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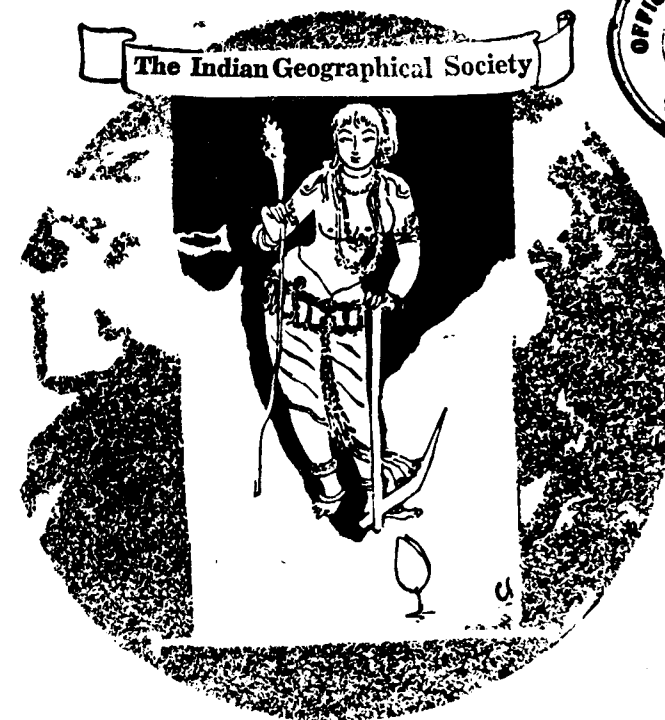
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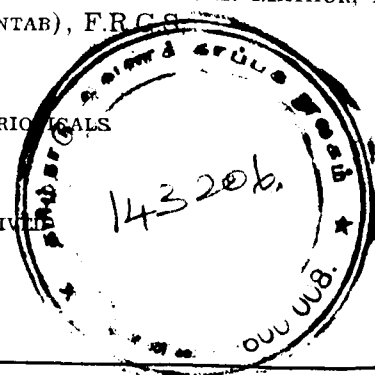
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MIDDLE SCHOOL GEOGRAPHIES

By C. RAGHUNATHAN

(According to the latest Syllabus)

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Population and Settlement in the Ghaggar Plain

By

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1. *Growth of Population.*—Since the time when one of the earliest civilizations of the world flourished in the river valleys of the Punjab, the Indo-Gangetic watershed has been inhabited by man (1). The plains of the Ghaggar, Saraswati and Chautang bear an indelible imprint of long tenure not only in terms of purely man-made features but in altered natural ones as well. The pressure of growing population in these plains, due to natural and other causes, pushed the centre of civilization further and further eastwards, till it finally established itself on the banks of the river Jumna—resulting in the reduction of the Ghaggar Plain to the status of a 'corridor' through which the traveller, trader and invader passed on their way from the North-Western passes of India to their common objective—Delhi.

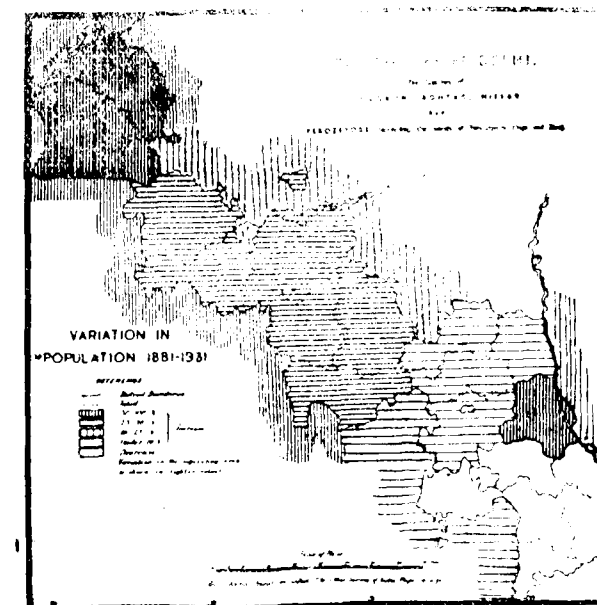
The population of the Indo-Gangetic Divide therefore shows a diversity of features. The intermingling of races, rise and fall of kingdoms, influx of armies, movements of population, internecine warfares and above all natural calamities tended to evolve intricate types of population groups and centres (2). The present landscape which is the result of these changing circumstances, presents many incongruities, with a base composed of typically Aryan tribal forms (3) upon which have been super-imposed elements of subsequent civilizations—West Asian and European.

The areal distribution of population within the Divide by the beginning of the 19th century can, however, be visualised in the light of many descriptions given in earlier revenue and settlement reports prepared under the British regime. Two distinct divisions of this area can easily be traced. One was Delhi and the surrounding country stretching between the Delhi Ridge and the Jumna River—thickly populated, commercial and administrative, definitely urban in character, looking towards the east rather than the west for its supply of food and raw materials and having an influence, moral and economic, over vast areas on both sides of the Jumna. In contrast to this was the rest of the Divide—the area west of the Ridge, extending right across the Ghaggar Plain to the banks of the Sutlej—dotted with a few self-sufficing, economically independent, compact, and highly crystallised 'villages' along the water-channels but far away from the main roads leading to Delhi. The site of these 'strongholds' in which the population of this tract was concentrated was usually a 'mound'—land elevated far above the surrounding plain, and was surrounded by deep ditches and high walls with a fort-like appearance (4). But the great part of the tract, particularly Rohtak, Hissar, Muktsar and Fazilka, was absolutely waste—the result of the insecurity of life and property which attended the decline of the Moghuls and especially the terrible famine of 1783 A.D.

With the spread of order by the middle of the 19th century the necessity for self-defence was to a great extent removed and the population tended towards a more even distribution. With general prosperity and extended and better cultivation, the larger groups gave rise to smaller groups which scattered over wide and so far vacant areas. This tendency, progressive though slow, was remarkable and far reaching in its results. The village community which survived the crash of Empires and emerged unchanged from centuries of anarchy and disorder, seems destined to succumb to the dissolving spell of peace and settled administration. The very sternness of conditions, then prevailing, supplied the external pressure which kept it together, and the relaxation of tension has allowed it to fall asunder by disintegration from within.

Map No. 1 summarizes the tendencies of population growth in the whole area and the adjoining States during the period 1881-1931. If we take Delhi out of the picture (since the abnormal increase of its urban population is due to a variety of factors), two facts can at once be read from the map. Firstly that the increase of population

is most pronounced in the west and north-west of the Area and gets less as one moves towards the opposite end till in Gurgaon it becomes an actual decrease in numbers. Secondly the highest percentage of increase occurs in Fazilka, Muktsar and Bikaner, the areas of lowest rain-fall and the gradation towards lower percentages of increase or even towards a decrease seems to follow the trends of increased rainfall both towards the Jumna and the Siwaliks. In other words the drier the area the higher the percentage of increase. It is not justifiable to explain such a complex pheno-



Map 1.

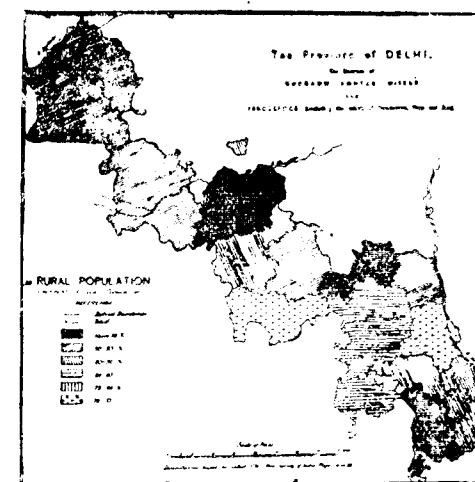
menon (5) as 'population movement' by reference to a single factor e.g., rainfall condition, colonization, administration etc. It may, however, be said in general that these tendencies (towards increase in the N.W. and decrease in the S.E.) are the result of the different utilization of the land in various tracts. In Gurgaon, for instance, the Jumna 'Banjar' before this period enjoyed comparatively settled conditions and nearly all of the available cultivable area had been under plough earlier than the areas further north or north-west of Delhi and the population had long reached a stage when it had pressed unduly on the resources available. This utilization of land to the maximum capacity contributed to the emigration of the

natural increase of population to other parts of the country where the opening of waste lands afforded an opportunity for work. The addition of the Agra Canal to the already existing well and tank facilities did not bring about any radical change in the condition of that district. On the other hand, the sparsely populated areas of Hissar and Ferozepore made a rapid progress in the utilization of land with increasing facilities of canal irrigation. New lands were broken, newer and better methods of agriculture applied, with the result that the area attracted the surrounding population and has continued to flourish (6).

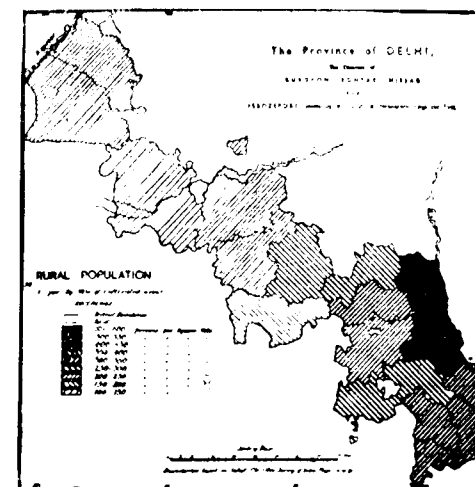
2. *Population Density*.—The total population of the Area in 1931 was nearly $3\frac{1}{2}$ millions: giving a density of about 245 persons per square mile—a figure which is nearly the same as that of the Indo-Gangetic Plain West (7) but higher than that of the Punjab as a whole (8). This figure, though fairly high, does not give the real density of population over large areas within this strip of land. It is an abstraction which like so many other averages reduces such contrasting entities as the populous city of Delhi, the sparsely inhabited sandy tracts of the Bagar, and the barren slopes of the Aravallis to a common level. If we want a real measure of density and a true picture of the distribution of population we shall have to modify our standard of comparison.

Thus, in the first place, when we are considering the Divide as a whole the presence of a few cities does not materially disturb the relative densities of population. But as soon as we begin to examine smaller units, such as the district or the *tehsil*, the inclusion of towns deprives the figures for density of all significance. The boundary of the administrative unit is wholly artificial, and when it includes a relatively large city, the density of the population within it can be varied at pleasure by expanding or contracting its limits. For example, the *tehsils* of Sonapat and the Province of Delhi are, excluding the two cities, equally well populated; the figures for rural population (in 1931) per sq. mile being 368 and 387 respectively, but if the cities are taken into account the densities become 401 and 1110 respectively. The density of the rural population and the manner in which this mass of population is scattered over these plains have the greater practical value for an economic study, although the density of the total population is of interest as affording the only means of comparison with other countries and as indicating, when taken within a sufficiently wide limit, the number of souls which a given area sustains.

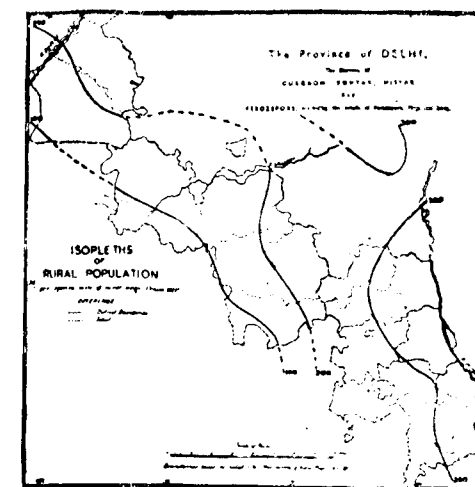
In map No. 2 therefore, an attempt is made to express the relation between the cultivated land and the rural population of the



Map 2a.



Map 2b.



Map 2c.

Area—a relation which gains importance in a country where agriculture is the main support of life.

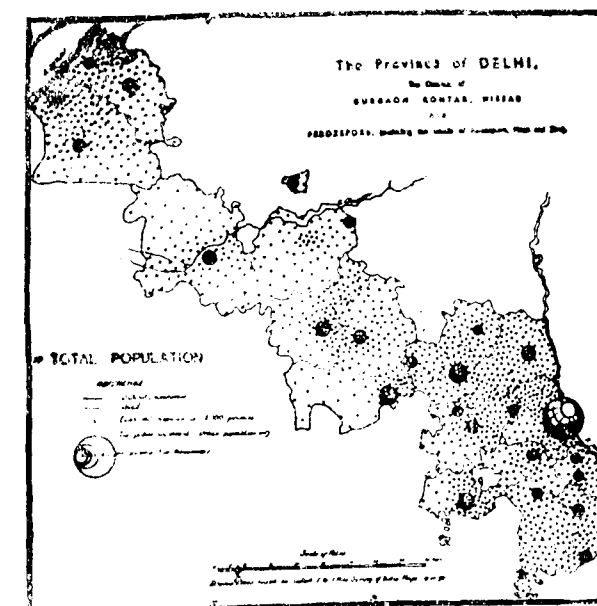
An analysis of the map (No. 2) suggests the over-whelming influence of natural factor over the distribution of population. The rural population of the Area, like the rest of the Panjab Plains consists almost wholly of husbandmen, together with the priests, traders and menials associated with them; the agricultural capacity of different tracts may therefore be expected to determine the density of their population. For agriculture, two things are primarily essential—cultivable soil and adequate supply of water. Examining the relative values of each of these factors in detail it is easy to infer that the more important factor which determines the density of population in this Area is the water supply. It is not therefore surprising to find a striking similarity between the Isopleth map and the Rainfall Map of the Area—a fact which strongly supports at least for this small area, a very generalised statement of Vidal de la Blache that there is a causal connection between the density of population and the rainfall of India as a whole and that the two increase and diminish together (9).

The water supply may be natural or artificial, and the tendency obviously is for population first to occupy those tracts (other conditions being equal) where an ample rainfall enables them to dispense with artificial supplies, the creation or employment of which involves considerable expenditure of capital and labour. But these tracts once occupied, other considerations come into play as population increases and the standard of agricultural practice improves. Furthermore, the tracts in which the rainfall is heaviest are often not those in which the physical conformation of the ground and the nature of the soil are best adapted to the needs of the husbandmen, while owing to its seasonal character the most valuable crops can seldom be grown at all, or at least can never be cultivated to perfection unless the rainfall is supplemented by artificial irrigation of some sort. Thus given that the rainfall is fairly abundant, those tracts in which a high water-table and a fertile soil render extensive irrigation from wells at once possible and profitable, will tend to develop fastest and attract the largest population in proportion to their area.

The construction of canals which bring water to the central arid areas has introduced another element into the question, for the use of canal water is, of all methods of irrigation, that which

demand least labour from the cultivator, and for a while at any rate, yields him the most abundant return.

The population pattern is (Map 3) therefore the hydrographic pattern—and an interpretation of the population map on the basis of irrigation, water table, isohyet maps and cultivated area leads at once to the conclusion that the tendencies are:

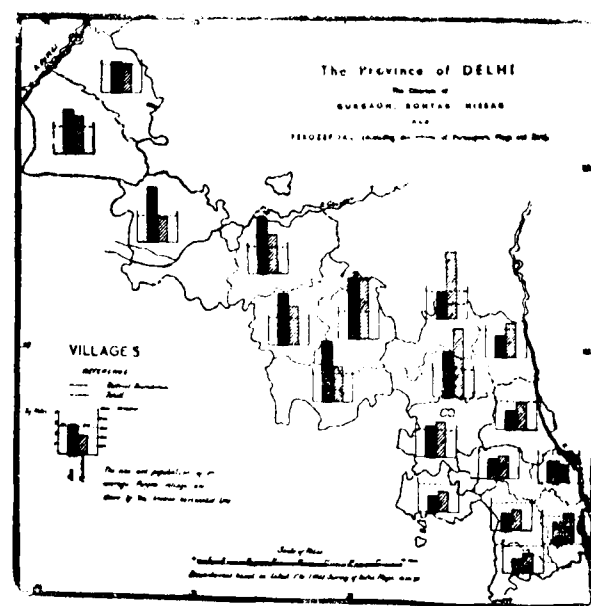


Map 3.

1. That where the proportion of the cultivable area to the total area is actually small, a dense population is impossible.
2. That where the rainfall is scanty, the population, in the absence of canal irrigation, will be scanty also.
3. That given a fairly sufficient rainfall the population will be densest where circumstances have permitted or encouraged the development of extensive irrigation from wells or canals.

There are other conditions of minor importance which carry more or less weight in different parts of the Area. The natural fertility of the alluvial soil of these plains, wonderfully uniform as they are on the whole, does vary sufficiently to affect seriously the

capacity of certain tracts to support an agricultural population. The physical conformation of the country, while it in some places renders dense population impossible, may often allow the pasturing of extensive flocks and herds which supplement the produce of the fields; and the means of cheap and ready carriage afforded by the existence of a railway have, by raising prices and increasing the profits of agriculture, begun to exert an influence over population distribution. The resulting effect of all these factors as a whole and their relative importance is summarized in map No. 4, which shows with remarkable clarity the adjustment of population distribution



Map 4.

to the natural resources of the Area. The average size of a village and its associated land increases as we move towards the centre of the Area while the average number of persons living within it decreases in the same direction. For the sake of comparison with the whole of the Punjab of which this tract is but a part, the two columns showing the size and population of villages are drawn with reference to a single horizontal line which indicates the corresponding figures for the Province as a whole. So defined and regular is the disparity between the two figures that the difference in height between the two columns can be taken with fair accuracy, to represent the relative productivity of the different tracts of the Area.

Essentially this comparison therefore confirms the statement above that it is the natural rather than the artificial features of the environment which to a large extent control the population grouping.

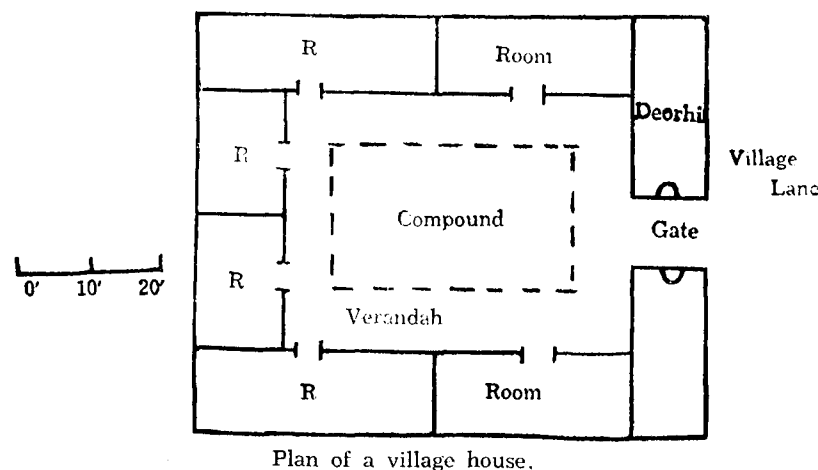
3. *House Types and Settlement Forms: Houses.*—From the threefold standpoints of beauty, hygiene and utility the typical rural house in this area is quite disappointing. It is inexpensive to build, being constructed partially or wholly of mud, and is unsubstantial in appearance—characteristics which are to be expected in a poor country where the climate is relatively hot and dry. Mud dwellings are the coolest in hot weather (June temperatures are usually above 110 in the shade) which lasts for more than 6 months in the year and mud stands so well in the dry climate of the plains that better building material is not needed.

