of religious agglomerations but also of the communally-interwoven texture of the Indian society. Both the Hindus and the Muslims should be allowed to live their own lives peacefully together on the basis of mutual understanding and toleration. If our differences are so fundamental that we cannot make one people, we can join in friendly relationship as two good peoples. If there can be no integration, there can certainly be co-ordination and collaboration. The object should be to divide India, not into political units which should either be in complete isolation from one another or in subordination to each other or to a common centre, but into states which should function in harmony and neighbourly co-operation.

Scheduled Castes:—Scheduled Castes form the most important group of the population next to caste Hindus and Muslims. They

2. Keane, *Ethnology*, Cambridge, p. 14.

3. Proceedings of the All India Maha Sabha Session, held at Ahmadabad, 1937.

are about 40 million or about 14% of the population of British India but are found scattered in all the provinces.⁴ They are specially numerous in United Provinces (20%), C.P. and Berar (18%), Madras (16%), Orissa (14%), Bengal (12%) and Bihar (10%). These people present a problem, unique in India. They are considered to be unholy, unclean, and untouchable by the high-caste Hindus and suffer from serious social, religious, and political handicaps on account of their degraded position. They have only a restricted right to use public conveniences like wells, or schools. They are excluded from Hindu temples. They generally live in reserves. Their quarters are extremely congested and have few municipal amenities. Both educationally and economically they are extremely backward. Hardly any of them can read, or write, and except a few in large industrial towns, they are extremely poor. They obtain the worst lands and the worst wells. The high-caste Hindus are to be blamed for having kept them so long in their lowly condition. There can be no political peace in this country as long as such a large section of the people is kept under subjugation and disgraceful humiliation. Any political reform must ensure future economic and social equality, for all sections of the people.

An important question is whether the Scheduled Castes should be united with the Hindus, or recognised as a separate political entity. It is difficult to define the term, Hindu. It is as much a social as a religious term. According to Census Report⁵ it denotes membership of a system, or organised society with great latitude of religious belief and practices, so that it is possible for a man to be a Hindu socially and to have a religious belief shared with others who do not regard themselves as members of the same society. This emerges from the history of the Hindu society, which has been formed by the accretion of a number of races within a polity indirectly hierarchical. There have been attempts, though unsuccessful, to absorb and include not only Scheduled Castes but also Jains, Buddhists and Sikhs within the fold of Hinduism. Whether the Scheduled Castes are Hindus, or not, and whether they want to share political rights with the Hindus, or not, is for them to say. It is, however, obvious that they form a caste exterior to Hindu society and are denied its religious, or social status. In Punjab about 400,000 persons of the Depressed

4. For detailed figures see the appendix.

5. 1931, p. 381.

Classes do not claim themselves to be Hindus and have returned themselves as Ad-Dharmis during the census of 1931 and 1941. To improve their lot, many of the members of the Scheduled Castes are being converted in large numbers to Christianity, Islam and Sikhism. The granting of political rights is the only way of pulling these people upon to their feet. It is only in this way that we can create self-consciousness in them and make them equal partners in an amicable society. Their present political union with the Hindus is based on the force of fast-up-to-death of a person exterior to them. Brought about by pressure, such a union cannot bring contentment, and dissatisfaction is the natural result.

The distribution of the Scheduled Castes shows a widely scattered pattern. They are found in every town and village in India, but nowhere do they form compact groups over large areas. Within a village, town, or city, they are, however, segregated towards outskirts, aloof from the main society. They do not constitute a majority anywhere, either in urban or rural areas. Though almost equal in number to the population of France they cannot aspire to separate nationhood as they have no separate homeland. But they cannot be ignored. They form an important minority in all the provinces, both as a whole and in parts. This fact should be recognised and their rights should be duly safe-guarded.

Tribes:—The tribes form about 7% of the population of India having a total population of about 17 million in British India. They are important elements in the population of the provinces of Andaman and Nicobar (36%), Orissa (21%), Bihar (18%), C.P. and Berar (18%), and Assam (24%). They have a special significance in Assam as is brought out by the following figures:—

Total Population Br. Territory.	Scheduled Castes.	Caste Hindus.	Muslims.	Tribes.
10,204,733.	676,291 (6.7%).	3,536,932 (34.7%).	3,442,4779 (33.81%).	2,848,996 (24%).

In the census of 1941, emphasis was rightly laid on community rather than religion, and figures have been collected accordingly. Community and religion may seem to many as one and the same and inseparable. They are, in fact, so in most cases. But where there are tribes, community and religion need not always be the same. Tribes form a social and cultural group which is homogeneous except for religion. As regards religion, about one third

adhere to their tribal religion which is some form of animism, while the rest are mostly Hindus, Buddhists, Muslims, and Christians.

Contrary to the Scheduled Castes, tribes are found in groups in their own separate isolated territories, generally in the hilly or forested areas in various parts of India. They live a primitive life with peculiar customs and festivals which give it homogeneity and cohesion. They are quite happy with their lot and environment. We need not encroach upon their isolation but let them lead their own life. We may create self-governing tribal areas with power of self-determination in regard to surrounding, or adjacent units. Contact may be maintained with the tribal chiefs just in the same way as with the rulers of the Native States.

Sikhs:—Sikhs are 4.2 million (or about 1½%) in British India. Their main strength is in the Punjab, where they number 3.76 million, or 90% of their total in British India. Within this province they form an important minority being 13% of the total population.

Sikhism seeks a synthesis of the monotheism of Islam with the philosophical concept of Hinduism. By religion, Sikhs are fundamentally nearer to Islam than to Hinduism. By race they are one. Modern researches have established that the people of the Punjab have racial homogeneity. In the words of Eickstedt, the famous German anthropologist, "There is no somatic difference between the Sikhs of the east and the Moslems of the west, and the illusion of racial difference between the two is due to the peculiar modes in which clothing and hair are worn by these people."

The Akali movement has considerably strengthened the position of the Sikhs. Large numbers of depressed classes, agriculturists, and artisans have been absorbed in Sikhism on account of their gain in status by leaving Hinduism. There has been a good deal of conversion of Hindu Jats to Sikh Jats. Within a few decades they have rapidly developed a marked individualism, not only in religion, but also in Society. In any political settlement, the right of self-determination cannot be denied to them, but unfortunately the pattern of their distribution does not entitle them to any regional claims. We find, however, that they have a dense population in the Ghaggar plain⁶ (between the Jumna and the Sutlej).

6. Ambala Division plus the districts of Ludhiana and Ferozepore of the Jullundur Division.

The respective strength of the chief communities in this section is given in the following table:

Caste Hindus.	Scheduled Castes: or ad-Dharmis.	Muslims.	Sikhs.	Others.
2,774,349.	771,072.	2,262,066.	1,060,957.	68,709.

It will be seen from the above that the communal pattern of this section of the Punjab is a triangular one, different from that of the rest of India. This justifies its separation from the Punjab, to be formed into a separate province. In the fitness of things, the province of Delhi, now an insignificant one, may be extended to include the whole of this area. What will happen to this new province, in case India is partitioned into Pakistan and Hindustan? Let the plebiscite on the basis of adult franchise decide the issue. There can be only one result of such a plebiscite and that is indicated by its community of interest with the rest of the Punjab.

Christians:—The Christians have a population of about 3.5 millions in British India, or more than 1% of the total. Of this over 2 millions, or about two-thirds are in Madras, which is thus the most Christian Province of India. Here they constitute a little over 4% of the total population. They are specially concentrated in the districts of Guntur and Tinnevely where there are about 10%. In the rest of India they are an insignificant minority, living mostly in urban areas.

Others, or the rest:—The remaining communities are too small in numbers to receive separate recognition in any province. All the rest of these peoples are only 1½ millions in the whole of British India or about ½% of the total population. There are Jains, Buddhists, Parsis, etc. Let them all be grouped together for separate treatment on their collective strength in each province.

Conclusion:—The multi-Communal texture of Indian Society points only to conclusion—separate rights for separate communities. Let it be laid down that a community with a population of 4%, or more in any province shall have separate rights. The lower limit has been fixed to allow the important minority of Christians in Madras to benefit from it. The present system of grouping the peoples into Muslims and non-Muslims should be abolished and be replaced by that of caste Hindus, Muslims,

Scheduled Castes, tribes and others. Punjab, and Madras shall have additional sections of Sikhs and Christians respectively. Combining an important minority with any other large group cannot properly be in its interest, and is not fair unless it be desired by the minority itself.

The Indian problem thus resolves itself into the simple question of giving political recognition to the communal pattern. Larger Regional concentrations of the main communities in the west east, north and south should be independent and free from any control, while smaller ones should be given as much autonomy and independence as may be economically consistent with the size of the groups and the resources of the area, actual, or potential. So long as the communal minorities do not choose to merge themselves in any political groups in legislatures created on an economic basis,⁷ the government of any province should reflect the communal pattern, being an integration of the representatives of the main communities chosen by themselves.

7. i.e. if the majority of the elected representative of those minorities do not join such a group.

APPENDIX (Census 1941)

Provinces.	Total Population Br. Territory.	Hindus Excluding Scheduled Castes.	Scheduled Castes.	Muslims.	Others. (Principal Minority).
1. United Provinces	55,020,617	34,094,511	11,717,158	8,416,308	289,422 (Tribes).
2. Punjab	28,418,819	6,301,737	1,592,320	16,217,242	3,757,401 (Sikhs).
3. N.W.F.P.	3,084,334	197,631		2,810,865	62,411 "
4. Bihar	36,340,151	22,173,890	4,340,379	4,716,314	5,055,647 (Tribes).
5. Orissa	8,728,544	5,594,535	1,238,171	146,301	1,721,006 "
6. Bengal	60,306,525	17,680,054	7,378,970	33,005,434	1,889,389 "
7. Assam	10,204,733	3,536,932	676,291	3,442,479	2,484,996 "
8. Madras	49,341,810	34,731,330	8,068,492	3,896,452	2,001,082 Indian Christian.
9. Bombay	20,849,840	14,700,242	1,855,148	1,920,368	1,614,298 (Tribes).
10. Sind	4,535,008	1,038,292	191,634	3,208,325	31,011 (Sikhs).
11. C.P. & Berar	10,813,584	9,880,583	3,051,413	783,697	2,937,364 (Tribes).
12. Baluchistan	501,631	39,521	5,102	438,930	11,918 (Sikhs).
13. Delhi	917,939	444,532	122,693	304,971	16,157 "
14. Ajmer-Marwara	586,693	376,481	25,740	89,899	91,472 (Tribes).
15. Coorg	168,726	105,013		14,730	19,723 "
16. Andaman Nicobar	33,768	8,427		8,005	11,076 "

Climate of Western U.P. (West of the Ganges)

By

V. S. MATHUR,
Lahore.

The area lies entirely within the temperate zone but falls in the tropical monsoon type of climate on account of the Himalayas that lie in the north of the region. The Himalayas completely divide the climatic conditions in Tibet that lies to their north and India that lies to their south. This change is both in temperature and rainfall, it makes India comparatively warmer and wetter than Tibet.