A representative house consists of two units: (1) a mud structure, mostly one-storied and (2) an open square or yard which is surrounded by a mud wall. The rural dwellings in the Area can be classified in two groups; one in which both of these units are discernible and the other in which the second unit disappears on account of paucity of space and other factors.

The mud structure or main residential part of the house is, in its simplest form, but one room with a single door. It may, however, be a collection of three or four rooms with an additional verandah, but to all the rooms, as a rule, there is still only one door—obviously to secure better protection firstly against thieves and secondly against the cold northern winds of winter and the hot S.-Easterlies of summer. The walls are of mud (except in the south-eastern hilly region where they are of unhewn stone) or more rarely of unbaked bricks—rough lumps of dry mud joined together and plastered over with wet mud—and they vary in height from 8 to 10 feet. The roofs are of mud laid on beams and joints of roughly hewn timber or of thatch—depending on the material which can be found locally. The yard serves the triple purposes of a barn, a stable and an open space for sleeping in summer. In size it varies according to the means of the residents.

But within the Area there are well marked variations in the houses which may differ considerably in architecture and the standard of comfort attained. Some of these variations reflect to some extent the general economic conditions of different tracts.

For instance, the best types of houses are found in the comparatively more fertile tracts of Haryana and the uplands of Fazilka and Muktsar. They are built with a covered gateway, sometimes large enough to admit a loaded cart, having side-rooms or 'deorhi' which open on to the lane; within this entrance is the yard, at the rear of this or on either side is a verandah and behind this again are the inner rooms for sleeping and living. The 'deorhi' serves as a cart lodge, tool shed and stable and also as a lodging for such guests as are not sufficiently intimate to be taken into the interior of the house. Its length is equal to the full length of the house and its depth nearly 8 to 10 feet. It is difficult to get timber for a wide span so that the buildings of the villages are generally long and narrow. If additional width is required brick pillars are introduced to support the roof in the middle.



Frequently the main yard or compound is sub-divided by walls into 2 to 3 minor enclosures. Within these enclosures are the hearths at which the bread is baked, and each confocal group living within the one enclosure has a separate hearth—the outward and visible sign of a separate and distinct group. The household cattle are generally penned at night either in the yard (in summer) or in the 'deorhi'. Fodder is stacked on the flat mud roofs or in corners of the spacious verandahs.

The type of house common in the Bagar (the Sandy tracts of S.E. Panjab) shows a standard of comfort distinctly inferior to that prevailing in the eastern portion of the Area. As a general rule,

the soil is not adapted for the construction of mud roofs as it is too light to withstand the rain or wind; the roofs are in consequence made of the thatch of 'bajra' the walls being of mud reinforced with reeds or straw. Several of such 'chhappars' (thatched houses) are arranged round a yard, which if the inmates are prosperous are provided with a mud entrance thatched with straw. In some cases where only a very friable sand is available the sides of the house are made by interweaving the branches of various bushes. The dimensions of such houses are much smaller, the 'deorhi' is absent and the enclosure wall is so low that the inhabitants of one house can see into another.

The poorest type of house occurs in the villages of the Ghaggar tracts and the belt of land subject to inundation near the Jumna or the Sutlej. The house is simply a round hut standing in the middle of a thorn enclosure—a temporary and even portable dwelling. There is generally an inner enclosure for the cattle. In extreme cases the enclosure also disappears and the only evidence of human habitation is in the form of a thatched roof supported by poles or walls made of wattle work of reeds.

The urban house, unless it is a combination of shop and residence, does not present any marked difference in style from the typical rural house. The house is generally less spacious, is two or three storied and built of baked bricks and hewn stones.

The predominance of these types of houses respectively in the Haryana, the Bagar, or the riverain tracts mentioned above do not, however, justify their classification on a regional basis. The factors which affect the distribution of types, though in many cases geographical, are varied and more complex than at first would seem to be the case. Two natural elements, viz., the conditions of climate which may make it desirable to have a particular pattern of house and the availability of material which usually explains such variations are subordinated to other factors, chiefly ethnic and social. For instance, nearly every village has on its outskirts inferior types of houses belonging to persons of the lower castes while the first type of house is found in many Jat villages irrespective of their situation (whether in the uplands of Muktsar or Sirsa or in the plains of Haryana). It is not possible therefore to generalize these features but it can be said that wherever water is abundant or easily available from wells or canals and the land pays better, the superior type of house prevails—a statement which is evidently very general,

Rural Settlements.—Since the Area is essentially agricultural in outlook the rural settlement forms predominate everywhere. The farming family ordinarily resides in a village and not in the midst of their fields, and therefore the complete township of 500—5000 inhabitants rather than the isolated farmstead must be considered as the residential unit of the rural population. Properly speaking an Indian Village is synonymous with the Old Mir, or the South African Township and is something more than a collection of human dwellings. It is a compact agricultural area with defined boundaries, usually anything from 50 to 100 acres in extent. The owners of the tracts often and the cultivators nearly always, live in a central 'hamlet', where small shops, cottage industries, stables, cattle enclosures and the inevitable moneylender are also located, man and beast in a most intimate contact. In what follows the word 'village' is used in its more restricted sense, meaning thereby this central hamlet or residential focus and not the whole area to which the term properly applies.

The villages in the Divide have in general three main distinctive features which can be attributed to economic and natural factors: Compactness of habitations as a measure of safety, security and co-operation; absence of through roads—showing the self-sufficiency of each village unit; and the existence of a tank or tanks very near to the village site—a necessity imposed by the climatic conditions of the area. There are variations in village characteristics but these features recur in practically each and every region from the Jumna to the Sutlej.

In *Haryana* or the Plains of eastern Hissar and northern Rohtak most of the villages, especially those which have had the benefit of canal irrigation for any considerable period, are somewhat superior in appearance. They consist of collections of substantial and roomy enclosures containing good mud houses. Among them are a large number of masonry houses with one or more lofty 'chaupals' (Rest houses). The 'pakka haveli' (or literally 'mansion') of the prosperous local *bania* (moneylender) is to be seen in many. On the outskirts of the village site are the mud huts of the village menials—or low caste people as *chammars* etc. The village as a rule, has one or at the most two entrances and there is generally no passage right through it. In many cases it is divided into 'panas' or wards between which there are no internal means of communication. Outside the village will be found one or more temples or shrines, the slightly elevated domes of which relieve the

even skyline. In sufficiently watered areas the village tank is surrounded by a fringe of trees chiefly *neeb*, *pipal* and *Kikar*. This pleasant green patch breaking the monotonous brown marks the position of a village from a distance in the dead level plain.

Towards the west and southwest the character, not only of the buildings but also of the surroundings of the village, deteriorates. There are fewer surrounding trees and the tanks are smaller and shallower in consequence of the proximity of light sandy soil. At the same time the large 'chaupal' and masonry houses become less common. A feature of villages in this area is the thick high thorn fence which surrounds the whole, possessing only one entrance, which is closed at night to guard against cattle thieves.

As a rule there is in the village no distinct and compact commercial core nor is there a residential district or any wide 'shopping' streets. The narrow, unpaved tortuous lanes which are also the main drainage lines of the village during the rainy season give access to buildings which combine both functions; for the dwelling and the shop are one, the shop occupying the front while the family lives in the back rooms.

A village shop is an institution by itself. It may just occupy the doorways of a house or be more pretentious consisting of one room with a slanting thatched roof supported by bamboos on a small platform in front of it. It supplies produce so diversified in nature as sweetmeats, cut piece-cloth, hardware, bamboo sticks and groceries and serves also as a meeting place for the residents of the small area it commands.

The whole of the village is usually surrounded by a circular path which being the open space nearest the dwelling is highly fertilized and consequently has often been encroached upon especially where land is more valuable. From this road a number of streets penetrate into the village in different directions and not uncommonly they end in blind alleys—each subdivision being cut off internally from the rest.

Settlement Locations and Sites.—The most important and in many cases the deciding factor in the determination of settlement sites is the effectiveness of water supply. Other elements of climate and relief have been of less significance because they vary very little and economic factors as markets and routes have, until recent-

ly, mattered little to communities which were self-sufficing. For this reason the settlements are located on or near the low banks of water channels, natural or artificial, on sites advantageous with respect to the spring level, in close proximity to natural depressions where the hard under-clay facilitates the storage of rain water or at those spots where the intermittent streams of the rainy season can be arrested by throwing embankments across them.

In the hilly region of the south-east for the same reason the villages occupy sites along the contact line of the hills and the agricultural land below. Such a position evidently offers two advantages—viz., a complete control over the torrents carrying the precipitation down the hills, and access to the scanty and scrubby vegetation of the slopes which provide a rough pasture for the cattle. The control of the torrents is comparatively easy in view of the fact that rainfall is low; and so complete is this check that it is only in years of abnormally heavy rainfall that any water is allowed by these 'contact point' villages to flow to the villages situated further away from the hills. These latter villages have therefore to depend on the water which percolates through the subsoil and raises the water table.

The diluvial terraces of the Jumna and the Sutlej, especially where they are elevated and separated from the alluvial plains below by abrupt slopes, have a number of small villages all along their length. The low-lying cultivated lands extend in some cases to the banks of the river and are worked by agriculturists living on the high and dry points. A similar arrangement is found in the valley of the Ghaggar. Here the moist bed of the river provides excellent cultivable land for growing miscellaneous winter crops, and the villages occupy the nearest dry points—portions of the bank which lie high and dry above the flood level of the Ghaggar. On these terraces as well as in the river valley there seems to be a tendency for dispersed settlement to be more common; although the degree of dispersion is more pronounced in the latter case.

Very definitely, however, the typical large and compact villages of the Area are spread more or less evenly over the high plains of Haryana from the upper terrace (higher *Danda*) of the Sutlej to the *Khadar* bank of the Jumna. Though primarily governed by the question of water supply, historical factors are of more importance than any others in the location of these settlements. The absence of villages on both sides of the Grand Trunk Road—the great

strategic road of the past—and the tendency for the villages to be perched on the top of high mounds show how past conditions influenced the population to settle on what were then advantageous sites.

Rural Settlement Forms (Patterns).—The actual origin of all but the newer settlements in the areas of Hissar and Ferozepore colonized at the end of the 19th Century, is lost in obscurity, but by studying the ground plan of the villages on a large scale map, it is possible to lay down to some extent the characteristics of certain general types, and to trace their distribution over the Area.

Obviously every village is the product of at least four different factors or groups of factors.

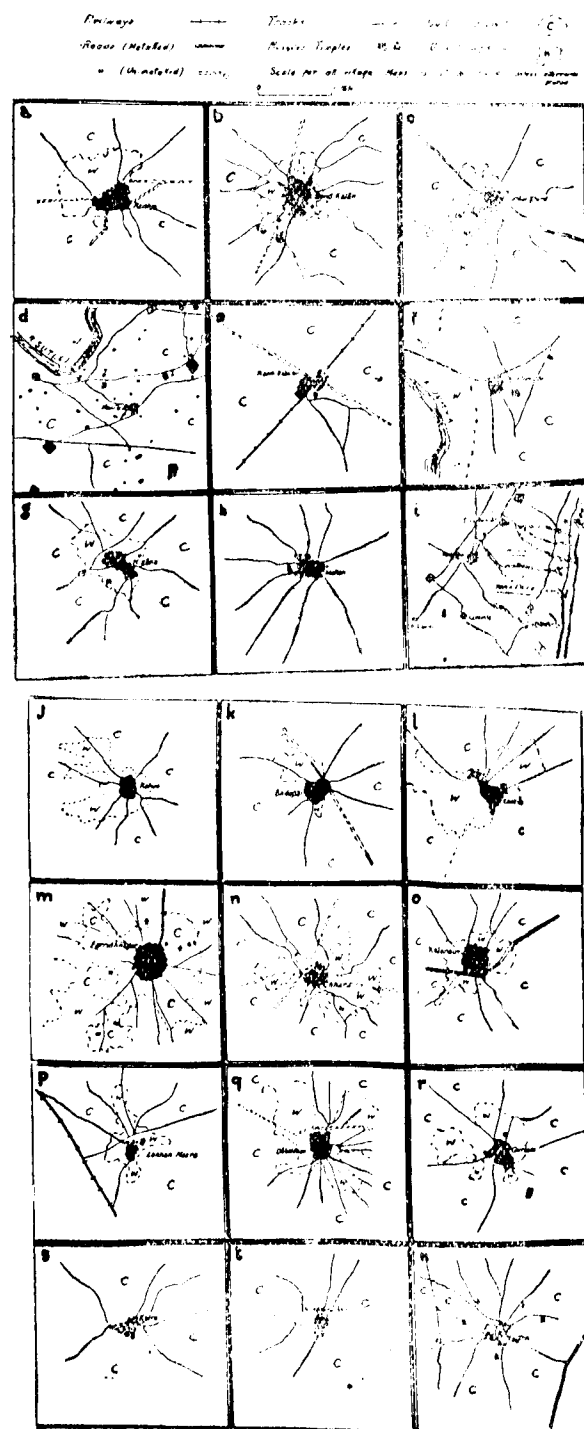
- (a) The physical factors; soils, water distribution and weather aspect.
- (b) The ethnic factor.
- (c) The agricultural factors. The variations of agricultural practice supply an influence third in importance for they themselves are dependent both on physical factors and systems of land tenure, and subordinate to both.
- (d) The historical factor: mentioned above.

The varying predominance of one or more of these factors may in many cases affect the forms (patterns) of the settlement. Thus in spite of the fact that within the Area, many wide tracts show a mixture of forms, there is in others a well marked line of partition between the types, due, it may be to geological or ethnological factors. The main types which can easily be recognised are three.

A. The 'clustered' villages (Map 5, types a, j, k and m) formed by a natural process of agglomeration from originally scattered and irregularly arranged elements¹ or laid out on a recognisable plan, (Map 5, types e and f) which in turn are divisible into various sub-classes (see table below). In the process of agglomeration of scattered elements relief probably exercises the chief influence; for, in long narrow valleys or the ridges of the Bangar the concentration will be into continuous strips; on broader sites into more isolated rectangles. The most interesting element in the settlement of this

1. This corresponds with 'Hausendorf' of Passarge's classification of village types (10).

VILLAGE TYPES

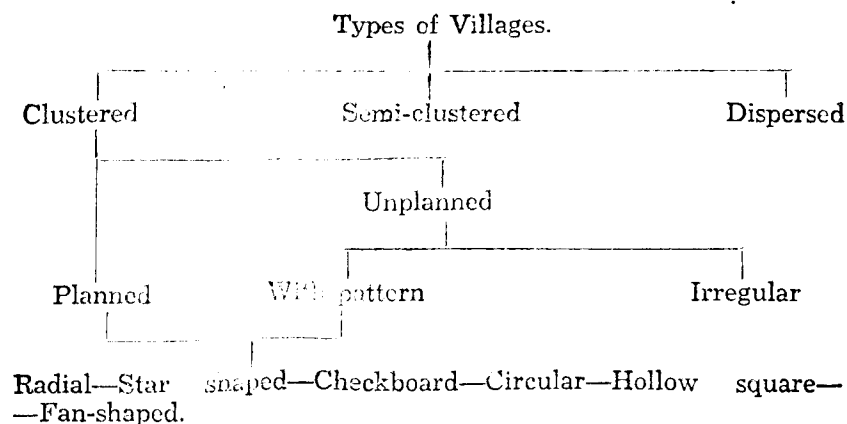


Map 5.

area, as emphasized before, is afforded by the large clustered villages of Hissar and Rohtak Plains. They must be considered the most typical of all for the Area and their plans resemble those of the Western Punjab Plains on the one hand and Eastern Rajputana on the other.²

B. The 'semi-clustered' or partially consolidated villages which have small compact nuclei, surrounded by a ring or belt of scattered houses. This type in fact represents a later stage in the growth of villages. Development and better utilisation of village lands, opening of a new market or the construction of a new road or railway leads to an addition to the village population which occupies, first, the portions of the village waste-land not already occupied, and then other land lying between the village site and the main road or railway. The core is therefore the residential unit belonging to the original village cultivators while the surrounding settlement consists usually of recently built houses belonging to new immigrants, newly opened market place or a few isolated mud houses occupying the gap between the village and the nearby railway station.

C. The 'dispersed' village is typical of the south-eastern hilly region and the low flood plains of the rivers. (Map 5, type d, and 1).



As regards the sub-classes of the main types a large group of villages is characterised by the radiation of streets from a common centre (Map 5, Type j and k). Increase of population in such patterns, leads to formation of double radial systems of houses as shown in Type l (Map 5). An original circular form (as in Map 5

2. 'Planmassige Dorfer' according to German writers.

type m) is due to protecting walls, to which the outer ring of streets also owes its origin. Sometimes (Map 5 type o) there is a double ring betokening an outward extension in course of time particularly in those villages where caste system is prevalent and the increase in the number of 'menials' or low caste people has been in excess of the accommodation available. The main streets converging on the place are in a few cases continued without a break to the centre though they sometimes bifurcate before reaching this, giving the place something of a starlike form (Map 5 type m). The larger and older villages have, however, inherited their distinctive layout from some past settlement forms. Their open check-board pattern presents an interesting divergence from the prevailing types which tend to assume a solid circular shape signifying the attainment of maximum compactness (Compare Map 5, types m, o, q).³ Compactness is a general characteristic, primarily due to tribal affinities and social customs and secondly to the need of protection. The subsidiary net-work of streets seems at first entirely without system, but is probably inherited from the primitive paths by which the husbandmen reached their houses in the most direct way possible. A variety of this main type is that in which the arrangement is fan-shaped instead of radial as in types p and s (Map 5).

Another main group is the irregularly clustered villages of the Rohtak, Delhi and Gurgaon areas where no system at all is traceable in the street plans and the houses are massed with no reference to the ground or other features (Map 5 types g and l). The villages of the Jumna *Bangar* in the east differ somewhat from the general trend in being less compact in spite of the fact that land is more valuable in this area than elsewhere—a reflection of the character of the castes or tribes inhabiting them. There are various other types, among them are the street-village (types t and u in Map 5) by which is meant not the course of a highway (for it often is quite remote from such) but one built in two continuous rows of houses leaving space for a street between; and the village built round a quadrangular open space.⁴ (Map 5 type r).

Urban Communities.—Out of the population of 3½ millions the tract under examination, except in the Province of Delhi and the Bhiwani Tehsil of Hissar where the two largest cities of the Area—

3. Wirrhausendorf.

4. 'Rynkdorf'.

Delhi (365, 527) and Bhiwani (35, 866) make a considerable difference—nearly 95% are connected directly with the soil. Among the rural population the figure exceeds 95% everywhere and is in some cases 100%. In a land so emphatically agricultural not many towns or cities are to be expected. Not only at the present time when the Area is in the process of development, but throughout the greater part of its history this tract has never supported many urban centres.

The functional characteristics of towns or cities are so ill defined that it is difficult to draw a line of demarcation between a city, a town and a village. It is no wonder therefore that in various census reports resort has been made to somewhat arbitrary standard, and a town is simply deemed to be a small city.⁵

The essential cleavage between an urban and a rural population would appear to be that the latter is mainly engaged in primary production from the soil, i.e., in agriculture, the former in commerce and manufactures in social organisation and in the professions. In England for instance, the line between these two classes of the community is seldom doubtful. The great industries of the country are in the hands of capitalists who employ workmen by thousands; the bulk of the commerce is concerned with buying, selling and transporting the materials for, and the products of, these industries, and naturally gravitates to their centres; the agency which collects

5. A town includes:

- (1) Every Municipality.
- (2) All Civil Lines not included within Municipal limits.
- (3) Every Contonment.
- (4) Every other continuous collection of houses inhabited by not less than 5,000 persons, which the Provincial Superintendent (of Census) may decide to treat as a town for census purposes.

A 'City' means:

- (1) Every town containing not less than 100,000 inhabitants.
- (2) Any other town which the Prov. Superintendent, with the sanction of the local Government, may decide to treat as a city for census purposes.

A 'Village' means any area:

- (1) For which a separate record of right exists; or (2) Which has been separately assessed to land revenue or would have been so assessed if the land revenue had not been released, compounded for or redeemed; or (3) Which the local Government may by general rule or special order declare to be an estate (7).

and redistributes the produce of the fields and pastures is most extensive where the industrial population congregates in huge cities. These are situated where coal or other minerals furnish close at hand the means or materials for manufacture, where natural power is available at small expense or where river or harbours afford facilities for carriage. Beyond their limits the agricultural community lives in the midst of the fields they cultivate; the village merely consisting of the place of worship, the 'great house' of the landowner, the inner area and a few small shops round which the farm labourers have collected for society and convenience, and is as distinctively rural as the farm house itself.

The distribution of the population in the Divide, however, is in the strongest possible contrast with this. In the case of the larger towns perhaps the contrast is not so apparent. Where the presence of the Court, the facilities offered by communications or the local circumstances have created a political, religious, social or commercial centre that the skill and the capital of the neighbourhood have collected round it, the result is a city like Delhi, Bhiwani etc.

It is in the smaller towns that the contrast with England is most striking and especially in the fact that the gradation from the city just described to the purely agricultural village is so imperceptible, and the series of intermediate forms so unbroken, that it is impossible to lay down any hard and fast lines of demarcation. This may be attributed to several causes. In the first place, the local manufacturers are so insignificant that the commerce of the country is largely independent of them. It is mainly concerned with the collection and export, i.e., the marketing of the primary produce of the countryside rather than with supplying the needs of industry. Marketing facilities tend therefore to be widely scattered over the country rather than to be concentrated in a few great urban centres. Again, such industries as are necessary to supply the simple needs of the village are represented in the village itself. The village is practically self-sustaining and self-sufficing. The people grow their own food, weave their own cloths, tan their own leather, build their own houses, make their own implements, mould their own domestic vessels; their priest lives within the walls of their village, they do without a doctor and look to the outside world for little more than salt, spices, the fine cloth for their holiday clothes and the coin in which they pay their revenue. Thus both the wholesale and retail distributions and the professional element which give its characteristic features to the population of an English country town are

here far less complex in their nature, far less important in point of number, and far less localised in their habitation. Almost all the smaller towns have extensive arable areas attached to them, and include among their inhabitants considerable cultivating communities, and they often have little to distinguish them from the true village beyond, their larger size, the greater extent, activity and importance of their trade and the superior skill of their workmen. The difference, in short, is one of degree rather than of kind.

The industrial and commercial expansion of India in general, after the Great War of 1914, has, however, affected to some extent the activities in the towns—particularly in those which are situated in cotton growing areas. These towns to-day are more flourishing and more urbanized than they were a quarter of a century back. The slowness with which towns have been formed indicates how little the rural population has had to learn hitherto from the urban population.

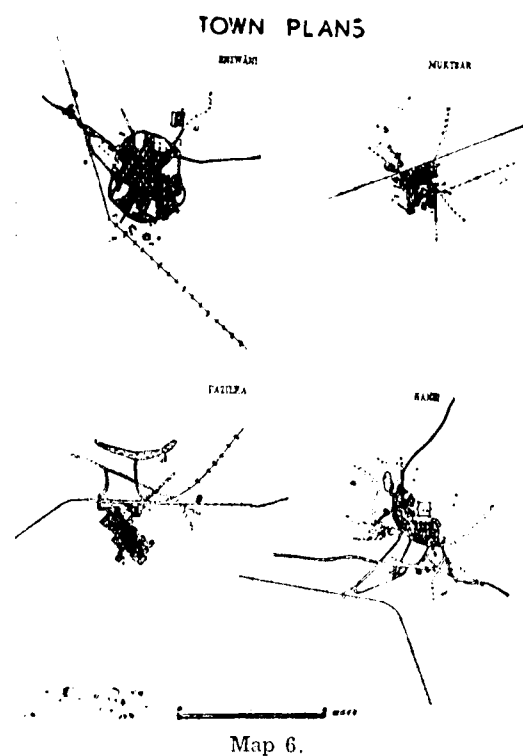
Origins.—The self-sufficiency of the small villages within the Area with respect to their food resources and other necessities of life, and the establishment from the earliest times of a system of society which recognized a strict classification of human beings into superior or inferior 'castes' have proved barriers to the establishment of big towns or cities. The superior class which could, either by sword or intellect, subjugate the neighbouring population, established itself in the most fertile and favourably located lands and laid the foundations of different kingdoms of varying extents. The centre of a kingdom was thus primarily an administrative centre. This was the origin of old cities like Inderprast (Delhi), Hansi or Sonipat.

It was not until the latter part of the middle ages, with the establishment of a feudal system of society and the division of the Area into a number of smaller states, ruled over by local tribal chiefs, that conditions became favourable for the growth of cities. The centripetal force acting to concentrate the population was the high walled residence or fort of the ruler surrounded by the quarters of a large group of professional warriors. Such centres had at least these main advantages: they furnished a degree of protection in a period when internecine warfare was a scourge, and they afforded—what was impossible in the village—opportunities for amusement and entertainment. Thus most of the towns of the Area originated as the strategic politico-social centres of small semi-independent territories. Artisans and traders gravitated to these cities, and in a

number of instances a centre became so specialized in some feature of trade, commerce or manufacture as to acquire considerable fame. So firmly established did these specialisations become that certain of them have persisted even to the present time.

In addition to these there are two additional types of cities with origins other than those mentioned above. They are:

(1) Cities associated with some temple or shrine (Like Muktsar Map No. 6) to which merchants and traders were attracted by the market advantages offered by the numerous worshippers visiting them.



(2) The more recent 'Mandis' or market town, (see plain of Fazilka Map 6) which were established for the purpose of disposing of the agricultural produce of the surrounding area, when the re-establishment of peace and order and better utilization of land left a surplus for such disposal.

These towns with the exception of the 'mandis' went through nearly the same stages of growth. The towns grew up rapidly

during a period of flourishing condition of the State to which they belonged and of which they formed the hub. Houses sprang up round the administrative centre, streets lengthened and routes developed as the process of agglomeration proceeded further. The approach of danger either in the form of the growing power of a neighbouring state or the fear of an invader resulted in the erection of a fort or a high wall round the city with a few gates. These precautions invariably failed to provide security and frequent internal struggles or external aggression led to a complete devastation of these cities and the re-dispersion of the population. In course of time, on these ruins another town would be built and developed, partly on account of its established position in the centre of the area, but more because of the availability of materials, which could be recovered from the remains of the former city. This in its turn might suffer the same fate as its predecessor and then again offer a more advantageous site for a new town on account of its consequent elevation above the surrounding area. It was this process of chequered growth which gives the towns of the Area a typical shape—viz., that of a 'hill' with a fort somewhere nearby or at the top of the hill and the houses in a haphazard arrangement round this centre, the 'palace' or residence of the former ruler being occupied now by the Tehsil headquarters or by a school (see plan of Hansi Map No. 6).

With the development of the Area and improved administration, the cities have shown a marked tendency towards 'modernisation' in recent times. The general atmosphere of the cities with their municipal and government offices, mills, factories, power-houses and schools reflects the reaction of the Area to the industrialisation which the modern age demands.

Distribution and Location.—Of the 17 towns in the Area, i.e. communities with a population of 5,000 or more in 1931, only 5 are situated near the Sutlej, 4 in Hissar and the rest towards the southeastern corner of the Area in Delhi, Rohtak and Gurgaon. This increase in towns with increasing density of total population towards the S. East reflects not only the effect of adverse climatic conditions (particularly rainfall) towards N. West, but also that of increasing distance from the ancient and modern economic and political centres of the S. East.

The marked concentration of the towns within that belt of alluvial soil which lies between the Aravalli Hills and the Jumna can be

attributed to the development of main routes, towards the Deccan and the Eastern and Western sea-boards. A similar arrangement on the N. Western edge of the Area is associated with the transportation facilities afforded by the older roads and newer railway lines connecting the central and the Eastern Punjab Plains with the S. Western Punjab and the tracts lying down the Indus and the Sutlej—a fact which is undoubtedly related to the origin of those centres. The rest of the cities, the majority of which are situated in Rohtak and Hissar are not associated with any one particular geographical advantage but rather with historical antecedents and water supply. Most of the urban centres, as pointed out above, were devastated by past events or were abandoned and decayed. They therefore stand up picturesquely in contrast to the monotonously flat-lying towns of the Gangetic Plain where higher spots, rare though they are, were not regarded with any preference.

Morphology.—From the view-point of cultural morphology the towns (except Delhi) are in a definite class by themselves. In many towns two distinct divisions can easily be recognised. The town proper which is essentially North Indian in its features and to a considerable degree appears to have been cast in the same mould as others. Round this core, or in close proximity to it has grown up a new 'colony'—i.e., a settlement carrying a definite foreign imprint as a result of the modern regime. The buildings of the District Headquarters, hospitals, churches, banks, bungalows or barracks which make up the new colony with its wide regular and well-kept roads contrast markedly with the tortuous and dirty streets, winding through a puzzling mixture of shops and houses of various sizes and shapes in the city proper.

Taken as a group these towns are characteristically local business centres, almost invariably on a railroad and serving a restricted tributary area much as they did during the pre-British period. The whitewashed flat-roofed houses huddled in all possible combinations and a sprinkling of shady trees grown in their courtyards make the town look a mixture of white, grey and green in the bright sunshine. The skyline is very uneven on which are prominent the minarets of mosques or the beflagged dome of a temple.

The plan of the streets is, as could be expected by the form of development of the towns, irregular at the centre (see plan of Bhiwani Map No. 6) but takes a definite shape on its outskirts and becomes well-planned and regular in the newer settlements. One

feature, however, recurs in the haphazard arrangement of the streets of the inner city; it is the main street. This street has no relation with the geometric centre of the city and may occur at any place and lead in any direction with respect to the population centre. This is the most fashionable part of the town and gains its prominence by a still greater congestion of houses along its length and an abundance of better looking shops around it. In short, in their narrow surfaced but unpaved thoroughfares, open gutters, lack of side walls and numerous streets with a combination of residences and shops, these towns bear a close resemblance to the rural village. Well-defined and compact business cores are not very distinct. However, the local '*mandi*' or the principal grain market and the main vegetable market are prominent in each and every town. Foreign style buildings are infrequent and where they do exist they are single, isolated and conspicuous in their surroundings, and never form solid blocks. Wells with a high round platform surmounted with structures carrying wooden or iron pulleys form an important part of the urban landscape particularly in the early morning and afternoon when they are the scene of great activity.

Delhi.—Quite distinct in nature and extent from the indigenous cities mentioned above is the city of Delhi the Capital and the administrative centre of India.

Situated at a nodal point where the Indo-Gangetic Plain narrows down to its minimum width, Delhi, with a population of 365,527 inhabitants is the only 'city' in the Area (City—in the sense used by the census reports). This city unlike the rest of the urban centres has much more than a local sphere of influence.

Its distinctive landscape is the result not of any new Indian element, but rather of the complete westernization of its business, transportation and manufacturing features. The indigenous system of urban life has been so much impregnated by western ideas that the whole structure has assumed a somewhat complex appearance. Though the buildings on the main streets are flanked by blocks of large, substantial buildings, European or semi-European in appearance, the large part of the city is still superficially oriental. The interior and the general planning of the houses conform with the orthodox Indian style while the exterior with which they open into the street, look much more modern by reason of their cemented walls and electric fittings. The business centre—the *Chauk*—is a long broad street flanked with pavements on which the

hawkers exhibit their wares on semi-permanent stalls. In this are located the banks, the cloth merchants, the druggists, the railway agencies and even a theatre. The traffic is most cosmopolitan, numerous taxis, motor coaches and tramcars contrasting strongly with the slow and lumbering ox-cart and hand-propelled barrows.

Adjacent to Delhi on another spur of the Delhi Ridge spreading eastwards for a mile over ground sloping in the same direction to the river 3 miles away, is New Delhi (population 73,657 in 1931)—a purely artificial city built quite recently to a design planned beforehand and with a definite purpose in view. The choice of the site of New Delhi was governed by many factors—for instance, sanitary conditions, area required by various offices and houses, water-supply and elevation. The city plan has been developed on a series of equilateral triangles instead of the rectangular grid-iron commonly favoured in modern town-planning—obviously affording a more direct point-to-point communication.

The change in outline between the two adjacent cities is sudden and complete. The busy streets of Delhi with its dark winding lanes, temples, mosques and tramcars within a short space give way to the official Capital with its huge secretariat and administrative buildings, its monotonous roads and stuccoed bungalows.

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Settlements in the Irrigated Area of Recent Colonization in the Indo-Gangetic Plain

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Irrigated areas of the Indo-Gangetic Plain.—The chief irrigated areas of the Indo-Gangetic plain are found in Western U.P., Panjab and Sind. In this flat and more or less fertile plain, the extent and the distribution of the irrigated areas is mainly bound up with the character of rainfall—(i) Its unequal distribution over the country, (ii) Its irregular distribution during the season, (iii) Its variability from year to year, and in many parts its liability to failure or serious deficiency. From the agricultural point of view undoubtedly the most unsatisfactory feature of the rainfall is its liability to failure or serious deficiency which makes agriculture a gamble in rain. In general it has been found that the lower the rainfall in a tract, the greater is its liability to serious deficiency from the average. Where the average rainfall is high a large deficiency can be experienced and yet sufficient water remains to ensure successful agriculture. The more precarious area is that in which the normal rainfall is less than 40"—The Upper Gangetic Valley and the Middle and the lower Indus Valley.

If we want to construct a map of the Indo-Gangetic Plain to show where irrigation is needed, it would be necessary to block out all parts where the average rainfall exceeds 40" or in some cases 50", and tracts lying at a higher altitude than a thousand feet above the Sea. Such an area will lie in a crescent of land extending from Karachi through Sind, Panjab and Western U.P. to about Allahabad.

Within this crescent the actual location and the distribution of the irrigated area will be determined by the adequacy of water-supply, ease of canal construction and the productivity of the soil. There is the riverain tract of the Indus in Sind, the interfluvies or Doabs between the Sutlej and the Jhelum, and the Sutlej—Jumna water-shed in the Panjab, and the Ganges-Jumna and the Ganges-Sarda Doabs in Western U.P. Of these irrigated areas, for the purpose of this discussion, we are chiefly concerned with the Sutlej-Jhelum Doabs in the Panjab in which the extension of irrigation has

been followed by colonization of large tracts, and to a much smaller extent with Sind where there has been a very limited sort of colonization after the opening of the Sukker Barrage. Western U.P. is outside the scope of our discussion as no settlement has taken place in that area following the inauguration of irrigation schemes, the land being already inhabited and privately owned.

Distribution of Settlements in the Panjab.—Settlement has taken place in S.W. Panjab in the Doab or inter-riverain tracts between the Sutlej and the Jhelum, or the country bounded and watered by the Sutlej, the Beas, the Ravi, the Chenab and the Jhelum. The lower and upper Jhelum colonies lie in the *Chaj* Doab between the Chenab and the Jhelum, corresponding with the districts of Shahpur and portions of Jhang and Gujrat, and the lower Chenab and the upper Chenab colonies in the *Rechna* Doab between the Ravi and the Chenab comprising the districts of Lyallpur, Jhang, Sheikhpora and Gujranwala, the lower Bari-doab and Nibi-Bar colonies in the Bari-doab between the Sutlej and the Ravi corresponding to the districts of Montgomery and Multan.

The Panjab uplands before settlement.—When the English conquered the Panjab in 1849, in the Bari, Rechna and Chaj doabs there lay extensive uplands known as *Bars*, containing a few scattered villages, with a sparse population of nomad graziers living in *rahnas* or collection of huts clustered round some old well or natural hollow filled with rain-water. Round a few of such natural hollows some dry cultivation was possible. The water-level lay so deep that well cultivation of any value could not exist. The few wells that were to be found at long distances apart were intended mainly to provide water for the cattle of the nomad graziers or *Janglis*. "In the early nineties a man journeying South from the Jhelum to the Sutlej would have had to traverse hundred and fifty miles of some of the ugliest and dreariest country in the world. Here and there round a few scattered wells, his eye might have been gladdened by a smiling oasis of wheat and if rain had just fallen, he would have found abundant grass. But rain in the Bar uplands is rare (the average is less than 5" a year), and his way would probably have lain through an endless waste of bush and scrub, with little sign of life beyond the uncertain footmark of camel, buffalo and goat and the moving dwelling of a nomad grazer, with its roof of thatch propped upon wooden piles. The Bar was described as unrivalled in the world for its combination of the most disagreeable features a landscape is capable of affording."