The all important fact in the climatology of India is the alteration of seasons known as the summer and winter monsoons. The winter, or the north-west monsoon is a season of winds of continental origin and thus of great dryness while the summer, or the south-west monsoon is a season of winds of oceanic origin of high humidity and of rain over the area.

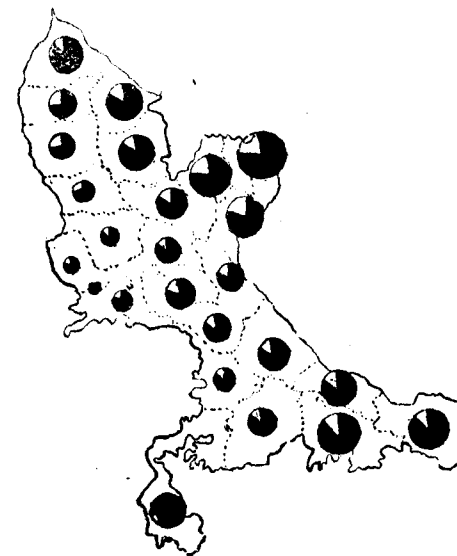
The dry monsoon which lasts from December to the middle of June, may be divided into two periods, one from December to February, of comparatively low rainfall and the other from March to June, of increasing and high temperature. In the same way, the wet monsoon may also be divided into one, from the middle of June to September of high rainfall and the other, from September to December of retreating monsoon period when the rainfall diminishes and the humid currents pass out of the Indian land. Thus the year can be broadly divided into (1) Cold Weather Season, (2) Hot Weather Season and (3) Rainy Season. We shall discuss them separately.

Cold-weather Season:—January is the typical cold-weather month with its average temperature of about 58° F in the area. As the expanse of the area is from the North to South, we find that the 55° F line passes through the northern districts of the area, while further down the temperature rises and the 60° F line passes through the centre of the area. The fact that the winter temperatures rise southwards is illustrated from the fact that the average temperatures decrease northwards—viz. Roorkee has 56° F, Meerut has 57° F, Agra has 60° F and Allahabad has 61° F. The difference

is, however, not very much but it is quite enough in respect of frost which appears quite frequently in the northern districts while in the southern, this winter phenomenon is absent.

Frost, however, is not a regular winter visitor of the area. There are no definite records of its frequency, or of the exact area with frost. There is not much literature available on the Indian frosts, and we also have no working knowledge of the measures that may be conomically adopted for the prevention of frost-damage to crops in India. Frost generally occurs in the month of January, or in the last days of December and the approximate number of days when frost may occur is about 1 to 5, according to the version of Dr. L. A. Ramdas, an official of the Meteorological Office, Poona. The area where frost occurs most is the region occupied by the northern and north-western districts down to the district of Agra.

WESTERN UNITED PROVINCES
Seasonal Distribution of Rainfall.



The circles denote total rainfall and the shaded space the percentage of Rainfall during the Rainy Season.

Clear skies, fine weather, low humidity, large diurnal range (vide appended map), and light land winds are the characteristic features of this season. The air movement is from the west down the Gangetic plain. A succession of shallow storms passes eastwards across the Iran Plateau and northern India during this

period. Precipitation accompanies these storms in small amounts. These storms are attended with remarkable temperature effects. Temperature usually rises very considerably in front of them while in their rear, dry, clear weather is found. They are in their full development a phenomenon of the north-western monsoons and are comparable with the storms that visit northern Europe at this time.

The rainfall during the winter months is rather scanty and as low as about 2.43" on an average for the area. To elucidate this further, the monthly rainfall figures and the number of rainy days in a month may be studied for some places.

Place.	Average Monthly Rainfall.					Number of Rainy Days in all.
	Oct.	Nov.	Dec.	Jan.	Feb.	
Meerut	0.52	0.13	0.35	1.28	0.80	12
Agra	0.76	0.12	0.27	0.54	0.48	7
Cawnpore	1.16	0.22	0.25	0.51	0.48	6
Allahabad	2.25	0.25	0.24	0.76	0.49	7

While making a study of the above tables, one finds that the rainfall at Cawnpore and Allahabad is heavier than at the other two places, viz. Agra and Meerut. The reason is that the south-west monsoon retreats during the latter half of October. It leaves the western districts much earlier than the eastern ones and that is why the rainfall in the eastern districts continues a little longer than in the western districts.

The Hot Weather Season:—In March the hot weather season begins and with the northward movement of the sun, the conditions begin to be modified. North-west winds continue but fall in strength. Temperature increases rapidly. In April and May the sun is far in the northern hemisphere and the heat becomes greater and greater. The month of May is typically a hot-weather month and the temperature at all stations is very high and rises as high as 115° F in some parts. Again there is a difference between the temperatures of the northern and the southern districts. The 90° F isotherm passes through the northern parts of the central districts of the area further south. 95° F passes just below our area. This fact is illustrated by the following average figures of

some places, viz. Roorkee has 88° F in May, Meerut has 89° F, Agra has 94° F and Allahabad has 94° F. In normal years, India is not disturbed by the storms appearing in central or western Asia but we always have some dust-storms of local origin. They are due to various local actions and contrasts accompanying high temperatures and large diurnal ranges. These are rarely more than a few hundred yards in diameter, but advance rapidly causing much destruction to life and property. They are comparable in violence to the tornadoes of the central districts of U.S.A.

The Rainy Season:—We have now to deal with the south-west monsoon. The first portion of this season viz., from June to September witnesses the extension of the south-west monsoon current over the whole of India. This is the season of the south-west monsoon proper. The temperatures begin decreasing.

The monsoon reaches our area usually towards the end of June. The probable date when it reaches Allahabad, the eastern-most point of our region may be said to be the 20th of June. There is not much difference between the time of its arrival at Allahabad and at Agra, or Meerut (the western points of our area). The intervening period may be a week or so.

The strength of the currents and the accompanying rainfall begin to diminish by the second week of September and decrease rapidly during the latter half of the month. This decrease in rainfall occurs at several places.

Bursts of general rainfall alternate with breaks, partial or general as the case may be. Usually the rainfall diminishes as we go westwards (Allahabad 41", Cawnpore 29", Agra 25", Meerut 26"). The reason is that as the monsoon goes farther and farther, it gets exhausted of its vapour. Another fact responsible for the variation in rainfall is the position of the places in relation to the Himalayas. To emphasize this fact further, two comparative figure-studies have been made (in the appendix). The places chosen are Pilibhit near the Himalayas and Agra, far away from the Himalayas. The year of study, viz. 1936, has been selected at random. The study is confined to the two months of July and August as these are the months when the area receives the major portion of its precipitation. A current of the monsoon runs parallel to the lower ranges of the Himalayas from Sikkim to Kashmir, giving rain almost daily to the places situated nearby and the amount of this rainfall decreases as one gets farther away from the hills, and thus out of the influence of the current; and

this is the reason for the difference between the precipitation of Pilibhit and Agra.

The transition from the wet to the dry season commences either late in September, or early in October and is usually not completed until the third week of December. The gradual transition follows upon a final outburst of rain. The temperature decreases considerably with the increasing dryness of the winds. The process of retreating occurs by a series of intermittent actions.

The geographical distribution of rainfall in the area is determined by its east to west expanse and its distance from the hills of the north. Thus (vide the rainfall distribution map), the average amount of the whole area is below 40". Williamson and Clarke in their paper, "The Rainfall Regions of India" have put the whole of the region in 20" to 40" division. This division is not sufficient to explain the rainfall distribution of the area and for that purpose I have further divided the area into three rainfall belts, (1) 35" and over, (2) 30" to 35", (3) 20" to 30"

The first belt comprises roughly the districts of Pilibhit and Barilly in the north near the Himalayan ranges and the district of Allahabad in the south-east. The second belt consists of the central districts and the northern district of Saharanpur which, though it is far in the west is near the Himalayan ranges and thus benefits by the current that gives the rainfall to those ranges. The third belt has the Western districts in its folds and gets the lowest rainfall.

An important feature in determining the economic value of the rainfall in the area is its variability. The simplest method to measure the variability is by means of the percentage ratio of the difference between the highest and the lowest actuals for the period of observation to the normal or average rainfall of the area. As calculated by the writers of the Imperial Gazetteer of India, the average variability for the Western United Provinces is about 100%.

Professor Williamson and Mr. Clarke were the first to draw an original map showing the variability of Indian Rainfall (the Quarterly Journal of the Meteorological Society. Vol. 57, 1931, p. 45). Our area falls partly in the belt having a variability from 17½ to 20%, and partly in the belt having a variability of from 20% to 22½%. The law that "the lower the average rainfall, the higher the variability tends to be" is fully met with in our area.

The northern and eastern portions, as I have said in the discussion on rainfall, have lower variability and they have higher rainfalls, while the western and central districts have higher variability as they have lower average rainfalls.

This high percentage of the variability of the rainfall makes the relation between the crops and rainfall a gamble and this gamble is intensified by the occasional breaks in the summer rainfall, thus making the introduction of irrigational facilities a necessity. The practical absence of winter rainfall further intensifies this need.

To end the section on the rainfall of the area, it may be useful to summarize the economic characteristics of the rainfall of the area.

- (1) The majority of the rain falls in the three months of July, August and September.
- (2) The commencement of rains may be considerably delayed, or the rains may stop unusually early.
- (3) There may be prolonged break in July, or in August.
- (4) There is not sufficient rainfall in winter, thus the winter crops have to look to artificial irrigation.

APPENDIX

Comparative Rainfall Studies for Agra and Pilibhit.