The people were a strong manly race. They were cattle rearers and cattle thieves; no man was worth his salt who did not combine both the professions. A jangli girl was never asked to accept a bride-groom who had not earned his spurs by lifting cattle.

Such an environment as possessed by the Bar uplands before settlement was the natural sequence to the vagaries of the Panjab rivers and their shifting channels, combined with the desiccation of the area. Almost every part of the Bar has been invaded over and over again by the changing courses of the bounding rivers. It has not ceased even to-day and the riverain tracts are always in danger of being overwhelmed by the river. For instance, during a recent flood in the Beas in 1927, says the report of an official of the Co-operative Department, the members of a village bank "had to shift their abode to three different places. There are no acres left, none to build their houses upon. They have now arranged for temporary houses on the land of a neighbouring village and have begun to cultivate as tenants."

The Southern and Western Punjab is really a part of the great deserts extending from Western Sahara to Manchuria. It has not escaped the process of desiccation which has ruined Makran and S. Baluchistan, and has resulted in the deterioration of the *Thal* and *Bar* tracts. The *Thal* still presents a typical sandy desert aspect. They say that the *Bar* tracts have actually deteriorated between the time of Alexander and our own days.

Such, in short, was the condition of the *Bars* or the inter-riverain uplands between the Sutlej and Jhelum which, since the eighties of the last century, have been under irrigation, cultivation and colonization. The harnessing of rivers in the Panjab, the construction of great irrigation works, and the accompanying extension of cultivation and colonization provide an interesting study of the extent of relationship between physical environment and human activity, and illustrate the importance of the human factor in the development of a country. It has been this well directed human effort that has converted the desolate waste of the Panjab Doabs into prosperous agricultural settlements and some of the most productive regions of the world.

When one speaks of colonization and settlement the mind turns at once to new countries. We think of the prairies of the United States or the Pampas of Argentina, of the broad plain of the Western Canada or the Australian bush. How did colonization come to be

a living problem in such an old country as the land of the five rivers or the Panjab? The answer is clear. There were larger expanses of land in this region waiting to be occupied by the surplus population of the congested districts of the sub-montane tracts, when they were made inhabitable by the construction of canals. In the Bars settlement has taken place in spite of adverse physical condition and an originally distracting environment.

Colonization on a large scale in the Panjab has been bound up with the history of four great canal systems. 1. The lower Chenab Canal. 2. The Lower Jhelum Canal. 3 The Triple Project (consisting of lower Bari Doab Canal, the Upper Jhelum and the Upper Chenab), and 4. The Sutlej valley Project.

With the lower Chenab Canal is associated the *lower Chenab Colony* also known as the *Lyallpur Colony*. It was founded between 1892-96 and embraces Lyallpur and parts of Jhang and Sheikhpora Districts. It covers an area of about 2½ Million acres or 3098 sq. miles. Connected with the Lower Jhelum Canal is the *lower Jhelum Colony* also known as *Shahpur Colony*. It extends into Jhang. It was founded between 1916-21 and covers an area of 452,078 acres. With the Triple Project are connected the *lower Bari Doab or Montgomery Colony* (1912-22), the *Upper Chenab Colony* (1915-19) and the *Upper Jhelum Colony* (1916-21) of which the L. B. Doab Colony is the most important. It covers parts of the district of Montgomery and Multan and has an area of 717627 acres. The *Nibi-Bar Colony* (1924), the latest of the major colonies in the Province, forms a part of the extensive Sutlej Valley Project. It extends over the Southern portions of the districts of Multan and Montgomery. Besides these there are some minor colonies—Sohagpara and Sidhnai colonies (1886-88), Chunian Colony (1897-98), Jhang Colony (1904-6), and Haveli Project Colony (1939). Altogether the colonies cover about 5½ million acres, which is more than one sixth of the total cultivated area of the Province.

Object of Settlement. In the Colonization of the Bars, the Government had originally two main objects in view. Primarily it was desired to relieve the pressure of population in the highly congested districts of Northern and Central Panjab. Secondly it was designed to create villages of a type superior in plan and comfort to anything which had previously existed in the Panjab. Upon this twofold bases arose the Lyallpur Colony. Subsequently a third

object appeared. The South African War brought the needs of the Army vividly to the front. It was feared that, if even India became involved in a great war, the supply of horses, mules and camels might fail. Accordingly it was proposed that land should be given to those who would undertake to maintain mares or camels for breeding purposes. This object has been dominant in the Shahpur and Montgomery Colonies, and in the former over 200 thousand acres have been given on horse-breeding conditions. With the disbanding of camel corps, camel-service grants are being abolished and turned into peasant grants. Later the scope of the conditional grant has been further extended, and it is now applied to the most heterogeneous schemes, propounded by one department of the Government or another. Lands have been given for the growth of selected seed, for the breeding of special strains of cattle, for the supply of Canteenents with milk and butter, for plantation and experiments in fruit farming, more recently even for the introduction of steam ploughs. The modern colony, therefore, is made not only to serve the primary needs of life but also to supply the requirements of the Army, and to develop a higher standard of Agriculture. In the Lower Bari-Doab Colony, an experiment had been tried of locating settlement of criminal tribes in the land. Some grants have also been made to different societies for depressed classes. In the Nibi-bar Colony there were extensive allotments under special conditions in compensation of land acquired by the Government, or in exchange of some villages which have suffered from water-logging. Some of these grants led to hot controversy, and others for example, the grants of land for breeding camel have definitely failed. In the Shahpur (Lower Jhelum) Colony and later in the lower Bari-Doab Colony the Horse Breeding Grantees cannot acquire proprietary rights in their grants and they have been tied down to a system of primogeniture which is entirely foreign to the Panjab and has on many occasions led to the murder of the eldest son. More interesting from the Geographical point of view are the grants for agricultural development, and the settlements that have grown on them.

Class of Settlers.—We have above some idea of the type of grants constituting the settlements. Something may be said about the class of settlers. Broadly speaking, colonists fall into three categories, (i) the small peasant proprietor who is given a square of land—in Shahpur he was given 2 squares to enable him to maintain a brood mare, (ii) the yeoman farmer who received 4 or 5

squares; and (iii) the land-lord, the representative of the landed gentry who got anything from 6 to 20 squares.

(i) *Peasant Proprietor*.—Of these the peasant proprietor is much the most important. He is the backbone of the colonies, as he is of the Panjab. The Jat, Sikh and the Arian are considered to be the most efficient and therefore the most desirable of the colonists. In less than a generation they have made the wilderness blossom like the rose. Even on the more backward and less industrious people the colony had a bracing effect. One of the most marked features of a colony has been that, in bringing together keen farmers from different areas and settling them side by side under equal conditions and with precisely the same opportunities, it has encouraged a healthy rivalry which is a powerful stimulus to agricultural development.

(ii) *Yeoman and (iii) Land lord*.—The other two classes of colonists, the yeoman and the landlord have so far not done very well. In the case of yeoman it was intended to attract the pick of the larger peasant proprietors, "men who by their wealth, energy or ability had raised themselves above their fellows without ceasing to belong to the agricultural community, and whose credit and resources, it was hoped, would prove of value in the development of an infant colony." In the case of the land-lord it was thought that a moderate infusion of capitalist element would strengthen the colony by bringing in men of superior intelligence and broader outlook than the ordinary peasant proprietor.

Between the yeoman and the land-lord the difference is more of degree than of kind. Both consider themselves superior to the peasant farmer, and both have more land than they can personally cultivate, the yeomen having at least 100 acres and the land-lord 2 or 3 times as much. Both the yeomen and the land-lord have failed because it was impossible to insist upon residence.

Influence of Absenteeism.—The absenteeism of the yeoman and the land-lord had a very unhealthy influence on the uniform growth of the settlements in the Panjab as anywhere else in the world. An absentee land-lord is incompatible with good agriculture and one gets a very clear contrast in the form and aspect of the settlement where the land-lord-owned and the peasant-owned areas come together—one glowing with human effort and the other fading for want of it. We shall do well to remember Professor

Carvers' dictum that "next to war, pestilence and famine the worst thing that can happen to a rural community is absentee land-lordism."¹ And a French writer² remarks it is the scourge of large estates as the mortgage debt is the scourge of small ones.

Process of Settlement.—Prior to the construction of a canal and with a view to determining the approximate position of the main line and the branches, the tract to be colonized was divided up into large squares or rectangles each of which was subsequently subdivided into small similar squares or rectangles. The large square or rectangle formed the basis of the original level survey of the canal; level survey executed on the basis of the smaller divisions (squares or rectangles) served to determine the layout of the distributaries and the water-courses. The whole tract was in this way demarcated into equal and regular areas, the shape and size of which have varied in the several schemes, being 22½ acre squares in the Sidhnai colony, 27·8 acre squares in the Lower Sohag, Lower Chenab and Lower Jhelum colony and 25 acre rectangles in the Triple-canal and the Sutlej-Valley-Project area. In the Lower-Bari-Doab Colony, the whole tract to be surveyed was divided by a transverse line into block (a), (b), (c) and so on. Each block was then subdivided into 600 smaller blocks. Within each sub-block there was a further sub-division into 16 rectangles of 25 acres each, measuring 1100/990 ft. A similar system was followed in the Sutlej-Valley-Project Area. A square or rectangle was the usual unit of allotment, and each such unit for the purpose of revenue and assessments, was again sub-divided into smaller squares or rectangles, each of about one acre in extent known as *Killas*. In Triple-canal colonies nearly 4 million such small rectangles have been demarcated. The square-laying is accompanied or followed by a soil survey with a view to the elimination of worthless soil from the scope of irrigation.

By allotting land in complete squares to colonists the evil, which is common in most districts of the Panjab, of holdings consisting of scattered fields was avoided. Every colonist got his land in a ring fence. These square or rectangular fields, from the point of view of farming in a canal-irrigated tract, are ideal. Moreover in a country where each son takes an equal share of his deceased father's

1. Principles of Economics, P. 377.

2. La Propriete Rural en France 1902, P. 237.

property, the rectangle containing 25 equal rectangular fields can be divided accurately easily and cheaply.

Delimitation of Villages.—On the completion of square-laying the next step was to delimit the boundaries of the estates which were to be formed. In a colony tract the alignment of the water-course preceded the creation of holdings and consequently it was possible to make the boundaries of each group of allotments coincide with the boundaries of the area commanded by the water-course which irrigates it. As a rule one, two or three irrigation chaks (the *chak* being the area irrigated by one water-course) were constituted into a village. The size of these chaks varies widely. In the Sidhnai scheme and earlier days of the Chenab Scheme villages average 2500 acres each; but these dimensions were somewhat excessive and in later schemes the tendency has been to decrease the size of the villages to 1800 acres or less.

No two villages are ordinarily called upon to share a water-course, to the risk of peace and order. The village boundaries having been settled, the general lay-out of the settlement was determined, the main streets were demarcated and land was set aside in the vicinity of grazing ground for the accommodation of village servants and for communal purposes such as tanks, tan-pits or manure heaps. All this was done before the colonists arrived. They found the village sites ready for them, and had only to build their houses and commence breaking up the land. The colony villages, thus methodically planned, possess marked sanitary advantages over the ordinary Indian homesteads.

Village Homesteads.—That every colonist must settle on his land and build for himself a house has always been for the peasant-colonist a law of the Medes and the Persians. It was however sometime before any steps were taken to secure a definite clause in the statement of conditions that the colonists should build a house in an ordered way upon a spot fixed by the Authorities. In the Sidhnai colony provision was indeed made for village habitations by the reservation of a square but frequently the grantees, after the custom of South-West Punjab, built their houses on their own land; this was also the case in the Sohagpara colony. In most villages an area was set apart for a village site; there was, however, no kind of approved site-plan and the allotment of building sites inside the site-plan was more or less hap-hazard. The earlier conditions for the lower Chenab colony merely laid down that the tenant should

settle permanently in the estate in which his lands were situated. It was not until 1904 that we find the present formula, "the tenant should build a house on a site allotted to him by the Government, unless especially permitted to it on his own land."

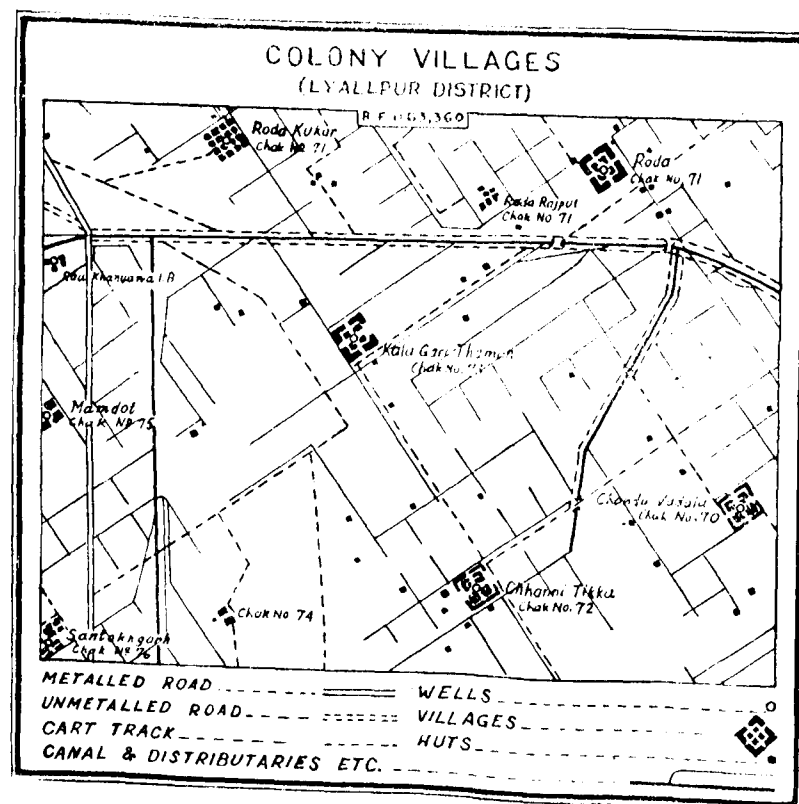
Selection of Square for village site.—One or more squares on water-course plans, mentioned above, were marked for the village site. The main considerations in the choice of this site have been:—

- (i) The site should be on a high level to facilitate drainage. It should not, however, be completely uncommanded, as colonists could not build their houses or plant trees, without a supply of water.
- (ii) The soil should be of a nature to permit houses being built on it; sand or thick *kallar* rendered this impossible.
- (iii) It should not be too close to a distributary or minor canal not only on account of the danger of waterlogging and stagnant water, but also because village cattle would do much harm to their banks. A square or even two squares distance away has been the minimum to aim at, but it has not always been possible to carry it out.
- (iv) On account of the danger of passing traffic, and the discomfort caused by constant dust, the site should not abut immediately on a main road. At least the strip of *Charagah* (grazing ground) should intervene.
- (v) A square should not be chosen, across which a water-course runs diagonally, and a water-course even along one edge of the site is a disadvantage.

Duplication of site.—Every ordinary village generally contains one Abadi or habitation. But in a few cases two *abadis* have been found advisable when the conformation of a village has precluded easy access from a central site to each grantee's holding. But the duplication of sites have been avoided as far as possible. Some people, especially *Janglis* (the aboriginal inhabitants), have been pressing hard to build houses on their own land. The constitution of a number of small hamlets scattered over an estate is not only administratively inconvenient but it is also not conducive to the creation of a homogenous village community, though from the point of view of sanitation and agriculture there is much to be said for farm cottages on one's own land.

Types of Colony Villages.—The evolution of ordered *abadis* (habitations) built on a type plan took place only after a lapse of a

number of years since the beginning of colonization. In the lower Chenab colony schemes (1892-96) the following suggestions were put forward:—"On proceeding to the actual location of settlers in a village, the first thing to be done is to decide upon the site for the *village-abadi*. This they should select for themselves. One full square should always be reserved; and in a large village, it may be two, ample room being left for a standing place for cattle, dung-hills, menials quarters and the usual surroundings of a village. It would perhaps be a good plan to insist upon all the new villages being intersected by two great open streets at right angles to each other and some 30 or 40 ft. wide."



The suggestions here advanced were somewhat elaborated in effect, the square or squares assigned for houses on the Rakh branch being partitioned off into a number of blocks. The internal distribution of land for building sites was at first left to the grantees, who carved out their own irregularly shaped compound at will. Such random occupation of sites had its obvious disadvantages. For pea-

sant villages on the Jhang Branch a standard plan was devised in which areas of each compound were laid down. Later plans for other colonies were modified according to requirements.

Colony Dwellings.—In the early stages of colonization no attempt had been made to prescribe a standard type of a colony dwelling, as long as the grantee surrounded his compound with a wall, and constructed some thing which might fairly be called a house and not a mere shanty; details of architectural design, it was felt, might reasonably be left to individual taste to decide. With the increase of interest, and the availability of larger funds more detailed plans were made for the new villages in the Nili-bar colony and other Colony extensions. Regulations for the general lay-out and hygiene were worked out. The main principles adopted are: a minimum height (12 ft) for living rooms, the prohibition of back-to-back houses, the raising of plinth level, the provision of adequate windows for ventilation and of a separate kitchen and separate godowns for grain. Ventilation has also been provided in stables or cowsheds. A Verandah and a good courtyard are important features of the various house-types.

Dwelling Structures.—The dwellings are generally built of mud, sunbaked and occasionally of kiln bricks. The roof generally consists of wood, covered with impervious clay. There are the wooden rafts tied together by planks which support clay. Occasionally they are thatched. Clay, wood and grass for thatching are easily available nearby and are very cheap. Besides, the dwellings afford a good protection in the summer heat as well as in the heavy downpours. Clay has to be renewed every year before the rainy season. The houses are generally one-storied.

Village Wells.—The ordinary position of the village well is the central *chawk*. It is most convenient for all concerned. When there is an old well in existence reasonably near the *abadi*, the inhabitants have been permitted to use it and the construction of a new well has been dispensed with.

Tanks.—Tanks for drinking and washing are also provided within easy distance from village site. If the water of the village well is not potable, the only source of supply is the tank. This indeed is always useful when the branches of the canal run dry in rotation during the cold weather months. The best spot for tanks is on the further side of the circular road, Killas being specially demarcated for the purpose.

Extra-Mural Sites.—In the younger colonies it has been an inevitable practice in peasant villages, where a reserve for *Charagah* (pasture) is maintained, to retain round the village-site a space usually about half a square in width, uncultivated and unbuilt upon. This provides for ventilation and exercise. Out of this area can be found space for school playground, sites for tanks, refuse heap and brick kilns.

Arboriculture.—Encouragement to tree-planting was one of the important points in the Colonization Schemes. It was important because, while the natural process of bringing land under cultivation resulted in the denudation of the tract of all existing tree growth, it was essential that provision be made for the future needs of the country in respect of timber and fuel. When the supply of fuel fails him the colonist turns to the manure cakes to which he is accustomed. This means depriving the land of what should properly go back to it.

Arboriculture was also desirable to increase the humidity in the atmosphere and decrease the rigour of the hot dry climate of the S. W. Panjab.

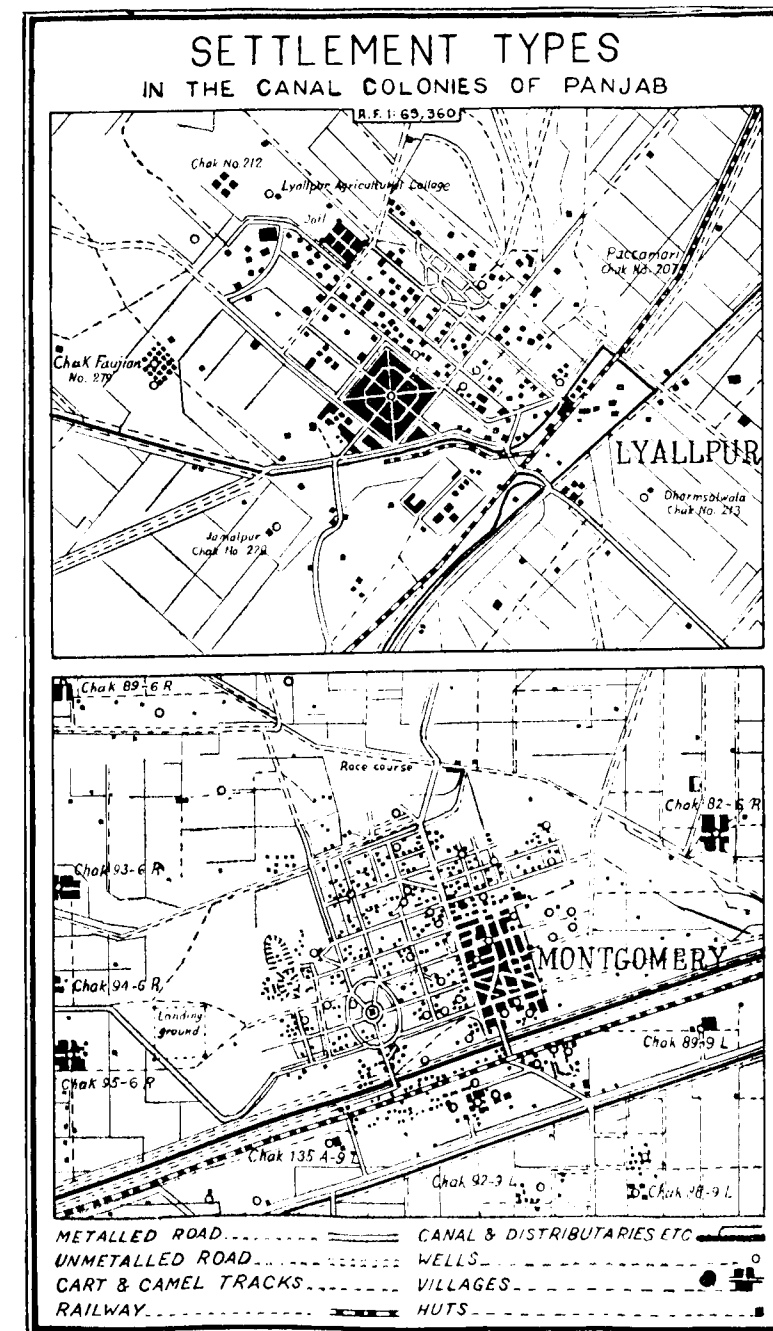
Apart from the encouragement of arboriculture generally, the question of planting with trees long mileage of new roads was also taken up and necessary arrangements were made.

New villages with road-side avenues present a vivid and pleasant contrast with the old villages most of which are dry in appearance.

COLONY TOWNS.

Selection of site.—The location and lay-out of country towns has always been a difficult question. Town sites have been selected in close co-operation with the Railway, Public health, Irrigation and P. W. departments of the Government. No rigid rule has been laid down as to the intervals to be fixed between the towns located on the railway; much has depended on the local conditions. But as far as possible, town sites have been selected at intervals of at least 20 miles, and 24-25 miles is a good average, giving each town a client area with a radius of about 12 miles.

The suitability of the town sites has been examined with reference to the possibility of pure water supply, facility for drainage, suitability of the soil in the neighbourhood for brick-making, and



possible danger of water-logging. If not already Government-owned the town-site has been acquired for the Government.

Lay-out.—General opinion about the lay-out has preferred the rectangular block system³ and opposed the radiating plan on which Lyallpur was designed. The block system does, it is true, involve a large number of exits and also gives free passage to hot winds and dust, but these are minor disadvantages. All main thoroughfares are straight and all open spaces in the town are either on one side of the main road or are traversed by such roads in a straight line without obstruction. "Well—*chawks*" i.e. road junctions with a well in the middle, are avoided. Approach roads from villages to the railway station do not pass through main bazars.

Position of Mandis and Factories.—The town and its adjuncts are a self-contained whole; mandis and factories, schools and hospitals etc., are perhaps better excluded from the general block-system of lay-out. Factories are always outside the town, generally in a position to leeward with regard to prevailing winds. The actual position of Mandi and factories (and elevators if any) is determined with reference to railway facilities. The usual modern yard plan of a railway station has the goods and passenger platform on opposite sides of the railway, to avoid excessive length. As it has been necessary to have the goods platform on the same side as the town, a foot bridge has been provided to take passengers from the town to the passenger platform. Minor factories, tanneries etc., which produce offensive noises or smells are generally placed on the road leading to the sewage disposal works.

Position of Markets.—From traffic considerations, meat and vegetable markets are placed in open spaces on one side or the other of thoroughfares. For police reasons special care is taken in the location of beef markets and *jhatka* shops. They are as a rule conveniently situated in the blocks containing the mosque and Gurdwara respectively. Slaughter houses are placed somewhere near the veterinary hospital.

Bathing and Cattle Tanks.—Bathing tanks for men and women have been provided either in the public gardens or on the outskirts of the towns.

3. See the Plan of Montgomery.

Religious and Public Buildings.—Sites of not less than two *kanals* have been reserved for the religious buildings of the various communities in different parts of the towns. A *serai* (a sort of rest-house) is provided near the railway station.

Fair Grounds and Public Gardens.—Adequate space is provided in every town for a public garden and a provision is made of about 10 acres for a fair ground outside the town.

Width of Streets.—Streets in residential quarters have a minimum width of 20 feet, of which 12 feet are metalled.

Back-to-Back Houses.—The question whether back-to-back houses should be permitted has long been a controversial one. Public health authorities are emphatically opposed to them on account of the impossibility of adequate ventilation, but it is admitted that the existence of a multitude of service lanes at the back of houses raises difficult problems of police, drainage and lighting. A solution for this problem has been evolved by which back-to-back houses are not allowed but back-to-back compounds are not prohibited.

Shops.—There are in existence for different towns standard plans of shops and godowns. In the new shop plans every shop keeper is made to provide a 6 ft. *Tharra* in front of all Bazar market shops to show their wares on them.

Bungalow Sites.—There is now a growing tendency on the part of the professional classes to come out of the towns and live in bungalows in European style.

Sites for Gardens.—On the outskirts of the town some sites have been reserved for private gardens which are given on lease.

Building Material.—The common building material in the towns are kiln-bricks, baked in the vicinity. Roofs are either of wood or bricks arched and supported on girders and in some cases of reinforced concrete. Double storied houses are frequent.

Influence of increase of population and the removal of Government Supervision.—With the increase of population, commerce and industry most of the towns are gradually losing their orderly plan and are growing in different sides in a haphazard manner. The

administrations of the municipal committees to which the control of towns has been transferred from the Government have been lacking in fulfilling their obligations. With the increase of population towns have been expanding laterally as well as vertically without full regard to ventilation and sanitation.

The Influence of Crops.—Wheat and cotton are the two chief crops of the colonized area. The dominance of these grain or fibre crops in the vicinity exercises a marked influence in the form of the towns. Where wheat is the predominant crop one finds grain elevators and flour mills occupying the factory area as in Lyallpur. Where cotton is extensively grown in the neighbourhood cotton presses and gins and factories are conspicuous as in Montgomery.

A good return from these cash crops, with the application of labour, has made the farmer more and more industrious. It has built up a class of robust and sturdy people. Besides, the production of these crops considerably in excess of their requirements has developed commercial outlook in these colonies and a close co-operation between the town and the village.

Sind.—The extension of irrigation in Sind through the famous Sukkur Barrage presents absolutely different conditions from those of the Panjab as far as settlement or colonization is concerned. In the irrigated lands of Sind there is a marked absence of large areas of hitherto uncultivated crown wastes which form a familiar feature of the Punjab irrigation schemes. Here the new canals are to irrigate an already settled country. Out of the gross area of $7\frac{1}{2}$ million acres commanded by the Sukkur Barrage, only about $1\frac{1}{2}$ million acres are unoccupied and uncultivable, and the rest is already under the occupation of private persons. This vacant land is very fragmented. Besides, the grants of land in the Panjab under prescribed conditions are here replaced by the disposal of bulk of the land through auction sales, to meet part of the expenditure of the Barrage. So no regular plan of settlement could be enforced beyond the occupation and cultivation of the auctioned site. In the Panjab there were immense empty plains, with thickly populated and even congested agricultural areas lying nearby. People for the new lands were at hand. All of them were admirably suited for new lands as agriculture was generally their calling and a common tradition gave them the cohesion so desirable. In Sind there are no vast areas of empty lands except in the delta, which the Sukkur Project does not touch.

Most of the land is in the occupation of Zamindars who cultivate only occasionally to avoid forfeiture under the land rules in force. It has no congested places to tap agricultural labour. Neither can it get this labour from the deserts to the west, to the east or the north, from Baluchistan or Jaisalmer or Bahawalpur, nor can Cutch to the South-east provide people of the right type. Even if foreigners from the neighbouring lands were available the Sindhi would resent very strongly their intrusion as permanent settlers.

Disposal of Crownlands.—The crownlands available under the Sukkur Barrage Scheme have been disposed of as follows:—(i) Sales at full rates; (ii) peasant grants (The peasants are tenants at will for the first 5 years after which they have to pay a prescribed price, which is about half that of the Panjab); (iii) Military grants; (iv) Limited auctions and sales at fixed prices; (v) Short term leases; (vi) long term leases; (vii) grants to other departments.

Rectangulation.—The whole area was rectangulated first, to 320 acres or half a square-mile rectangles. Each rectangle was divided into 64 acre blocks, to be further sub-divided into one acre plots.

India—A Study in Space Relations*

By

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India is often referred to as a vast sub-continent. With an area of 1·8 million square miles, (c.f. Europe excluding Russia is only 1·95 million square miles in area) the analogy is by no means imperfect. There are a few political units like the U.S.S.R., Canada, Australia and U.S.A. which are larger than India, but the population of India is far in excess of any of these. China is the only country in the world with a population greater than that of India. Actually India has a population more than a sixth of the world and has nearly two thirds as many people as the whole of Europe (including Russia). It has more than 2½ times the population of North America and 50 times that of Australia. Its very size and population fully justify its name as a subcontinent.

The shape of India is that of an irregular quadrilateral with its diagonals from north to south from latitude 8°N to 37°N, a direct distance of about 2000 miles—and east to west between 61°E to 98°E, a distance of about 2200 miles, both of which exceed 1/10 the circumference of the earth. "The south-western and south-eastern sides of the quadrilateral rest on the oceans in long smooth coast lines with few large inlets or good harbours. The north-western and north-eastern sides are the land frontiers along the southern mountainous edge of 'High Asia'—the highest and most extensive of the elevated regions of the earth."¹

India lies entirely in the Northern hemisphere (8°N to 37°N). The tropic of Cancer practically passes through the centre of India dividing it into two unequal parts; nearly 2/3 of India lies in temperate latitudes. The only other land mass with a similar latitudinal position is Australia in the southern hemisphere. Nevertheless, Australia is considered a temperate country while India is deemed

to be tropical. This is as a consequence of two entirely unrelated causes. Primarily the whole area south of the Himalayan region has a remarkable uniformity of climate in spite of the latitudinal diversity and latitude no longer becomes the dominant factor in determining the climate. The Himalayas have entirely deprived the Hindusthan of such bracing winters as are enjoyed by regions of similar latitudes in South China or the Southern States of the U.S.A. On the plains of India, frost is rare, and snow is almost unknown. A tropical climate is thus imposed upon half a million square miles of temperate lands,² and the civilisation of India has not been influenced by either the difficulties or the stimulus of a cold or cool winter.³ There are no similar mountain barriers in Australia and it therefore enjoys a climate pertinent to its position. Secondly India had a civilisation from very early times, a civilisation almost absolutely independent of Western Europe and remarkably distinct from those of the temperate lands. Australia, when it was discovered had no such standard of culture. On conquest, its aboriginal civilisation was completely exterminated and it therefore developed the civilisation of its immigrants. This was easy because of the poverty of population and because of the very low standard of culture of the indigenous aborigines. The temperate civilisation thus got itself implanted in Australia, but even after 300 years of British rule, it is extremely doubtful if the culture of India has been substantially altered. English education, laws based on English custom and usage and western modes of dress (only by men and not by women) have been adopted, but the culture of India is essentially Indian. Both climatically and culturally, it is therefore true to conclude that India is tropical.

India forms an integral part of the "World Island"⁴, the land mass of Eur-Africa and Asia—which is the most important single unit of the world. Britain lies at the north-western extremity of the World Island and India at its south-eastern limits, almost as far apart as possible on the World Island, and it is in spite of this enormous distance between them that India is a dependency of Britain, actually the greatest dependency which has ever been held by a completely external power. India lies near the major portion of the

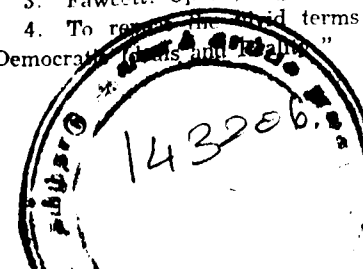
*A paper read before the Society on 22-8-42.

1. Fawcett. 'Political Geography of the British Empire,' Page. 223.

2. Lyde. 'The continent of Asia' Page. 357.

3. Fawcett. Op cit, Page 221.

4. To represent the terms used by Sir Halford Mackinder in his "Democratic Ideals and Reality."



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land surface of the earth which is inhabited by man and well over half the population of the world live in regions of similar latitudes. India's neighbour to the east is China and these countries together have just less than half the world population. These facts normally suggest enormous potentialities for trade, but such however is not the case. India and China are both mainly agricultural, with the result that a remarkable similarity of products is found in both the regions; consequently, there is little scope for exchange. The poverty of these countries is appalling and this economic factor also plays a dominant role in minimising trade. Further, in spite of the proximity, because of the mountainous topography, the land routes are extremely difficult. The present war has brought home at a rather belated hour, the importance of land links between India and China.

It is interesting to note that among all the three⁵ oceans of the world, only the Indian ocean has been named after a country.⁶ This naturally reflects the great importance of India in the early days. The ocean routes between Europe and the Far East must pass through the Indian Ocean; thereby, it becomes an indispensable link in traffic. The lie of India near the northernmost limits of the Indian Ocean makes it much more easily accessible and in close proximity to the shortest and the most direct of such major routes. The importance of the Indian Ocean is partly due to the wealth of its border-lands and partly also to its position in linking Europe with the Far East. Its size, position, population and a host of other factors make India by far the most dominant among all the countries bordering the Indian Ocean. Once the importance of the Indian Ocean as a highway of commerce is admitted, then some places in India which are either on, or in proximity to these Ocean routes, become important trade centres and the frontier stations of the Indian Ocean like Aden, Singapore etc., become centres of strategic value, in that they are in a position to command and control the trans-Indian Ocean traffic.

The south-west and south-east of India border on the ocean and the land routes into India are only from the north, north-west and

5. The three oceans of the world are the Pacific, the Atlantic and the Indian. Neither the Arctic nor the Antarctic are generally construed as such by oceanographers.

6. The North Sea is some times called the German Ocean.

north-east. To the north of India (between 75° and 95° E) are some of the highest mountain regions of the earth and the boundary of India here is almost wholly in regions far above the levels of any permanent human habitations. "Backed as they are by the huge and lofty plateau of Tibet, the Himalayas are beyond doubt the most formidable natural frontier in the world."⁷ Hitherto, the northern frontier has been of very little importance in the foreign relations of India. It is essentially a frontier of separation in one of the most effective barrier areas on the land surface.

From the earliest times, the Mongol hordes of China and Central Asia have been directed on India and no gateway which could offer any possible hope of admittance has been neglected. But the northern passes in the Himalayas have not only barred migratory Asiatic hordes through all ages, but have proved too much even for small organized Mongol military expeditions. No modern ingenuity even including the aeroplane—has as yet contrived a method of dealing with the passive resistance of serrated bands of mountains of such altitude as the Himalayas. "No railway could be carried over such a series of snow-capped ramparts; no force that was not composed of Asiatic mountaineers could attempt to pass them with any chance of success; and these northern lines, these eternal defences of Nature's making, may well be left a vast silent wilderness of peaks, undisturbed by man's puny efforts to improve their strength."⁸

The great Himalayan arc then is a very serious barrier in the north. To the north-east of India are the jungle-clad yomas—Arakan, Lushai, Patkai etc. Though they do not rise much above 10,000 feet, they have been both a secure protection to India and a great barrier to intercourse by land, even with Burma. The Himalayan arc widens out westward and its altitude decreases as its width increases and it trends more and more off the line of the wet monsoon with a consequent decrease in the distribution and density of forest cover. The difference between the eastern and western flanks is mainly a response to the climate, not the relief. In the east, besides the effective mountain barrier, forests provide an additional obstacle; in the west, the barrier is a combination of the desert and the mountain. Forests have invariably been more effective as barriers than deserts.