July.		August.	
Agra.	Pilibhit.	Agra.	Pilibhit.
0.64	0	0	0.34
0.28	0	0	0
0.22	0.05	0.31	0.22
0	0	0.33	0.33
0	0	0.27	3.00
0	0.45	0.14	0
0.60	0.65	0	0
0.19	2.25	0	0
0.02	1.65	0.30	0.24
0.09	8.20	0.04	0.13
0.41	0.60	4.55	0.05
0	1.05	0.90	0.17
0	0.20	0	0
0	0.01	0	0
0	0.04	0	0
0	0	0	0
0	0	0	0
0	0	0.35	0
0	0	6.79	0
0	0.46	0	0
0.17	0	0.08	0.60
0	0	0.44	3.65
0.06	0	0.46	0.24
0.40	0.68	0	0.61
2.90	0.59	0	0
0	0.51	0	0.03
0.58	1.54	0	1.79
0.21	2.30	0	0.25
0.31	0.20	0	0.01
0	0.05	0	5.25
0	0.09	0.08	1.36
7.08	21.57	15.04	18.27

River Changes in the Ghaggar Plain¹

By

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Introduction :—The courses of the rivers and the patterns they form are determined by slope gradients and inequalities of rock resistance. This being the case, it is evident that the drainage patterns reflect original slopes and original structures, or the successive episodes by which the surface has been modified, including uplift, depressing, tilting, warping, folding, faulting and jointing, as well as deposition by sea, glaciers, winds and rivers. A single stream or drainage pattern may be the result of one or several of these factors. Moreover, as streams are long lived, comprising among physiographic features some of the oldest survivors or surviving remnants and also some of the youngest developments in response to earth movements, they may embody a long record of the geologic history of the region. Streams "of an older generation often continue to exist in sections as parts of a younger system, by which they have been captured and dismembered. The direction of flow and the angles in the course thus register older and younger controls which were inherent in the structure of the rocks, or due to disturbing earth movements."²

From the point of view of the evolution of drainage pattern and the changes in the courses of rivers the Ghaggar Plain is one of the most important areas in the world. With no natural obstacles to mould their courses, its rivers have been throughout their history changing their courses in whole, or in part, from year to year and from age to age. Even now they veer and change at will, for ever carving out for themselves new channels, inundating new stretches of countryside and leaving old channels silted up and

1. Denomination of the region bounded by the Sutlej in the North, the Siwaliks in the North-east, the Jumna in the east and more vaguely by a line running through Gurgaon, Bawal (Nabha), Mohindargarh (Patiala), Dadri (Jind), Bikaner and Bahawalpur to the South and West.

2. Willis, Bailey, *Geologic Structures*, New York, (McGraw-Hill, 1929), p. 310.

forgotten. It is, therefore, found seamed everywhere with ancient river channels, some continuous throughout the region and many miles beyond it, but very many others in a more or less obliterated condition and traceable for short distances. These beds may be representatives of others that have been completely wiped out by the work of nature, or man, or both. These old drainage patterns will be described in so far as they can be reconstructed from the scanty data available.

The elucidation of the history of a river system and the reconstruction of the phases by which it has degenerated to its existing condition, is essentially a form of detective investigation. The clues may be drawn from such varied fields as geology, archaeology, history and geography. Many of the most valuable pieces of evidence are frequently provided by research which the geologists conduct for other purposes. Their investigations provide valuable evidence of general history and suggest a hypothesis of river evolution. But being for the most part barren of useful minerals, the Ghaggar Plain has received very little attention from the Geological Survey of India, with the result that no help is offered from this source. The activities of the Archaeological Department in the area have been of a rather desultory character and hence afford little help. While the early ages of Indian history are so obscured by fables, and so involved in superstitious gloom no probable conjectures can be formed on this basis. Geography too does not lend any assistance as very little account of the geography of Ancient India is available. It would have been easy to trace these changes even if some authentic maps, either of the Hindu, or the Muslim period were available. But the earliest maps we have are those prepared in the later part of the 18th century, before which most of the changes had already taken place.

The history of these revolutionary river changes is, therefore, still a matter of dispute among the geologists, archaeologists, historians and geographers. Not only that, but most of the writings pertaining to them suffer from vagueness, inconsistencies and contradictions. The student of drainage evolution must, therefore, derive all the clues he needs from a study of the courses of the rivers themselves. Although, under these limitations any final judgment seems an impossibility, the conclusions which have been arrived at in this may be found the most probable.

Pre-Pleistocene Drainage:—Three phases have been distinguished in the upheaval of the Himalayas, one at the end of the

eocene, one in the middle Miocene and the last in the middle or upper Pliocene, after which the only earth movement that has taken place is a comparatively gentle warping that has affected certain regions of Peninsular and extra-Peninsular India in post-Pleistocene times. Of these three movements the one that occurred in mid-Miocene was the most intense which uplifted the main range of the Himalayas and the mountains of Baluchistan and Burma.

The first phase of the Himalayan uplift drove out the main ocean from the Himalayan geosynclinal zone and pushed the Eocene gulf of the Tethys sea further towards the south. In the middle Tertiary³ times this retreating gulf was succeeded, by the Siwalik or Indo-Braham river⁴ and the drainage of the whole of northern India then passed through but this outlet. This mighty river rose probably in Assam and skirting the Himalayas debouched in the gradually receding sea of that period, on the site of the present Arabian Sea.

As the uplift of the Himalayas proceeded, the main drainage channel and the young tributaries from the north continued to be pushed southward towards the rapidly filling depression. When the mid-Pleistocene disturbance of the N.W. Punjab took place and contorted and raised the Potwar mid-Pleistocene area into a plateau, its general effect was that this depression was heaved up and tilted so as to form two long inclined plains, one sloping south-easterly and the other south-westerly.

This disturbance brought about the dismemberment of the Siwalik river system in the middle-Pleistocene,⁵ and the drainage

3. Wadia, D.N., The Tertiary Geosyncline of the N.W. Punjab and the History of Quaternary Earth-Movements and Drainage of the Gangetic Trough, Q.J.G. Mining and Metallurgical Soc. of India, Vol. IV, No. 3, 1932 p. 87.

3. Wadia, D.N., The Tertiary Geosyncline of the N.W. Punjab and the flowing river for the drainage of both the Eastern and Western Himalayas into the Arabian sea, was put forward by R. D. Oldham in 1894. In 1919, Sir Edwin Pascoe and Dr. G. E. Pilgrim almost simultaneously and independently suggested such a river based on studies of the Punjab oil-belt and the Siwalik Boulder Conglomerates, respectively. The Faunistic evidence as pointed out by N. Annandale (Brijdrag. tot de Dierk, XXII, p. 145) does lend enough support to this view. Dr. C. S. Fox does not entirely agree with this hypothesis.

5. Wadia, D.N., The Tertiary Geosyncline of N.W. Punjab and Hist. of Quaternary Earth-Movements and Drainage of the Gangetic Trough, Q.J.G. Mining and Metallurgical Soc. Ind., Vol. IV, No. 3, 1932, p. 86.

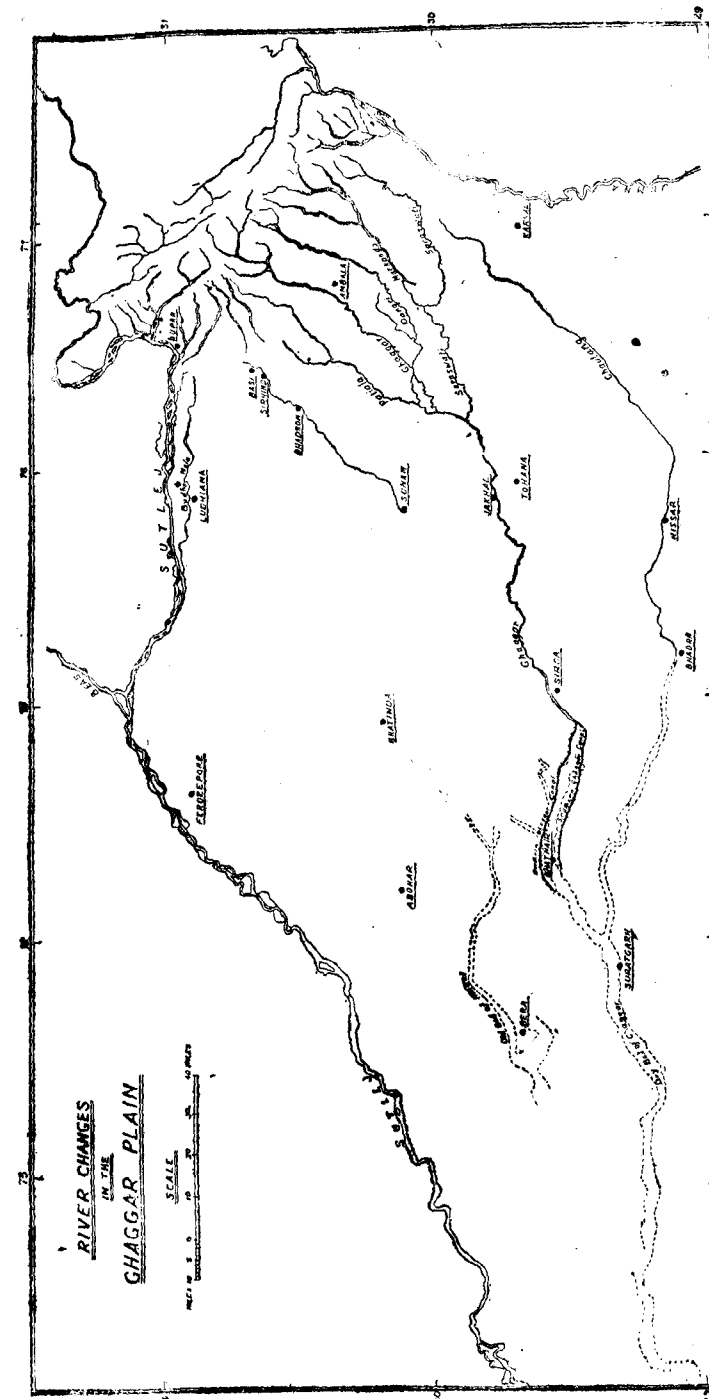
of the western and eastern Himalayas, separated by the hilly country of the Aravallis and Rajputana, were respectively affected into the Arabian Sea by the Indus and Ghaggar systems, and into the Bay of Bengal by the Ganges and its tributaries. The lower portion of the Siwalik river continued to discharge itself into the Arabian Sea, the upper part was subjected to a reversal⁶ of flow and water was forced back to seek an outlet into the Bay of Bengal, through the now aggraded, more or less levelled Gangetic plain, and the middle portion was converted into a separate independent drainage—Ghaggar—having the Sutlej and the Jumna, or their fore-runners, as its most westerly and most easterly tributaries respectively.

Before this mid-Pleistocene disturbance the Indus, Ghaggar and the Ganges systems had no existence, for upto that time the Siwalik river that ran in the area flowed skirting the Himalayas completely. It was only when the inclined plains were fairly completed that for the first time the great general drainage of the area began to run from north to south-east and the Indus, Ghaggar and the Ganges river systems or their fore-runners were established. The transverse Himalayan rivers, which were really the oldest water-courses of North India continued to discharge their waters into the new rivers, irrespective of their ultimate destination, whether Arabian Sea, or the Bay of Bengal.

During the Upper-Pleistocene epoch, as a result of crustal movements, some interchange may have taken place between the affluents of the Indus, Ghaggar and the Ganges, by minor shiftings of the watershed, now to one side now to the other. The new river systems thus set up must have undergone considerable other changes during the historic times.

Historic Drainage:—There are in the Ghaggar Plain about seven major dry river channels which vary from 1 to 6 miles in width. Some of these, from their size, seem to have been rivers carrying large volumes of water in bygone ages. These channels all converge about Jakhal, at a point in Lat. $29^{\circ} 14' N.$ and Long.

6. In this reversal of drainage, Pascoe assigns the chief share to the process of river capture by head-erosion of the tributaries. But the capacity of river-capture alone in accomplishing this colossal change is doubtful and differential earth-movement has been suggested as the chief contributory cause, aided by the levelled and uniformly graded drainage-lines on the surface of the wide North Indian plains during the Pleistocene epoch.



73° 08'E⁷ and thenceforward a well defined channel exists all the way to the sea; it being known by the name of the Ghaggar, Hakra or Wahind as far as Sind and beyond that to the sea as Eastern Nara. Above Jakhal this bed has no doubt been obliterated. But from Jakhal, through Sirsa and Bikaner, it can be traced into Bahawalpur upto Lat. 28° 46'N, and Long. 71° 25'E. Below this again comes a stretch of 60 miles in which the river bed has been either completely obliterated by drifting sand, or at any rate is not marked on the Revenue Survey maps of Bahawalpur. But in Lat. 28° 16'N Long. 70° 33'E. we again find a deserted river channel called on maps as the "dry bed of the river Wundun," which is continuous down to Lat. 27° 25'N and Long. 60° 18'E. Thence for 23 miles upto Lat. 27° 15'N., the course is obscured and obliterated by deposits from the flood waters of the Indus. But the river Nara has been traced upto that point.

Thus, this dry river bed can be traced, fairly continuously, from Jakhal in Hissar to the Eastern Nara in Sind. It is a well-defined valley varying in width from 3 to 6 miles, of no great depth and usually quite level from side to side, but distinctly marked off from the plain through which it passes, by a clearly defined bank or sand-ridge on either side.

The existence of these several river beds, the numerous remains of towns and villages along their courses, the Vedas and the traditions of the inhabitants speaking of a live river running across the area and the names "Hariana" and the "Nursery of the Aryan race" etc., for parts of this, now desolate and arid land, establish the past existence of an important river system in this region almost beyond doubt and postulate a considerable change in its hydrography during the historic period. It is, however, to be determined as to which river it was that watered this region.

It has now been proved by the researches of Walker⁸ and others that there has been no desiccation in this part of the land. This then precludes any possibility of a river system carrying large volumes of water, as the magnitude of these beds suggests, drying up, and leaves us with the alternative of such a river having only deserted its course. This conclusion is further supported by the extremely small slope and the evenness of the Ghaggar Plain which are calculated to have further favoured the diversion of the course of the river. Let us now see where this river has gone to after deserting this area.

7. Barns, J.W., Jour. Roy. Geog. Soc., Vol. 42, 1872, p. 393.
8. Walker, G.T., M.I.M.D., Vol. 21, Pt. I, 1910, pp. 1-21.

Classical writers mention the Sutlej as a great⁹ stream. But they do not mention it as a tributary of the Indus, though they mention the other four rivers—Jhelum, Chenab, Ravi and Beas—by the names as branches of the Indus. Their failure to mention a river of its dimensions then, could not be by oversight. It is argued in this connection that the Beas was the terminus of Alexander's expedition and hence his chroniclers have nothing to say of the country beyond it. But, be as it is, it is unthinkable that if the Sutlej, at all, joined the Indus, even its junction would have passed unnoticed by Alexander's men while sailing down the Jhelum. Neither its junction was noticed by them nor was it ever described as a tributary of the Indus by the classical writers. This fact inevitably shows that during the classical period it pursued an independent course.

Also the name Sutlej has never been used by the natives of the Punjab to designate the stream formed by the union of the Sutlej and the Beas. The combined waters have been called by them by the name of the lesser of the two rivers as the Beas. This peculiarity of the greater river losing its name in the lesser one, where there is also no special sanctity attached to the latter, only suggests that it was a late interloper into the Indus system.

Until modern times the Indus, after receiving its Punjab tributaries was called the Punjnad.¹⁰ Had the Sutlej been one of them, the name "Punjnad" for this part of the Indus would have been a misnomer. It, however, seems incredible that so inappropriate a name could have ever been applied, had the courses of the rivers been similar to what they now are.

These facts of historical evidence point irresistably to the conclusion that the Sutlej was not always a tributary of the Indus and followed a very different and independent course, at any rate to a point much below the junction of the other four rivers. Let us examine how far the physical configuration of the area warrants this conclusion.

The Sutlej flows with a terrific force in its mountain region and takes an abrupt turn westwards from its debouch at Rupar and proceeds in this direction for a long course of about 120 miles. Here the soil is soft and sandy and the current has always been

9. McCrindle, Ancient India, as described by Ptolemy, p. 88.

10. *Ibid.*

very rapid and there is no evidence that any physical obstruction ever existed to prevent the Sutlej from flowing directly to the South. Therefore, there seems to be no obvious cause here to prevent the momentum from working in its natural straight direction in that soft alluvium and deflect it at such a sharp angle. This shows that the present is not the original course¹¹ of the Sutlej. If, however the existing mountain course of the Sutlej is projected from Rupar southwards it leads upto the dry bed of river Hakra at Tohana, the point at which the numerous mountain torrents from the head of the Ghaggar Plain would converge¹² if they continue to flow. From Rupar to Tohana, as already stated, this old bed has been obliterated but onwards it can be traced under varying names of the Hakra, Sotra, Choya, etc.

Conclusions:—It is therefore, inferred that:

(1) In early historic times, an important river system, the Ghaggar, watered the Ghaggar Plain.

(2) The Sutlej was the most westerly and the Jumna the most easterly tributary of the Ghaggar and their present courses are of comparatively late acquisition.

There are both physical and historic grounds for the belief that during early historic times the Jumna discharged into the Sutlej.¹³

(3) The affluents of the Ghaggar shifted east and west and were one after another beheaded and captured by the Indus and Ganges systems.

This hypothesis is corroborated by the recent investigations which have established beyond doubt a marked westing tendency in the Sutlej and an easting tendency in the Jumna. The Hindu tradition which believes a mighty river, Sarsuti, to have once flowed across the Ghaggar Plain and later joined the Ganges at Allahabad has mistaken the shifting of the Jumna and its junction with the Ganges at Allahabad for Sarsuti's. As such this tradition also supports this conclusion.

(4) When the two important tributaries of the Ghaggar, the Sutlej and the Jumna, were respectively captured by the Indus and the Ganges and converted into their chief affluents the Ghaggar was reduced to the insignificant stream, it now is.

11. Medlicott, H.B.: Sketch of the Geology of the Punjab, p. 9; I.G., Vol. I, 1908, p. 188.

12. J.A.S.B., Vol. LV, Part IV, 1886, p. 338.

13. Lyde, L.W., The Continent of Asia, p. 393.

The Factor of Geography in the Strategy and Progress of the World War

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INTRODUCTION

In the clash and clatter of arms it is likely that the powerful factor of geography in the prosecution of the world war will be forgotten by many. Whenever such a great war is waged, it is not only the force of circumstances or the powers of mechanical men that produce the results; the place factor is of equally great importance in all the strategy and progress of this war, and it is the purpose of this article not merely to show how the geography behind current history plays its part, but also to indicate the lines on which such wars can be prevented in future.

There is no doubt that the present war is a geography war, as it is waged on a vast scale on the earth, and in its causes, its events and the possible results the hand of Nature is quite visible. It also seems to be true that the chief use of a war is to teach geography to the people of the world! Nothing is done by the belligerents themselves without a thorough knowledge of the locality in which it is waged. No General can issue orders without acquainting himself thoroughly with the minute physiographical details required for such purposes. Every point is dealt with by him after referring to the physical conditions, food and water facilities, lines of communication, etc. No pilot can leave his aerodrome without a map and a weather forecast in his hand. This is, besides, an all-out war, that is to say, nothing is left by mankind that is serviceable to them in their good or bad achievements, desirable or undesirable ideals, and it is a war which is fought in all the three spheres of the earth, the lithosphere, the hydrosphere and the atmosphere.

Today, geography has really come into its own. A thorough knowledge of the country, its terrain, hydrography, climatic conditions, water and food resources, and above all, its lines of communication is necessary for any nation to plunge into a conflict against another in these times, and as it is a war of mechanised

forces, the progress is very rapid. It is, therefore, that, unlike the old-world Wars of the Roses, the Hundred Years' War, the War of Austrian, or, Spanish succession and the battles of Waterloo and Crecy, we now hear of a World War, of Hitler's Fortress of Europe, of the battles of France and Italy, the battles of Supplies to occupied, or, conquered territories, the Atlantic Wall, a 1000-mile front, the Winter Front, the Summer, or, Winter Offensive, etc., etc. This War is again a war of nerves, the like of which was never fought in past ages; and since fighting is on such a vast scale the results also are bound to be of far-reaching consequences and the geographical sense is getting developed more and more in this world.