7. Lord Curzon. 'Frontiers'. Page 18.

8. Sir Thomas Holdich 'The gates of India'. Page 187.

India was therefore insulated and protected by geographical conformations which formed a natural barrier against outside influences, almost as impassible as, or even more so than, the sea barriers of England. These definite and strong 'barrier frontiers' on the landward sides of India have contributed greatly to the establishment of her very strongly marked geographical individuality.⁹

In the British Empire, India and Canada are the only two countries with large land frontiers. War between Britain and America is discounted as outside the range of practical politics, but admittedly "Canada has been and is a permanent hostage to the United States for the good behaviour of the British Empire."¹⁰ "The frontier of India is 2,500 miles long but the 600 miles from Chitral to Chaman is of vital importance, absolutely vital."¹¹ It was only in the extreme north-west about the hinterland of Kashmir and beyond the Himalayan system that any weakness could be found in the chain of defensive works in the north of India. Afghanistan has always held the landward gates of India through which the great restless human tide has ever been on the move. Owing to the peculiar geographical conformation of the country, Quetta holds the key for the approaches from the west. For very many miles north of Karachi, the plains of Sind are faced by a solid wall of rock—the Kirthar range—so rigid, straight and unscalable as to form a veritably impracticable barrier. For a short space at its southern end, it subsides into a series of minor ridges connecting Karachi to Las Bela (Bela). These southern Las Bela approaches are not only the oldest, but they have also been the most persistently trodden¹² among the many in the frontier. The land routes to India then are either through the passes in the north-west, the more important of which are the Malakand, Khyber, Kohat, Tochi valley, Gomal and Bolan, or, the Makran coast, or, through the passes in the north-east. Each of these deserve detailed consideration.

The routes through the north-west passes. The active land frontier of India is to the North-west. Here the great mountain

9. Fawcett. Op cit., Page 224.

10. Ibid, Page 128.

11. Lt.-Col. Bruce. Journal of the East India Association. 1939. Page 264.

12. Lyde. Op cit., Page 352. "This is the route by which the Dravidians came to India the Baluchis speak an archaic Persian and the Brahuis of the Kirthar heights are Dravidian."

ranges of 'High Asia' sink to the lower ranges which border the plateau of Iran on the east and north, at altitudes which allow of the development of fairly easy passes. Here also the mountain system narrows to a width of little more than 300 miles between the plains of India and those of Turkistan. A little to the west of the narrowest part, it is possible to pass round the western end of the Hindukush mountains without having to climb an elevation of more than 5,000 feet. "At its southern end, this frontier is in deserts, at the northern in high mountains and it is significant that the important routes are nearer to the mountains than to the desert, which is, or was in the recent past, a more difficult barrier than mountains of moderate elevation."¹³ The passes have been more or less open doors to India through the ages. Men literally "in nations" have passed through them; the dynasties in India have been changed and her destinies relapsed time after time by the facilities of approach which they have afforded. The most modern conditions of things military¹⁴ are perhaps similar to those in the days of Alexander and Baber and they may therefore once again become the gates of India. The routes have been considerably improved and the railway access is dangerously near Peshawar and Quetta, or even Duzdab.¹⁵

The base of all these northerly passes of Malakand, Khyber and Kohat lies in Badakshan so that their chief characteristics as gates of India are common to all. It has been too often pointed out to require repetition that the plains of Balkh—all Afghan Turkistan in short—lie at the mercy of any well organized force which crosses the Oxus southwards, but once that force enters the gorges and surmounts the passes of the Badakshan ramparts, a totally new set of problems would be presented. The passive hostility of the uplands and their bleak sterility would create the necessity for some artificial means of importing supplies from the plains before any formidable force could be kept alive at the front. Modern methods point to military railways and the Russians have ringed in Afghanistan with railways. There is a railway right round the frontier and all along the Oxus and a railway from Termez goes to Tashkent and from there, one branch goes to Moscow and another to

13. Fawcett. Op. cit., Page 251.

14. In that air routes are linked to land routes.

15. Sir Thomas Holdich. Op. cit., Page 522.

Siberia. Another railway goes from Termez all along the frontier of Chinese Turkistan, where they can raise corn in a year's time, sufficient to supply an army of any size, instead of having to bring it, be it from Russia or Germany.¹⁶ Yet another line links Krasnovodsk on the eastern shores of the Caspian with Kushk, through Merv. The northern frontiers of Afghanistan then, are very easily accessible by rail. "It is surprising to hear that there are 150 German Engineers carrying out Hydro-electric schemes and other industrial enterprises in Afghanistan. I very much doubt whether you would find a single British Engineer in the whole country."¹⁷ This fact makes the railway accessibility doubly dangerous. Nevertheless, it would be a long and weary, if not absolutely hopeless task to bring a railway across the highlands of Badakshan to the foot of the Hindukush, but all the same aerial transport seems feasible.

Among the land routes, the highways of Herat and Seistan¹⁸ form the only avenues for military approach that are not barred by difficulties of nature's own providing, or commanded from the sea. Historically it seems strange that compared with the Kabul approaches so little use has been made of this open highway, but probably the main reason was the inhospitability of the Thar desert; but now the desert can be crossed by rail. There is however one great highway from Herat (which is about 60 miles from Kushk, the nearest Russian military outpost) to Kandahar, about 360 miles long with probably good motor roads and Kandahar is about 70 miles from the Indian frontier railway terminus of Chaman, overlooking the road from India to Persia.¹⁹—say 500 miles in all. The distinguishing feature of this highway between Russia and India is the comparative ease with which that great Asiatic divide which extends all the way from the Hindukush to the frontier of Persia can be crossed on the north of Herat. There, this great central water-parting sinks to insignificant levels and it is parted and split by the passage of the Hari Rud river. The 500 miles of railway gap which still yawns between the Indian and

16. Lt.-Col. C. E. Bruce. *Journal of the East India Association*, 1939 Page 264.

17. Sir William Barton. *Journal of the East India Association* 1939. Page 261.

18. Sir Thomas Holdich. *Op. cit.*, Page 525.

19. Lyde. *Op. cit.*, of Asia, Page 350.

Russian systems is an easy gap to fill up and it affords a road for advance which can only be regarded as an open highway. The alternative route to Kandahar is the Helmund route, but it is much longer; yet another would be from Herat to Duzdab via Farah. Knowing the nature of the country which intervenes between Quetta and Herat to the north-west, or between Quetta and the Arabian sea coasts on the south-west, it is impossible to indicate any possible line of advance on Sind, or the southern section of the N. W. frontier of India that would not be dominated by Quetta.²⁰ Quetta certainly is today the most important gateway of India and the possibility of a land or aerial attack through Quetta cannot be over-emphasised.

History tells us that through these approaches in the north-west frontier of India, several invasions of the past have poured into Hindusthan. From the military point of view, it is an international frontier of the first importance for the whole Empire,²¹ and it is to-day the one obviously dangerous frontier, and on its security, the commonwealth may be said to stand. "It is only here that the Empire is open to any serious threat of attack by land and it must be remembered that such an attack might be delivered, not on account of any quarrel with India, but because a dispute between the Empire and a foreign power had arisen in quite a different part of the world. The problem of India is therefore unique."²² Hitherto this Indian frontier was considered to be within touch of the Russian menace, but now is it the German menace?

The invader from Central Asia has from time to time throughout the centuries pushed his way towards the plains of India over the passes which cross these vast ranges. It is in their deep and tortuous valleys that are found bodies of hardy and fanatical tribesmen, well-armed and fearless, unable to extract more than the barest pittance from the stony ground where they live and quarrel, but having before their eyes the tempting prospect of booty from the passing caravan, or from a raid into the settled districts below them.²³ They are one of the hardest race of fighters in the world, Moslem by religion, highly skilled in the use of ground and for the

20. Sir Thomas Holdich. "The Indian Borderland", Page 49.

21. Sir George Dunbar. "Frontiers," Page 73.

22. Sir John Simon. "Indian Statutory Commission" 1930 Report Volume 2 Page 173.

23. *Ibid*, Page 316.

most part, armed with rifles. Their trade, and indeed their recreation from time immemorial, has been raiding their richer and more peaceful neighbours. "Should they rise simultaneously, they could put half a million men into the field whose requirements are small, no great supply columns, no bases, nothing really vulnerable from the air".²⁴ They are completely illiterate and always easily roused to religious frenzy against the infidels.

The Makran coast route.—The second land route of importance leading into India is the Makran coast route or the Las Bela route. It has already been stated that this is not only the oldest, but perhaps the most persistently trodden among the many in the frontier; and this was probably the route of the Dravidians. The city of Armail, Armabel, (Las Bela), by virtue of its position commanding the high road to India, must have been of great historic importance.²⁵ "The Makran route was thought very important in both land traffic and sea traffic by the Arabs and it declined with the decline of Arab influence and much of the old Arab attitude to it might be revived with great advantage. For it is a belt, about 80 to 100 miles wide, in which, except in the south-eastern corner, is a definite east-to-west trend of the feature lines and during the three centuries of Arab rule in Sind, it was one of the greatest thoroughfares in the world."²⁶ These approaches are commanded from the sea and no one heading for the Indus plains could utilise them unless he holds sway over the Arabian Sea. The command of the Arabian Sea and of the Persian Gulf beyond, thus becomes vitally important to the security of India.

Further, an overland railway connection from Europe to India through Persia utilising this route is quite a practicable scheme. "There are no great physical obstacles interposed to make the way thorny for the slow-moving train of a Khafila, and where the camels can take their stately way, the more lively locomotive can follow."²⁷ It may therefore happen that Las Bela may once again (perhaps during this War?) be a way-side resting place on the way to India.

24. Field Marshal Sir Philip Chetwode. *Journal of the East India Association* 1936 Page 161. See also Lt.-Col. C. E. Bruce. "Waziristan".

25. Sir Thomas Holdich. "Gates of India" pages 304 and 305. "Las Bela is but the modern name derived from the influx of the Las or Lumri tribe of Rajputs."

26. Lyde. *Op cit.*, Page 352.

27. Sir Thomas Holdich. "Gates of India" Page 321.

The routes through the north-east.—The third and the last of the land routes into India are those from Tibet, and China. Beyond the tangled and as yet almost unsurveyed ranges of Northern Burma and eastern Assam lies China, with its nearer populous valleys separated from those of Assam and Burma by some 600 miles of mountainous country. This frontier may in the future be pierced by routes, but down to the present time, it has been almost a closed frontier to any large-scale movements. Nevertheless mention must be made that the early Mongol and Kolarian elements in India did enter the land at this north-eastern corner.²⁸

The plateau of Tibet however does afford the open way which is not to be found further west. The mountain chains and elevated passes at the eastern entrance into Tibet from China, far exceed in natural strength and difficulty those which intervene between the plains of India and Lhasa. It must therefore be admitted that it is possible for an unopposed Chinese (or Japanese) force to invade India by eastern Tibet, possibly even by the Valley of Assam. A reflection of this is to be found in the awe-inspiring statement made by the Assam Government to the Simon Commission that "the time may soon come when the north-east frontier of India will become no less, if it is not more important for the defence of India, than the north-west frontier."²⁹ Admittedly the natural difficulties for such an expedition are extremely grave, but it is a contingency for which adequate preparations must be made, however remote it may appear to be.

The pages of history generally provide abundant indications to gauge the real values of each of these gates as highways into India. None of the tracks which lead from China and Tibet into India have ever been utilised for the passage of large bodies of people either as immigrants, troops, commercial travellers or pilgrims, although there exists a direct connection between China and the Brahmaputra in Assam and although the difficulties of the road between Lhasa and India are by no means insuperable. For several centuries in the past, the Chinese have been essentially peace-loving people, but now these frontier regions of India are likely to be occupied by Imperialist Japan. Can history then be our sole guide to determine and gauge the importance of this route? Is it this fact

28. Lyde. *Op cit.*, Page 357.

29. Sir George Dunbar. *Op cit.*, Page 72.

which baffled the Assam Government to give an ominous note of warning to the Simon Commission? Japanese resources and tactics in Burma have clearly demonstrated their ability to surmount similar obstacles and it would be a folly to completely pin our faith in nature's defences. Have adequate arrangements been made to meet this danger? "No strategic railway leads up to the frontier zone; no money has been spent on lateral roads and very little on intelligence. The watch on the north-east frontier is entrusted to military police."³⁰ It is hoped that something better has been and is being done since these lines were written.

History provides no records of a formidable passing of large bodies of people by the Kashmir passes from Turkistan or the Pamirs, although the Karakoram has been a trade route through all time and although the Chinese have left their mark below Chitral. Yet, there have been explorers over the passes connecting the affluents of the upper Oxus with Gilgit and Chitral, some of whom have sounded a note of solemn warning. "Gilgit is in a very forward, even an exposed position, though the narrow valleys and stupendous mountains may continue to form a secure barrier. In these days of air-craft and rapid communications, even motors may come within easy reach of Gilgit."³¹ All the same, at the present day the threat through Gilgit is not as serious as that along the Makran coast or along the several other gates³² in the north-west.

The position and space relations of India with reference to the oceans and the ocean routes deserve careful study. India is centrally situated among the three southern peninsulas of Asia; to the west lies the peninsula of Arabia and the countries of the Near East with a desert or semi-desert environment and to the east lies the Malaya peninsula with an equatorial environment. Because of its position in the centre, India has been accessible both from the east and the west. Greek,³³ Jewish, Christian, Moslem, Parsee and in

30. Sir John Simon. *Op cit.*, Vol. 2, Page 185.

31. Schomberg. "Between the Oxus and the Indus" Page 20.

32. The Malakand, Khyber, Kohat, Tochi Valley, Gomal, Bolan; of these Bolan is the most important.

33. The impression left on India by the Greeks is marvellously small. It is chiefly to be found in the architecture and sculpture of the Punjab. The Greek language disappeared from the Indus valley about the end of the 10th century A.D. and there is hardly a Greek place-name to be recognised any where on the Indus banks.

recent times European influences have poured in from the west and the Chinese influences have come from the east. For many centuries the Peoples and States of India seem to have been almost passive in their external relations. Others mainly from Central and Western Asia, from the oasis and steppe lands, in and bordering on the deserts, pushed into the monsoon lands as immigrants, traders, missionaries, invaders, conquerors; and the Indians accepted them, submitted to them and absorbed them. But from India itself there was no return movement of pressure towards central Asia or to the west. And though the Indian born religion and social philosophy of Buddhism spread over the Far East, it did not produce a permanent contact with that region because it was stamped out by persecution in the land of its origin. Saivism has proceeded eastwards from India to Sumatra and Java and the Colas had an empire in the East Indies. India thus has been a focus of peoples and cultures, but it must be noted that Hinduism never spread westwards, overland. Is it because the contented social philosophy of Hinduism with its faith in fate and ahimsa, is not adaptable to the rigorous conditions of the desert and semidesert environment?³⁴

The earliest routes from Europe to India were mainly land routes, but later, the sea routes down the Persian Gulf and the coast of Persia became important. According to certain Arab writers, large companies of Arabs settled in the borderland and coasts of India from the very earliest days. 'Indeed, there are evidences of their existence in Makran long before the days of Alexander, but there is very little evidence of any overland approach to India across the Indus, and the Indus with its flanking lines of waterless deserts was ever a most effectual geographic barrier.'³⁵ Still later, probably after Hippalus in the first century A.D. the monsoons were utilised for a direct route to the Malabar coast of India.³⁶ In the

34. It is said that because of their unproductiveness and the harshness of the environment, the deserts must be inhabited by nomadic peoples of great independence and strength of character, self-reliant, proud and lawless. The desert is the stronghold of Islam, the simple, rigid and severe creed of a monotonous and stern environment. See Austin Miller 'Climatology' Page 234.

35. Sir Thomas Holdich "The Gates of India" Page 226.

36. P. J. Thomas, *Journal of the Madras Geographical Association* Vol. 6, Page 230 and G. Kuriyan. "Indian Geographical Journal" Vol. 17 Pages 2 and 3.

earlier days (perhaps it is true even to-day), it was not through Indian initiative that contacts were established, but on the other hand, it was because of the advent of other maritime nations. The relief of the country tended to turn the life organisation to within the heart of the country. The coasts in general are smooth, they do not provide many harbours³⁷ and the seasonal conditions are not very favourable for maritime development, though the inundations provide shelter for the sea craft from the monsoons. Between Karachi and Chittagong there are not more than 3500 miles of direct coast-line and that means only one mile of coast to about 450 square miles of hinterland.³⁸ Except for about 150 miles, all of this coast is within the tropics and is almost devoid of natural harbours. In the absence of islands and border seas, the coasts are storm swept and scourged by fierce currents; there are hundreds of miles of bare rock wall in the western half and of mangrove swamp in the eastern. The river harbours are the most expensive and dangerous in the whole world. Bombay (from the Portuguese word Bom=good, Bahia=bay) Marmagao and Cochin are perhaps the only natural ports of India.

In ancient days maritime trade was almost non-existent and none of the ancient Indian Empires had a really large navy. The isolation of India by sea has been in some ways, especially down to the 17th century, more complete than its isolation by land. The peoples of India have not been tempted out to sea and the coastlands have produced few sea-farers. The coastline and the relief are partly responsible for this, but equally well, it must be due to the fact that the country was more or less self-contained. The forces of human activity and endeavour were mainly centripetal and not centrifugal.

Since the opening of the Suez, the Red Sea—Arabian Sea route became the most important ocean route linking India with Europe. This inland sea route is not only the shortest between Great Britain and India, but it is also a vital part of the coasting route of the "Continent" from the north-west of Europe to the north-east of Asia. The Mediterranean route to India in peace time serves the

37. The only large inlets, the Gulf of Cambay and Cutch are shallow and inhospitable to shipping.

38. Contrast Europe with one mile of coast line for about 80 square miles of hinterland.

largest number of peoples and has the greatest volume of trade. But this sea route passes near the shores of the homelands of other important naval powers and it crosses the routes connecting the homelands of France and Italy with their African dependencies which are the vital sea ways of the French and Italian Empires "The Mediterranean Sea is so narrow, and its shores especially on the north, are so well placed with easily defended harbours, that the passage of ships along it can very seriously be endangered by hostile air-craft and submarines. It is very doubtful whether a purely naval force, however strong, could keep open the Mediterranean sea way against a group of its littoral powers, since the shores of the Mediterranean peninsulas and islands offer very favourable bases for aerial and submarine attacks on shipping. Hence the Suez route may be of little actual value in war; but so long as the open sea route is available, the canal is not vital to British Communications."³⁹

Very recently railways have been constructed to link up Europe with India—the Simpton-Orient Express route, the Central Asian route from Kulab to Moscow etc. Air routes follow land routes. India forms the connecting link for air routes to Bangkok, Singapore and Port Darwin. At Cairo the air routes diverge one to South Africa and the other to India. India forms the most important link in the Imperial air communications because of two fundamental geographic factors. The Himalayas to the north of India form a veritable barrier and air routes must perforce avoid them. Secondly there are no large group of islands to the south or west of India which could be used as air bases. South Africa is under-developed and it lies on a longer route so that it could not be used effectively or economically as a half-way base. The route through India connects the largest number of important centres by the shortest distances; consequently the volume of aerial traffic via India is very great and the control of this is very valuable.