GEOGRAPHICAL CAUSES OF THE WAR

Whatever were the immediate causes of this World War in September, 1939, it must be remembered that the trouble had been brewing for long. If man breaks Nature's laws, he must suffer in consequence. The greatest trouble in the modern world is the acquisition of fresh territories by powerful nations and setting up of unnatural boundaries. Nature cannot tolerate this and so one nation comes into clash with another. The population is allowed to spill over such boundaries and there is an undue and unnatural admixture of races, languages and cultures. The neutrality of Switzerland, preserved so far by the worst of Europe's enemies, is very significant. It is a perfect geographical unit, being surrounded by high Alpine ranges on all sides with but a few mountain passes, which this small nation has utilised. Within it the culture produced is preserved, to its best advantages. In other parts of Europe, which are supposed to be the most advanced countries in the modern world, the breach of nature's laws is the greatest. Again, the more a country is overpopulated, the greater is the demand for food, which its native soil cannot supply. To relieve the congestion and starvation some way must be found. Besides, Nature has ordained that certain things will grow in certain countries only and certain minerals are deposited only in certain parts of the earth. This uneven distribution of peace and war materials is purposely designed by Nature to carry mankind to the goal of unity and perfection. Man must learn the lesson of international as well as interregional intercourse.

Only a proper and skilful planning can avoid wars, foreign or civil, in this twentieth century. Then there would be no geographical necessity for a war as German philosophers wrongly think there is. Thinking in terms of the globe and not the flat atlas is absolutely

necessary. There can be no real east, or, no real west, no high, or, no low race, no sovereign, or, no feudal State in such a "global thinking".

Professor E. G. R. Taylor, one of the leading British geographers, while discussing the changing atlas, says "Professional geographers have always had the habit of viewing the round earth as a whole. But save in Germany, they were persons little regarded. It is so ironic that the doyen of English geographers, Sir Halford Mackinder, should, by his brilliant generalisations of a quarter of a century ago, have supplied their leading ideas to the German exponents of Geopolitik, the gospel of inevitable aggressive war. Where Mackinder pointed out the geographical causes of wars the Germans announced their geographical necessity, ignoring the fact that between man and his milieu there always intervenes the Idea; in this case the idea of war, or peace".*

GEOGRAPHICAL FACTORS OF THE WAR

There are various factors of Geography which come into play whenever a war is on, especially when it is on a gigantic scale. (1) First of all, there is the physical factor,—the structure and nature of a land the strike and extent of a mountain chain, the pattern of a river system and its high or low banks, the maze of an archipelago, the outlines of a channel, coast or lake,—all these affect the trend of war in every age. Often it has been found in the story of the world, that "history repeats itself" just on account of this very physical factor. The best example is the comparison of the present Battle of Italy with Garibaldi's campaign to free Sicily and Southern Italy from the Bourbon rule of Francis II of Naples and to lay the foundation of a liberated Italy. The very landing, the main routes, the advances through valleys and along the coastlines, the methods of forking, assaulting and recruiting, the trials of weather disturbances and the difficulties of crossing turbulent rivers etc., are all the same, or, similar in both. Even the names of the battle-fields, like Catania, Messina, Reggio, Salerno, Naples and the Volturro are the same. This is because, though the times are different and the generals or leaders are new, the countries and their environs have remained the same; man must first follow the patterns drawn by Nature in all his movements on the earth. Often the invincibility of a land depends upon its geographical isolation. In the dreadful Battle of England during the dark days of 1940, England was saved only by the narrow channel of water,—the English Channel. On the other hand, in the battle of France

such a vital gap as the historic Sedan has played a different part. It was through it that the Germans poured into France in their breakthrough and it was through the same gap that the Allies hurled the Germans back, along the way they first came.

(2) The next factor is that of *climate*. Time and tide wait for no man. We have already heard of General Winter and General Summer, as also winter and summer offensives, showing that however much the fighting forces may wish, they must wait till the weather is favourable to them. Nature has taken its toll in the scorching summer heat in the African Campaign and in the frozen fields of Russia for these five years. In Burma and other fronts more soldiers have died of monsoon fever in the swamps than on the actual battle-field. In no time, would Wing-Commander Monsoon arrive and help to undo what the Japs have done on the Burma front a whole season. All the N.-S. valleys in Burma become swampy, presenting an appearance of a vast seething quagmire with disease-ridden jungles of malaria, typhoid and dysentery for men hibernating in dug-outs and fox holes for the period. Foggy and inclement sky is most unsuitable for an air raid, however anxious the fliers may be to finish off their jobs.

It sometimes happens that an element of surprise is exploited even when high seas are running and strong winds are blowing, by attacking the enemy *unexpectedly*, as was the strategy adopted by General Eisenhower while launching the Second Front. One reason why the British and the Americans can stand the climates of many frontiers is the climate of their own land,—which itself is *changeable*. It is the great range of temperatures and the cyclonic storms there that are the secrets of good health and acclimatisation, so that in whichever country they happen to be, their bodies can stand the climate. In fact, they can face such climatic changes in many latitudes. These soldiers, sailors and airmen can do well all over the world,—this is a precious finding of this Great World War. Here the climate is no obstacle to allied progress, but rather it acts like a favourable wind to an aviator. Hardy Indian mountaineers, hardened on the heights of India's mountains, are also able to stand the climates of France and Italy and Burma. But the Italians, on the other hand, have proved to be more a liability than an asset to the Axis Powers. A whole battalion, belonging to Rommel's Afrika Korps succumbed to the British at El Alamein in the scorching July heat and without water for more than twenty-four hours, thus giving a chance to the Eighth Army to make history which they really did. It all depends upon the stage of acclimatisation reached by a class of soldiers.

(3) The third factor of Geography is that of the *economic resources* of a land, without which a war can never be carried out. When the campaign was first started by Germany, it was calculated by economists that it could not be carried on for more than six months, owing to its limited oil resources! But this calculation is found faulty by Germany's manufacture of synthetic oil and by its rush for the oilfields of Europe, e.g. Rumania, the Caucasus etc., so much so that at one time the campaign seemed a life-and-death struggle for them. Shortage of food and water is another consideration. The British blockade on the European fortress is more or less complete. It was the cutting off of water supply that gave the initial successes to Japan in the Dutch East Indies and Burma, and to Italy in North Africa and Abyssinia. There is always a strategic warfare for bombing all water and oil pipe lines unless they are properly camouflaged. This point has to be considered in future for all kinds of reconstruction and town-planning.

In one sense the present war is a war of minerals. Deprive the enemy of such vital resources and the war is lost by him.

Side by side with such materials, food grains and water supply, there is to be an economic use of animals. Though the War is largely mechanised, there are certain tracts on the earth's surface which cannot be crossed by tanks or armoured cars and beasts of burden must take their place. One reason why the Japs succeeded in the jungles of Malaya and the hilly terrain of Burma in the beginning of 1942, is their light-footed animal infantry. Mules, horses, camels, dogs and pigeons are yet of great service to man even in this advanced age and they can never be altogether discarded.

(4) Then there is the *human* factor to consider. Success, or, failure in modern warfare must depend upon human endeavours also. As we have seen, the crossing of the English Channel could not be attempted by the Germans for reasons best known to them. But the same difficulty was surmounted by the Allied Invasion Forces, though after a long and mature planning. They have excelled the enemy in the *amphibious methods* of landing. Today the inherent insularity of the British Isles has enabled the Allies to make these islands the *biggest aircraft carriers* in the world. Malta has won for itself the greatest honour in island-warfare against innumerable air and sea attacks. Australia was just saved from Japanese invasion owing to its wide sea-front. The Germans in the very beginning of the war organised the conquest of Norway by attacking the different fjords as the nerve centres of a glaciated land.

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Rivers too, are nature's barriers, though partial, to the progress of man. In such a vast flat land as the plains of Russia with no hindrances or obstacles in the way, ding-dong battles are possible. The steamroller moves in one direction at one time and in another direction at another time, so much so that in the N. African desert warfare the Allies covered 2500 miles since El Alamien, whereas Rommel could go only upto the Quattara Depression in the same flat region. It is, in the same way, the flat nature of the country in Poland and in N. France that enabled the Nazis to overrun, within a short time, both the countries, particularly the latter, after actually by-passing the Maginot Lines. Some animals, again, act as man's enemies and hinder, or, harm his progress in war time. In the tropical forests of Malaya, the Allies' defeat was partly due to wild animals with which they were not acquainted. Tiny insects like mosquitoes, poisonous snakes and even leeches play havoc in this respect. It has been said that leeches cling to soldiers' feet imperceptibly in a jungle and not until they have sucked enough blood and dropped down that they are detected. They are so fine and thread-like, that they can even pass through the sole of a boot.

So we see that there is a constant struggle between Man and Nature even in warfare. Nature tries to defeat man and hinder his progress more than his human enemy, but man, on the other hand, attempts to overcome these barriers and handicaps, or, makes use of them in self-defence. A very thorough and wide knowledge of the region is, therefore, absolutely necessary in such large-scale operations.

PHYSICAL FEATURES AND WAR STRATEGIES

Let us now consider some definite physical features of the earth and see how far they are useful to man for strategic purposes, or hinder his progress in the modern world.

(1) *Mountains and Valleys*:—The first and foremost is the relief of the battlefield. It is a well-known fact that when Napoleon met Wellington in the battle of Waterloo, the latter had a slight advantage over the former on account of his *elevated position on a small hillock*. Likewise, mountains and valleys, flat plains, or rolling country sides, plateaus, or desertlands, all have their vote in the issue of a large-scale war, like the present one.

The *delaying action* caused by the Greeks in Albania against the enemy is a very good instance. Most of Albania is a series of

rifts, or valleys divided by a similar series of mountain ridges 5,000 to 6,000 feet high and running N.W. to S.E. When the Italians attacked Albania with some 2,000 aircraft and 10 divisions, one of which was fully motorised, the only thing that the light-footed and swiftly moving Greek army could do was to use its mountain artillery and harass the enemy, who was thus forced below, with his tanks and transport, to trundle along the valleys. Even the Greek women hurled huge boulders from the heights, on the Italians below and proved their prowess! It is only when the Greek army was cut into two and isolated from its supplies from the valley below that it had to yield to the enemy ultimately. The great German drive for the Heartland of Russia, the rich plain from the Carpathians to the Baikal Mountains, started by Hitler in 1941, could at least be stopped by the giant mountains of the Caucasus, which alone baffled him and he failed thereby to dominate the world at the outset.

In Italy, on the other hand, the mountain terrain was at first found to be highly advantageous to the Nazis. The Cassino campaign is an excellent illustration. Here the enemy made an effective use of *honey-comb* of *inter-communicating tunnels* driven into the mountains, and turned up in most unexpected places before the Allies. They also held flank positions and cut gun posts in the soft rocks, from which they could fire some miles behind the allied spearhead, and from the precipitous slopes secured advantages of observation and attacks. Bugged down by terrible weather for a long time, the *Allies marked time, until* they could resume insidious infiltration over the great heights around Cassino in spite of the heavy rains on the coastline, the heavy snow on the heights of the Apennines and a regular sea of slush and mud all along the flooded river valleys. In Italy, these forces, especially the heroic 8th Army, had to take one height after another and cover only a few furlongs at a time, while in the plains of North Africa the same men could cover hundreds of miles at a time. And all this, in extremely bad Italian weather, which marks the bitter winter in an otherwise sunshiny land. Our brave Indian soldiers had to don great coats, to wear woollen underwears and leather jackets to protect themselves from the biting cold. A process of *leap-frogging* and *slogging up* had to be exercised in such a trying Mediterranean climate. Frozen by cold at night, roasted by sunshine by day and soaked to the skin by intermittent showers of winter rains in the afternoon—such was their sad lot for a while. Moreover these troops had also to struggle against violent floods of which the waters rolled down the precipitous mountain sides

in terrible water-falls, which went to turn the rivers, flowing at right angles to their march, into raging torrents in a moment. All military bridges were swept away thereby.

While such was the case with the army, the Allied navy found it easy to blow up the solitary *coastal* railway in places in Italy and to strike the *underbelly* of Italy. "All roads lead to Rome", but here the Allies could take possession of the *singular lateral Highway* and reach Rome after all. It was a spectacular route sweeping from the sea level to crests of 5000 feet with hairpin bends and sharp gradients. In one area a distance of about 80 miles was actually covered by a detour of 130 miles or so.

Another interesting instance of mountain warfare is that of the Gothic line defences based on the strategic exploitation of the topography of N. Italy. Here the Italian peninsula is intersected from N.W. to S.E. by the Apennines, the Ligurian, the Luskan, the Etruscan and the Umbrian ranges. The Gothic line runs along their edges and projects towards the S.E. But it can be easily pierced.

So the mountain barriers have proved to be neither impregnable nor impenetrable at all times. But there is a limit. If the mountains exceed the limit, say 10000 ft. in height, they are really very difficult to pass for a whole army and conquest, or, defeat is slow. Besides, if there are any weak spots, such as mountain passes in them, they are good for defence purposes e.g. the Khaiber Pass, the Brenner Pass etc. They cannot be by-passed atleast like any other artificial defence line, such as the Maginot can be in a comparatively flat land.

On the whole, the battle of Italy has been found to be hard and long. It cannot be compared to the flat-plain warfare in Russia. The United Armies, British, Canadian, American, Indian, have done far better in this difficult country than the Russians and they deserve *greater credit*. Besides, the Russians have fought bravely for their own country, while these men have fought for another king's country.

So are the battles of Imphal and Kohima on the Assam-Burma front, fought hard and heavy for the possession of the single artery of the road, in which, during the monsoon season especially, landslides cause more havoc than air attacks. The question of food supplies has to be tackled very carefully in such hilly places.

(2) *Rivers and Plains*:—Crossing and recrossing of rivers in the flat plains of Russia has been quite a new experience. In such a battlefield of vast open spaces crossed by great rivers, flank movements, encirclements and by-passings of anti-tank minefields

were easy. German retreats to "prepared positions" in Russia, where they could find some natural barriers, are well-known. The steamroller rolled across Poland, Ukraine and S. Russia right upto Stalingrad in one season from the German side and then, in the opposite direction, in another season was the Soviet avalanche. Hundreds of miles were covered, due to the momentum at a time, across such *navigable* rivers as the Dneister, the Don and the Volga. Often these very rivers were used as *defence lines* for a while against the enemy; especially the military strategy inside and outside the Dneiper bend in the south was remarkable. While the Germans hugged the river here in their last stand, the Russian plan was to split the enemy against the Pripet marshes and then swinging southwards towards the Bug and the Dneister to encircle and trap the enemy. Many dams and key bridges had to be destroyed and rebuilt alternately; it was all a swirling battle with fleets of tanks and self-propelled guns. Defences on such rivers are generally on the banks, *the bends being very helpful as Maginot Lines* in this respect. But the wide plains between them are very fertile and must be conquered before the wheat crops are reaped and the output from the big industrial centres, such as Kiev, must be removed. So the scorched-earth policy has proved to be disadvantageous to both the sides in river valleys and plains. One description of a battle in the Dneiper bend given in the *London Times* of 15th November, 1943 is worth quoting here. "Crossing the Dneiper near Kremenchung, they (the Russians) made straight for the heart of the great bend—the iron-mining town of Krivoi Rog. They almost reached it before they were halted and while the Germans struggled desperately to ward off this unexpected assault, our Allies struck again with redoubled fury at Melitopol. After a long and grim fight the bastion was overpowered and the Germans swept across the Nogaisk Steppe to the mouth of the Dneiper at Kherson. Their chief disaster was the cutting off of their forces in Crimea from their comrades in the mainland. Yet on a line inside the great bend from Krivoi Rog to Nikopol the enemy put up and are still putting up a stubborn resistance. Why is this? The importance of the iron mines of Krivoi Rog and the far more valuable manganese mines at Nikopol may be one reason, but it is also probable that the Germans had concentrated at this central point their regional strategic reserves for both offensive and defensive purposes. It is these strong armoured forces which are holding up the Russians in the great bend of the Dneiper". But as we have noticed, the natives succeeded ultimately in breaking up this barrier by making several breaches in the bend of this meandering river. Actually they

succeeded in crossing 750 miles upto the Dneiper in 12 months! Outflanking movements were made and scores of German divisions were entrapped thereby. Like other rivers in the northern hemisphere the rivers of Russia have their right banks cut up and lie high where the left banks are low and flat due to aggradation. No wonder the Germans found them advantageous at first due to the height for invading Russia and their progress was rapid. But their retreat was difficult the other way.

When rivers are not so wide, as is the case in Italy, it is possible to fix the troops firmly *astride the stream*, as General Montgomery did, by strengthening and consolidating the Sangro bridgehead. He dealt a colossal crack in the German winter line. Before this, the Fifth army had to hug the Garigliano river and the Eighth army the Sangro river for a long time with all the bridges destroyed. Drinking water had actually to be brought by buckets, under such trying circumstances up the steep gradients at times, a watershed plays a critical part. The Smolensk way to Moscow is notorious, on account of its situation between the watersheds of the northern and the southern rivers.

Often rivers go to war themselves by affording transport facilities, not necessary in actual war theatres. The Mississippi moved a tremendous part of the canal and river cargoes of America during the course of the last year and the traffic reached a record height. Where rivers have the habit of flooding the plains, they are disciplined and harnessed e.g. the Ohio, during the war, was made "to climb steps" so to say. Again the river loops are cut off and a kind of artificial flood avulsion is created even in the heat of wartime.

The Irawadi valley will have to be reconquered by gagging the river in its very mouth at Rangoon, when a large Allied armada is made to stand in front of it again. Only north-south or south-north movements are easy in such river valleys. Just a single battle, fought at the mouth of the Ganges viz. Plassey by Lord Clive, placed the wealth of the whole Gangetic valley at the feet of the British in 1757 A.D. While in earlier ages only downstream sailing was easy, in the modern age such upstream assaults are also possible.

(3) *Islands and Coastlands*:—We have already referred to the almost impregnable fort of Malta in the Mediterranean sea, as it is well protected by the British Navy and the Royal Air Force. The position and physical features of Gibraltar are similar. In the eroded holes in the lime stone of this rock, the British guns rest

safely and undisturbed. It is an excellent gun-post in Britain's life-line to the East.

Leap-frogging is done while moving from one island to another in the Pacific Ocean, which is full of islands and the war strategy must necessarily be different here than on the continent of Europe. Japan's early successes were due to this practice of using the islands as aircraft carriers and creating shipping lanes by conquering more and more of them. Their entrance into the penal islands of Andaman and Nicobar, early in 1942, was probably for the same purpose. Amphibious offensives are necessary and bridgeheads are established only after aerial and surface bombardment. If the beaches are flat, long and unguarded, landings are easy. But wherever it is difficult to land, the use of parachutes is made with profit, as in New Guinea for the supply of food to the Australian Division from the air.

The bombing of Tokyo from the Aleutian and other islands is a miracle of the present war and it is easy to understand that a Tokyo-bound thrust from Pearl Harbour would be better than an Asiatic offensive against Japan.

So the geography of the Pacific ocean has favoured Japan in its art of island-skipping and so many major bases have been neutralised. It took many of the islands of the Pacific by surprise, but given enough time it is possible for the Allies to defend every inch of ground on the coast, so that such landings cannot be made at all times and all places; so did the Germans and the Italians, in the beginning, in the Mediterranean Sea with the Dodecanese islands, the island of Crete etc. But soon the tide turns in the opposite direction though the difficulty of mastering the Pacific Ocean is great. Although there are innumerable islands in the Pacific, for a real mastery of the ocean by air there are not suitable landing islands for aeroplanes, at least every thousand miles e.g. the north-east quadrant is blank except the Hawaii. Due to their skill in landings on broad sea-coasts, the Japanese have tried to strangle China so long, but although deprived of its only eastern sea board, China can still live and thrive on its great culture and hug its many green valleys and hills against the onslaughts of the unscrupulous Japanese.

In regard to the use and misuse of coastlands, the best example we can give is that of the landings of the Allies on the uninviting coasts of North Africa and France, the former being so, due to the roughness of the Mediterranean Sea and the strongly fortified harbours of Tunisia, and the latter, due to the construction of the

so-called fortresses of the Atlantic Wall. In both, the allied troops have succeeded, as they have used the *geographical peculiarities of the coastland to their best advantage*.