"The Mediterranean route is of more vital importance to the developing air ways of the Empire than to its war-time communications."⁴⁰ The chief gap between British Stations on the air ways connecting the British Isles with the Indian Ocean lands lies immediately to the south and south-east of Great Britain. Here, unless they make a detour by the Atlantic coast to Gibraltar which

39. Lawrence. *Op cit.*, Page 63.

40. *Ibid.*

is too small (only 2 square miles in area) and too rugged and in many other ways unsuitable for an air port, the first British Station is in Malta—about 1200 miles away by the most direct route. The direct routes from Britain to Malta must cross the territory of one or more European States. The most direct way is over France and any path which avoids France, must cross either the Alps or the mountains of northern Spain. Actually the great circle route from Britain to India lies across Germany Poland etc., and under the present political conditions is of no practical value.

In the early days, India was vulnerable on the north-west and the principal contacts and invasions were effected through the passes in the north-west of India. Later came the intrusion of European culture and domination by way of the sea and the gates of India became water gates and the way to India, the way of the sea. It is true that air transport does not change the normal life or commerce very considerably, but this war has amply demonstrated its importance strategically. Command of the air is a fundamental need and this enhances the strategic position of India. Air routes are more definitely linked to land than to sea and the most important air route is over-land to Karachi. The north-western approaches of India have again become the most vulnerable regions demanding air fortifications both at Karachi and at Quetta.

Thus it is clear that Quetta (or Chaman) becomes the most vulnerable outpost of India, be it a land or an air attack. At Quetta lies one of the keys to the front doors of India; it is the real citadel of the frontier system of defence.⁴¹ Historically the Bolan route was not as frequently used as the Kabul approaches but that was due to the Indus with its flanking lines of waterless deserts behind the gates of Quetta. To-day, however, such is not the case. Neither the Indus nor the Thar are effective barriers. The Hari Rud—Helmund route to Kandahar and thence to Quetta is the most likely route of ingress by an enemy from the west, much more so, than the Kabul approaches—while the road from the east is through the Brahmaputra valley. There are no two ways of dealing with this problem. Men and material must be available both in quantity and in quality to guard these gates while they are open or even to close them by an effective destroyal of communications beyond India. There would still however exist the danger

41. Sir Thomas Holdich "Indian Borderland" Pages 50 and 51.

through the sea gates, but the coast line is too long to be effectively guarded every where and it would be much simpler and certainly more efficient to attempt to defend those particular sea gates which are attacked. The position and space relations of India have their enormous importance in the strategy of defence!

The Geographer and the Localization of Industries

By

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Introduction—The industrialist, before launching his industry, has to follow up the geographic factors and the ultimate success of his enterprise will depend upon his behaviour in the geographic environment. The complex aspect of localization is a case, where the Economist and the Geographer are expected to give vent to their particular points of view and develop a 'new hyphenated relation.' Viewed from the angle of responsibility, the Geographer, the Economist and the Politician are like the three legs of the tripod, on which rests the industry of a country. But the Economists and the Politicians are evincing a step-motherly attitude towards the Geographers, either because they are fanatics of their sciences or are ignorant as to the aid that the Geographers can render in the general task of Industrial planning. The 'Laisson character' of Geography is well illustrated and impressed by Professor Taylor by a poly-circular representation. Lord Stamp's classification² of Geographic explanation of Economic facts accurately depicts the importance of the Geographer in the matter of localization. When 'Industrialise or Perish' has become the accepted slogan of a country's development, it is absolutely essential to be acquainted with clear classification of the factors of localization and with a knowledge of what the Geographers can do in the schemes of Industrial planning.

Neglect of Geography in India.—The science of geography has been made the sick man of the school curriculum and the step-daughter of the University, especially in India and it is not thought of at all in industrial planning. To concentrate solely on the non-Geographical aspects and relegate the Geographical aspect to the back-ground is just like hunting after the shadow, leaving off the substance.³ The Geographic factors can under no circumstances be regarded as subsidiary and they can be placed on a par with the

Economic and the Political factors in importance. I quote a few statements of Alfred Weber who regards the Geographic factor as 'subsidiary, special and purely technical.'

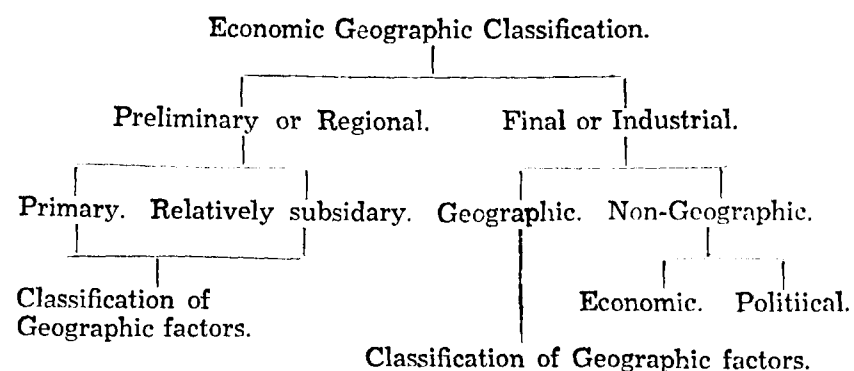
'Political Economy has left to Economic Geography the theoretical consideration of distribution of economic processes over a given area.'⁴

'Of what use for our purpose are beautiful maps showing the regions within which one industry is practised "primarily". Similarly useless for our purpose are otherwise quite estimable maps which show us the relative Geographic importance of various industries in relation to population.'⁵

A dissection of the above statements reveals that the author's knowledge as to the scope of Geography in general and Economic Geography in particular is very meagre. The Economic factors of Localization of Industries, the Industries being only the Manufacturing Industries, form the scope of his book and the limits for the scope are like the two sides of a slit trench; but, his remarks about the work of Geographers are too generalised and prejudiced. Examples of maps and numerous writings on the English Industries and Maps in German reports were cited to substantiate his (Alfred Weber's) 'distorted idea' about the maps. If the maps are prepared simply to show the location of the industries, of course they are only for the decoration of the Geographer's room, but materially it should not be and actually it is not so at least in the present century. The first stage in the 'Industrial process of Production' according to Alfred Weber is 'securing the place of location' vesting importance in Economic factors. But he forgets that even before considering the nature and size of an industry, the nature of the location itself and the environmental conditions must receive close attention, as the geographical factors are basic in every industry, and not merely 'technical' and 'subsidiary'. It is stated that 'the degree of humidity and fresh water concern the particular industry only' but with greater truth it can be said that they concern the Industry of particular regions. To quote a simple instance, all the industries situated in England are concerned with the degree of humidity, especially in winter. The nature of the power and fuel is dictated by the pattern of the geographic environment.

Geographic versus Non-geographic factors and their importance. Many a classification of the factors of Localization has been made, such as general and particular; regional or agglomerating

and deglomerating; direct and indirect and so on; but this impresses on the fact that the geographic factors have been viewed as subsidiary or they have been mixed up with the Economic and Political factors. The classification⁶ made by the Royal Geographical Society in their Memorandum, on the Geographic factors relevant to the Localization of Industries is very instructive. A classification of the factors of Localization on the following lines sieves out the Geographer from the Economist and the Politician.



In the chart shown above the Preliminary classification takes into account, whether the region in question is Industrial or Agricultural, Semi-Industrial or Semi-Agricultural, or both Industrial and Agricultural. The Final classification relates to the Industries in a region. Thus the Preliminary and Final may also be termed as Regional and Industrial.

Preliminary or Regional. The Regional aspect is again subdivided into Primary and Relatively subsidiary. The object of this sub-classification is to separate the regions having special significance to the importance of geographic factors in their future development. India and Siberia can be included in this classification, because to them the geographic factors—the exclusive dependence on land in India and the unusual predominance of natural factors in Siberia—are fundamental. Thus out of necessity, the importance of Geographic factors is realised in these regions. Germany can be included under the classification, Relatively Subsidiary as the Geographic factors are not of primary importance. It is an industrial country; of course I am speaking of its condition since 1871—depending more on imports chiefly agricultural, transport costs and the tariff problems forming the important elements in its national economic structure. Even then the natural controls cannot be ruled

out of account, as the rivers play an important role in the country's economy, which, in the apt words of Mr. G. R. Crone "possess one great disadvantage from the point of view of a unified transport system."⁷

Final or Industrial. The final or Industrial classification concerns itself with the Direct geographic factors and the Direct non-geographic factors, the latter being subdivided into Economic and Political. If the cost of the land, the interest on Capital, the wages of labour and the transport costs, these being reflected in the balance of the profit and loss account, are the objectives of the economists and the tariff problem and national and international policies are the concern of the politicians, the edaphic, geomorphologic, phenologic, climatic and human factors are the criteria of the geographers. There is interdependence between these three factors and the political factors are even sometimes shaped by the geographic forces. The reflection of the change of the British Tariff policy since 1914 in the horizontal movement of industries in England and the formulation of the tariff sections of Switzerland, dictated by the natural structure, stress on the influence of the geographic controls on the political programmes. It is only in recent times that the importance of the geographic factor has been realised and now the Geographers have as important a place as the economists and the Politicians. A peep into the geographic aid availed of by the British, the Americans and the Russians in their national programmes, is indeed necessary for those in our country who disregard the importance of geography.

Geographic aid in foreign countries.

England. In England, the Land Utilization Survey under the direction of Dr. Dudley Stamp has prepared maps showing the utilization of every inch of the country in the past and the present. The Royal Geographical Society started in the 1st half of the 19th Century is really the guide for the National Planning Body. The Memorandum 8 submitted by the Royal Geographical Society in 1938 on the 'Geographic factors relevant to the localization of industries' and the map by the 'Sieve method' suggested by Prof. Taylor are really very novel, profitable and practicable. The Geographers were entrusted with the task of investigating the causes of the horizontal displacement of the industries after the great war and the inferences received much attention at the hands of the industrial planners. After 1914 the geographers took a leading part in Town Planning and distribution.

United States of America. The importance of the Agricultural Atlas of the U. S. Dept. of Agriculture which contains the pedologic, climatologic, and topographical distributions and the time of sowing, planting and harvesting and crop distribution needs no special mention. American Geographers are working on problems like the 'consumptive capacities' of their country's population and solving such questions as the following:—"Why certain crops are best fitted to certain types of environment?" and "whether a different type of agriculture is either feasible or possible?" More attention is paid to land utilization than in Britain as can be inferred from the agrarian nature of the country. The Mediterranean region was forced to follow up her natural dictates by resorting to fruits and vegetables abandoning wheat and barley, while the Lake area received a close scrutiny at the hands of the Cultural Geographers.

Russia. Before 1917 the Russians were ignorant of the fact that the 'machine requires oil for lubrication' and now the country is enjoying the fruits of a well-thought-out plan prepared in co-operation by the Geographers, the Economists and the Politicians. Collectivism prevailed and the exploitation of the unknown regions is the major task entrusted to the Russian Geographers. The growth of agricultural and industrial crops in regions like Novaya Zemlya, the construction of ports like Igarka on the Lower Yenisei, the use of the ice breakers in exploring the North-Eastern Passage, the linking up of the coastline of the Northern sea with 57 polar stations and broadcasting of weather report for four times a day, and the discovery of valuable minerals by the Tatik Pamir Expedition—have all ushered an era of prosperity to Russia.

Conclusion. The promoter can 'investigate, assemble and present' the industrial concern, the share-holder can purchase the shares, the labourers can toil all the day long from whistle in to whistle out; but they can never successfully handle the complex factor of localization without the co-operation of the geographers, who alone are capable of selecting the best locations, the factors of which vary with the nature of the industry, the stage of the country's development and the nature of the physical conditions existing. The countries that are in the process of Industrial Revolution, like India, should take care, not to neglect the importance of the Geographical Factor and there should be no haphazard preparation of the maps. In India geographic knowledge is at present confined to a microscopic few, though thanks to the Indian and Calcutta Geogra-

phical Societies, the Geography Section of the Indian Science Congress, and Universities like Aligarh there is now a rapid diffusion of geographic knowledge. The preparation of the land utilization maps for India by the Indian Geographers on the lines of those prepared in Britain, keeping in view, the historical background, the nature of the country and the type of development required, and publication of an Indian Agricultural Atlas on the model of the American Agricultural Atlas are urgently required. It is hoped that this stupendous but necessary work will soon be undertaken and carried out in proper time by the co-operation of the Government, the Universities, the Geographical Societies and Associations in India and the Indian Geographers.

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Modern Aids to the Teaching of Geography in Indian Schools

II—HOW RADIO CAN HELP

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Most of the problems of our country can be adequately solved only by the real education of our people. And I feel that a proper understanding of Geography can do much to help our younger citizens in forming a realistic vision of the world in which they live and of their own country in relation to the world. India is a country of great achievements and of even greater possibilities. But if we are to develop all the latent resources of our country we must see it in its true geographical perspective. That is why I wish to insist that in our educational establishments, we must utilise to the fullest extent all modern aids which can facilitate the geography teacher's task.

School broadcasting occupies a distinguished place in the British educational system. A council of administrative officials and teachers supervises the development of School Broadcasting and the local education authorities are increasingly providing and maintaining receiving sets as part of their usual school equipment.

These broadcasts have helped "to provide a mental stimulus beyond the ordinary resources of the school". I do not in any way wish to underestimate the interplay of personality between the teacher and the taught nor to question the utility of the former's teaching tactics. My purpose is to draw public attention to the immense value of radio as a means to the imparting of a wider and more realistic knowledge to our children than is possible within the class room. Its utility has been established abroad and I fail to see any adequate reason why it cannot play an equally important part in our classrooms as well.

The school broadcasts must fit into the ordinary syllabus and should include only subjects of 'lively interest'. These adjustments

should be the sole concern of the teacher. He should be in touch with the broadcasting authorities and should ascertain their future programmes and prepare his timetable to fit in with the broadcasting programme. It is the duty of the broadcasting authorities to consult various teaching bodies and thus plan their talks and it is the duty of the teacher again to select those talks that fit into his class work and leave the rest. The School Broadcasts as we have in India are to my mind not well-planned and have not subject-wise distribution. It is, however, encouraging to learn that something is being done. I may suggest that educational officers may be appointed at every station and it be their work to organise such broadcasts. It is essential that these officers be teachers of ability and experience.

For the smooth and efficient running of these school broadcasts it is desirable that all broadcasts be under one control. This creates in our educational policy a continuity and unity that we lack so much and avoids the commercialism and propaganda with which broadcasting in some countries is strongly associated.

The preparation of programmes confronts us with a problem of great magnitude. Professor E. G. R. Taylor, has been in charge of the talks in Geography broadcasted by the British Broadcasting Corporation. The present writer has been fortunate in having the learned professor as his teacher and guide for a period of two years and a half. During this period he discussed with her on several occasions the problem of School Broadcasting. She has divided the subject into (1) Junior and (2) Senior Geography, the latter intended for students ranging from 11 years to 14 or 15 and the former for those ranging from 9 to 11 years.

The programmes for the younger children consist mainly of travel talks and are intended "to supply elements of life and colour beyond the resources of the school, thus supplementing the Geography syllabus". From time to time people tell the children of Great Britain their first-hand experiences of life in other parts of the world and these details enrich the geographical knowledge of the school children and enliven the facts that their teacher has spoken about or that they read in their Geography books.

During the term from September to December, 1938 in the programme of Geography Broadcast Talks was a series of talks on the Far East. The programme included topics such as 'In Cairo,' 'A village on the Nile,' 'Living in Baghdad,' 'An Indian City,' 'an Indian Village' and 'an Indian Jungle.'

I had occasion to listen to the talk on "In Cairo" in a London school and was amazed to witness the interest and enthusiasm exhibited both by the teacher and the pupils. Before the broadcast the teacher gave each of us an illustrated pamphlet about the forthcoming talk issued by the Broadcasting Corporation which helped us to visualise the scenes we were going to hear about. Then he located the place of the talk on the map a few moments before the talk and said a few words about the geography of the place. And after the radio talk the teacher asked questions about it and repeated some of the facts which we had heard. Another useful plan is for the teacher to ask the students to write down as home-work a description of the place they have heard about, illustrating their facts from the pamphlet. This will, I think, train their memory and teach them to look at pictures with a 'seeing eye'.

The talks for the senior students are about specific geographical problems and are generally given by speakers having first-hand knowledge of the problems. They, in the words of Professor Taylor, contribute "vivid description and up-to-date knowledge." The last named term included broadcasts on (1) Managing the Sea-Coast-Erosion and Accretion; (2) Understanding climate (America)—The Canadian Farmer pushes North; (3) Mud and Flood—the Mississippi, friend or enemy.

In these cases also an illustrated pamphlet is issued to accompany each talk. A summary of the broadcast is also included to suggest material for "preparation or follow-up". The teacher, in this case too, relates the pictures and the maps in the pamphlet to the usual class-room map.

It should not, therefore, be difficult to realise that radio can be a vital aid to teaching of Geography and, of course, of other subjects. Education to-day is not merely a 'preparation' for securing jobs! The child of to-day needs preparation for life, both in work and play, and it is high time that our educational authorities realised that all-important link between class-room activities and "Life".

Reading books and listening to the class-teacher must inevitably become monotonous and much that is taught in this way, if unrelieved, is neglected as dull routine. Listening to a radio is in itself a thrill for children. They look forward to it as something interesting and I have observed that when they return home, they relate to their parents with great pride what they have heard on the radio, and anxiously await the next broadcast.

The teacher can look to the broadcast talks to provide what he himself can supply only with difficulty. They make it possible for world-known travellers with first hand experience to address huge audiences "without suffocating the atmosphere." Specialised knowledge of experts is available for the whole community, so that broadcast talks enrich the curriculum and supplement the work of the teacher who lacks specialised knowledge.

In India to-day, the rural schools deserve and should receive special treatment, inasmuch as the equipment of the school in general and often the qualifications of the teaching staff are inferior to those of urban schools. We can now bring to our village pupils resources from which he can make contact with the outside world. For rural schools, therefore, broadcasting is of special value. Series of talks should be designed for Rural Schools to give them what urban schools already possess and to compensate as far as possible for lack of modern equipment and up-to-date text-books. This new experience will be a real awakening for the village child. In the beginning he may exhibit only a passing interest but gradually he will begin to assimilate some general ideas and the details of the different talks will develop into a live pattern in his mind. Thus it is to be hoped he may get rid of the inferiority complex which at present shrouds so many of our pupils in village schools.

The problems of technical installation and reception may require the help of the broadcasting authorities and for this they may have to put the services of some of their engineers at the disposal of schools. Advisory visits may be paid to all equipped schools and advice given to the local authorities free of cost or on payment of a small fee. The State should aid schools in effecting this educational development by financial help or gifts of apparatus. This is a real investment.

This is moreover an excellent way in which public-spirited men and women can help the community.

Some of us may be tempted to dismiss the idea of wireless lessons with amused contempt, as being divorced from real teaching. Yet this attitude cannot be justified. The teacher is now used to the black-board and chalk, to maps and pictures, to models etc., as aids to his teaching. He has no fear that such aids might interfere with his domination over his class or endanger discipline. And a very little experience of wireless lessons will suffice to convince the most timid of pedagogues that when the children are really interested, they are only too ready to learn.

In the same way, there is no need for the teacher to be jealous of the superior qualifications of the experts who can address his pupils by this new medium. The yeoman service of our teachers will still be the key to the successful running of our schools.

The utility of the wireless talks lies most particularly in the reality of its representation, which nothing else but actual contact with other peoples or visits to places of geographical interest can bring. In advocating the universal use of wireless broadcasts in our schools, therefore, I do not seek to alter the fundamentals of teaching but I do wish to bring home the facts that they may widen the possibilities of what can be taught and vary the method in which lessons are given so as to make our schools more able to meet the needs of children who are to adjust themselves to the modified structure of human society.

News and Notes

The difficulty of procuring paper in time has caused considerable delay in bringing out this issue within the quarter. Members and subscribers, it is hoped, will appreciate our war time difficulties and not mind the delay.

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Two meetings were held during the quarter. In the first one Mr. George Kuriyan read a paper on *India—a Study in Space Relations*. In the second one Mr. N. Subrahmanyam spoke on *The Geography of Hill Fortresses in South India*.

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We are glad to note that the University of Mysore which introduced Geography for the Intermediate course two years ago has this year carried it on to the B.A. course also.

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The Indian Science Congress will meet at Lucknow in the first week of January 1943. As the Geography Section of it has lost its place as a separate section having been tacked on to the Geology Section in spite of all the efforts of the Geographers to prevent this amalgamation, a desire has been expressed by several of them to have a separate Conference of their own as a clearing house of Geographical thought and research in this country like the Political Science, Economic, Historical and Oriental Conferences. It has been urged that such a Conference can also tackle important questions, such as preparation of Land Utilization Maps, A National Indian Atlas, A Standard Regional Geography of India etc. Co-operation of the work of several Governmental departments such as the Geological and the Meteorological, and the Survey of India has to be done as preliminary to and part of a National Regional Planning. An Indian Geographical Conference held annually in the different University centres may be found to be extremely helpful in carrying out such work. Opinion is invited on this idea.

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Owing to the emergency conditions prevailing in South India during last summer, the Provincial Educational and Geographical Conferences could not be held at Vellore in May 1942 as was originally planned. It is now understood that the two postponed Conferences will be held in May, 1943.

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During the quarter a Refresher course in Geography was conducted at Madanapalle by Mr. N. Subrahmanyam, which was attended by 20 teachers of Geography from the several schools in the locality. A number of excursions were also conducted as part of the programme of the course, the most important of which was that to Horsley Konda.

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The All-India Educational Conference will be held at Indore, from 27th to 30th December, 1942. The New Education Fellowship and the Indian Adult Education Conference will also meet there at the same time.

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We are glad to welcome the publication of the Punjab Geographical Journal, Volume I. In the vast sub-continent of India, there is great need for the promotion and diffusion of a good deal of Geographical knowledge; and one more journal, at present, means some more useful work carried out in that direction.

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It is interesting to note that the newly started University of Ceylon has a full-fledged Department of Geography from the very beginning, instead of having to wait for tardy recognition and slow development as in several of the Indian Universities.

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We are glad to state that the Ceylon Geographical Society, which is closely associated with the University Department of Geography, has been giving a series of popular lectures by specialists, illustrated with slides and views, for the benefit of the Military Officers and soldiers now staying at Colombo.

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Select Contents from Periodicals

The Geographical Journal: January 1942.

Through Western Tibet in 1939. By Captain Robert Hamond.
The Sargasso Sea. By G. E. R. Deacon.
Routes to Russia through Iran. (Monthly Record).

The Geographical Journal: February 1942.

The Tali District of Western Yunnan. By C. P. Fitzgerald.
Discussion on the Geographical Aspects of Regional planning.
By Prof. E. G. R. Taylor, Dr. L. Dudley Stamp and others.
Recent Developments in the Netherlands-Indies By
Dr. G. H. C. Hart.

The Geographical Journal: March 1942.

Some Routes in Southern Iran. By J. V. Harrison.
The Early History of Water Supply. By C. E. N. Bromehead.
Future of Irrigation in India. (Monthly Record).

The Geographical Journal: April 1942.

The Geographical Aspects of Malaria. Sir Malcolm Watson.
A Survey of Ancient Sites along the 'Lost' Sarasvati River.
By Sir Aurel Stein.

The Geographical Journal: May-June 1942.

Siam before the War. By L. Dudley Stamp.
The Caucasian Borderland. By W. E. D. Allen.
The Burma Road. By Sir Henry Craw.
The Haramosh Pass. By Captain E. C. Fountaine.

Geography: June 1942.

Experiments in Teaching Current Affairs. By E. M. Coulthard.

Geographical Review: April 1942.

Land Utilization and Agriculture of Mindanao, Philippine Islands. By Robert L. Pendleton.
Settlement Patterns in Malaya. By E. H. G. Dobby.
A Functional Analysis of Population Distribution. By Harold H. McCarty.

The Punjab Geographical Review: Vol. I, 1942.

The Climate of Lahore. By P. R. Krishna Rao.
Through the Himalayas—From Simla to Tibet. By Raja Ram.
The Natural Regions of India. By I. D. Malhotra.
The Development of the Fruit Industry in the Punjab. By Farhat Ullah Khan.

Agricultural Regions of the Punjab. By Kazi S. Ahmad.
The Evolution of the Field Pattern in the Indo-Gangetic Divide. By S. Muzaffar Ali.

Calcutta Geographical Review: January 1942.

Minerals and Mineral Products. By S. P. Chatterjee.
Agricultural Regions of the United Provinces. By B. N. Mukerjee.

Fisheries of Bengal. By A. K. Banerjee.
Life in a Fishing Village of Bengal. By M. N. Basu.

Indian Information: June 1, 1942.

Indian Timber. (Pp. 552 to 556).

Approved by the Text-Book Committee,

DESCRIPTIVE GEOGRAPHY

For Elementary Standards 4-8 according to 1941 New Syllabus

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Standard 4 ready for sale, Price 7 annas. Standards 5 to 8 will be ready shortly

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BY

N. SUBRAHMANYAM, M.A., L.T., F.R.G.S.

Lecturer in Geography, Teachers' College, Saidapet.

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The following are some of the special features of the series:—

The treatment is throughout descriptive; and the influence of geographical environment on human activities have been well brought out everywhere. Physical, human and political geography have been taken in combination, so as to present a synthetic picture of human societies in the different regions of the world. Constant reference has been made to local conditions and examples, making the home region the standard of comparison throughout. The main geographical principles have been treated in an elementary way, each in relation to the region of which it is a characteristic. Attempt has been made to develop the chief geographical concepts in the course of the regional study.

The exercises at the end of each chapter have been very carefully prepared not only for the purpose of testing the subject matter learnt, but also in some way to supplement the matter taught. The volumes are copiously illustrated with pictures, maps and diagrams. The bold print on glazed paper makes the books attractive to the pupils.

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Reviews

Looking at the World. (Four books). By W. A. Green and E. G. Green (Blackie & Son, London).

The four books of this series together present to children of the Junior School age groups a course of geography graduated both in language and material. The narrative units in the first two books are in simple sentences and one idea is presented at a time. Books Three and Four also are written in a simple style. A correct balance between the descriptive and practical aspects of the subject has been kept up in all the books, and the basic facts of geography have been clearly presented. Practical exercises at the end of each chapter deal with the most important ideas in it.

Book One (*Families in Other Lands*) gives picturesque and detailed accounts of family life in lands which represent main climatic types so presented as to bring out the full value of the contrasts. The practical exercises deal with simple natural phenomena of sun-movement and wind-direction.

Book Two (*Our Neighbours and their Work for us*) describes graphically the work of Man in many lands in producing food and other materials of everyday life. The practical exercises develop the relationship between wind and rainfall, investigate the seasonal as well as the daily movements of the sun, and make a beginning with the drawing of plans.

Book Three (*The World and its Tradeways*) deals with the work and trade of the chief countries of the world. The exercises here give practice in the use of maps and scales besides continuing the observation of physical phenomena.

Book Four (*Britain and her Work*) presents the geography of Britain with special reference to her industries.

The superb illustrations of high geographical value, the clear and simple maps, and the bold print on glazed paper, make the volumes highly attractive to children. They can be specially recommended for use as supplementary reading books in middle school forms of secondary school and as reference books for teachers in Higher Elementary Schools.

The Enterprise Senior Geographies: (Two Books). By Donald Smith. (Blackie & Son., Ltd., London).

These two books form the first two volumes of a series of three books prepared for English Senior Schools, with sufficient material in them to interest pupils of different calibres and attainments.

Each of the books is arranged for two half-yearly allotments as follows:—Book One—First Half-Year's Work (*Introduction to Physical Geography*) gives a simple presentation of the Earth as a unit, explaining its basic phenomena from the child's own experience. The Second Half-Year's Work (*The Major Natural Regions of the World*) again treats of the Earth as a unit, but with a surface of varied regions, covered with a vegetable life and peopled by an animal life determined by the phenomena dealt with in the first half-year's work.

In Book Two, the first half-year's work treats of the *Natural Regions of the World as differentiated by their human values*—the production of shelter, food, drink and clothing. The second half-year's work deals with the *British Isles*.

The "Things to do" at the end of each section and the frequent illustrative quotations, the excellent maps, pictures and diagrams and the attractive get-up are other good features of the two books.

The Southern Continents. By Jasper H. Stenbridge. (Oxford University Press). 1941. Pp. 324, 24 plates, 112 text-figures.

This volume is one of a series of geography books. (The New Oxford Geographies), providing a graded course for pupils in secondary schools, who are working for the school certificate and similar examinations. Mr. Stenbridge, who is well-known as the author of several good school books on geography and geographical exercise-books, has laid special emphasis on the human side of geography, dealing with basic geographic principles as they arise in connection with the various regions. Avoiding over-generalization, he has frequently used concrete and detailed description of places and scenes to exemplify and illustrate the inter-relation between human life and physical environment.

The volume is illustrated by simplified maps and fine photographs of special geographical interest, both closely linked with the text. Suggestive and stimulating exercises and a carefully prepared index for each of the continents are other features of this valuable book,

which can be used as a text-book in those Indian schools where English is the medium of instruction. To suit the curricula of different schools, the continents are available in separate books also.

Living and Earning a Living: Book III—India, Europe and the British Isles. By Helen T. Scudder. (Oxford University Press). 1942. Pp. 152, and 69 illustrations.

This is a text-book of Geography, suitable for use in Form III of secondary schools in Madras Presidency, being prepared in accordance with the recently revised syllabus issued by the Educational Department. As we pointed out in reviewing Book I of this series last year, owing to the general prevalence of the mother-tongue medium of instruction in non-language subjects in the middle school forms, the few schools in which Geography is taught through the English medium have hitherto laboured under the disadvantage of having no suitable text-book in English for the use of the pupils. That gap has now been filled up by the three books, of which the book under review is the third.

The matter has been presented in a refreshingly interesting manner, adopting a simple descriptive style. The 'things to find out' at the opening of each chapter and the stimulating exercises at the end of each provide material for individual and group work, and ensure pupil activity. The numerous pictures, maps and diagrams as well as the statistical data serve not only to throw further light on the subject matter but also to supplement it in a vivid and pleasurable manner.

En Dēsem: My Country (Tamil). By A.N. Schwartz. (Christian Literature Society for India, Madras). 1942. Price annas 8.

This is a text-book of Geography for standard IV of Tamil Elementary Schools in Madras Presidency, prepared in accordance with the latest Departmental syllabus. As in the book for standard V by the same author, reviewed in the previous issue of this Journal, the matter is treated in clear simple language. Suggestive questions and suitable exercises appended to each lesson and the numerous illustrations enhance the value of the book, which along with the others of the C. L. S. Geographical Series in Tamil provide a set of books for standards II to V of Elementary Schools in Tamil Nad.

Geography for Standard II and Standard III. (Tamil). By P. S. Darling (Christian Literature Society for India, Madras). 1942. Price As. 6 and As. 7.

These two books of geographical stories, which were originally published in 1927, have now been revised and rearranged, and supplemented with local studies so that they may be used by teachers of elementary schools who wish to follow the latest syllabus in geography for standards II and III, issued by the Department of Public Instruction, Madras.

The stories in these two books provide accurate geographical matter, 'without sacrificing the essential qualities of good narrative'. At the end of each story, the author has given all the information the teacher requires to make the lesson effective and to follow it up with useful handwork. To illustrate the latter careful instructions have been given and diagrams drawn. Both the books are well-illustrated. While the stories are intended to be told to young children who cannot be expected to use them, older children can read them for themselves thereby revising, and keeping fresh in their minds what they learnt from teachers' narration in a lower class.

Children of Many Lands: Book I. (Tamil). (Christian Literature Society for India, Madras), 1942. Price As. 4.

This is the first book of a new series of geographical readers in Tamil, meant to provide supplementary reading matter for children in Standard II of Tamil Nad. Compared to Darling's book for the same class, reviewed above, the language and treatment are very much simpler, being designed to be directly used by the children themselves, while the other book is meant to be used by the teacher and the older children. This book contains for each of the typical climatic regions two stories and not one as in the other book, one dealing with the life of a boy and the other dealing with that of a girl. Clear bold print and the numerous pictures should make the book attractive to the young ones.

Little Folk in Many Lands. (Blackie & Son).

Little Children of the Great Round World. By Dorothy King. (Blackie & Son).

These two volumes provide excellent geographic material for world geography, treated in very simple language (the first one in the shape of stories), dealing with the life of people in many lands. They can be used as text-books in the primary classes of Convent

and Anglo-Indian schools, where English is the medium of instruction, and as supplementary reading books in other schools where the mother-tongue medium has been adopted. Elementary School teachers will find in them accurate geographical matter, which they can utilise for narration to the children in their own language. The bold print on glazed paper, the excellent illustrations and the fine get-up make the books very attractive to the children.

Jainism and Karnataka Culture. By S. R. Sharma, (Karnataka Historical Research Society, Dharwar). 1940. Price Rs. 5.

The main substance of the book under review formed part of the Author's thesis on 'Jainism in South India', which got him the M.A. degree of the University of Bombay; and the Karnataka Historical Research Society of Dharwar has published it as the first of a series of volumes of its Silver Jubilee Publications. Prof. Sarma presents in this book a historical survey of Jainism in Karnataka, particularly in relation to the culture of the province. He shows how for over thousand years from the first century of the Christian era onwards, Jainism flourished in all parts of the Karnataka, and how during all this period it exerted a steady and permanent influence on the growth of Karnataka society, affecting thought and life. Finally he discusses the causes of the decline of Jainism in this region. A map of South India showing important places of Jain history and a few blocks of buildings etc., illustrate the volume.

Kannada Nadina Kathagalu: (Canarese). By Narayana Sarma. (Karnataka Historical Research Society, Dharwar). 1940. Price As. 12 paper; 1 Re. Calico.

This volume of 56 historical tales of the Karnataka country deal with the great men and women of the area who have played an important part in politics, religion and art in that region; and cover a period of 17 centuries, beginning from the 3rd century A.D. to the present day. Through these stories the author presents the various aspects of the life and culture of the Canarese country. The simple language in which they are written make the volume easily readable for young pupils as well as the general public. A historical introduction, numerous interesting pictures of great personages, sculptures and architectural monuments, a historical map and a picture map of monuments of the Karnataka country are other useful features of this neat little volume, published by the Karnataka Historical Research Society of Dharwar as the second of its Silver Jubilee Publications.

Books and Journals Received

- The Southern Continents*: By Jasper H. Stenbridge.
- Living and Earning a Living*: Book III: *India, Europe and the British Isles*: By Helen T. Scudder.
- Exploration in Tibet*: By Swami Pranavananda.
- Little Folk in Many Lands*: (Blackie & Son).
- Little Children of the Great Round World*: By Dorothy King.
- Looking at the World*: By W. A. Green & E. G. Green.
- Book I. *Families in other Lands*.
- Book II. *Our Neighbours and their Work for us*.
- Book III. *The World and its Tradeways*.
- Book IV. *Britain and its Work*.
- The Enterprise Senior Geographies*: Books I: & II. By Donald Smith.
- Children of Many Lands—Book I*: (Tamil): (C.L.S.).
- Geography for Standards II & III*: (Tamil): By P. S. Darling.
- Geography for Standards IV & V*: (Tamil): By A. N. Genwertz.
- Jainism and Karnataka Literature*: By S. R. Sharma.
- Kannada Nadina Kathagalu*: (Canarese): By Narayana Sarma.
- Indian Information*: June 1 to September 15.
- The South Indian Teacher*: July, August, September and October, 1942.
- Journal of the Sindh Historical Society*: June 1942.
- The Geographical Journal*: January to June 1942.
- Kalaimagal*: July and September 1942.
- Geographical Review*: April 1942.
- The Indian Journal of Political Science*: July-Sept. 1942.
- The Quarterly Journal of the Mythic Society*: January 1942.
- The Punjab Geographical Journal*: Vol. I, 1942.
- Nagari Pracharini Patrika*: Vol. 47, No. 1.
- Geography*: June 1942.
- Calcutta Geographical Review*: January 1942.
- Madras Christian College Magazine*: September 1942.
- Journal of Venkateswara Oriental Institute*: January-June 1942.