The long looked-for Second Front in Europe was opened with the approach of summer skies and typical anticyclonic winds. The locality chosen was the neighbourhood of Cherbourg peninsula, most suitable to its protection by the British Navy due to its exposure on three sides, the low-lying sandy beaches, the crescent-shaped shoreline between two good harbours of Cherbourg and Le Havre, pierced by the estuaries of the rivers, the Vire and the Orne, which proved to be most serviceable for landings; really it was the best locality for the invasion of Europe by the Allies under the circumstances. Though much further across the English Channel than the coast of Calais, it was on the high-way to the capital of France. On the whole, the rough and craggy chalk hills of Normandy the gently rolling country and the quietly meandering rivers could afford the best defences to the enemy at the same time. So also was the landing on the south coast of France made perfect, due to the partially protected coast of Provence.

Although the Germans could easily mine the beaches, make booby traps and flood the coastal plains, could even hide their whole ammunition in the forests in these regions, they were discarded by the Allies and the very obstacles, fixed up by the enemy in the beach sands, were used by the invasionists for cover against shots and shells. In the flat plain of northern France big pincer operations were possible for *outflanking large towns* and the enemy could be paralysed easily in powerful nerve centres.

(4) *Deserts and Marshes*:—However clever man may be in the art of fighting, he has to stand against the obstacles of deserts and marshes, two of Nature's devices to stop the progress of any world war. While in the former region it is difficult to get water, in the latter it is hard to get rid of water. These at least would prevent a war from growing into a greater world war. More men die in such regions from diseases than from actual battles. Those, who struggle hard against these obstacles and are fittest, only survive. The famous Seventh Armoured Division is styled "Desert Rats", which name is quite significant. The ding-dong battles of North Africa, the stoppage of the Axis onslaught in Egypt in the bottleneck between the Quattara Depression and the sea by the brilliant 8th Army under *Montgomery* are due to these natural obstacles in the way of man. Holland could put up high walls against the sea and reclaim land in peace time, but these very

dykes could be bombed and the area easily flooded. The flooding of green valleys further west by blowing up the river dams and the cutting of water supply and electric energy are like creating artificial marshes in the civilised parts of Europe!

The Pripet marshes particularly have proved to be a powerful weapon in Russia's hands. They are a series of bogs and swamps extending for about a hundred miles on both sides of the river Pripet, which runs into the Dneiper, north of Kiev. They are difficult to cross at any time but terrible in winter. No north-south railway traverses them until well inside the Polish border 100 miles further west. They are divided laterally by the Pripet and the Gomel-Warsaw railway is roughly parallel to it. Such a geographical circumstance was a god send for the Soviet forces for their war strategies in this region.

(5) *Seas and Lakes*:—In these days of combined *land-sea-air* operations, the place of the ocean cannot be ignored. We are acquainted with the tactics of the Japanese in their initial success in the Pacific, Pearl Harbour, Manila, Hongkong, Singapore, Wake Islands and Midway Island. Where sea operations fail, good harbours can be conquered by land. Singapore, quite impregnable by sea, was taken by the Japanese unexpectedly from the land side. Due to their excellence in such triple operations, they were able, within a few months, to make large-scale combined attacks on the British and American life-lines in the ocean. The same strategy could be practised by the Allies after the lapse of sufficient time and they could recover from these initial shocks. Skill on seas and lakes for destroying submarines, sweeping mines and ultimately occupying more and more islands as aircraft carriers is needed. For establishing vital supply-lines from Great Britain, the Empire units and the United States, a hold on the Indian Ocean is absolutely necessary and surface and submarine raiders must be destroyed and shipping lines established. Among the oceans, therefore, the Indian ocean occupies a critical position with India as the most critical peninsula of Asia. The use of such an excellent natural harbour as Trincomalee is self-evident. The deeper the sea, the more clear are its waters from the air for detecting U Boats and submarines, while shallow seas like the North Sea with dull waters suit the enemy admirably. Inland seas and lakes serve as wedges, and they are useful to Russia, for instance, in its struggle against Finland, and also, Rumania and other Balkan States round the Black Sea, which it has duly penetrated already.

Countries, which are situated far inland, need "windows" towards the sea for their very existence in a sea-faring world. No

doubt Germany fought with Poland for the Danzig Corridor and Russia's eyes are on Iran and Iraq for *securing a window* out into the Arabian Sea. In fact Iran will play a critical part in the modern world in this respect, as she has in the past history of Asia and the significance of the conference of the Big Three at Tehran is very great indeed. Already a storm is developing over Iran's oil supply.

MAP MAKING AND THE WAR

Like many other things in war time, map making has been stimulated. It has made great strides in this World War. It has become an international business, so great is the importance of plotting every essential thing on the map.

Before this War, people were content with the maps only of the penny-atlas type. But due to the exigencies of the conflict and the enormity of its extent, Royal Engineers have roamed the world over, so to say, in order to map its details. "Nothing can happen without maps", says Lt. Col. T. A. Lowe, D.S.O., M.C., "nothing in war especially." According to him, from the Office of the Director of Military Surveys alone, some 60 million maps of different countries have been issued between January and June 1943. For North Africa especially before the famous landing, 9½ million maps of the region were sent out. Troops are generally given the maps by stages, that is to say, they get the first sheet as they advance on land at first and when they get off the first stage, the next is supplied and so on.

But the greatest improvement has been made in map-making for fighter pilots and bomber pilots who require the best large-scale maps, as their range is increased greatly. Two sets, "Target for today" and "Target for to-night" maps, are issued for them. "They are large sheets with circles of a mile radius drawn until the bull's eye is reached in the middle. The night maps are so made as to enable the pilots to read them by an amber light only. These maps are printed in two colours—magenta and black. The whole of the paper is used to denote water; therefore, when we look at it in day time, the printing shows a dirty grey for general land and magenta for built-up areas. The amber light supplies the rest. Under it, magenta and grey become brown, magenta without grey become orange—which is where the bomb must fall".

So every army has its Sappers and its mobile survey unit of Royal Engineers to do and improve upon this great job. Every

one of its moves depends upon the right kind of maps for its plans. Aerial photography has also greatly advanced during this war.

What is the ultimate outcome of all this surveying and mapping in wartime? Since every war is followed by peace, these very maps will be of immense service to mankind in the world reconstruction and planning with all the details already gathered. After this War, maps will really be in great demand both for business and for recreation.

But as Prof. E. G. R. Taylor has remarked, we shall not need the old flat and static kind of maps with contorted projections and hemispheric isolation; we shall want *dynamic maps of the world with no real east or real west*. The world has evolved sufficiently *now to think in terms of the whole globe*. This kind of "global thinking" is essential and must inspire us to change our ideas of the world. We must learn to *compass the globe with all the human communities living together in congenial physiographic regions, not as Hindus, Muslims, Christians, Germans, Italians or Jews, but as members of one human family, living happily in peace and good neighbourliness, as the original arylans, the ancestors of civilised Europeans and Asiatics, lived in the Aryan Home, ages ago*.

A FORECAST

Judging from the trend of events that have taken place so far in all the War theatres, Europe, Africa and Asia, and from the nature and extent of the chief features of their geography, some possibilities of this war may be prophesied. They are:—

(1) No region is self-sufficient with regard to foodstuff, or fuel. Minerals, especially coal and oil, are getting exhausted at a speed undreamt of, in the history of the world. There must be an end to this sabotage;

(2) Hitler's much-vaunted fortress of Europe, has proved to be a failure. The Atlantic Wall has already been broken. As the Germans proved the futility of the artificial Maginot Line, the Allies have shown that the *natural* boundaries of the Atlantic Coast, the North Sea, the Tyrrhenian Sea, or the Adriatic Sea cannot stand the might of Allied Navies and Air Forces with their superb knowledge of geography.

(3) The conquering armies will reach some suitable *natural* frontiers on land and stop there. No people can stand the strain of three or four or five Fronts without any intercourse with the outside world for a long time.

(4) Germany, being within the bombing range from all sides, the R.A.F. can finish the job which the army, or the navy cannot. So is U.S.A. getting ready for scorching Japan.

(5) Japan's own lesson of land-sea-air operations, taught to the Allies, will be re-learned by this nation with regret.

(6) Russia will emerge a mighty and enviable nation in the world. This war has brought Russia and the other Allied Nations so close together in a common cause. They can certainly learn much from one another and save the world from another catastrophe.

Man is inconstant, while Nature is not. Human history may repeat itself, because Nature's geography is *behind* this history. While man changes so rapidly, changes in nature and natural features such as mountains, rivers, lakes, seas and climates are very slow. It takes many milleniums for a hilly region to be denuded and reduced to the base-level of erosion. Besides, nations are unevenly distributed in this world. Some are young, some old, while others are *adolescent*. It is from the last that troubles generally arise.

Summarising the Political Pattern of the world, Prof. Samuel Van Valkenburg writes: "The cycle theory in the political development of States is intended to give a better understanding of the problems of the present family of nations. The map of the present is only the picture of a moment, and a similar study for any other time will show great differences if compared with the one of today. Similarly a future map for the year 2000 A.D. will look very different. No forecast can be made based on this cycle. It should be stated again that no definite number of years can be given for the length of the various stages; that depends entirely upon the structure of the state involved and upon its neighbours. But one conclusion may be drawn, namely, that *the world will never be safe for peace, because there will always be countries in the stage of adolescence. Only through lenience when possible, or, pressure when necessary, can the mature states maintain the balance for peace*".

PLANNING FOR THE FUTURE

Will there be absolutely no hope for permanent peace after all? The process will be long and tedious and it will be necessary to make some kind of *definite large-scale international planning* for preventing such wars in future.

(1) The first and foremost is a plan for fixing proper political frontiers. *Unnatural, unsuitable and unreasonable frontiers are the bane of Europe's existence.* There must be *proper, physiographic or cultural* boundaries provided, and nations must be allowed to live and thrive on *their own cultures* within them e.g. Switzerland. Then there must be a well-planned scheme for *spiritually irrigating* these different cultures apart from the individual's religion, by means of a net-work of cultural canals across the Oases, allowing the cultures to mingle in *suitable physiographic regions*. Thus unity must be secured from the diversities of races, religions and cultures in the whole world. One culture, or religion, should not be allowed to suppress or strangle another, but equal opportunities should be given to all. There is no room in the world for one selfish race or one selfish state geographically to exist. Jealously guarding its "Sovereign" without making some sacrifices for *common welfare* would be to sow the seeds of the third world war.

(2) There must be definite inter-national planning of food, fuel and other vital resources of the world. All countries can, therefore, be dependent on one another *with profit and with dignified self-respect*. In other words, cultural sciences like geography must now be stimulated and help in the planning by such schemes as Inter-regional Geographical Correspondence and Exchange of Material.

(3) There must be a proper study of mankind in all countries. That is to say, a thorough study of the *human* geography of every country must be made compulsory in all Universities. People must know one another well, must sympathise with one another and must appreciate the worth and ideals of one another. A *lingua franca* of the world is a great desideratum in this connection.

(4) Disarmament is futile, so long as man is man and human nature remains the same. Nations must be made to defend themselves against intruders and invaders from needy parts of the world and *evil must be crushed*. This time a "League of Prophets" may be tried.

(5) Lastly, it is only when man is able to *decode the secrets of life* exhibited in human sufferings in spite of the vastness of this earth and its inexhaustible resources; it is only when our bombers will always be willing to carry poppies instead of bombs to "Flanders", old and new; it is only when man is able to think that his real enemy is *not man* but want, poverty, and misery, and it is only when man feels that his struggle should be directed against Nature's handicaps, obstacles and calamities, such as floods

and famines, pestilence and plague, that there will be won by him a victory in the real sense.

Let us end this discussion with an extract from a soldier's letter written amidst the stress and strain of this very dreadful war:

"God grant the day when all alike shall pit their strength and heroism and skill against the real enemies,—the wants of the world, and in a ceaseless, timeless struggle against Nature well be fighting, a real man's war for a real people's VICTORY!"

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N. Subramanyam Memorial

In aid of the N. Subramanyam Memorial Fund, a Variety Entertainment was staged at the Lady Willingdon Training College Hall, Triplicane, Madras, on the 28th October 1944 with Lt.-Col. Diwan Bahadur Dr. A. Lakshmanaswami Mudaliar, B.A., M.D., L.L.D., D.Sc., Vice-Chancellor, University of Madras, in the chair.

Sri P. Nagaraja Rao and party enacted a few scenes from the tamil drama SARASA, which was followed by a Bharata Natyam and Abhinayam by two young and talented artistes, Srimathi Yogam and Srimathi Mangalam. They kept the whole audience spell bound for an hour by a most exquisite display of the art of Indian Dancing. This was followed by Prof. C. S. Kamalapati and his troupe staging a few scenes from Shakespeare's Merchant of Venice and Macbeth.

Miss J. M. Gerrard, Principal, Lady Willingdon Training College and President of the Indian Geographical Society welcomed the Vice-Chancellor and proposed him to the chair. The Vice-Chancellor gave a short account of the life and work of the late Mr. N. Subramanyam and laid stress upon the enormously important role which Geography plays in the life of man. He was glad that although it has been a Cinderella in the curricula of studies in this University, recent changes tend to suggest that in the years to come, it is likely to become one of the most important subjects of study in the University Classes.

Mr. George Kuriyan, Hony. Secretary, N. Subramanyam Memorial Committee and the Indian Geographical Society proposed a vote of thanks, in which he made a special mention of the voluntary co-operation which he received from all the artistes who enacted the shows and in particular from Srimathies Yogam and Mangalam for their performance at very short notice, owing to Srimathi Kalanidhi Ganapathi having disappointed at the last moment. The success of this entertainment was entirely due to the Entertainment Sub-Committee and Mr. Kuriyan took the opportunity of thanking Miss A. R. Irawathy, Convenor, and her Entertainment Committee.

Further, he desires to express here his thanks to Sri G. Srinivasachari of the G. S. PRESS, for so ably doing all the printing work in connection with the Memorial and that free of all cost—a generous help given most willingly and sometimes under very exacting conditions.

The Secretary N. Subramanyam Memorial Committee reports that the entertainment brought in a gross receipt of Rs. 822 which has been credited to the Memorial Fund.

Letter to the Editor

Sir,

I should be glad if you could find space in the INDIAN GEOGRAPHICAL JOURNAL for the following remarks and suggestions on the present position of geography in Indian education. I must explain that I am really a somewhat puzzled enquirer from outside. Since my arrival in India, rather more than two years ago, I have tried to meet as many geographers as possible and to find out how the subject fares in the Universities. The rather negative result of my enquiries (admittedly inadequate) impels me to seek a more comprehensive view through the medium of your pages. I should be happy if these remarks served to initiate a discussion from which such a view might be attained.

An outside observer undoubtedly gets the impression that the status of geography in the Universities is low, and that published work is unequal; the two of course go together. Very few Universities appear to recognise or teach geography as a full degree subject. Diploma courses seem to be either rudimentary—designed to add one more to the already appalling list of subjects which the overworked and underpaid teacher may be called upon to offer—or else elaborate castles in the air with little relation to the facilities which actually exist for teaching to an adequate university standard. The syllabuses are magnificent on paper, but may remain a dead letter from lack of properly equipped libraries and labs. I have even seen an M.A. syllabus which offered the strangest combinations of economic geography, military geography, transport geography, one might almost add metaphysical geography; all that was lacking was plain ordinary geography and any evidence that the student who took the course need know any. It seemed possible to take an M.A. in the subject without having done it at any earlier stage, and without having any regional knowledge beyond one or two special areas. I think you will agree that the erection of such grandiose superstructures on a flimsy foundation represents a type of "progress of higher education" which is best done without.

Yet geography has a part to play in the building of an informed public opinion, a part whose importance it would be impossible to over-estimate. The level of what may be called crude political and commercial geography is not too bad; people know where countries are and what they produce more or less; and

owing to the war map-mindedness is gaining ground. But of geography as a true cultural subject there seems to be hardly a trace; yet the subject is so naturally the keystone to the arch of the sociological studies. A new approach, a new thinking-out of the whole place of geography in the educational scheme of things is urgently needed. Historical geography, for instance—what an immense field lies around us! And I don't mean merely tracing the boundary changes of British India; why not for example a serious enquiry into the evidence for the theory so widely held in textbooks that Islam is the religion of desert nomads—a theory which seems to me to omit about nine-tenths of the history of Islam and about nine-tenths of its current sociology. Geomorphology again seems to be hopelessly neglected; why do we not have any discussion of the fascinating problems of the hydrography of the Western Ghats, the geomorphological history of the Konkan, the peneplanes and cycles of erosion of the Dekkan, the badlands topography of the lower Chambal, to mention only a few of the questions which have thrust themselves on my attention merely by looking through a train window. Fox's *Physiography for Indian Schools* is hardly geomorphology in the modern sense, and for the rest—where is there any comprehensive treatment?

As things stand we are so far from having a good geomorphology or historical geography that there is not even a good detailed and comprehensive general geography. Stamp, Lyde, the *Geographie Universelle* are all good so far as they go, but none of them is anything like a full treatment; we need badly something of the standard of Jathar and Beri's *Indian Economics*. Local studies in human geography are often very well done; properly used, gazetteers and numerous series of official reports provide mines of information. Could not a beginning at least be made on a series of regional monographs which would provide the basis for a later synthesis? If, as is likely, publishing difficulties are the bar, could not an effort at least be made to enlist the support of Chambers of Commerce, Universities, Provincial Governments, and to bring home to them the advantages of a scientific survey of their areas? Perhaps the INDIAN GEOGRAPHICAL JOURNAL itself could help by publishing a series of notes on the sources and handling of material for the guidance of young geographers.

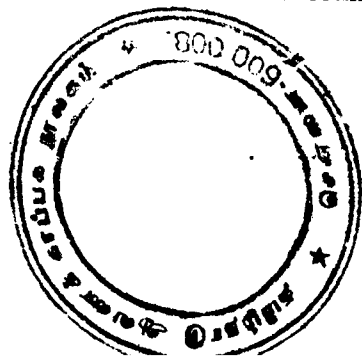
It may be said that owing to the war nothing serious can be done now. I agree that to start new University Departments now, when books and equipment of all kinds are almost unobtainable, is to invite disaster and perhaps to provide undeserved arguments to those academic authorities who for some curious reason still

seem to oppose the progress of the subject. But it surely does not follow that *nothing* can be done now. It is important to find out just what the position is; would it not be possible to organise an enquiry, perhaps with the help of the Indian Science Congress, into the exact status of geography in the various universities, the numbers and grades of teachers and students, types of syllabus, adequacy or otherwise of libraries? If such information could be collated, a basis might be laid for a really serious movement to raise the position of geography in the Universities and to ensure that it is kept to the front in the big changes that are bound to come after the war.

I trust that these remarks will not be taken as implying any general strictures on Indian geographers in themselves. The work produced is, as I have said, very unequal; I think that the fundamental reason for this is the astonishing disproportion, in some cases at least, between the high ambitions of the syllabus and the sordid reality of the library with which the teaching has to be done. It is significant that the best work is done in local studies where the Gazetteers, old as they are, provide a firm basis to start from. In other branches, I sometimes wonder whether the geographical malnutrition observable is not perhaps the result of a diet consisting too exclusively of Stamp and Semple, good authors both, but not as the sole staples. I must not conclude without expressing my admiration for the good work that is done, often in the most unfavourable conditions.

I fully realise that these enquiries, made entirely in my scanty leisure hours, may well prove to be open to much correction. I shall be pleased if it prove so, and in any case I shall be satisfied if I have succeeded in bringing out the need for a serious review by Indian geographers of the position and prospects of their subject. If any of your readers are sufficiently interested to voice their opinions, I would ask them to remember that this is avowedly an outside view, stated in the hope of stimulating discussion, and that if it errs, it does so not from lack of a desire to give credit where credit is due, but from an interest in maintaining and improving the standards and status of University geography, and from simple accident in not meeting perhaps the right set of facts.

'An Inquiring Mind'.



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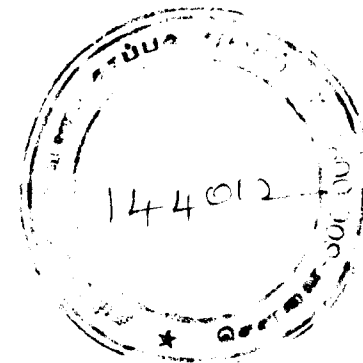
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